muRata
INNOVATOR IN ELECTRONICS

# SMD/BLOCK Type
# EMI Suppression Filters EMIFIL®

# Introduction

Murata Manufacturing Co., Ltd. has been developing the EMI suppression device market since the invention of 3 terminal capacitor DS310 series in 1979. Also, we have been striving to develop and popularize new noise countermeasure technologies as well as new products in the concept of "Develop unique products," to become our customer's best solution partner. We hope you can find the key solution to your noise problem.

**Explanation of symbols in this catalog**

| | Features of each series | | Features of each item | |
|---|---|---|---|---|
| All Products | Flow OK | Flow soldering available | New | New product |
| | | | Kit | Exist in design kit |
| | Reflow OK | Reflow soldering available | ≧1A | Rated current 1A or more |
| | | | ≧3A | Rated current 3A or more |
| | Hi Power | Meets large current lines | ≧10A | Rated current 10A or more |
| Chip Ferrite Bead | GHz | Meets high frequency noise up to 1-2GHz | | |
| | Hi-GHz | Meets ultra high frequency noise up to 10GHz | | |
| LC Combined Type Filter | | | DTV | Low cut-off frequency type for UHF band noise, which affects digital TV tuner |
| Chip Common Mode Choke Coil | | | HD | For high speed differential signal lines (USB2.0/LVDS/IEEE1394 etc.) |
| | | | UD | For ultra high speed differential signal lines (HDMI/DVI/Display Port/USB3.0 etc.) |
| | | | Impedance Match | Line impedance has been matched to transmission lines |

**EU RoHS Compliant**

- All the products in this catalog comply with EU RoHS.
- EU RoHS is "the European Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment."
- For more details, please refer to our website 'Murata's Approach for EU RoHS' (http://www.murata.com/info/rohs.html).

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# CONTENTS





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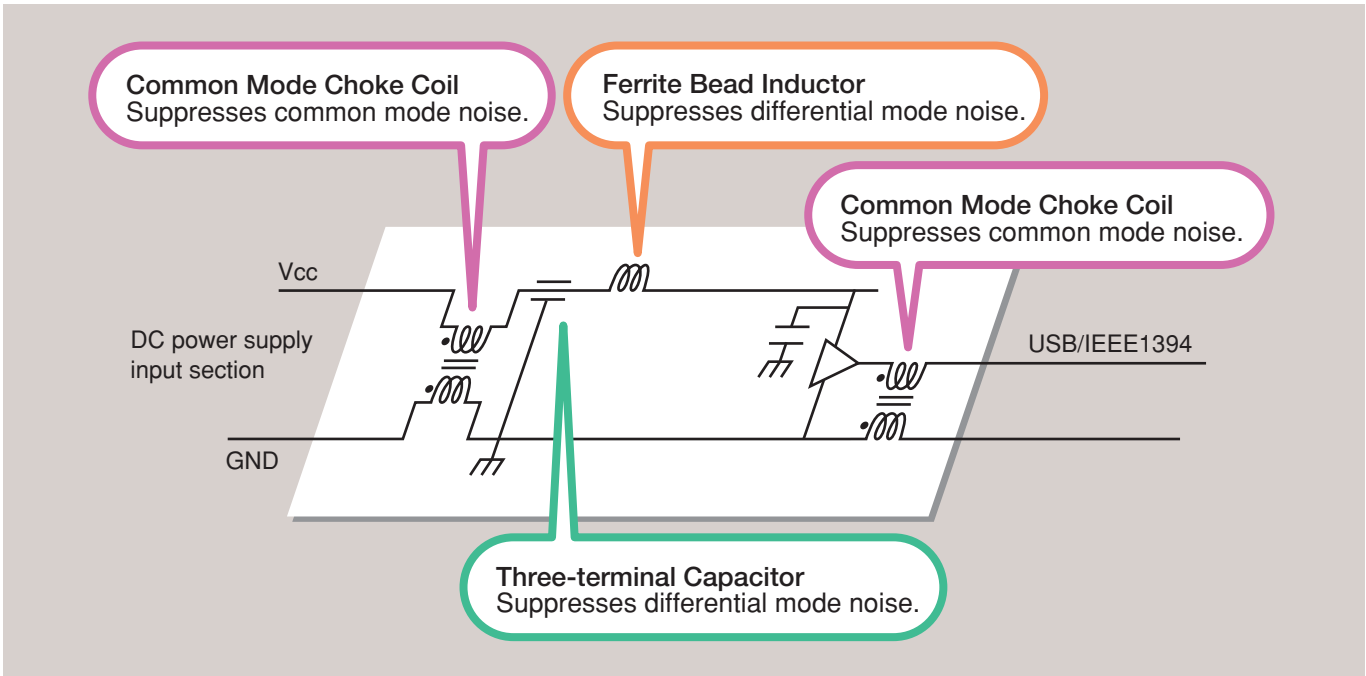
## ●Features & Suitable Circuits

| Type | Features | Suitable Circuits |
|---|---|---|
| Ferrite Bead<br>BLM/BLA Series<br>  | · Miniaturized<br>· GND connection unnecessary<br>· Effective at low impedance line | · Application set with less noise radiation<br>· Low impedance line |
| Capacitor Type<br>NFM/NFA/NFE/NFR/<br>NFL/NFW Series<br>  | · Great noise suppression effect<br>· With effect as By-Pass capacitor (Lineup for Power)<br>· Good noise separation from signal (LC filter for Signal)<br>· Effective at high impedance line | · Application set with higher noise radiation<br>· High impedance line<br>· Circuit with By-Pass capacitor<br>· Circuit driven by high frequency |
| Common Mode<br>Choke Coil<br>  | · Possible to suppress noise with less affect of ultra high speed signal<br>· Great effect for common mode noise<br>· Less magnetic saturation by current | · High speed differential signal line<br>· I/F cable driver<br>· Power line |

## ●Example

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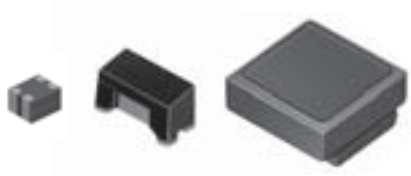
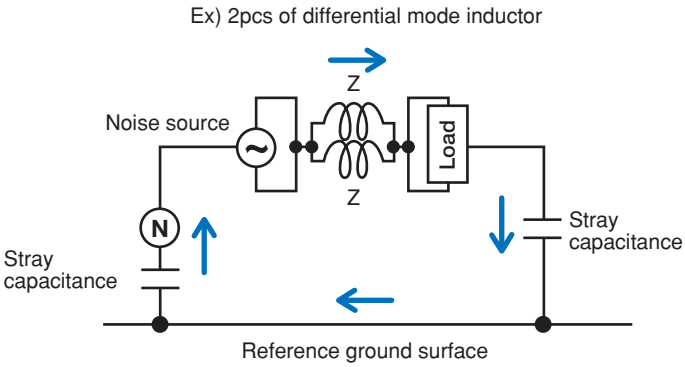
# ●Advantages to Using Common Mode Choke Coils



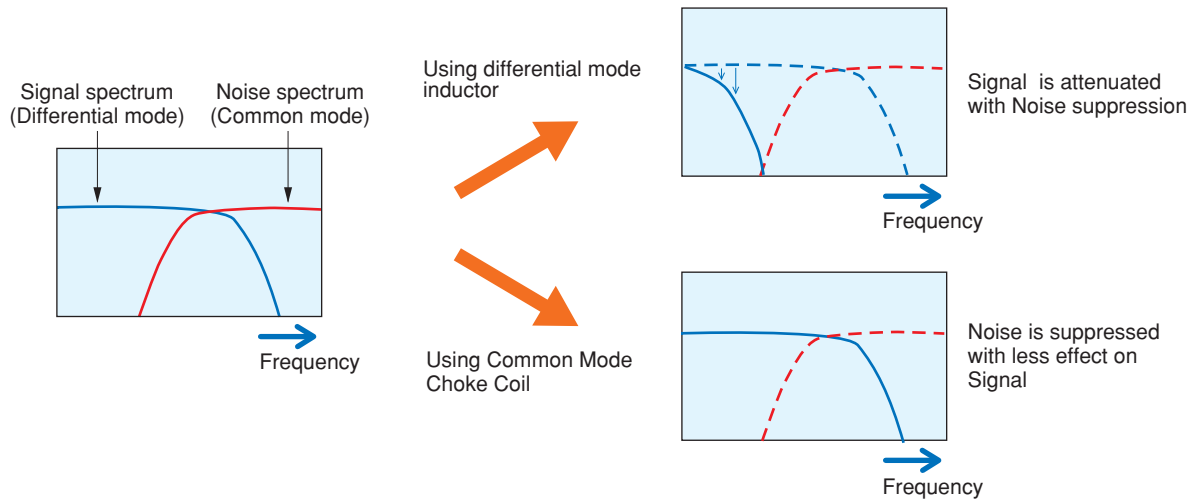
## 1. Great Effect for Common Mode Noise

Differential mode inductors work as a half impedance for common mode noise. Common Mode Choke Coils are effective for common mode noise.




## 2. Possible to Suppress Noise with Less Affect of Ultra High Speed Signal

Common Mode Choke Coils can suppress Noise with less affect of Signal, even if the frequency range of Signal and Noise are the same, because they separate each conductive mode of current.

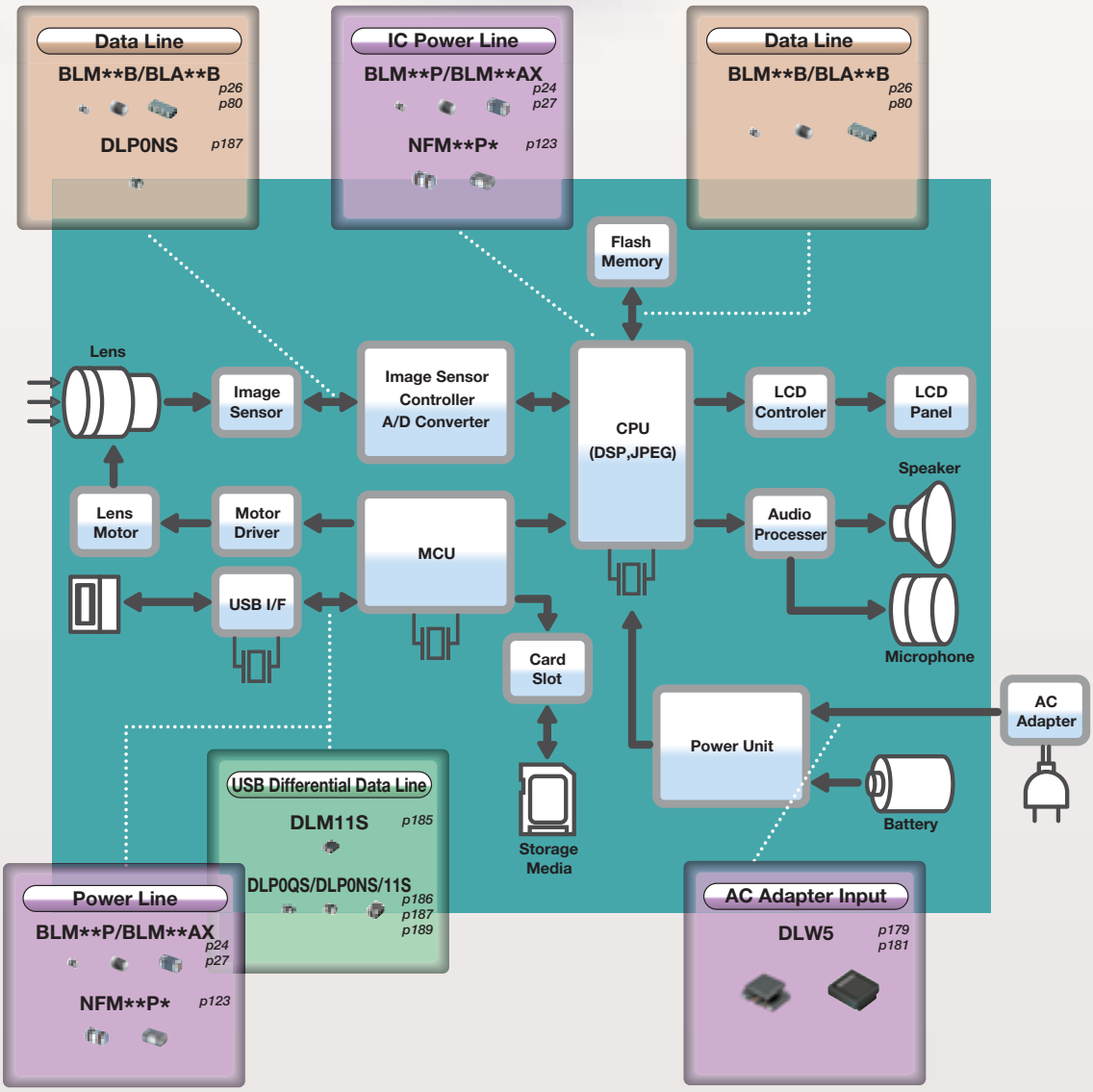



## 3. Less Magnetic Saturation by Current

Common Mode Choke Coils are effective for noise suppression of DC power lines, due to their less magnetic saturation at high power current, that comes from their construction of cancelling magnetic flux of differential mode current at each coil.

# Digital Still Camera

Application Sample

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# Smartphone
Application Sample


**RF Module**
BLM03/BLM15 p27 p36

**LCD/Camera**
NFA18SL p145
DLP0QS p186
DLP0NS/DLP1ND/DLP11S p187 p189 p193

WiFi
BT
GPS
Cellular RF
Cellular BB
ACPU
SIM Slot
Micro SD Slot
Touch Panel
LCD Monitor
LCD Driver
Camera Module
Audio IC
Speaker
Mic
NFC
USB
D/D Converter
Flash Memory
DRAM
Power Management IC
Battery

**IC Power Line**
NFM15PC/NFM18PC p123 p126
BLM15P/BLM18KG p36 p52

**Audio Line**
BLM02/03 p24 p27
DLM11G p184

**USB**
DLP0QS p186
DLP0NS p187
DLP11S/11R/11T p189 p190 p191

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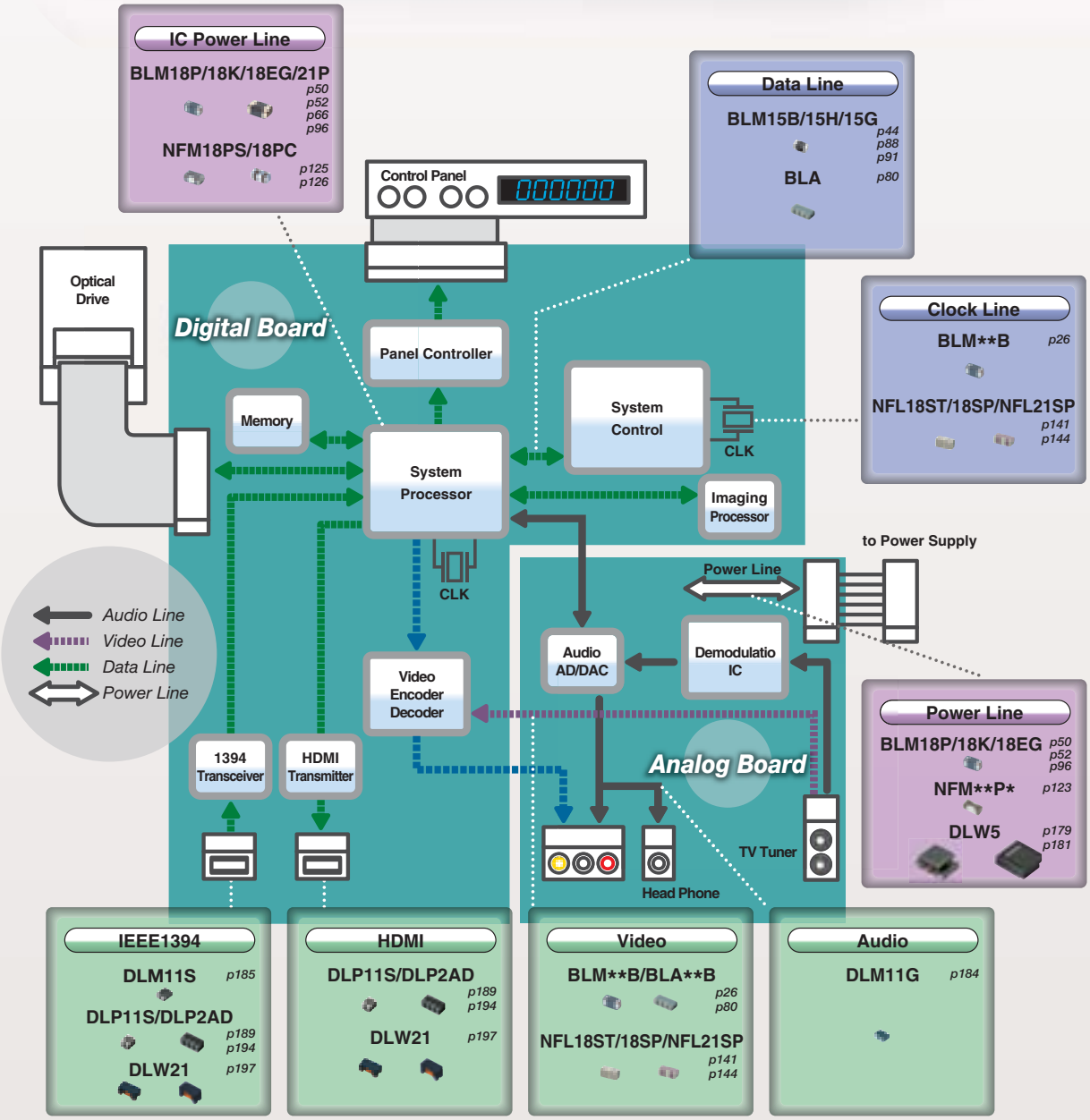
# Blu-ray/DVD

Application Sample

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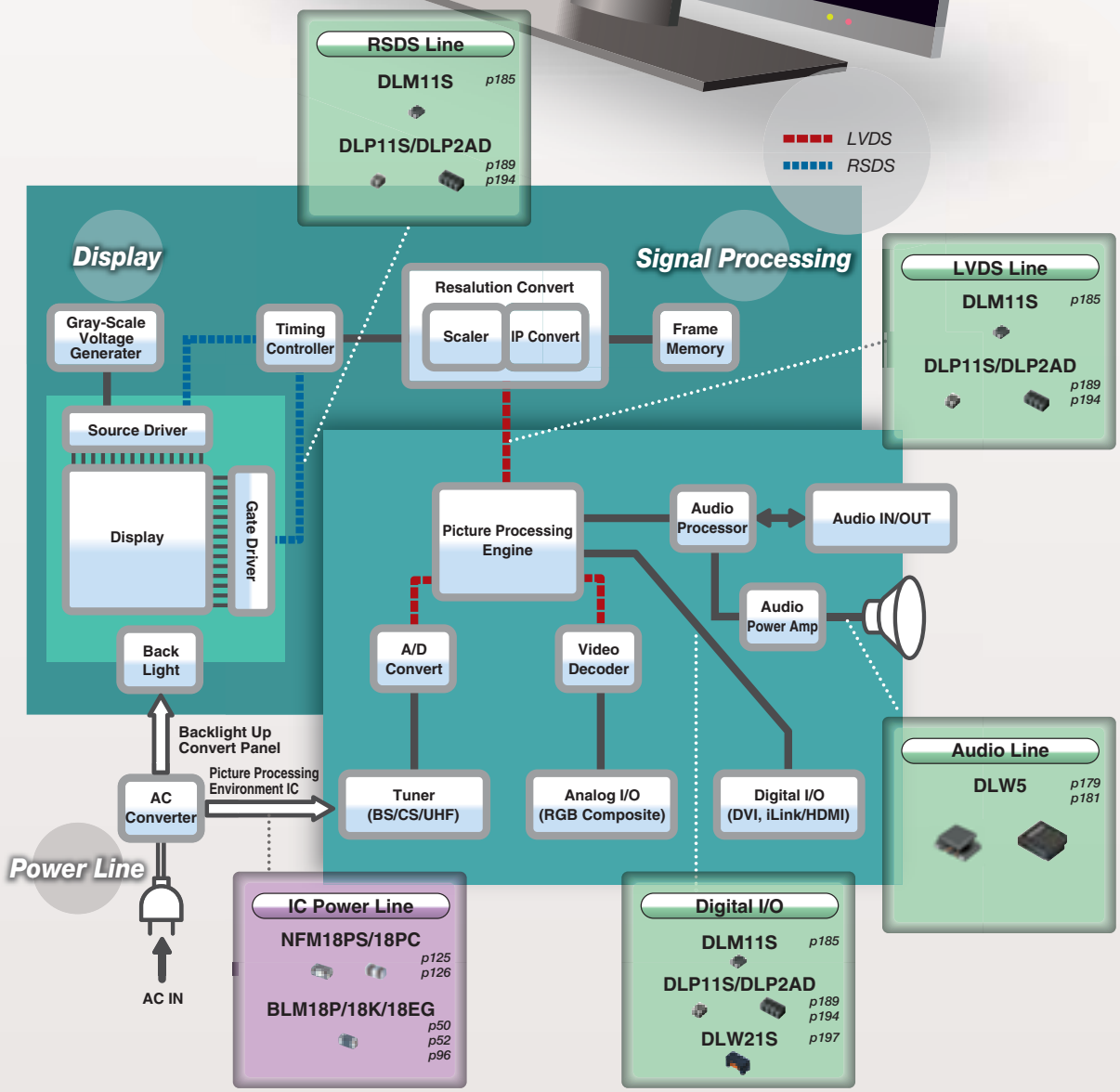
# LCD-TV

## Application Sample

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# EMI Filter Selection by Circuits and Noise Frequency

## ●Chip Ferrite Bead / Chip EMIFIL®

**Noise Frequency?**

**Circuit Type?**

### Noise Frequency: Under 1GHz

#### Inductor Type (Suppression Effect: Normal)

**Power Line**

- **BLM02AX** p24 — 01005(0402)/Imp.10-120Ω
- **BLM03AX** p30 — 0201(0603)/0.2-1A/Imp.10-1000Ω
- **BLM03PG** p27 — 0201(0603)/0.75-0.9A/Imp.22-33Ω
- Low DC Resistance / High Current Type
- **BLM03PX** p28 — 0201(0603)/1-1.8A/Imp.22-80Ω
- **BLM15AX** p40 — 0402(1005)/0.35-1.74A/Imp.10-1000Ω
- **BLM15PX** p36 — 0402(1005)/0.9-3A/Imp.33-600Ω
- **BLM15PG/PD** p38 — 0402(1005)/1-2.2A/Imp.10-120Ω
- **BLM18P** p50 — 0603(1608)/0.5-3A/Imp.30-470Ω
- **BLM21P** p66 — 0805(2012)/1.5-6A/Imp.22-330Ω
- **BLM31P** p75 — 1206(3216)/1.5-6A/Imp.33-600Ω
- **BLM41P** p77 — 1806(4516)/1.5-6A/Imp.60-1000Ω
- **BLE32P** p79 — 1210(3225)/10A/Imp.30Ω
- Low DC Resistance Type
- **BLM18K** p52 — 0603(1608)/1.3-6A/Imp.26-600Ω
- **BLM18S** p54 — 0603(1608)/1.5-6A/Imp.26-330Ω

**General Signal Line** Under 10MHz

- **BLM03AG** p32 — 0201(0603)/Imp.10-1000Ω
- **BLM15AG** p42 — 0402(1005)/Imp.10-1000Ω
- **BLM18A** p56 — 0603(1608)/Imp.120-1000Ω
- **BLM18T** p62 — 0603(1608)/Imp.120-1000Ω
- **BLM18R** p63 — 0603(1608)/Imp.120-1000Ω
- **BLM21A** p68 — 0805(2012)/Imp.120-1000Ω
- **BLM21R** p73 — 0805(2012)/Imp.120-1000Ω
- Array Type
- **BLA2AA** p80 — 0804(2010)/Imp.120-1000Ω
- **BLA31A** p83 — 1206(3216)/Imp.30-1000Ω

**High Speed Signal Line** Over 10MHz

- **BLM02BX** p26 — 01005(0402)/Imp.150Ω
- **BLM03B** p34 — 0201(0603)/Imp.10-600Ω
- **BLM15BX** p44 — 0402(1005)/0.25-0.6A/Imp.75-1800Ω
- **BLM15B** p46 — 0402(1005)/Imp.5-1800Ω
- **BLM18B** p58 — 0603(1608)/Imp.5-2500Ω
- **BLM21B** p70 — 0805(2012)/Imp.5-2700Ω
- Array Type
- **BLA2AB** p80 — 0804(2010)/Imp.10-1000Ω
- **BLA31B** p83 — 1206(3216)/Imp.120-1000Ω

#### Capacitor Type (Suppression Effect: High)

**Power Line**

- **NFM15PC** p123 — 0402(1005)/Cap.0.047-4.3μF
- **NFM18PC** p126 — 0603(1608)/2-4A/Cap.0.1-2.2μF
- **NFM21PC** p129 — 0805(2012)/2-6A/Cap.0.1-4.7μF
- **NFM3DPC** p130 — 1205(3212)/2A/Cap.0.022μF
- **NFM31PC** p131 — 1206(3216)/6A/Cap.27μF
- **NFM31KC** p132 — 1206(3216)/6-10A/Cap.0.01-0.1μF
- **NFM41PC** p133 — 1806(4516)/2-6A/Cap.0.2-1.5μF
- T Circuit Filter Feed Through Type
- **NFE31PT** p121 — 1206(3216)/6A/Cap.22-2200pF
- **NFE61PT** p122 — 2706(6816)/2A/Cap.33-4700pF
- Block Type
- **BNX022/023** p221 — 10-15A

**General Signal Line** Under 10MHz

- **NFM15CC** p134 — 0402(1005)/Cap.2200-22000pF
- **NFM18CC** p135 — 0603(1608)/Cap.22-22000pF
- **NFM21CC** p136 — 0805(2012)/Cap.22-22000pF
- **NFM3DCC** p137 — 1205(3212)/Cap.22-22000pF
- **NFM41CC** p138 — 1806(4516)/Cap.22-22000pF
- Array Type
- **NFA31CC** p139 — 1206(3216)/Cap.22-22000pF
- T Circuit Filter Feed Through Type
- **NFE31PT** p121 — 1206(3216)/Cap.22-2200pF
- **NFE61PT** p122 — 2706(6816)/Cap.33-4700pF

**High Speed Signal Line** Over 10MHz

- LC Combined
- **NFL15ST** p140 — 0402(1005)/Cut off 150-500MHz
- **NFL18ST** p141 — 0603(1608)/Cut off 50-500MHz
- **NFL18SP** p143 — 0603(1608)/Cut off 150-500MHz
- **NFL21SP** p144 — 0805(2012)/Cut off 10-500MHz
- **NFW31SP** p150 — 1206(3216)/Cut off 10-500MHz
- RC Combined
- **NFR21GD** p152 — 0805(2012)/22-100Ω/Cap.10-100pF
- Array Type (RC/LC Combined)
- **NFA31GD** p153 — 1206(3216)/6.8-100Ω/Cap.10-100pF
- **NFA18SL/NFA18SD** p145 p147 — 0603(1608)/Cut off 50-480MHz
- **NFA21SL** p148 — 0805(2012)/Cut off 50-330MHz

### Noise Frequency: GHz Band (800MHz to 2.5GHz)

#### Inductor Type (Suppression Effect: Normal)

**Power Line**

- **BLM18HE** p92 — 0603(1608)/0.5-0.8A/Imp.600-1500Ω
- **BLM03E** p87 — 0201(0603)/0.4-0.6A/Imp.25-50Ω
- **BLM15E** p90 — 0402(1005)/0.7-1.5A/Imp.120-220Ω
- **BLM18E** p96 — 0603(1608)/0.5-2A/Imp.100-600Ω

**General Signal Line** Under 10MHz

- **BLM03HG** p85 — 0201(0603)/Imp.600-1200Ω
- **BLM15HG** p88 — 0402(1005)/Imp.600-1000Ω
- **BLM18HG** p92 — 0603(1608)/Imp.470-1000Ω
- **BLM18HK** p92 — 0603(1608)/Imp.330-1000Ω

**High Speed Signal Line** Over 10MHz

- **BLM03HD** p85 — 0201(0603)/Imp.330-1000Ω
- **BLM03HB** p85 — 0201(0603)/Imp.190Ω
- **BLM15HD** p88 — 0402(1005)/Imp.600-1800Ω
- **BLM15HB** p88 — 0402(1005)/Imp.120-220Ω
- **BLM18HD** p92 — 0603(1608)/Imp.470-1000Ω
- **BLM18HE** p92 — 0603(1608)/Imp.600-1500Ω
- **BLM18HB** p92 — 0603(1608)/Imp.120-330Ω

#### Capacitor Type (Suppression Effect: High)

**Power Line**

- **NFM18PS** p125 — 0603(1608)/2A/Cap.0.47-1.0μF
- **NFM21PS** p128 — 0805(2012)/4A/Cap.10μF

**High Speed Signal Line** Over 10MHz

- LC Combined
- **NFL18ST** p141 — 0603(1608)/Cut off 50-500MHz
- Array Type (LC Combined)
- **NFA18SL/NFA18SD** p145 p147 — 0603(1608)/Cut off 50-480MHz
- **NFA21SL** p148 — 0805(2012)/Cut off 50-330MHz

### Noise Frequency: High-GHz Band (1GHz to 10GHz)

#### Inductor Type

**General Signal Line** Under 10MHz

- **BLM15GG** p91 — 0402(1005)/Imp.220-470Ω
- **BLM18G** p98 — 0603(1608)/Imp.470Ω

**High Speed Signal Line** Over 10MHz

- **BLM15GA** p91 — 0402(1005)/Imp.75Ω

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## ●Chip Common Mode Choke Coil

**Circuit Type?**

### DC Power Line


**DLW5AH** p177
2014(5036)/0.2A/Imp.4000Ω


**DLW5AT** p179
2014(5036)/1-6A/Imp.50-2700Ω


**DLW5BS** p177
2020(5050)/0.5-5A/Imp.190-3000Ω


**DLW5BT** p179
2020(5050)/1.5-6A/Imp.100-1400Ω

High Current Type Automotive Available


**PLT10HH** p202
12.9mmx6.6mm
/6-18A/Imp.45-1000Ω

### High Speed Differential Signal Line

#### High Speed Signal Line
(USB/LVDS/IEEE1394/mipi etc.)


**DLM11S** p185
0504(1210)/Imp.45-90Ω


**DLP0QSN** p186
025020(0605)/Imp.60Ω


**DLP0NSC/SN** p187
03025(0806)/Imp.28-120Ω


**DLP11SN** p189
0504(1210)/Imp.67-330Ω


**DLP11RN** p189
0504(1210)/Imp.45Ω


**DLW21H** p199
0805(2012)/Imp.67-180Ω


**DLW21S_S/X** p197
0805(2012)/Imp.67-500Ω


**DLP31S** p192
1206(3216)/Imp.120-550Ω


**DLW31S** p200
1206(3216)/Imp.90-2200Ω

Automotive Available


**DLW43S** p201
1812(4532)

Array Type


**DLP1ND** p193
05025(1506)/Imp.35-90Ω


**DLP2ADN** p194
0804(2010)/Imp.67-280Ω


**DLP31D** p196
1206(3216)/Imp.90-440Ω

#### Ultra High Speed Signal Line
(HDMI/DVI/Display Port etc.)


**DLP0QSA** p186
025020(0605)/Imp.7-35Ω


**DLP0NSA** p187
03025(0806)/Imp.7-15Ω


**DLP11SA** p189
0504(1210)/Imp.35-90Ω


**DLP11RB** p189
0504(1210)/Imp.15-40Ω


**DLP11TB** p189
0504(1210)/Imp.80Ω


**DLW21S_HQ** p197
0805(2012)/Imp.67-120Ω

Array Type


**DLP2ADA** p194
0804(2010)/Imp.35-90Ω

### Audio Line


**DLM11G** p184
0504(1210)/Imp.600Ω


**DLW5AT** p179
2014(5036)/1-6A/Imp.50-2700Ω


**DLW5BT** p179
2020(5050)/1.5-6A/Imp.100-1400Ω

**Guide of Digits in this Chart:**

**●for BLM03P**

0201(0603)/0.75-0.9A/Imp.22-33Ω

- 0201 — Size (inch)
- (0603) — Size (mm)
- 0.75-0.9A — Rated Current
- Imp.22-33Ω — Impedance

**●for BNX022/023**

10-15A/Range1MHz-2GHz

- 10-15A — Rated Current
- Range1MHz-2GHz — Effective Frequency Range

**●for NFR21GD**

0805(2012)/22-100Ω/Cap.10-100pF

- 0805 — Size (inch)
- (2012) — Size (mm)
- 22-100Ω — Resistance
- Cap.10-100pF — Capacitance

**●for NFA18S**

0603(1608)/Cut off 50-480MHz

- 0603 — Size (inch)
- (1608) — Size (mm)
- Cut off 50-480MHz — Cut-off Frequency

**●for DLW5BS**

2020(5050)/0.5-5A/Imp.190-3000Ω

- 2020 — Size (inch)
- (5050) — Size (mm)
- 0.5-5A — Rated Current
- Imp.190-3000Ω — Impedance

# BL□

**Inductor Type**

| | | | Series | Size Code in inch (in mm) | Impedance (Ω) at 100MHz (10 — 100 — 1000) | Effective Frequency Range (Applicable Frequency Ranges are only for reference.) (10kHz 100kHz 1MHz 10MHz 100MHz 1GHz 10GHz) |
|---|---|---|---|---|---|---|
| For General Band Noise | Signal Lines Type | Universal Type [ Power Lines / Signal Lines ] | BLM02AX p24 | 01005 (0402) | 10 70 120 | |
| | | | BLM03AX p30 | 0201 (0603) | 10 80 120 240 600 1000 | |
| | | | BLM15AX p40 | 0402 (1005) | 10 30 70 120 220 600 1000 | |
| | | For General Signal Lines | BLM03AG p32 | 0201 (0603) | 10 80 70 120 240 600 1000 | |
| | | | BLM15AG p42 | 0402 (1005) | 10 70 120 220 600 1000 | |
| | | | BLM18A p56 | 0603 (1608) | 120 150 220 330 470 600 1000 | |
| | | | BLM21A p68 | 0805 (2012) | 120 150 220 330 470 600 1000 | |
| | | | BLM18T p62 | 0603 (1608) | 120 220 600 1000 | |
| | | | BLA2AA p80 (4 circuits array) | 0804 (2010) | 120 220 600 1000 | |
| | | | BLA31A p83 (4 circuits array) | 1206 (3216) | 30 60 120 220 600 1000 | |
| | | For High Speed Signal Lines | BLM02BX p26 | 01005 (0402) | 150 | |
| | | | BLM03B p34 | 0201 (0603) | 10 22 33 47 56 75 80 120 240 470 600 | |
| | | | BLM15B p44 | 0402 (1005) | 5 10 22 33 47 75 120 220 240 470 600 1000 1800 | |
| | | | BLM18B p58 | 0603 (1608) | 5 10 22 47 60 75 120 140 150 220 330 420 470 600 1000 1500 1800 2200 2500 | |
| | | | BLM21B p70 | 0805 (2012) | 5 60 75 120 150 200 220 330 420 470 600 750 1000 1500 1800 2200 2250 2700 | |
| | | | BLA2AB p80 (4 circuits array) | 0804 (2010) | 10 22 47 75 120 220 600 470 1000 | |
| | | | BLA31B p83 (4 circuits array) | 1206 (3216) | 120 220 600 470 1000 | |
| | | For Digital Interface Lines | BLM18R p63 | 0603 (1608) | 120 220 600 470 1000 | |
| | | | BLM21R p73 | 0805 (2012) | 120 220 600 470 1000 | |
| | Power Lines Type | | BLM03PX* p28 | 0201 (0603) | 33 (1.5A) 22 (1.8A) 80 (1A) | |
| | | | BLM03PG p27 | 0201 (0603) | 33 (0.75A) 22 (0.9A) | |
| | | | BLM15P* p36 | 0402 (1005) | 33 (3A) 80 (1.5A/2.3A) 180 (1.5A) 220 (1.4A) 470 (1A) 10 (1A) 30 (2.2A) 60 (1.7A/2.5A) 120 (1.3A/2A) 330 (1.2A) 600 (0.9A) | |
| | | | BLM18P* p50 | 0603 (1608) | 33 (3A) 120 (2A) 220 (1.4A) 470 (1A) 30 (1A) 60 (0.5A) 180 (1.5A) 330 (1.2A) | |
| | | | BLM21P* p66 | 0805 (2012) | 30 (4A) 220 (2A) 22 (6A) 60 (3.5A) 120 (3A) 330 (1.5A) | |
| | | | BLM31P* p75 | 1206 (3216) | 50 (3.5A) 390 (2A) 33 (6A) 120 (3.5A) 600 (1.5A) | |
| | | | BLM41P* p77 | 1806 (4516) | 75 (3.5A) 470 (2A) 60 (6A) 180 (3.5A) 1000 (1.5A) | |
| | | | BLM18K* p52 (Low DC Resistance Type) | 0603 (1608) | 30 (5A) 70 (3.5A) 220 (2.2A) 470 (1.5A) 26 (6A) 100 (3A) 120 (3A) 330 (1.7A) 600 (1.3A) | |
| | | | BLM18S* p54 (Low DC Resistance Type) | 0603 (1608) | 70 (4A) 220 (2.5A) 26 (6A) 120 (3A) 330 (1.5A) | |
| | | | BLE32P p79 | 1210 (3225) | 30 | |
| For GHz Band Noise | Signal Lines Type | Universal Type [ Power Lines / Signal Lines ] | BLM03E* p87 | 0201 (0603) | 25 (0.6A) 50 (0.4A) | |
| | | | BLM15E* p90 | 0402 (1005) | 220 (0.7A) 120 (1.5A) | |
| | | | BLM18EG* p96 | 0603 (1608) | 120 (2A) 330 (0.5A) 470 (0.5A) 100 (2A) 220 (2A/1A) 390 (0.5A) 600 (0.5A) | |
| | | | BLM18HE* p92 | 0603 (1608) | 1000 (0.6A) 600 (0.8A) 1500 (0.5A) | |
| | | | BLM03HG p85 | 0201 (0603) | 1000 600 1200 | |
| | | | BLM03HD p85 | 0201 (0603) | 600 330 470 1000 | |
| | | | BLM03HB p85 | 0201 (0603) | 190 | |
| | | | BLM15HG p88 | 0402 (1005) | 600 1000 | |
| | | | BLM15HD p88 | 0402 (1005) | 600 1000 1800 | |
| | | | BLM15HB p88 | 0402 (1005) | 120 220 | |
| | | | BLM18HG p92 | 0603 (1608) | 600 470 1000 | |
| | | | BLM18HD p92 | 0603 (1608) | 600 470 1000 | |
| | | | BLM18HB p92 | 0603 (1608) | 120 220 330 | |
| | | | BLM18HK p92 | 0603 (1608) | 600 330 470 1000 | |
| For High-GHz Band Noise | Signal Lines Type | | BLM15GG p91 | 0402 (1005) | 220 470 | |
| | | | BLM15GA p91 | 0402 (1005) | 75 | |
| | | | BLM18G p98 | 0603 (1608) | 470 | |

* The derating of rated current is required for some items according to the operating temperature on each product page.

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## NF□

### Capacitor Type

| | Series | Size Code in inch (in mm) | Capacitance (F) | Effective Frequency Range (Applicable Frequency Ranges are only for reference.) |
|---|---|---|---|---|
| | | | 10p 100p 1000p 10000p 0.1μ 1μ 10μ | 10kHz 100kHz 1MHz 10MHz 100MHz 1GHz 10GHz |
| Signal Lines Type | NFM15CC p134 | 0402 (1005) | 2200 22000 | |
| | NFM18CC p135 | 0603 (1608) | 470 2200<br>22 47 100 220 1000 22000 | |
| | NFM21CC p136 | 0805 (2012) | 470 2200<br>22 47 100 220 1000 22000 | |
| | NFM3DCC p137 | 1205 (3212) | 470 2200<br>22 47 100 220 1000 22000 | |
| | NFM41CC p138 | 1806 (4516) | 470 2200<br>22 47 100 220 1000 22000 | |
| | NFA31CC p139 (4 circuits array) | 1206 (3216) | 470 2200<br>22 47 100 220 1000 22000 | |
| Power Lines Type | NFM15PC p123 | 0402 (1005) | 47000 0.22 1.0<br>0.1 0.47 4.3 | |
| | NFM18PS p125 | 0603 (1608) | 1.0<br>0.47 | |
| | NFM18PC p126 | 0603 (1608) | 0.22 1.0<br>0.1 0.47 2.2 | |
| | NFM21PS p128 | 0805 (2012) | 10 | |
| | NFM21PC p129 | 0805 (2012) | 0.22 1.0 4.7<br>0.1 0.47 2.2 | |
| | NFM3DPC* p130 | 1205 (3212) | 22000 | |
| | NFM31PC p131 | 1206 (3216) | 27 | |
| | NFM31KC* p132 | 1206 (3216) | 10000 22000<br>15000 0.1 | |
| | NFM41PC p133 | 1806 (4516) | 0.2 1.5 | |
| Universal Type [ Power Lines / Signal Lines ] | NFE31PT p121 | 1206 (3216) | 470 2200<br>22 47 100 220 1500 | |
| | NFE61PT p122 | 2706 (6816) | 100 360 1000<br>33 68 180 680 4700 | |

## NF□

### LC(RC) Combined Type

| | Series | Size Code in inch (in mm) | Cut-off Frequency (MHz) | Effective Frequency Range (Applicable Frequency Ranges are only for reference.) |
|---|---|---|---|---|
| | | | 10 100 500 | 10kHz 100kHz 1MHz 10MHz 100MHz 1GHz 10GHz |
| Signal Lines Type | NFL15ST p140 | 0402 (1005) | 150 200 300 500 | |
| | NFL18ST p141 | 0603 (1608) | 50 70 100 200 300 500 | |
| | NFL18SP p143 | 0603 (1608) | 150 200 300 500 | |
| | NFL21SP p144 | 0805 (2012) | 500<br>10 20 50 70 100 150 200 300 400 | |
| | NFA18SL p145 (4 circuits array) | 0603 (1608) | 200 400<br>50 130 180 220 300 350480 | |
| | NFA18SD p147 (4 circuits array) | 0603 (1608) | 200<br>180 | |
| | NFA21SL p148 (4 circuits array) | 0805 (2012) | 280 310<br>50 80 200 300 330 | |
| | NFW31SP p150 | 1206 (3216) | 400<br>10 20 50 100 150 200 300 500 | |
| | NFR21GD p152 | 0805 (2012) | | |
| | NFA31GD p153 (4 circuits array) | 1206 (3216) | | |

* The derating of rated current is required for some items according to the operating temperature on each product page.

## DL□

Common Mode Choke Coils

| | | Series | Size Code in inch (in mm) | Common Mode Impedance (Ω) at 100MHz (100 / 500 / 1000) | Effective Frequency Range (Applicable Frequency Ranges are only for reference.) (100kHz 1MHz 10MHz 100MHz 1GHz 10GHz) |
|---|---|---|---|---|---|
| Signal Lines Type | For Audio Lines | DLM11G p184 | 0504 (1210) | 600 | |
| | For Ultra High Speed Signal Lines | DLM11S p185 | 0504 (1210) | 45 90 | |
| | | DLP0QSN p186 | 025020 (0605) | 60 | |
| | | DLP0QSA p186 | 025020 (0605) | 15 7 35 | |
| | | DLP0NSC p187 | 03025 (0806) | 28 | |
| | | DLP0NSN p187 | 03025 (0806) | 35 90 67 120 | |
| | | DLP0NSA p187 | 03025 (0806) | 15 7 | |
| | | DLP11SN p189 | 0504 (1210) | 67 240 90 120 160 200 280 330 | |
| | | DLP11SA p189 | 0504 (1210) | 35 90 67 | |
| | | DLP11RN p190 | 0504 (1210) | 45 | |
| | | DLP11RB p190 | 0504 (1210) | 15 40 | |
| | | DLP11TB p191 | 0504 (1210) | 80 | |
| | | DLP31S p192 | 1206 (3216) | 120 220 550 | |
| | | DLP1NDN p193 (2 circuits array) | 05025 (1506) | 35 90 67 | |
| | | DLP2ADA p194 (2 circuits array) | 0804 (2010) | 35 90 67 | |
| | | DLP2ADN p194 (2 circuits array) | 0804 (2010) | 90 240 67 120 160 200 280 | |
| | | DLP31DN p196 (2 circuits array) | 1206 (3216) | 90 130 200 320 440 | |
| | | DLW21S p197 | 0805 (2012) | 90 490 67 120 180 260 370 500 | |
| | | DLW21H p199 | 0805 (2012) | 90 67 120 180 | |
| | | DLW31SN p200 | 1206 (3216) | 90 160 260 600 1000 2200 | |
| | | DLW43SH p201 | 1812 (4532) | | |
| Universal Type [ Power Lines / Signal Lines ] | | DLW5AH/DLW5BS* p177 | 2014 (5036) / 2020 (5050) | 500 800 1500 4000 190 350 600 1000 3000 | |
| | | DLW5AT*/DLW5BT* p179 | 2014 (5036) / 2020 (5050) | 50 110 230 330 500 1000 1400 100 150 250 400 850 1100 2700 | |

## PL□

Large Current Common Mode Choke Coil for Automotive Available

| | Series | Size Code in inch (in mm) | Common Mode Impedance (Ω) at 10MHz (100 / 500 / 1000) | Effective Frequency Range (Applicable Frequency Ranges are only for reference.) (100kHz 1MHz 10MHz 100MHz 1GHz 10GHz) |
|---|---|---|---|---|
| Large Current Type for Automotive Available | PLT10HH* p202 | – | 45 400 900 100 500 1000 | |

## BNX

Block EMIFIL®

| | | Series | Height (mm) | Rated Voltage (Vdc) | Rated Current (A) | Effective Frequency Range (Applicable Frequency Ranges are only for reference.) (10kHz 100kHz 1MHz 10MHz 100MHz 1GHz 10GHz) |
|---|---|---|---|---|---|---|
| Power Lines Type | SMD Type | BNX022* p221 | 3.1 | 50 | 10 | |
| | | BNX023* p221 | 3.1 | 100 | 15 | |
| | | BNX024* p221 | 3.5 | 50 | 15 | |
| | | BNX025* p221 | 3.5 | 25 | 15 | |
| | Lead Type | BNX002 p223 | 13 max. | 50 | 10 | |
| | | BNX003 p223 | 13 max. | 150 | 10 | |
| | | BNX005 p223 | 13.5 max. | 50 | 15 | |
| | | BNX012* p224 | 8.5 max. | 50 | 15 | |
| | | BNX016* p224 | 8.5 max. | 25 | 15 | |

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# BL□

## Chip Ferrite Bead





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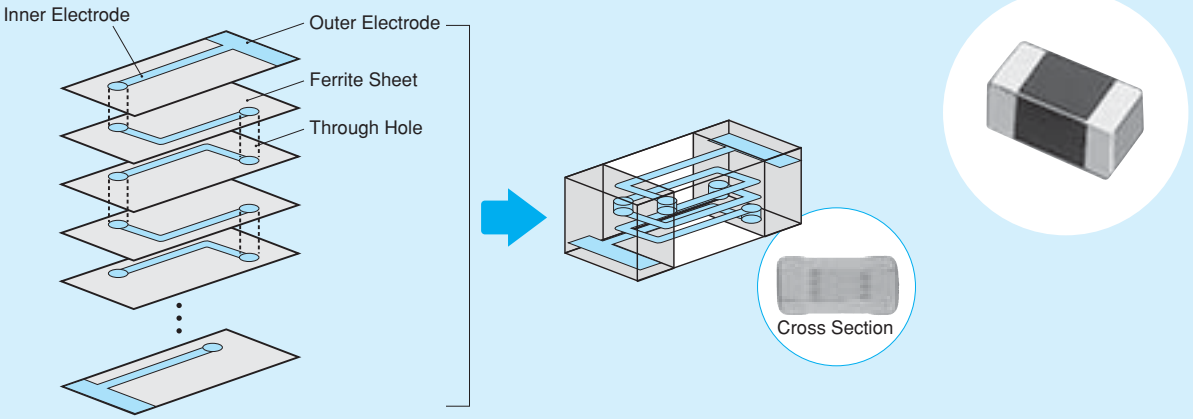
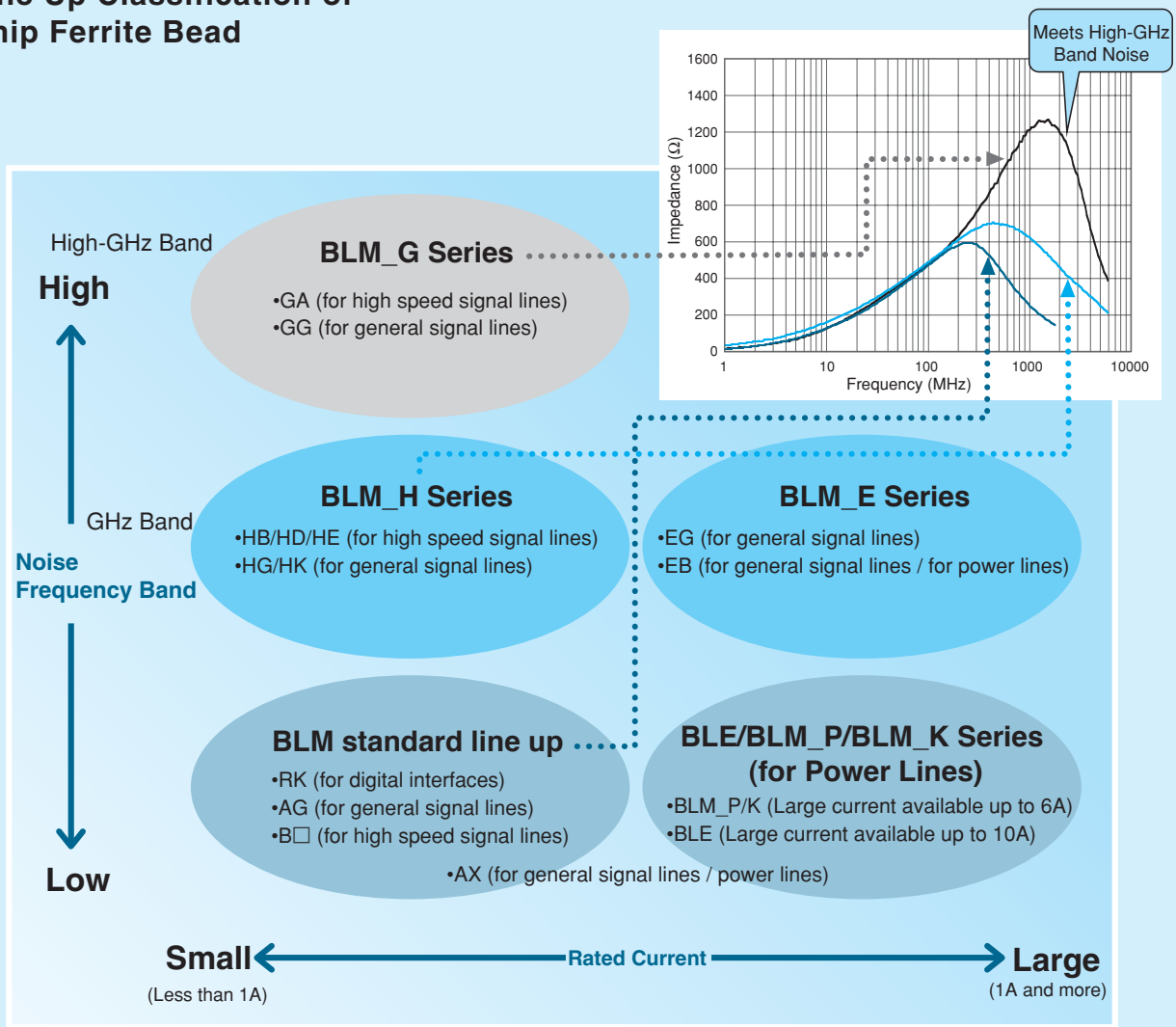
## ●Example of Chip Ferrite Bead BLM Series Structure




## ●Line Up Classification of Chip Ferrite Bead

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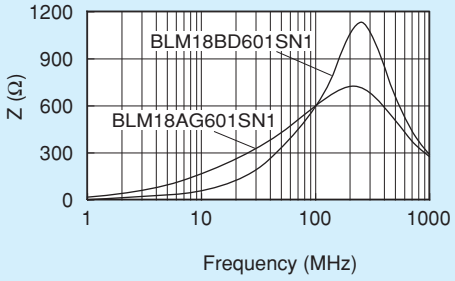
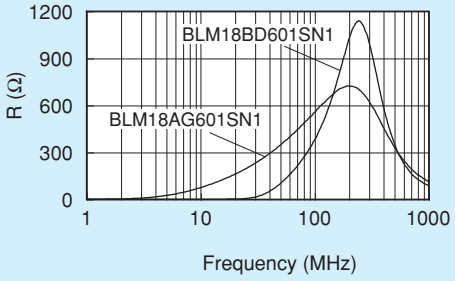
## ●Difference between BLM A type and B type (HG type vs HD/HB/HE type)

A type: Impedance curve rises from low frequency range. Suppresses noise in a wide frequency range.
B type: Impedance curve rises sharply. Less damage to signal waveforms.

### ■Comparison of Impedance Curve

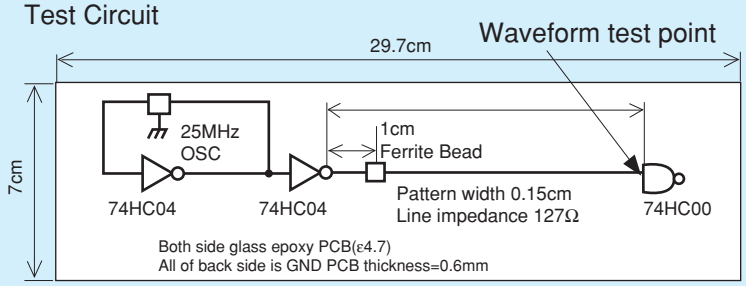



### ■Comparison of Resistance Element

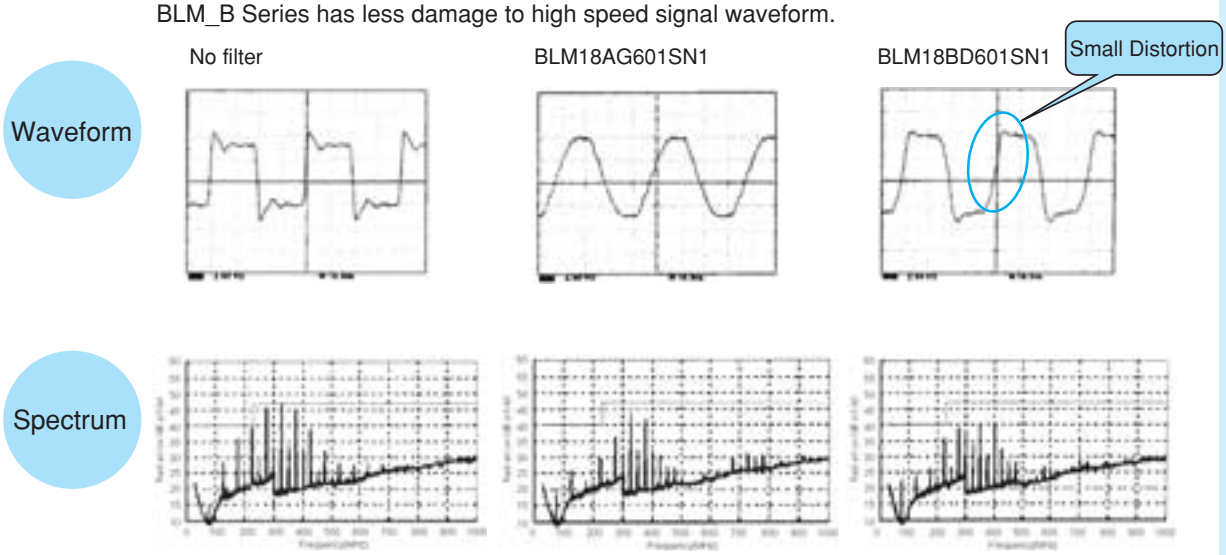



### ■Comparison of Test Effect (25MHz)

Test Circuit




BLM_B Series has less damage to high speed signal waveform.



(Part Number) BL M 18 AG 102 S N 1 D
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾

❶Product ID

| Product ID | |
|---|---|
| BL | Chip Ferrite Beads |

❷Type

| Code | Type |
|---|---|
| A | Array Type |
| E | DC Bias Characteristics Improved Type |
| M | Ferrite Bead Single Type |

❸Dimensions (L×W)

| Code | Dimensions (L×W) | EIA |
|---|---|---|
| 02 | 0.4×0.2mm | 01005 |
| 03 | 0.6×0.3mm | 0201 |
| 15 | 1.0×0.5mm | 0402 |
| 18 | 1.6×0.8mm | 0603 |
| 2A | 2.0×1.0mm | 0804 |
| 21 | 2.0×1.25mm | 0805 |
| 31 | 3.2×1.6mm | 1206 |
| 32 | 3.2×2.5mm | 1210 |
| 41 | 4.5×1.6mm | 1806 |

❹Characteristics/Applications

| Code *1 | Characteristics/Applications | Series |
|---|---|---|
| AG | For General Use | BLM03/15/18/21, BLA2A/31 |
| AX | | BLM02/03/15 |
| TG | | BLM18 |
| BA | For High-speed Signal Lines | BLM15/18 |
| BB | | BLM03/15/18/21, BLA2A |
| BC | | BLM03/15 |
| BD | | BLM03/15/18/21, BLA2A/31 |
| BX | | BLM02/15 |
| PD | For Power Lines | BLM15 |
| PG | | BLM03/15/18/21/31/41 |
| PN | | BLE32 |
| PX | | BLM03/15 |
| KG | For Power Lines (Low DC Resistance Type) | BLM18 |
| SG | | |
| RK | For Digital Interface | BLM18/21 |
| HG | For GHz Band General Use | BLM03/15/18 |
| EB | For GHz Band High-speed Signal Lines (Low Direct Current Type) | BLM03 |
| EG | For GHz Band General Use (Low DC Resistance Type) | BLM15/18 |
| HB | For GHz Band High-speed Signal Lines | BLM03/15/18 |
| HD | | BLM03/15/18 |
| HE | | BLM18 |
| HK | For GHz Band Digital Interface | BLM18 |
| GA | For High-GHz Band High-speed Signal Lines | BLM15 |
| GG | For High-GHz Band General Use | BLM15/18 |

*1 Frequency characteristics vary with each code.

❺Impedance
Expressed by three figures. The unit is in ohm (Ω) at 100MHz. The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.

❻Electrode
Expressed by a letter.

Ex.)

| Code | Electrode |
|---|---|
| S/T | Sn Plating |
| A | Au Plating |

❼Category

| Code | Category |
|---|---|
| N | Standard Type |

❽Number of Circuits

| Code | Number of Circuits |
|---|---|
| 1 | 1 Circuit |
| 4 | 4 Circuits |

Continued on the following page.

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❾Packaging

| Code | Packaging | Series |
|---|---|---|
| **K** | Embossed Taping (ø330mm Reel) | **BLE, BLM21 *1/31/41** |
| **L** | Embossed Taping (ø180mm Reel) | |
| **B** | Bulk | All Series |
| **J** | Paper Taping (ø330mm Reel) | **BLM03/15/18 *3/21 *2, BLA2A/31** |
| **D** | Paper Taping (ø180mm Reel) | **BLM02/03/15/18/21 *2, BLA2A/31** |

*1 BLM21BD222SN1/BLM21BD272SN1 only.
*2 Except for BLM21BD222SN1/BLM21BD272SN1
*3 Except for BLM18T

| Size Code in inch (in mm) | Thickness (mm) | Type | | Part Number | Impedance at 100MHz/20°C | Impedance at 1GHz/20°C | Rated Current | New / Kit / ≥1A / ≥3A / ≥10A / GHz / Hi-GHz / Flow / ReFlow |
|---|---|---|---|---|---|---|---|---|
| 01005 (0402) | 0.2 | Universal Type [Power lines/Signal lines] p24 | | BLM02AX100SN1 | 10ohm±5ohm | - | 750mA | Kit ReFlow |
| | 0.2 | | | BLM02AX700SN1 | 70ohm±25% | - | 300mA | Kit ReFlow |
| | 0.2 | | | BLM02AX121SN1 | 120ohm±25% | - | 250mA | Kit ReFlow |
| | 0.2 | For High Speed Signal Lines p26 | | BLM02BX151SN1 | 150ohm±25% | - | 200mA | New ReFlow |
| 0201 (0603) | 0.3 | For General Signal Lines p32 | | BLM03AG100SN1 | 10ohm(Typ.) | - | 500mA | Kit ReFlow |
| | 0.3 | | | BLM03AG700SN1 | 70ohm(Typ.) | - | 200mA | Kit ReFlow |
| | 0.3 | | | BLM03AG800SN1 | 80ohm±25% | - | 200mA | Kit ReFlow |
| | 0.3 | | | BLM03AG121SN1 | 120ohm±25% | - | 200mA | Kit ReFlow |
| | 0.3 | | | BLM03AG241SN1 | 240ohm±25% | - | 200mA | Kit ReFlow |
| | 0.3 | | | BLM03AG601SN1 | 600ohm±25% | - | 100mA | Kit ReFlow |
| | 0.3 | | | BLM03AG102SN1 | 1000ohm±25% | - | 100mA | Kit ReFlow |
| | 0.3 | Universal Type [Power lines/Signal lines] p30 | | BLM03AX100SN1 | 10ohm(Typ.) | - | 1000mA | Kit ≥1A ReFlow |
| | 0.3 | | | BLM03AX800SN1 | 80ohm±25% | - | 500mA | Kit ReFlow |
| | 0.3 | | | BLM03AX121SN1 | 120ohm±25% | - | 450mA | Kit ReFlow |
| | 0.3 | | | BLM03AX241SN1 | 240ohm±25% | - | 350mA | Kit ReFlow |
| | 0.3 | | | BLM03AX601SN1 | 600ohm±25% | - | 250mA | Kit ReFlow |
| | 0.3 | | | BLM03AX102SN1 | 1000ohm±25% | - | 200mA | Kit ReFlow |
| | 0.3 | For High Speed Signal Lines (Sharp Impedance Curve) p34 | | BLM03BD750SN1 | 75ohm±25% | - | 300mA | Kit ReFlow |
| | 0.3 | | | BLM03BD121SN1 | 120ohm±25% | - | 250mA | Kit ReFlow |
| | 0.3 | | | BLM03BD241SN1 | 240ohm±25% | - | 200mA | Kit ReFlow |
| | 0.3 | | | BLM03BD471SN1 | 470ohm±25% | - | 215mA | Kit ReFlow |
| | 0.3 | | | BLM03BD601SN1 | 600ohm±25% | - | 200mA | Kit ReFlow |
| | 0.3 | | | BLM03BB100SN1 | 10ohm±25% | - | 300mA | Kit ReFlow |
| | 0.3 | | | BLM03BB220SN1 | 22ohm±25% | - | 200mA | Kit ReFlow |
| | 0.3 | | | BLM03BB470SN1 | 47ohm±25% | - | 200mA | Kit ReFlow |
| | 0.3 | | | BLM03BB750SN1 | 75ohm±25% | - | 200mA | Kit ReFlow |
| | 0.3 | | | BLM03BB121SN1 | 120ohm±25% | - | 100mA | Kit ReFlow |
| | 0.3 | | | BLM03BC330SN1 | 33ohm±25% | - | 150mA | Kit ReFlow |
| | 0.3 | | | BLM03BC560SN1 | 56ohm±25% | - | 100mA | Kit ReFlow |
| | 0.3 | | | BLM03BC800SN1 | 80ohm±25% | - | 100mA | Kit ReFlow |
| | 0.3 | For Power Lines p27 p28 | | BLM03PG220SN1 | 22ohm±25% | - | 900mA | Kit ReFlow |
| | 0.3 | | | BLM03PG330SN1 | 33ohm±25% | - | 750mA | Kit ReFlow |
| | 0.3 | | | BLM03PX220SN1 | 22ohm±25% | - | 1800mA | Kit ≥1A ReFlow |
| | 0.3 | | | BLM03PX330SN1 | 33ohm±25% | - | 1500mA | Kit ≥1A ReFlow |
| | 0.3 | | | BLM03PX800SN1 | 80ohm±25% | - | 1000mA | Kit ≥1A ReFlow |
| | 0.3 | For GHz Band Noise | For General Signal Lines p85 | BLM03HG601SN1 | 600ohm±25% | 1000ohm±40% | 150mA | Kit GHz ReFlow |
| | 0.3 | | | BLM03HG102SN1 | 1000ohm±25% | 1800ohm±40% | 125mA | Kit GHz ReFlow |
| | 0.3 | | | BLM03HG122SN1 | 1200ohm±25% | 2000ohm±40% | 100mA | New GHz ReFlow |
| | 0.3 | | Universal Type [Power lines/Signal lines] p87 | BLM03EB250SN1 | 25ohm±25% | 105ohm±40% | 600mA | Kit GHz ReFlow |
| | 0.3 | | | BLM03EB500SN1 | 50ohm±25% | 255ohm±40% | 400mA | Kit GHz ReFlow |
| | 0.3 | | For High Speed Signal Lines p85 | BLM03HD331SN1 | 330ohm±25% | 750ohm±40% | 200mA | Kit GHz ReFlow |
| | 0.3 | | | BLM03HD471SN1 | 470ohm±25% | 1000ohm±40% | 175mA | Kit GHz ReFlow |
| | 0.3 | | | BLM03HD601SN1 | 600ohm±25% | 1500ohm±40% | 150mA | Kit GHz ReFlow |
| | 0.3 | | | BLM03HD102SN1 | 1000ohm±25% | 2300ohm±40% | 120mA | Kit GHz ReFlow |
| | 0.3 | | | BLM03HB191SN1 | 190ohm±25% | 1150ohm±40% | 150mA | Kit GHz ReFlow |
| 0402 (1005) | 0.5 | For General Signal Lines p42 | | BLM15AG100SN1 | 10ohm(Typ.) | - | 1000mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15AG700SN1 | 70ohm(Typ.) | - | 600mA | Kit ReFlow |
| | 0.5 | | | BLM15AG121SN1 | 120ohm±25% | - | 550mA | Kit ReFlow |
| | 0.5 | | | BLM15AG221SN1 | 220ohm±25% | - | 450mA | Kit ReFlow |
| | 0.5 | | | BLM15AG601SN1 | 600ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15AG102SN1 | 1000ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | Universal Type [Power lines/Signal lines] p40 | | BLM15AX100SN1 | 10ohm±5ohm | - | 1740mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15AX300SN1 | 30ohm±25% | - | 1100mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15AX700SN1 | 70ohm±25% | - | 780mA | Kit ReFlow |
| | 0.5 | | | BLM15AX121SN1 | 120ohm±25% | - | 700mA | Kit ReFlow |
| | 0.5 | | | BLM15AX221SN1 | 220ohm±25% | - | 600mA | Kit ReFlow |
| | 0.5 | | | BLM15AX601SN1 | 600ohm±25% | - | 500mA | Kit ReFlow |
| | 0.5 | | | BLM15AX102SN1 | 1000ohm±25% | - | 350mA | Kit ReFlow |

Continued on the following page.

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| Size Code in inch (in mm) | Thickness (mm) | Type | | Part Number | Impedance at 100MHz/20°C | Impedance at 1GHz/20°C | Rated Current | New / Kit / ≥1A / ≥3A / ≥10A / GHz / Hi-GHz / Flow / ReFlow |
|---|---|---|---|---|---|---|---|---|
| 0402 (1005) | 0.5 | For High Speed Signal Lines (Sharp Impedance Curve) | p44 | BLM15BX750SN1 | 75ohm±25% | - | 600mA | Kit ReFlow |
| | 0.5 | | | BLM15BX121SN1 | 120ohm±25% | - | 600mA | Kit ReFlow |
| | 0.5 | | | BLM15BX221SN1 | 220ohm±25% | - | 450mA | Kit ReFlow |
| | 0.5 | | | BLM15BX471SN1 | 470ohm±25% | - | 350mA | Kit ReFlow |
| | 0.5 | | | BLM15BX601SN1 | 600ohm±25% | - | 350mA | Kit ReFlow |
| | 0.5 | | | BLM15BX102SN1 | 1000ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BX182SN1 | 1800ohm±25% | - | 250mA | Kit ReFlow |
| | 0.5 | | p46 | BLM15BD750SN1 | 75ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BD121SN1 | 120ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BD221SN1 | 220ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BD471SN1 | 470ohm±25% | - | 200mA | Kit ReFlow |
| | 0.5 | | | BLM15BD601SN1 | 600ohm±25% | - | 200mA | Kit ReFlow |
| | 0.5 | | | BLM15BD102SN1 | 1000ohm±25% | - | 200mA | Kit ReFlow |
| | 0.5 | | | BLM15BD182SN1 | 1800ohm±25% | - | 100mA | Kit ReFlow |
| | 0.5 | | | BLM15BB050SN1 | 5ohm±25% | - | 500mA | Kit ReFlow |
| | 0.5 | | | BLM15BB100SN1 | 10ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BB220SN1 | 22ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BB470SN1 | 47ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BB750SN1 | 75ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BB121SN1 | 120ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BB221SN1 | 220ohm±25% | - | 200mA | Kit ReFlow |
| | 0.5 | | | BLM15BC121SN1 | 120ohm±25% | - | 350mA | Kit ReFlow |
| | 0.5 | | | BLM15BC241SN1 | 240ohm±25% | - | 250mA | Kit ReFlow |
| | 0.5 | | | BLM15BA050SN1 | 5ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BA100SN1 | 10ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BA220SN1 | 22ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BA330SN1 | 33ohm±25% | - | 300mA | Kit ReFlow |
| | 0.5 | | | BLM15BA470SN1 | 47ohm±25% | - | 200mA | Kit ReFlow |
| | 0.5 | | | BLM15BA750SN1 | 75ohm±25% | - | 200mA | Kit ReFlow |
| | 0.5 | For Power Lines | p36 | BLM15PX330SN1 | 33ohm±25% | - | 3000mA | Kit ≥3A ReFlow |
| | 0.5 | | | BLM15PX600SN1 | 60ohm±25% | - | 2500mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15PX800SN1 | 80ohm±25% | - | 2300mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15PX121SN1 | 120ohm±25% | - | 2000mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15PX181SN1 | 180ohm±25% | - | 1500mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15PX221SN1 | 220ohm±25% | - | 1400mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15PX331SN1 | 330ohm±25% | - | 1200mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15PX471SN1 | 470ohm±25% | - | 1000mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15PX601SN1 | 600ohm±25% | - | 900mA | Kit ReFlow |
| | 0.5 | | p38 | BLM15PG100SN1 | 10ohm(Typ.) | - | 1000mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15PD300SN1 | 30ohm±25% | - | 2200mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15PD600SN1 | 60ohm±25% | - | 1700mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15PD800SN1 | 80ohm±25% | - | 1500mA | Kit ≥1A ReFlow |
| | 0.5 | | | BLM15PD121SN1 | 120ohm±25% | - | 1300mA | Kit ≥1A ReFlow |
| | 0.5 | For GHz Band Noise | p88 For General Signal Lines | BLM15HG601SN1 | 600ohm±25% | 1000ohm±40% | 300mA | Kit GHz ReFlow |
| | 0.5 | | | BLM15HG102SN1 | 1000ohm±25% | 1400ohm±40% | 250mA | Kit GHz ReFlow |
| | 0.5 | | p88 For High Speed Signal Lines (Sharp Impedance Curve) | BLM15HD601SN1 | 600ohm±25% | 1400ohm±40% | 300mA | Kit GHz ReFlow |
| | 0.5 | | | BLM15HD102SN1 | 1000ohm±25% | 2000ohm±40% | 250mA | Kit GHz ReFlow |
| | 0.5 | | | BLM15HD182SN1 | 1800ohm±25% | 2700ohm±40% | 200mA | Kit GHz ReFlow |
| | 0.5 | | | BLM15HB121SN1 | 120ohm±25% | 500ohm±40% | 300mA | Kit GHz ReFlow |
| | 0.5 | | | BLM15HB221SN1 | 220ohm±25% | 900ohm±40% | 250mA | Kit GHz ReFlow |
| | 0.5 | | Universal Type [Power Lines/Signal Lines] p90 | BLM15EG121SN1 | 120ohm±25% | 145ohm(Typ.) | 1500mA | Kit ≥1A GHz ReFlow |
| | 0.5 | | | BLM15EG221SN1 | 220ohm±25% | 270ohm(Typ.) | 700mA | Kit GHz ReFlow |
| | 0.5 | For High-GHz Band Noise | p91 For General Signal Lines | BLM15GG221SN1 | 220ohm±25% | 600ohm±40% | 300mA | Kit Hi-GHz ReFlow |
| | 0.5 | | | BLM15GG471SN1 | 470ohm±25% | 1200ohm±40% | 200mA | Kit Hi-GHz ReFlow |
| | 0.5 | | For High Speed Signal Lines p91 | BLM15GA750SN1 | 75ohm±25% | 1000ohm±40% | 200mA | Kit Hi-GHz ReFlow |

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| Size Code in inch (in mm) | Thickness (mm) | Type | Part Number | Impedance at 100MHz/20°C | Impedance at 1GHz/20°C | Rated Current | New / Kit / ≥1A / ≥3A / ≥10A / GHz / Hi-GHz | Flow / ReFlow |
|---|---|---|---|---|---|---|---|---|
| 0603 (1608) | 0.8 | For General Signal Lines *p56* | BLM18AG121SN1 | 120ohm±25% | - | 500mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18AG151SN1 | 150ohm±25% | - | 500mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18AG221SN1 | 220ohm±25% | - | 500mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18AG331SN1 | 330ohm±25% | - | 500mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18AG471SN1 | 470ohm±25% | - | 500mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18AG601SN1 | 600ohm±25% | - | 500mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18AG102SN1 | 1000ohm±25% | - | 400mA | Kit | Flow ReFlow |
| | 0.6 | *p62* | BLM18TG121TN1 | 120ohm±25% | - | 200mA | | Flow ReFlow |
| | 0.6 | | BLM18TG221TN1 | 220ohm±25% | - | 200mA | | Flow ReFlow |
| | 0.6 | | BLM18TG601TN1 | 600ohm±25% | - | 200mA | | Flow ReFlow |
| | 0.6 | | BLM18TG102TN1 | 1000ohm±25% | - | 100mA | | Flow ReFlow |
| | 0.8 | For High Speed Signal Lines (Sharp Impedance Curve) *p58* | BLM18BD470SN1 | 47ohm±25% | - | 500mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BD121SN1 | 120ohm±25% | - | 200mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BD151SN1 | 150ohm±25% | - | 200mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BD221SN1 | 220ohm±25% | - | 200mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BD331SN1 | 330ohm±25% | - | 200mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BD421SN1 | 420ohm±25% | - | 200mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BD471SN1 | 470ohm±25% | - | 200mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BD601SN1 | 600ohm±25% | - | 200mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BD102SN1 | 1000ohm±25% | - | 100mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BD152SN1 | 1500ohm±25% | - | 50mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BD182SN1 | 1800ohm±25% | - | 50mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BD222SN1 | 2200ohm±25% | - | 50mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BD252SN1 | 2500ohm±25% | - | 50mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BB050SN1 | 5ohm±25% | - | 700mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BB100SN1 | 10ohm±25% | - | 700mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BB220SN1 | 22ohm±25% | - | 600mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BB470SN1 | 47ohm±25% | - | 550mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BB600SN1 | 60ohm±25% | - | 550mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BB750SN1 | 75ohm±25% | - | 500mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BB121SN1 | 120ohm±25% | - | 500mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BB141SN1 | 140ohm±25% | - | 450mA | | Flow ReFlow |
| | 0.8 | | BLM18BB151SN1 | 150ohm±25% | - | 450mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BB221SN1 | 220ohm±25% | - | 450mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BB331SN1 | 330ohm±25% | - | 400mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BB471SN1 | 470ohm±25% | - | 300mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BA050SN1 | 5ohm±25% | - | 500mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BA100SN1 | 10ohm±25% | - | 500mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BA220SN1 | 22ohm±25% | - | 500mA | | Flow ReFlow |
| | 0.8 | | BLM18BA470SN1 | 47ohm±25% | - | 300mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BA750SN1 | 75ohm±25% | - | 300mA | Kit | Flow ReFlow |
| | 0.8 | | BLM18BA121SN1 | 120ohm±25% | - | 200mA | Kit | Flow ReFlow |
| | 0.8 | For Digital Interface Lines *p63* | BLM18RK121SN1 | 120ohm±25% | - | 200mA | | Flow ReFlow |
| | 0.8 | | BLM18RK221SN1 | 220ohm±25% | - | 200mA | | Flow ReFlow |
| | 0.8 | | BLM18RK471SN1 | 470ohm±25% | - | 200mA | | Flow ReFlow |
| | 0.8 | | BLM18RK601SN1 | 600ohm±25% | - | 200mA | | Flow ReFlow |
| | 0.8 | | BLM18RK102SN1 | 1000ohm±25% | - | 200mA | | Flow ReFlow |

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| Size Code in inch (in mm) | Thickness (mm) | Type | | Part Number | Impedance at 100MHz/20°C | Impedance at 1GHz/20°C | Rated Current | New / Kit / ≥1A / ≥3A / ≥10A / GHz / Hi-GHz / Flow / ReFlow |
|---|---|---|---|---|---|---|---|---|
| | 0.8 | For Power Lines | Standard Type p50 | BLM18PG300SN1 | 30ohm(Typ.) | - | 1000mA | Kit ≥1A Flow ReFlow |
| | 0.8 | | | BLM18PG330SN1 | 33ohm±25% | - | 3000mA | Kit ≥3A Flow ReFlow |
| | 0.8 | | | BLM18PG600SN1 | 60ohm(Typ.) | - | 500mA | Kit Flow ReFlow |
| | 0.8 | | | BLM18PG121SN1 | 120ohm±25% | - | 2000mA | Kit ≥1A Flow ReFlow |
| | 0.8 | | | BLM18PG181SN1 | 180ohm±25% | - | 1500mA | Kit ≥1A Flow ReFlow |
| | 0.8 | | | BLM18PG221SN1 | 220ohm±25% | - | 1400mA | Kit ≥1A Flow ReFlow |
| | 0.8 | | | BLM18PG331SN1 | 330ohm±25% | - | 1200mA | Kit ≥1A Flow ReFlow |
| | 0.8 | | | BLM18PG471SN1 | 470ohm±25% | - | 1000mA | Kit ≥1A Flow ReFlow |
| | 0.6 | | Low DC Resistance Type p52 | BLM18KG260TN1 | 26ohm±25% | - | 6000mA | Kit ≥3A Flow ReFlow |
| | 0.6 | | | BLM18KG300TN1 | 30ohm±25% | - | 5000mA | Kit ≥3A Flow ReFlow |
| | 0.6 | | | BLM18KG700TN1 | 70ohm±25% | - | 3500mA | Kit ≥3A Flow ReFlow |
| | 0.6 | | | BLM18KG101TN1 | 100ohm±25% | - | 3000mA | Kit ≥3A Flow ReFlow |
| | 0.6 | | | BLM18KG121TN1 | 120ohm±25% | - | 3000mA | Kit ≥3A Flow ReFlow |
| | 0.8 | | | BLM18KG221SN1 | 220ohm±25% | - | 2200mA | Kit ≥1A Flow ReFlow |
| | 0.8 | | | BLM18KG331SN1 | 330ohm±25% | - | 1700mA | Kit ≥1A Flow ReFlow |
| | 0.8 | | | BLM18KG471SN1 | 470ohm±25% | - | 1500mA | Kit ≥1A Flow ReFlow |
| | 0.8 | | | BLM18KG601SN1 | 600ohm±25% | - | 1300mA | Kit ≥1A Flow ReFlow |
| | 0.5 | | p54 | BLM18SG260TN1 | 26ohm±25% | - | 6000mA | Kit ≥3A Flow ReFlow |
| | 0.5 | | | BLM18SG700TN1 | 70ohm±25% | - | 4000mA | Kit ≥3A Flow ReFlow |
| | 0.5 | | | BLM18SG121TN1 | 120ohm±25% | - | 3000mA | Kit ≥3A Flow ReFlow |
| | 0.5 | | | BLM18SG221TN1 | 220ohm±25% | - | 2500mA | Kit ≥1A Flow ReFlow |
| | 0.5 | | | BLM18SG331TN1 | 330ohm±25% | - | 1500mA | Kit ≥1A Flow ReFlow |
| 0603 (1608) | 0.8 | For GHz Band Noise | For General Signal Lines p92 | BLM18HG471SN1 | 470ohm±25% | 600ohm(Typ.) | 200mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HG601SN1 | 600ohm±25% | 700ohm(Typ.) | 200mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HG102SN1 | 1000ohm±25% | 1000ohm(Typ.) | 100mA | Kit GHz Flow ReFlow |
| | 0.8 | | For High Speed Signal Lines (Sharp Impedance Curve) p92 | BLM18HE601SN1 | 600ohm±25% | 600ohm(Typ.) | 800mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HE102SN1 | 1000ohm±25% | 1000ohm(Typ.) | 600mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HE152SN1 | 1500ohm±25% | 1500ohm(Typ.) | 500mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HD471SN1 | 470ohm±25% | 1000ohm(Typ.) | 100mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HD601SN1 | 600ohm±25% | 1200ohm(Typ.) | 100mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HD102SN1 | 1000ohm±25% | 1700ohm(Typ.) | 50mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HB121SN1 | 120ohm±25% | 500ohm±40% | 200mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HB221SN1 | 220ohm±25% | 1100ohm±40% | 100mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HB331SN1 | 330ohm±25% | 1600ohm±40% | 50mA | Kit GHz Flow ReFlow |
| | 0.8 | | For Digital Interface Lines p92 | BLM18HK331SN1 | 330ohm±25% | 400ohm±40% | 200mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HK471SN1 | 470ohm±25% | 600ohm±40% | 200mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HK601SN1 | 600ohm±25% | 700ohm±40% | 100mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18HK102SN1 | 1000ohm±25% | 1200ohm±40% | 50mA | Kit GHz Flow ReFlow |
| | 0.5 | | Universal Type [Power lines/ Signal lines] p96 | BLM18EG101TN1 | 100ohm±25% | 140ohm(Typ.) | 2000mA | Kit ≥1A GHz Flow ReFlow |
| | 0.8 | | | BLM18EG121SN1 | 120ohm±25% | 145ohm(Typ.) | 2000mA | Kit ≥1A GHz Flow ReFlow |
| | 0.8 | | | BLM18EG221SN1 | 220ohm±25% | 260ohm(Typ.) | 2000mA | Kit ≥1A GHz Flow ReFlow |
| | 0.5 | | | BLM18EG221TN1 | 220ohm±25% | 300ohm(Typ.) | 1000mA | Kit ≥1A GHz Flow ReFlow |
| | 0.5 | | | BLM18EG331TN1 | 330ohm±25% | 450ohm(Typ.) | 500mA | Kit GHz Flow ReFlow |
| | 0.5 | | | BLM18EG391TN1 | 390ohm±25% | 520ohm(Typ.) | 500mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18EG471SN1 | 470ohm±25% | 550ohm(Typ.) | 500mA | Kit GHz Flow ReFlow |
| | 0.8 | | | BLM18EG601SN1 | 600ohm±25% | 700ohm(Typ.) | 500mA | Kit GHz Flow ReFlow |
| | 0.8 | For High-GHz Band Noise p98 | | BLM18GG471SN1 | 470ohm±25% | 1800ohm±30% | 200mA | Kit Hi-GHz ReFlow |
| 0805 (2012) | 0.85 | For General Signal Lines p68 | | BLM21AG121SN1 | 120ohm±25% | - | 800mA | Kit Flow ReFlow |
| | 0.85 | | | BLM21AG151SN1 | 150ohm±25% | - | 800mA | Kit Flow ReFlow |
| | 0.85 | | | BLM21AG221SN1 | 220ohm±25% | - | 800mA | Kit Flow ReFlow |
| | 0.85 | | | BLM21AG331SN1 | 330ohm±25% | - | 700mA | Kit Flow ReFlow |
| | 0.85 | | | BLM21AG471SN1 | 470ohm±25% | - | 700mA | Kit Flow ReFlow |
| | 0.85 | | | BLM21AG601SN1 | 600ohm±25% | - | 600mA | Kit Flow ReFlow |
| | 0.85 | | | BLM21AG102SN1 | 1000ohm±25% | - | 500mA | Kit Flow ReFlow |

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| Size Code in inch (in mm) | Thickness (mm) | Type | Part Number | Impedance at 100MHz/20°C | Impedance at 1GHz/20°C | Rated Current | New | Kit | ≥1A ≥3A ≥10A | GHz Hi-GHz | Flow | ReFlow |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0805 (2012) | 0.85 | For High Speed Signal Lines (Sharp Impedance Curve) p70 | BLM21BD121SN1 | 120ohm±25% | - | 200mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BD151SN1 | 150ohm±25% | - | 200mA | | | | | Flow | ReFlow |
| | 0.85 | | BLM21BD221SN1 | 220ohm±25% | - | 200mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BD331SN1 | 330ohm±25% | - | 200mA | | | | | Flow | ReFlow |
| | 0.85 | | BLM21BD421SN1 | 420ohm±25% | - | 200mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BD471SN1 | 470ohm±25% | - | 200mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BD601SN1 | 600ohm±25% | - | 200mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BD751SN1 | 750ohm±25% | - | 200mA | | | | | Flow | ReFlow |
| | 0.85 | | BLM21BD102SN1 | 1000ohm±25% | - | 200mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BD152SN1 | 1500ohm±25% | - | 200mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BD182SN1 | 1800ohm±25% | - | 200mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BD222TN1 | 2200ohm±25% | - | 200mA | | Kit | | | Flow | ReFlow |
| | 1.25 | | BLM21BD222SN1 | 2250ohm(Typ.) | - | 200mA | | Kit | | | Flow | ReFlow |
| | 1.25 | | BLM21BD272SN1 | 2700ohm±25% | - | 200mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BB050SN1 | 5ohm±25% | - | 1000mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BB600SN1 | 60ohm±25% | - | 800mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BB750SN1 | 75ohm±25% | - | 700mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BB121SN1 | 120ohm±25% | - | 600mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BB151SN1 | 150ohm±25% | - | 600mA | | | | | Flow | ReFlow |
| | 0.85 | | BLM21BB201SN1 | 200ohm±25% | - | 500mA | | | | | Flow | ReFlow |
| | 0.85 | | BLM21BB221SN1 | 220ohm±25% | - | 500mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BB331SN1 | 330ohm±25% | - | 400mA | | Kit | | | Flow | ReFlow |
| | 0.85 | | BLM21BB471SN1 | 470ohm±25% | - | 400mA | | Kit | | | Flow | ReFlow |
| | 0.85 | For Digital Interface Lines p73 | BLM21RK121SN1 | 120ohm±25% | - | 200mA | | | | | Flow | ReFlow |
| | 0.85 | | BLM21RK221SN1 | 220ohm±25% | - | 200mA | | | | | Flow | ReFlow |
| | 0.85 | | BLM21RK471SN1 | 470ohm±25% | - | 200mA | | | | | Flow | ReFlow |
| | 0.85 | | BLM21RK601SN1 | 600ohm±25% | - | 200mA | | | | | Flow | ReFlow |
| | 0.85 | | BLM21RK102SN1 | 1000ohm±25% | - | 200mA | | | | | Flow | ReFlow |
| | 0.85 | For Power Lines p66 | BLM21PG220SN1 | 22ohm±25% | - | 6000mA | | Kit | ≥3A | | Flow | ReFlow |
| | 0.85 | | BLM21PG300SN1 | 30ohm(Typ.) | - | 4000mA | | Kit | ≥3A | | Flow | ReFlow |
| | 0.85 | | BLM21PG600SN1 | 60ohm±25% | - | 3500mA | | Kit | ≥3A | | Flow | ReFlow |
| | 0.85 | | BLM21PG121SN1 | 120ohm±25% | - | 3000mA | | Kit | ≥3A | | Flow | ReFlow |
| | 0.85 | | BLM21PG221SN1 | 220ohm±25% | - | 2000mA | | Kit | ≥1A | | Flow | ReFlow |
| | 0.85 | | BLM21PG331SN1 | 330ohm±25% | - | 1500mA | | Kit | ≥1A | | Flow | ReFlow |
| 1206 (3216) | 1.1 | For Power Lines p75 | BLM31PG330SN1 | 33ohm±25% | - | 6000mA | | Kit | ≥3A | | Flow | ReFlow |
| | 1.1 | | BLM31PG500SN1 | 50ohm(Typ.) | - | 3500mA | | Kit | ≥3A | | Flow | ReFlow |
| | 1.1 | | BLM31PG121SN1 | 120ohm±25% | - | 3500mA | | Kit | ≥3A | | Flow | ReFlow |
| | 1.1 | | BLM31PG391SN1 | 390ohm±25% | - | 2000mA | | Kit | ≥1A | | Flow | ReFlow |
| | 1.1 | | BLM31PG601SN1 | 600ohm±25% | - | 1500mA | | Kit | ≥1A | | Flow | ReFlow |
| 1806 (4516) | 1.6 | For Power Lines p77 | BLM41PG600SN1 | 60ohm(Typ.) | - | 6000mA | | Kit | ≥3A | | Flow | ReFlow |
| | 1.6 | | BLM41PG750SN1 | 75ohm(Typ.) | - | 3500mA | | Kit | ≥3A | | Flow | ReFlow |
| | 1.6 | | BLM41PG181SN1 | 180ohm±25% | - | 3500mA | | Kit | ≥3A | | Flow | ReFlow |
| | 1.6 | | BLM41PG471SN1 | 470ohm±25% | - | 2000mA | | Kit | ≥1A | | Flow | ReFlow |
| | 1.6 | | BLM41PG102SN1 | 1000ohm±25% | - | 1500mA | | Kit | ≥1A | | Flow | ReFlow |
| 1210 (3225) | 0.2 | For Power Lines p79 | BLE32PN300SN1 | 30ohm±10ohm | - | 10000mA | New | | ≥10A | | Flow | ReFlow |
| 0804 (2010) | 0.5 | For General Signal Lines p80 | BLA2AAG121SN4 | 120ohm±25% | - | 100mA | | | | | | ReFlow |
| | 0.5 | | BLA2AAG221SN4 | 220ohm±25% | - | 50mA | | | | | | ReFlow |
| | 0.5 | | BLA2AAG601SN4 | 600ohm±25% | - | 50mA | | | | | | ReFlow |
| | 0.5 | | BLA2AAG102SN4 | 1000ohm±25% | - | 50mA | | | | | | ReFlow |
| | 0.5 | For High Speed Signal Lines p80 | BLA2ABD750SN4 | 75ohm±25% | - | 200mA | | | | | | ReFlow |
| | 0.5 | | BLA2ABD121SN4 | 120ohm±25% | - | 200mA | | | | | | ReFlow |
| | 0.5 | | BLA2ABD221SN4 | 220ohm±25% | - | 100mA | | | | | | ReFlow |
| | 0.5 | | BLA2ABD471SN4 | 470ohm±25% | - | 100mA | | | | | | ReFlow |
| | 0.5 | | BLA2ABD601SN4 | 600ohm±25% | - | 100mA | | | | | | ReFlow |
| | 0.5 | | BLA2ABD102SN4 | 1000ohm±25% | - | 50mA | | | | | | ReFlow |
| | 0.5 | | BLA2ABB100SN4 | 10ohm±25% | - | 200mA | | | | | | ReFlow |
| | 0.5 | | BLA2ABB220SN4 | 22ohm±25% | - | 200mA | | | | | | ReFlow |
| | 0.5 | | BLA2ABB470SN4 | 47ohm±25% | - | 200mA | | | | | | ReFlow |
| | 0.5 | | BLA2ABB121SN4 | 120ohm±25% | - | 50mA | | | | | | ReFlow |
| | 0.5 | | BLA2ABB221SN4 | 220ohm±25% | - | 50mA | | | | | | ReFlow |

Continued on the following page.

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| Size Code in inch (in mm) | Thickness (mm) | Type | Part Number | Impedance at 100MHz/20°C | Impedance at 1GHz/20°C | Rated Current | New Kit ≧1A ≧3A ≧10A GHz Hi-GHz Flow ReFlow |
|---|---|---|---|---|---|---|---|
| 1206 (3216) | 0.8 | For General Signal Lines p83 | **BLA31AG300SN4** | 30ohm±25% | - | 200mA | Flow ReFlow |
| | 0.8 | | **BLA31AG600SN4** | 60ohm±25% | - | 200mA | Flow ReFlow |
| | 0.8 | | **BLA31AG121SN4** | 120ohm±25% | - | 150mA | Flow ReFlow |
| | 0.8 | | **BLA31AG221SN4** | 220ohm±25% | - | 150mA | Flow ReFlow |
| | 0.8 | | **BLA31AG601SN4** | 600ohm±25% | - | 100mA | Flow ReFlow |
| | 0.8 | | **BLA31AG102SN4** | 1000ohm±25% | - | 50mA | Flow ReFlow |
| | 0.8 | For High Speed Signal Lines p83 | **BLA31BD121SN4** | 120ohm±25% | - | 150mA | Flow ReFlow |
| | 0.8 | | **BLA31BD221SN4** | 220ohm±25% | - | 150mA | Flow ReFlow |
| | 0.8 | | **BLA31BD471SN4** | 470ohm±25% | - | 100mA | Flow ReFlow |
| | 0.8 | | **BLA31BD601SN4** | 600ohm±25% | - | 100mA | Flow ReFlow |
| | 0.8 | | **BLA31BD102SN4** | 1000ohm±25% | - | 50mA | Flow ReFlow |



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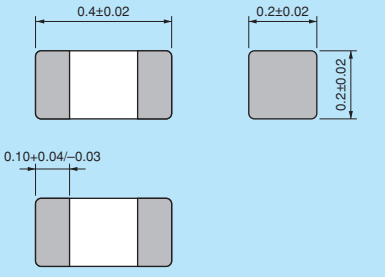
# BLM02AX Series 01005/0402 (inch/mm)

Reflow OK

## High Spec Ferrite Bead ultra low DC resistance. For general signal lines.



### Dimensions




### Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 20000 |
| B | Bulk(Bag) | 1000 |

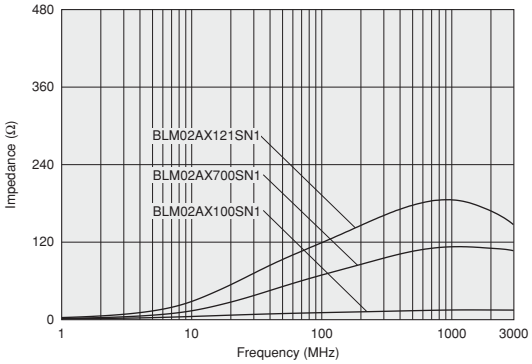
Refer to pages from p.100 to p.103 for mounting information.

### Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM02AX100SN1□ | 10ohm ±5 ohm | 750mA | 0.07ohm max. | -55°C to +125°C | Kit |
| BLM02AX700SN1□ | 70ohm ±25% | 300mA | 0.4ohm max. | -55°C to +125°C | Kit |
| BLM02AX121SN1□ | 120ohm ±25% | 250mA | 0.5ohm max. | -55°C to +125°C | Kit |

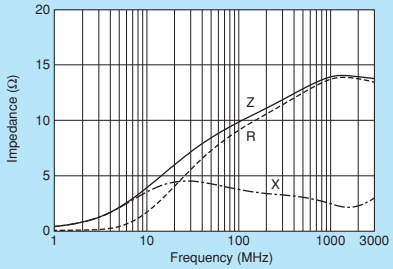
Number of Circuits: 1

### Impedance-Frequency Characteristics

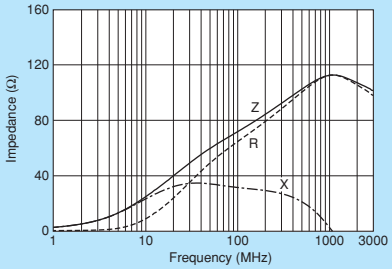



### Impedance-Frequency Characteristics

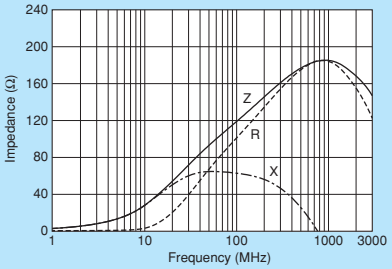
**BLM02AX100SN1**




**BLM02AX700SN1**




**BLM02AX121SN1**

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# Excellent for Both Signal and Power Lines. Multi Function Chip Ferrite Bead BLM□□AX Series

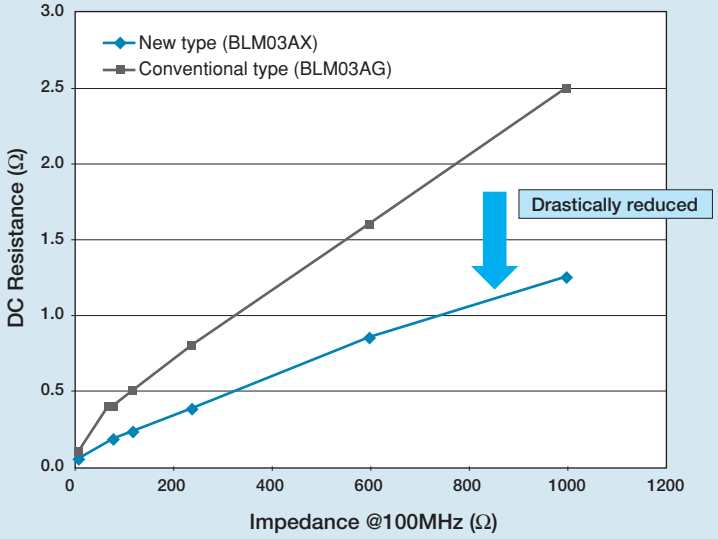
## Feature

- 1/2 the DC resistance than conventional type utilizing the latest technology
  New ferrite material
  Optimum ferrite firing condition
  Fine piling technology
  Advanced coil pattern design technology
- Improved stability of performance at heat shock
- Wide line-up from 10 to 1000ohm(@100MHz) useful for signal line

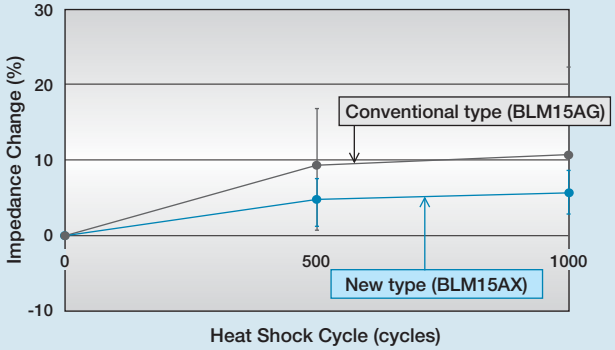
## Advantage

- High Rated Current
  Good for miniaturization of high power equipment
- Lower Voltage down at Ferrite bead
  Good for Battery driven equipment by saving running voltage margin
- Higher Reliability

### Drastically Reduced DC Resistance




### Test Result - Heat Shock



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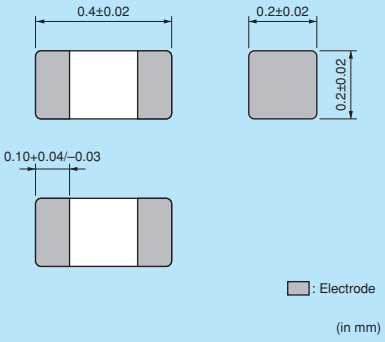
# BLM02BX Series 01005/0402 (inch/mm)

Reflow OK

## High Spec Ferrite Bead ultra low DC resistance. For high speed signal lines.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 20000 |
| B | Bulk(Bag) | 1000 |

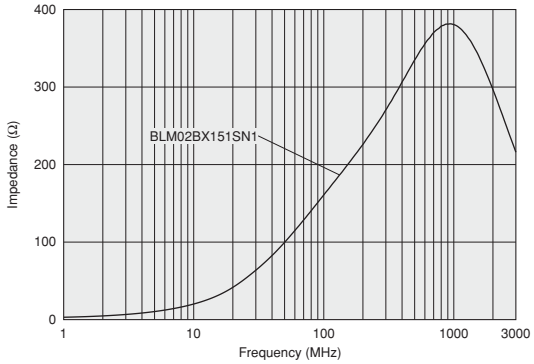
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM02BX151SN1□ | 150ohm ±25% | 200mA | 0.7ohm max. | -55°C to +125°C | New |

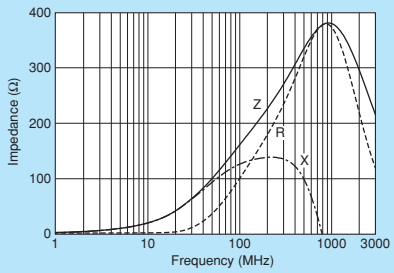
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics




### ■ Impedance-Frequency Characteristics

**BLM02BX151SN1**



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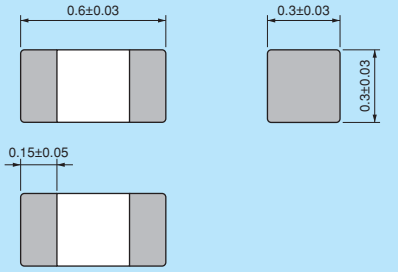
# BLM03PG Series 0201/0603 (inch/mm)

Hi Power Reflow OK

## 0201 size for power lines.

*Please refer to the products designed for both power lines and signal lines.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 15000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

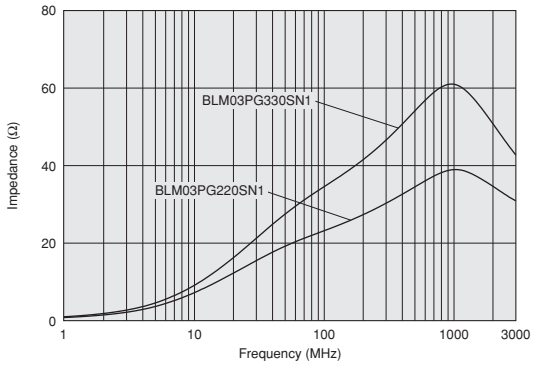
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM03PG220SN1□ | 22ohm ±25% | 900mA | 0.065ohm max. | -55°C to +125°C | Kit |
| BLM03PG330SN1□ | 33ohm ±25% | 750mA | 0.090ohm max. | -55°C to +125°C | Kit |

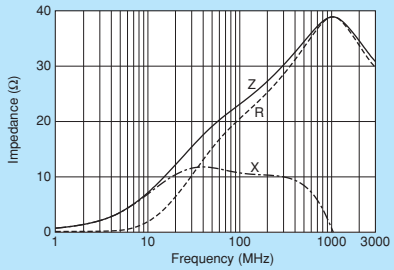
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

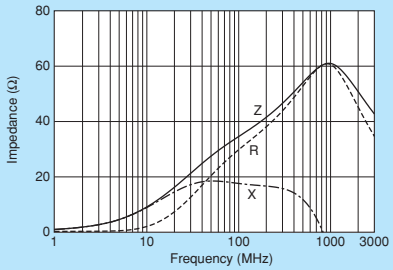



### ■ Impedance-Frequency Characteristics

**BLM03PG220SN1**




**BLM03PG330SN1**



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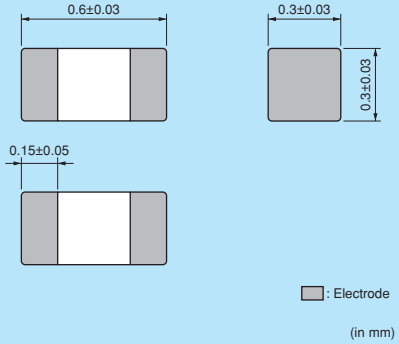
# BLM03PX Series 0201/0603 (inch/mm)

Hi Power Reflow OK

## Improved DC resistance meets larger current.



### Dimensions




### Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 15000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

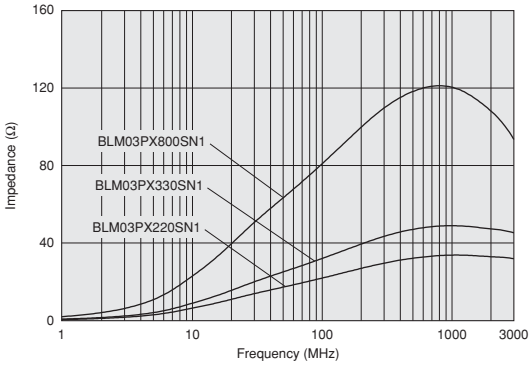
Refer to pages from p.100 to p.103 for mounting information.

### Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM03PX220SN1□ | 22ohm ±25% | 1800mA | 0.040ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM03PX330SN1□ | 33ohm ±25% | 1500mA | 0.055ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM03PX800SN1□ | 80ohm ±25% | 1000mA | 0.130ohm max. | -55°C to +125°C | Kit ≧1A |

Number of Circuits: 1

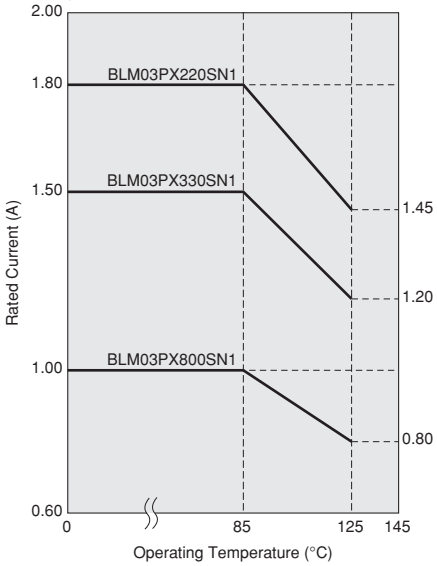
### Impedance-Frequency Characteristics




### Notice (Rating)

In operating temperature exceeding +85°C derating of current is necessary for BLM03PX_SN1 series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current

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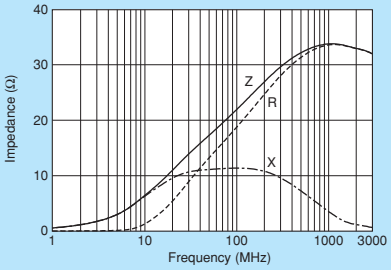
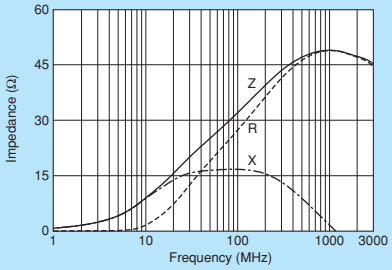
## ■ Impedance-Frequency Characteristics

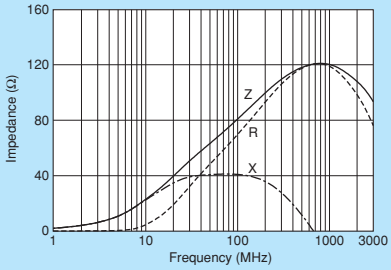
**BLM03PX220SN1**




**BLM03PX330SN1**




**BLM03PX800SN1**

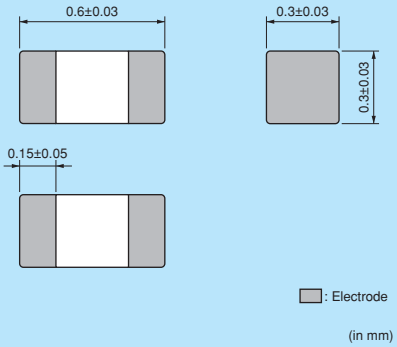


# BLM03AX Series 0201/0603 (inch/mm)

Hi Power Reflow OK

## High Spec Ferrite Bead Ultra low DC resistance and wide impedance line up. Fit for both power lines and signal lines.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 15000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

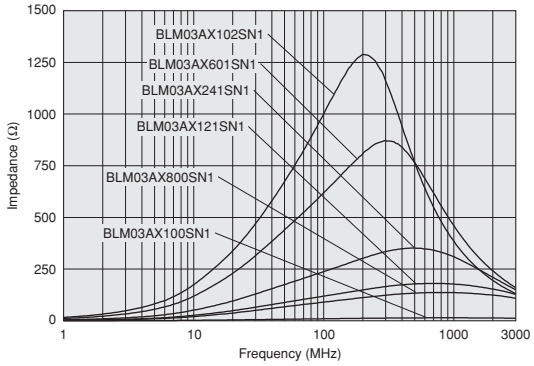
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM03AX100SN1□ | 10ohm (Typ.) | 1000mA | 0.05ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM03AX800SN1□ | 80ohm ±25% | 500mA | 0.18ohm max. | -55°C to +125°C | Kit |
| BLM03AX121SN1□ | 120ohm ±25% | 450mA | 0.23ohm max. | -55°C to +125°C | Kit |
| BLM03AX241SN1□ | 240ohm ±25% | 350mA | 0.38ohm max. | -55°C to +125°C | Kit |
| BLM03AX601SN1□ | 600ohm ±25% | 250mA | 0.85ohm max. | -55°C to +125°C | Kit |
| BLM03AX102SN1□ | 1000ohm ±25% | 200mA | 1.25ohm max. | -55°C to +125°C | Kit |

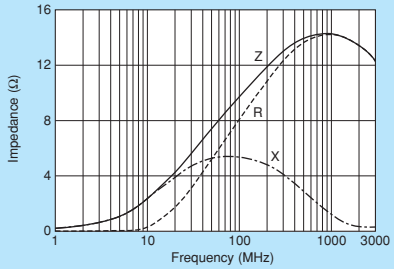
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

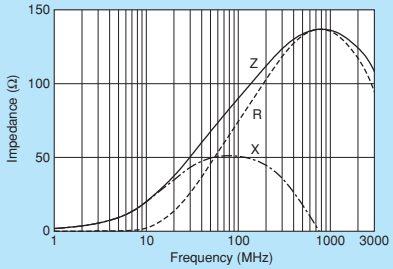



### ■ Impedance-Frequency Characteristics

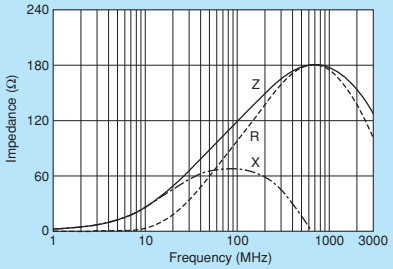
**BLM03AX100SN1**




**BLM03AX800SN1**




**BLM03AX121SN1**

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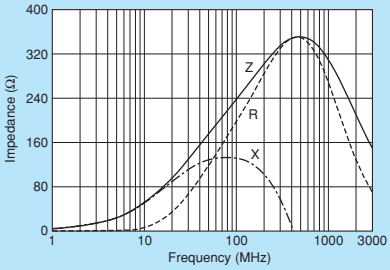
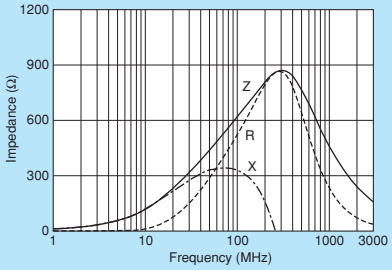
## ■ Impedance-Frequency Characteristics

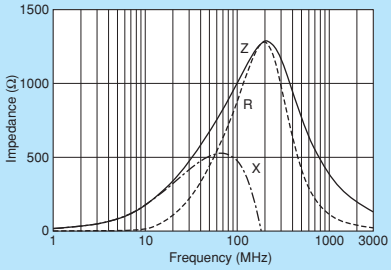
**BLM03AX241SN1**




**BLM03AX601SN1**




**BLM03AX102SN1**

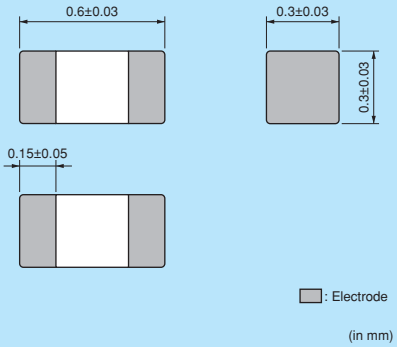


# BLM03AG Series 0201/0603 (inch/mm)

Reflow OK

## 0201 size for general signal lines.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 15000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

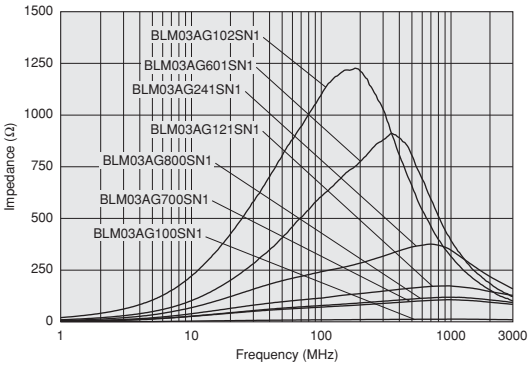
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM03AG100SN1□ | 10ohm (Typ.) | 500mA | 0.1ohm max. | -55°C to +125°C | Kit |
| BLM03AG700SN1□ | 70ohm (Typ.) | 200mA | 0.4ohm max. | -55°C to +125°C | Kit |
| BLM03AG800SN1□ | 80ohm ±25% | 200mA | 0.4ohm max. | -55°C to +125°C | Kit |
| BLM03AG121SN1□ | 120ohm ±25% | 200mA | 0.5ohm max. | -55°C to +125°C | Kit |
| BLM03AG241SN1□ | 240ohm ±25% | 200mA | 0.8ohm max. | -55°C to +125°C | Kit |
| BLM03AG601SN1□ | 600ohm ±25% | 100mA | 1.5ohm max. | -55°C to +125°C | Kit |
| BLM03AG102SN1□ | 1000ohm ±25% | 100mA | 2.5ohm max. | -55°C to +125°C | Kit |

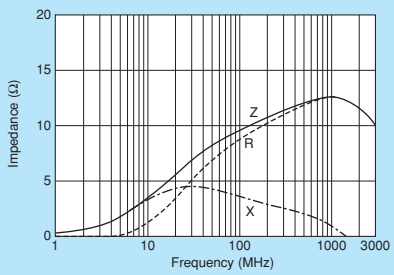
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

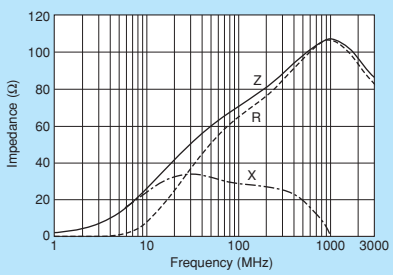



### ■ Impedance-Frequency Characteristics

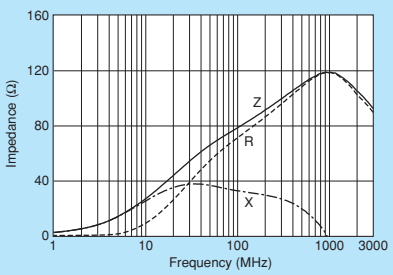
**BLM03AG100SN1**




**BLM03AG700SN1**




**BLM03AG800SN1**




Continued on the following page.

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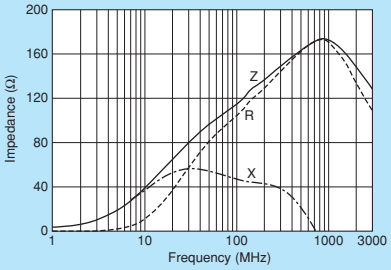
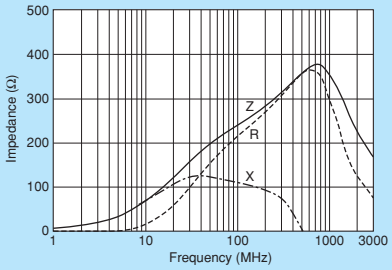
## ■ Impedance-Frequency Characteristics

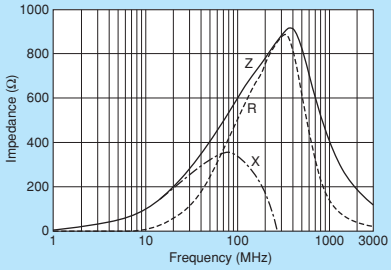
### BLM03AG121SN1



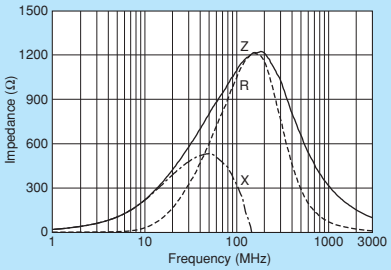

### BLM03AG241SN1




### BLM03AG601SN1




### BLM03AG102SN1

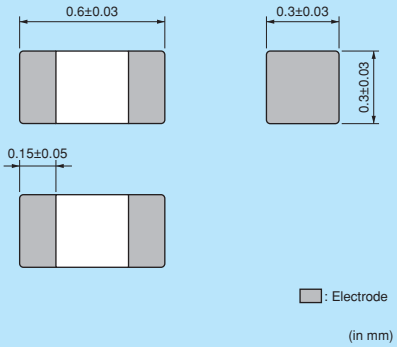


# BLM03B Series 0201/0603 (inch/mm)

Reflow OK

## 0201 size for high speed signal lines.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 15000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.100 to p.103 for mounting information.

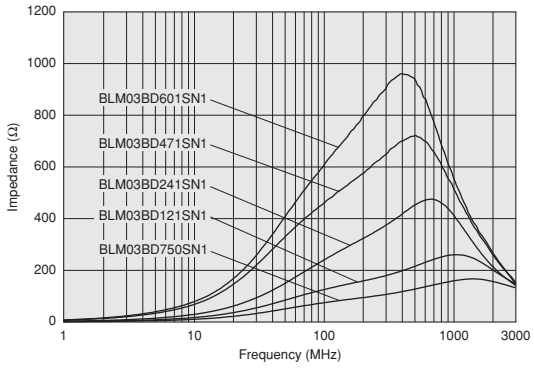
### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM03BD750SN1□ | 75ohm ±25% | 300mA | 0.4ohm max. | -55°C to +125°C | Kit |
| BLM03BD121SN1□ | 120ohm ±25% | 250mA | 0.5ohm max. | -55°C to +125°C | Kit |
| BLM03BD241SN1□ | 240ohm ±25% | 200mA | 0.8ohm max. | -55°C to +125°C | Kit |
| BLM03BD471SN1□ | 470ohm ±25% | 215mA | 1.5ohm max. | -55°C to +125°C | Kit |
| BLM03BD601SN1□ | 600ohm ±25% | 200mA | 1.7ohm max. | -55°C to +125°C | Kit |
| BLM03BB100SN1□ | 10ohm ±25% | 300mA | 0.4ohm max. | -55°C to +125°C | Kit |
| BLM03BB220SN1□ | 22ohm ±25% | 200mA | 0.5ohm max. | -55°C to +125°C | Kit |
| BLM03BB470SN1□ | 47ohm ±25% | 200mA | 0.7ohm max. | -55°C to +125°C | Kit |
| BLM03BB750SN1□ | 75ohm ±25% | 200mA | 1.0ohm max. | -55°C to +125°C | Kit |
| BLM03BB121SN1□ | 120ohm ±25% | 100mA | 1.5ohm max. | -55°C to +125°C | Kit |
| BLM03BC330SN1□ | 33ohm ±25% | 150mA | 0.85ohm max. | -55°C to +125°C | Kit |
| BLM03BC560SN1□ | 56ohm ±25% | 100mA | 1.05ohm max. | -55°C to +125°C | Kit |
| BLM03BC800SN1□ | 80ohm ±25% | 100mA | 1.40ohm max. | -55°C to +125°C | Kit |

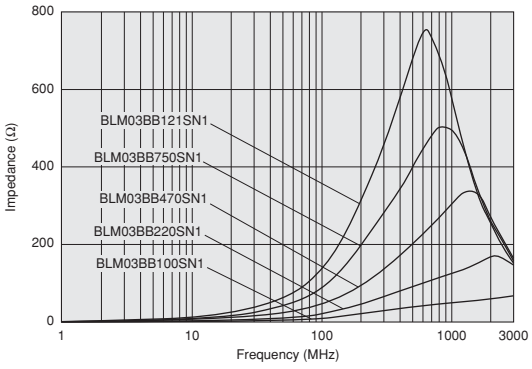
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

**BLM03BD Series**




**BLM03BB Series**




Continued on the following page.

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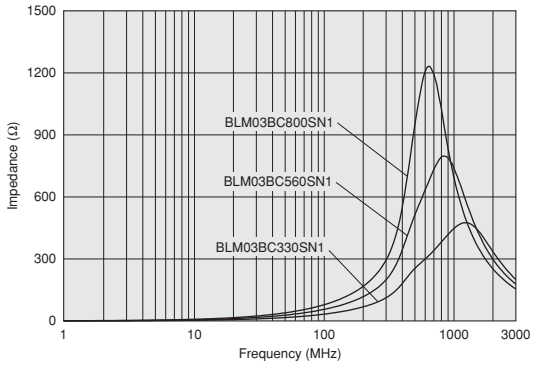
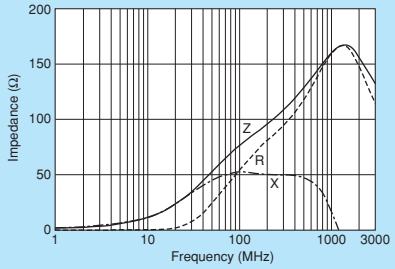
## ■ Impedance-Frequency Characteristics

### BLM03BC Series

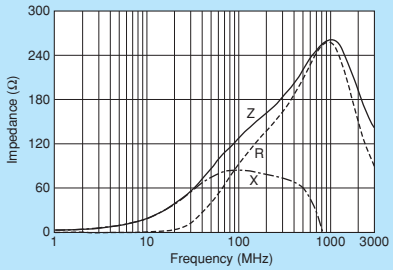



## ■ Impedance-Frequency Characteristics

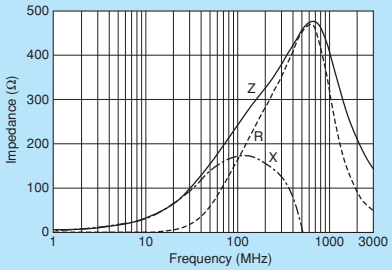
### BLM03BD750SN1



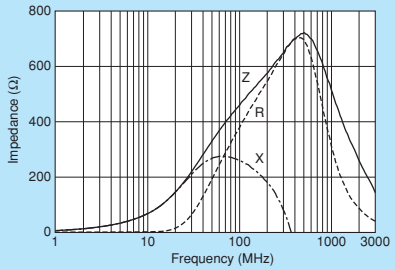

### BLM03BD121SN1



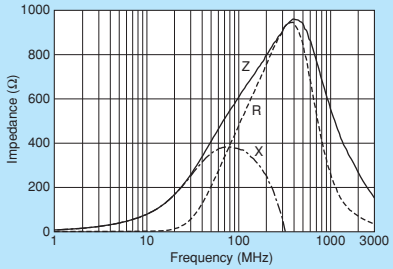

### BLM03BD241SN1



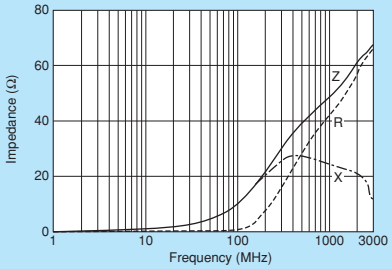

### BLM03BD471SN1



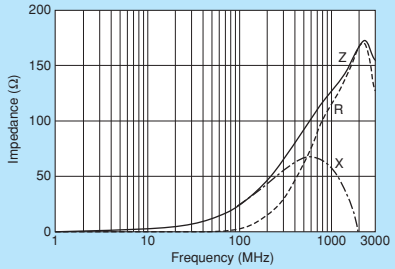

### BLM03BD601SN1



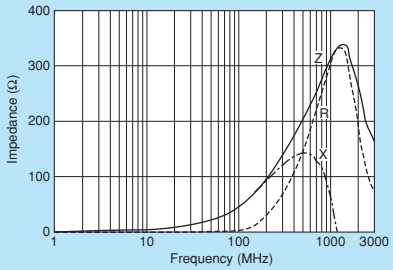

### BLM03BB100SN1



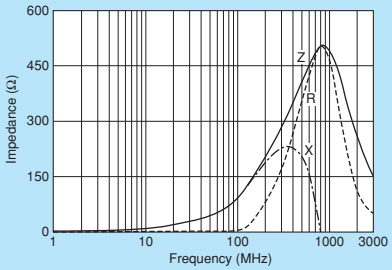

### BLM03BB220SN1



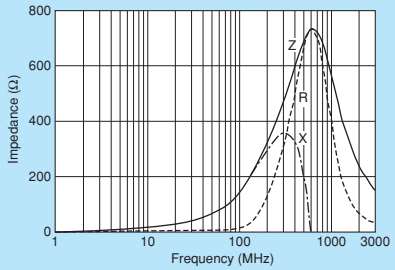

### BLM03BB470SN1



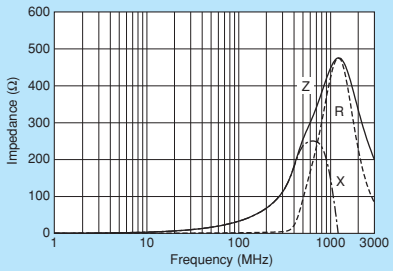

### BLM03BB750SN1



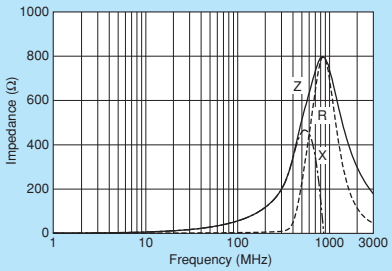

### BLM03BB121SN1



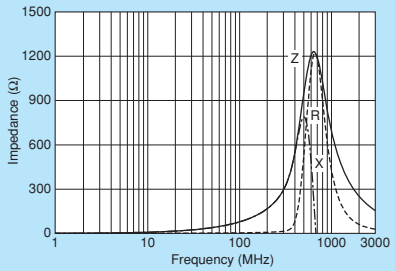

### BLM03BC330SN1




### BLM03BC560SN1




### BLM03BC800SN1



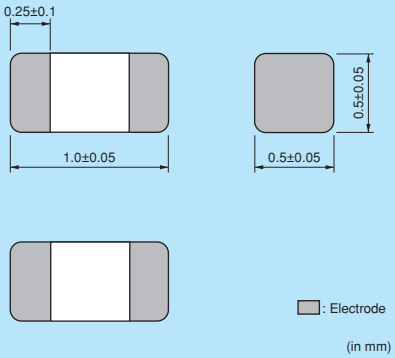
# BLM15PX Series 0402/1005 (inch/mm)

Hi Power Reflow OK

## 3A max., high performance type for power lines up to 600ohm.



### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

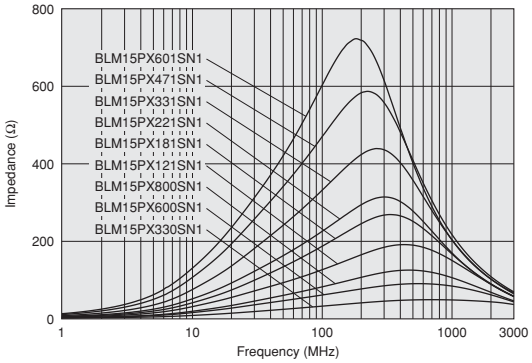
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM15PX330SN1□ | 33ohm ±25% | 3000mA | 0.022ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM15PX600SN1□ | 60ohm ±25% | 2500mA | 0.032ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15PX800SN1□ | 80ohm ±25% | 2300mA | 0.038ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15PX121SN1□ | 120ohm ±25% | 2000mA | 0.055ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15PX181SN1□ | 180ohm ±25% | 1500mA | 0.090ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15PX221SN1□ | 220ohm ±25% | 1400mA | 0.10ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15PX331SN1□ | 330ohm ±25% | 1200mA | 0.15ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15PX471SN1□ | 470ohm ±25% | 1000mA | 0.20ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15PX601SN1□ | 600ohm ±25% | 900mA | 0.23ohm max. | -55°C to +125°C | Kit |

Number of Circuits: 1

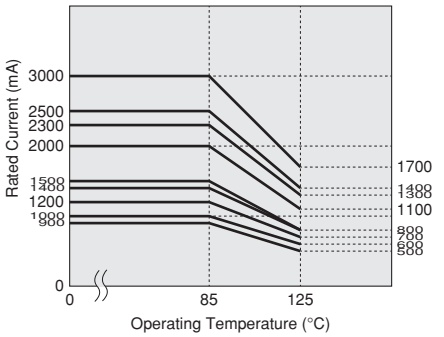
### ■ Impedance-Frequency Characteristics




### ■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM15PX series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current




Continued on the following page.

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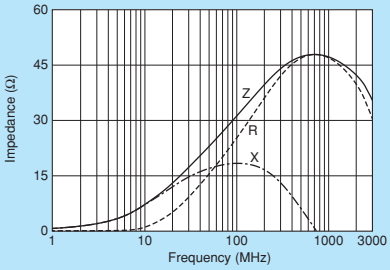
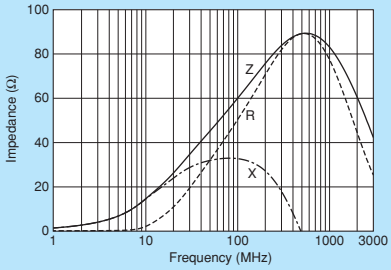
## ■ Impedance-Frequency Characteristics

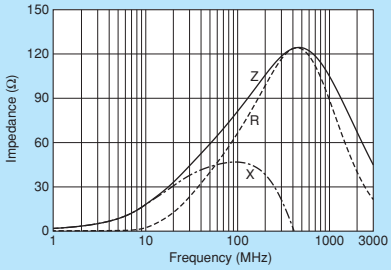
### BLM15PX330SN1



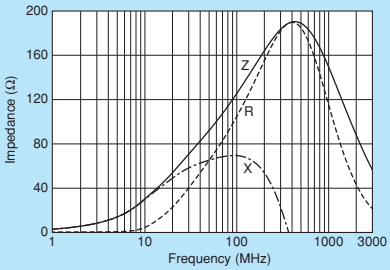

### BLM15PX600SN1



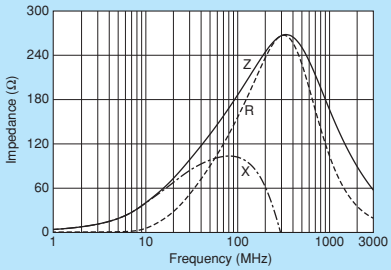

### BLM15PX800SN1



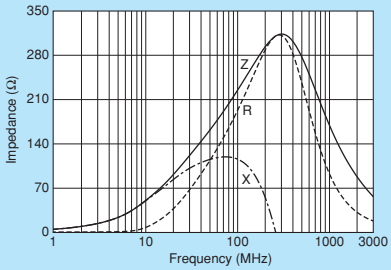

### BLM15PX121SN1



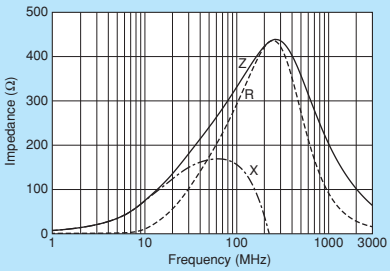

### BLM15PX181SN1



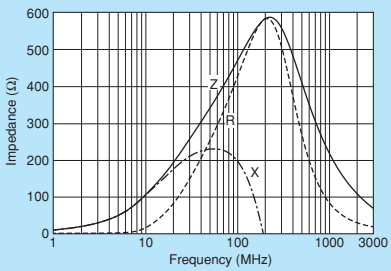

### BLM15PX221SN1



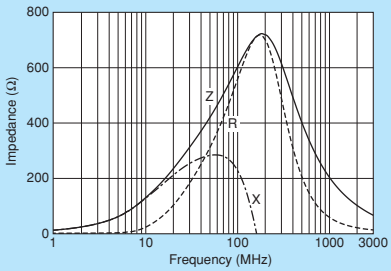

### BLM15PX331SN1




### BLM15PX471SN1




### BLM15PX601SN1



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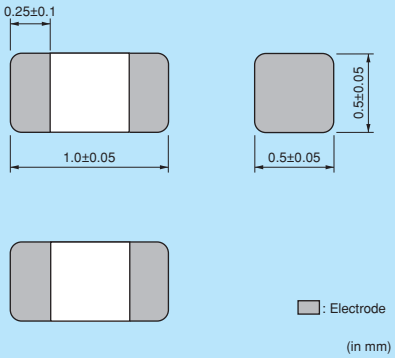
# BLM15PG/BLM15PD Series 0402/1005 (inch/mm)

Hi Power Reflow OK

## 0402 size for power lines.

*Please refer to the products which are designed for both power lines and signal lines.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

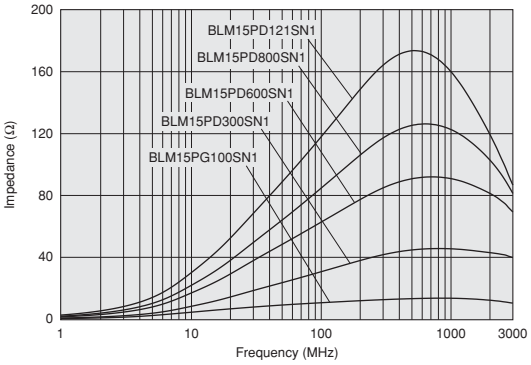
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM15PG100SN1□ | 10ohm (Typ.) | 1000mA | 0.025ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15PD300SN1□ | 30ohm ±25% | 2200mA | 0.035ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15PD600SN1□ | 60ohm ±25% | 1700mA | 0.06ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15PD800SN1□ | 80ohm ±25% | 1500mA | 0.07ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15PD121SN1□ | 120ohm ±25% | 1300mA | 0.09ohm max. | -55°C to +125°C | Kit ≧1A |

Number of Circuits: 1

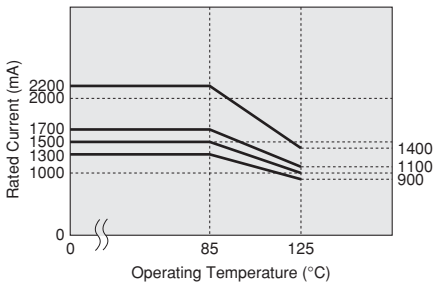
### ■ Impedance-Frequency Characteristics




### ■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM15PD series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current




Continued on the following page.

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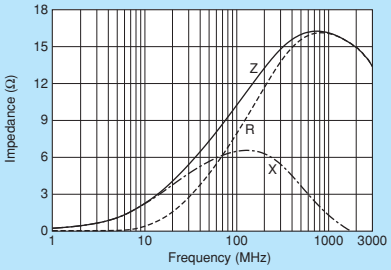
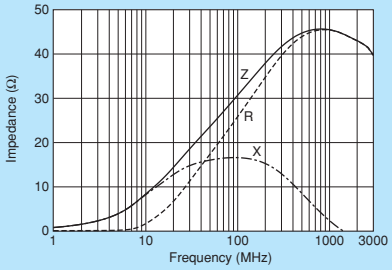
## ■ Impedance-Frequency Characteristics

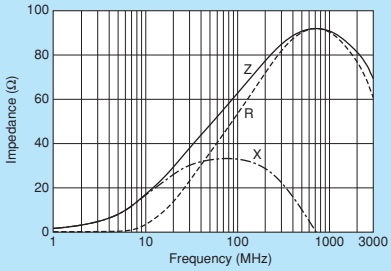
### BLM15PG100SN1



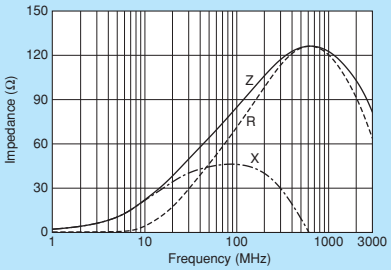

### BLM15PD300SN1



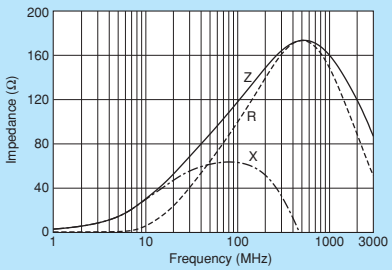

### BLM15PD600SN1




### BLM15PD800SN1




### BLM15PD121SN1

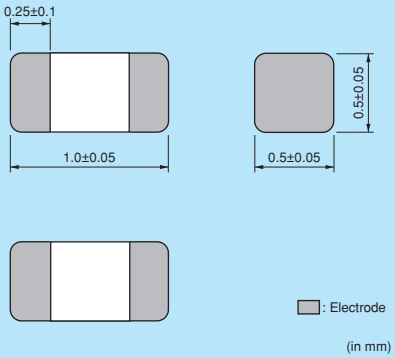


# BLM15AX Series 0402/1005 (inch/mm)

Hi Power Reflow OK

## High Spec Ferrite Bead Ultra low DC resistance and wide impedance line up. Fit for both power lines and signal lines.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

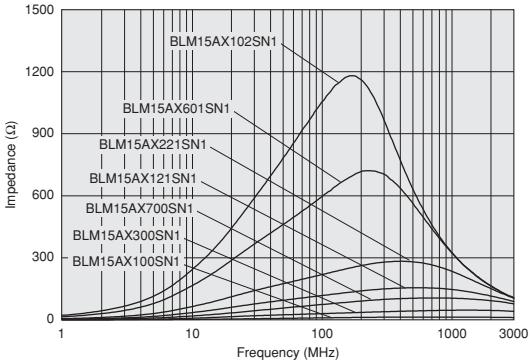
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM15AX100SN1□ | 10ohm ±5ohm | 1740mA | 0.015ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15AX300SN1□ | 30ohm ±25% | 1100mA | 0.06ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15AX700SN1□ | 70ohm ±25% | 780mA | 0.1ohm max. | -55°C to +125°C | Kit |
| BLM15AX121SN1□ | 120ohm ±25% | 700mA | 0.13ohm max. | -55°C to +125°C | Kit |
| BLM15AX221SN1□ | 220ohm ±25% | 600mA | 0.18ohm max. | -55°C to +125°C | Kit |
| BLM15AX601SN1□ | 600ohm ±25% | 500mA | 0.34ohm max. | -55°C to +125°C | Kit |
| BLM15AX102SN1□ | 1000ohm ±25% | 350mA | 0.49ohm max. | -55°C to +125°C | Kit |

Number of Circuits: 1

### ■ Impedance-Frequency Characteristics




Continued on the following page.



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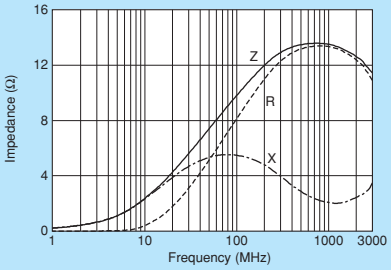
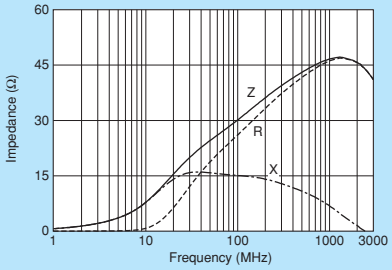
## ■ Impedance-Frequency Characteristics

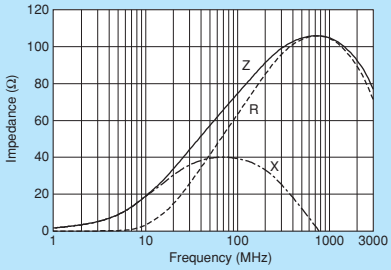
### BLM15AX100SN1



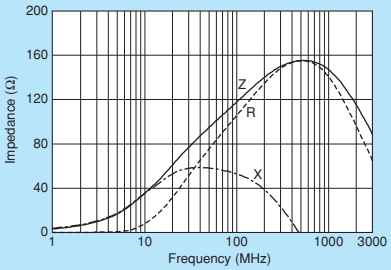

### BLM15AX300SN1



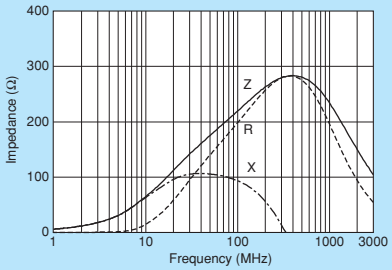

### BLM15AX700SN1



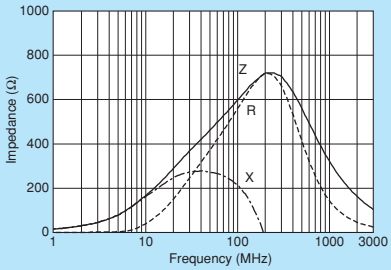

### BLM15AX121SN1



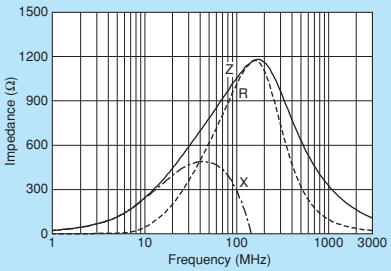

### BLM15AX221SN1




### BLM15AX601SN1




### BLM15AX102SN1



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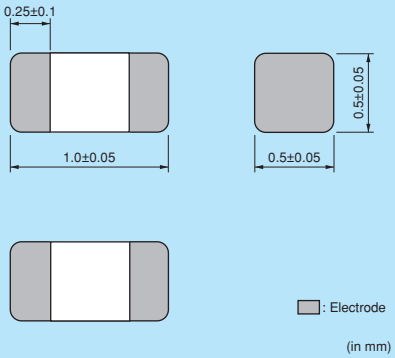
# BLM15AG Series 0402/1005 (inch/mm)

Reflow OK

## 0402 size for general signal lines.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

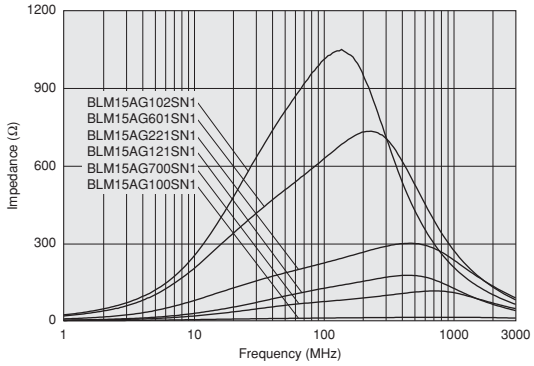
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM15AG100SN1□ | 10ohm (Typ.) | 1000mA | 0.025ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15AG700SN1□ | 70ohm (Typ.) | 600mA | 0.15ohm max. | -55°C to +125°C | Kit |
| BLM15AG121SN1□ | 120ohm ±25% | 550mA | 0.19ohm max. | -55°C to +125°C | Kit |
| BLM15AG221SN1□ | 220ohm ±25% | 450mA | 0.29ohm max. | -55°C to +125°C | Kit |
| BLM15AG601SN1□ | 600ohm ±25% | 300mA | 0.52ohm max. | -55°C to +125°C | Kit |
| BLM15AG102SN1□ | 1000ohm ±25% | 300mA | 0.65ohm max. | -55°C to +125°C | Kit |

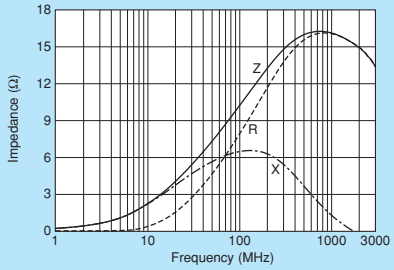
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

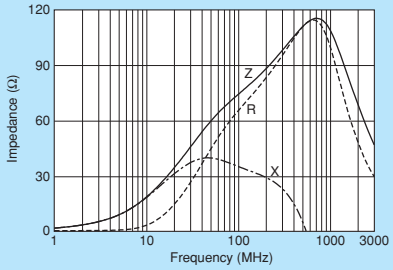



### ■ Impedance-Frequency Characteristics

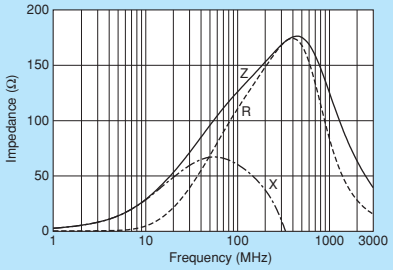
**BLM15AG100SN1**




**BLM15AG700SN1**




**BLM15AG121SN1**




Continued on the following page.

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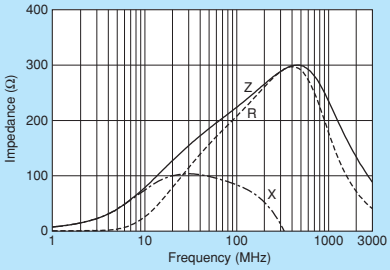
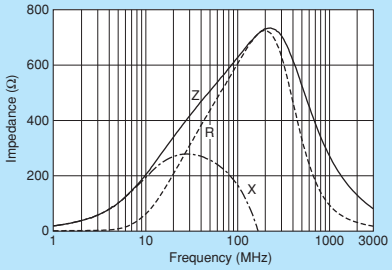
## ■ Impedance-Frequency Characteristics

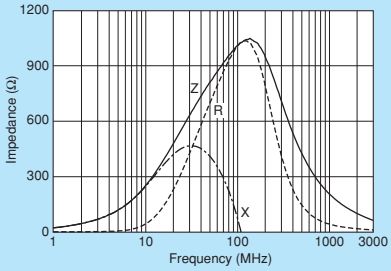
**BLM15AG221SN1**




**BLM15AG601SN1**




**BLM15AG102SN1**



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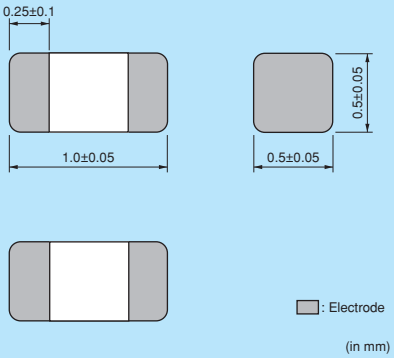
# BLM15BX Series 0402/1005 (inch/mm)

Reflow OK

## 0402 size for high speed signal lines, low DC resistance.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

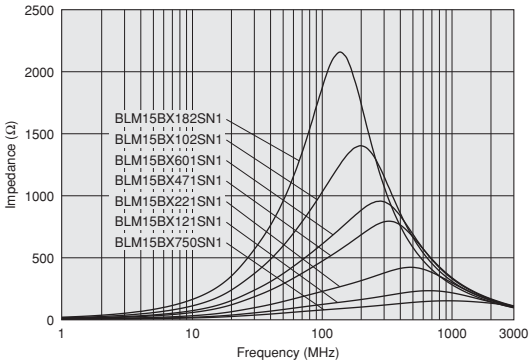
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM15BX750SN1□ | 75ohm ±25% | 600mA | 0.15ohm max. | -55°C to +125°C | Kit |
| BLM15BX121SN1□ | 120ohm ±25% | 600mA | 0.17ohm max. | -55°C to +125°C | Kit |
| BLM15BX221SN1□ | 220ohm ±25% | 450mA | 0.27ohm max. | -55°C to +125°C | Kit |
| BLM15BX471SN1□ | 470ohm ±25% | 350mA | 0.41ohm max. | -55°C to +125°C | Kit |
| BLM15BX601SN1□ | 600ohm ±25% | 350mA | 0.46ohm max. | -55°C to +125°C | Kit |
| BLM15BX102SN1□ | 1000ohm ±25% | 300mA | 0.65ohm max. | -55°C to +125°C | Kit |
| BLM15BX182SN1□ | 1800ohm ±25% | 250mA | 0.90ohm max. | -55°C to +125°C | Kit |

Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

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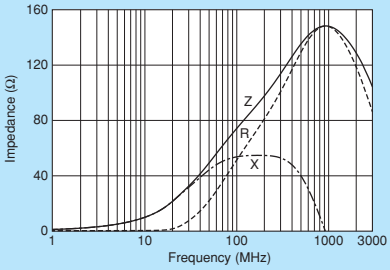
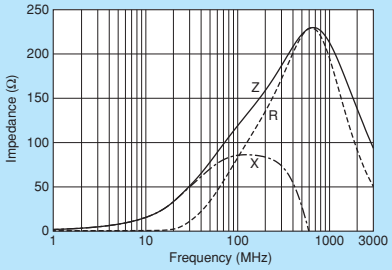
## ■ Impedance-Frequency Characteristics

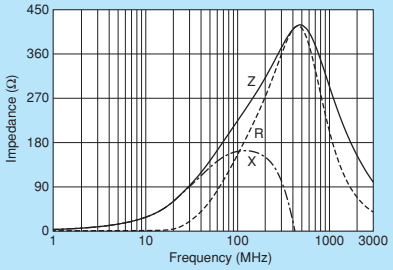
### BLM15BX750SN1



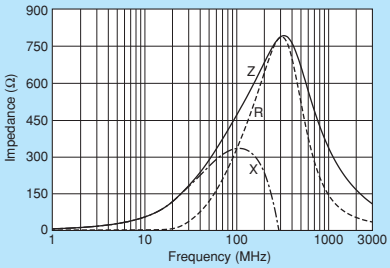

### BLM15BX121SN1



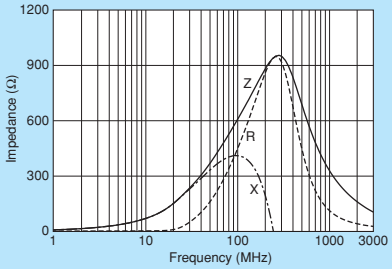

### BLM15BX221SN1



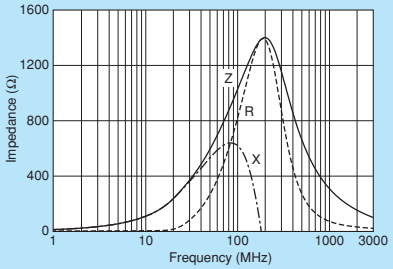

### BLM15BX471SN1



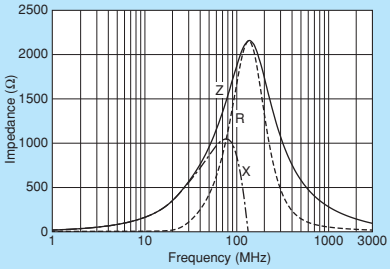

### BLM15BX601SN1




### BLM15BX102SN1




### BLM15BX182SN1



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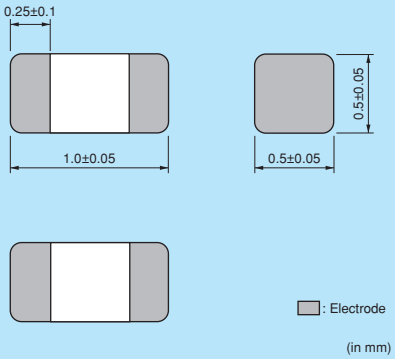
# BLM15B Series 0402/1005 (inch/mm)

Reflow OK

## 0402 size for high speed signal lines.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM15BD750SN1□ | 75ohm ±25% | 300mA | 0.20ohm max. | -55°C to +125°C | Kit |
| BLM15BD121SN1□ | 120ohm ±25% | 300mA | 0.30ohm max. | -55°C to +125°C | Kit |
| BLM15BD221SN1□ | 220ohm ±25% | 300mA | 0.40ohm max. | -55°C to +125°C | Kit |
| BLM15BD471SN1□ | 470ohm ±25% | 200mA | 0.60ohm max. | -55°C to +125°C | Kit |
| BLM15BD601SN1□ | 600ohm ±25% | 200mA | 0.65ohm max. | -55°C to +125°C | Kit |
| BLM15BD102SN1□ | 1000ohm ±25% | 200mA | 0.90ohm max. | -55°C to +125°C | Kit |
| BLM15BD182SN1□ | 1800ohm ±25% | 100mA | 1.40ohm max. | -55°C to +125°C | Kit |
| BLM15BB050SN1□ | 5ohm ±25% | 500mA | 0.08ohm max. | -55°C to +125°C | Kit |
| BLM15BB100SN1□ | 10ohm ±25% | 300mA | 0.10ohm max. | -55°C to +125°C | Kit |
| BLM15BB220SN1□ | 22ohm ±25% | 300mA | 0.20ohm max. | -55°C to +125°C | Kit |
| BLM15BB470SN1□ | 47ohm ±25% | 300mA | 0.35ohm max. | -55°C to +125°C | Kit |
| BLM15BB750SN1□ | 75ohm ±25% | 300mA | 0.40ohm max. | -55°C to +125°C | Kit |
| BLM15BB121SN1□ | 120ohm ±25% | 300mA | 0.55ohm max. | -55°C to +125°C | Kit |
| BLM15BB221SN1□ | 220ohm ±25% | 200mA | 0.80ohm max. | -55°C to +125°C | Kit |
| BLM15BC121SN1□ | 120ohm ±25% | 350mA | 0.45ohm max. | -55°C to +125°C | Kit |
| BLM15BC241SN1□ | 240ohm ±25% | 250mA | 0.70ohm max. | -55°C to +125°C | Kit |
| BLM15BA050SN1□ | 5ohm ±25% | 300mA | 0.10ohm max. | -55°C to +125°C | Kit |
| BLM15BA100SN1□ | 10ohm ±25% | 300mA | 0.20ohm max. | -55°C to +125°C | Kit |
| BLM15BA220SN1□ | 22ohm ±25% | 300mA | 0.30ohm max. | -55°C to +125°C | Kit |
| BLM15BA330SN1□ | 33ohm ±25% | 300mA | 0.40ohm max. | -55°C to +125°C | Kit |
| BLM15BA470SN1□ | 47ohm ±25% | 200mA | 0.60ohm max. | -55°C to +125°C | Kit |
| BLM15BA750SN1□ | 75ohm ±25% | 200mA | 0.80ohm max. | -55°C to +125°C | Kit |

Number of Circuits: 1

Continued on the following page.



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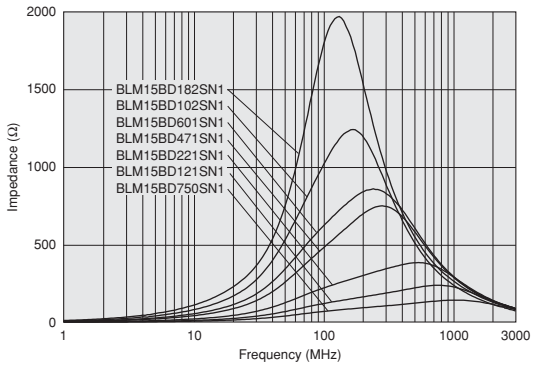
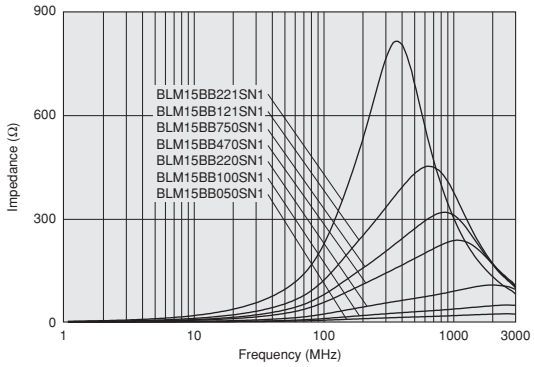
## ■ Impedance-Frequency Characteristics

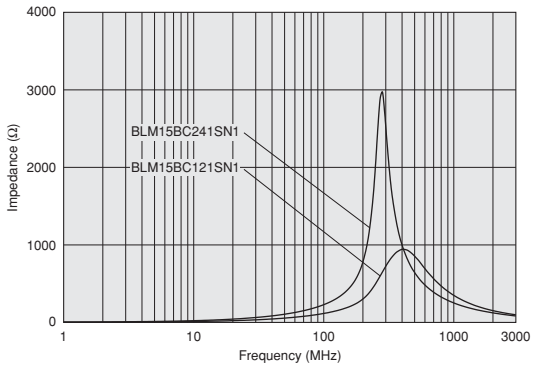
### BLM15BD Series



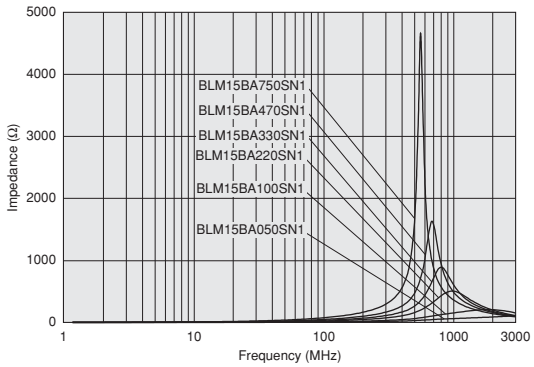

### BLM15BB Series




### BLM15BC Series

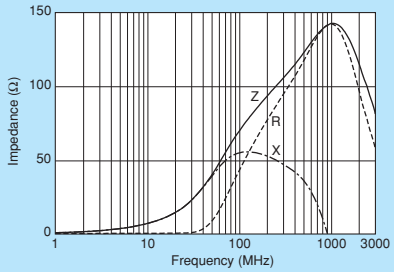



### BLM15BA Series

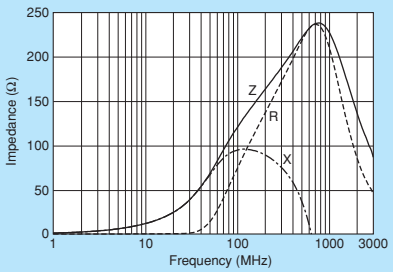



## ■ Impedance-Frequency Characteristics

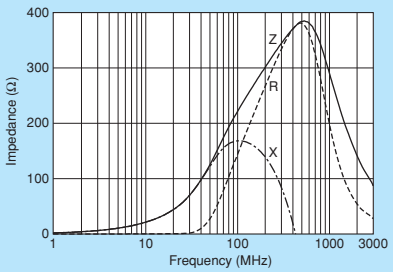
### BLM15BD750SN1



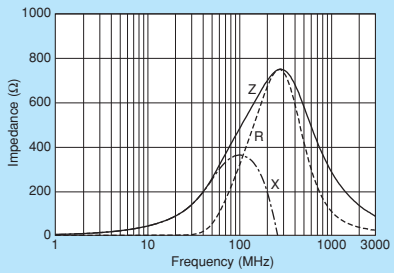

### BLM15BD121SN1



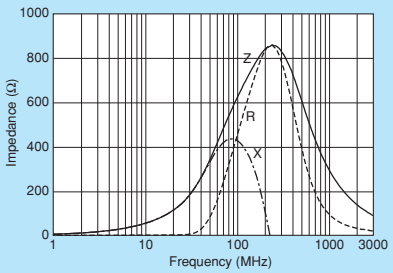

### BLM15BD221SN1



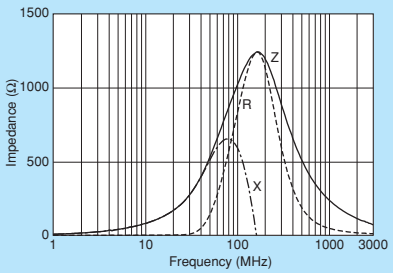

### BLM15BD471SN1




### BLM15BD601SN1




### BLM15BD102SN1




Continued on the following page.

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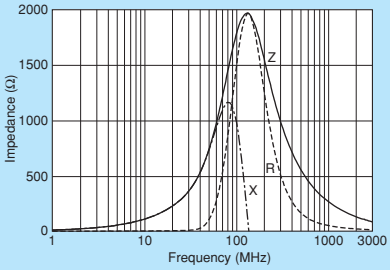
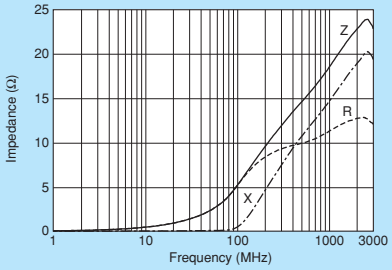
## ■ Impedance-Frequency Characteristics

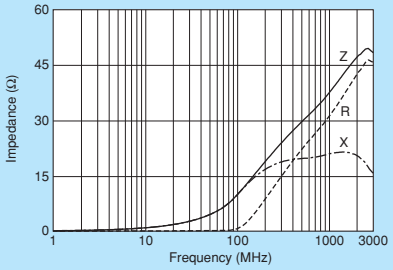
### BLM15BD182SN1



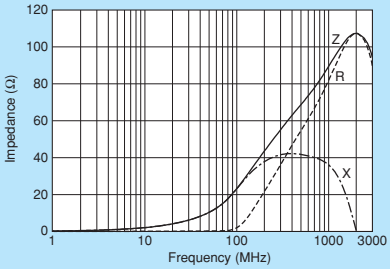

### BLM15BB050SN1



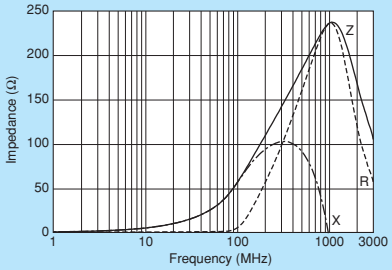

### BLM15BB100SN1



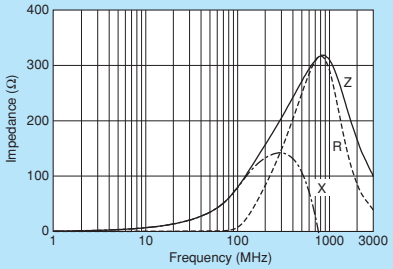

### BLM15BB220SN1



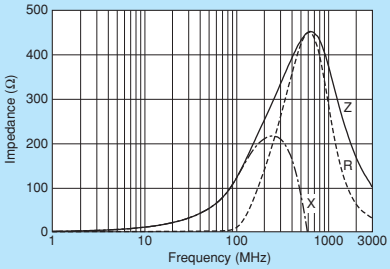

### BLM15BB470SN1



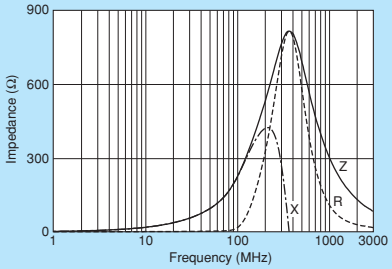

### BLM15BB750SN1



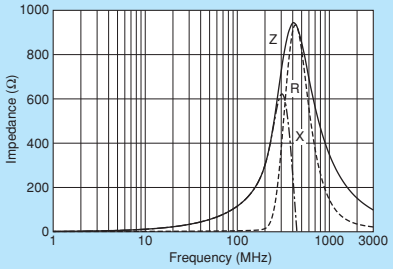

### BLM15BB121SN1



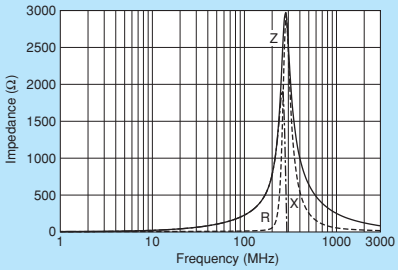

### BLM15BB221SN1



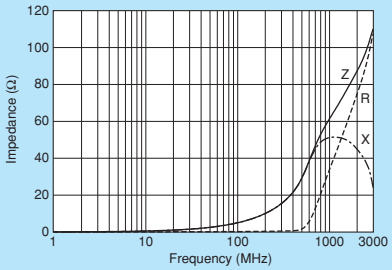

### BLM15BC121SN1



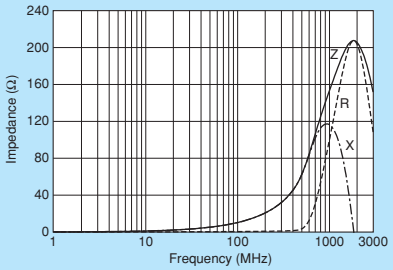

### BLM15BC241SN1



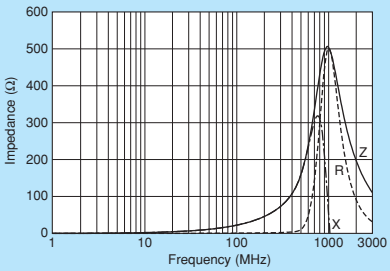

### BLM15BA050SN1



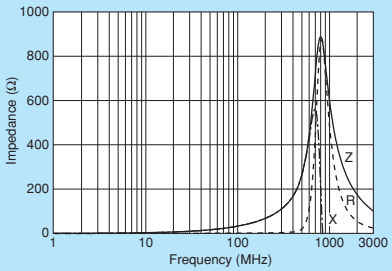

### BLM15BA100SN1



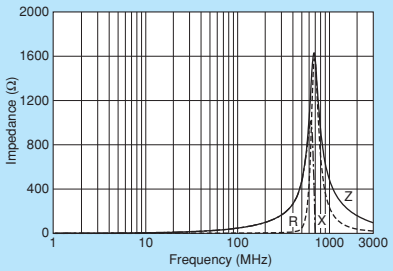

### BLM15BA220SN1




### BLM15BA330SN1




### BLM15BA470SN1




Continued on the following page.

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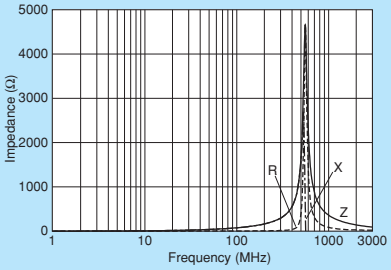
## ■ Impedance-Frequency Characteristics

**BLM15BA750SN1**



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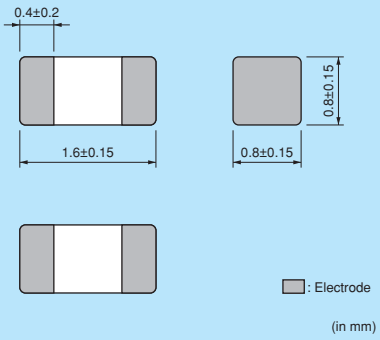
# BLM18P Series 0603/1608 (inch/mm)

Hi Power Flow OK Reflow OK

## 0603 size for power lines.

*Please refer to the products designed for both power lines and signal lines.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

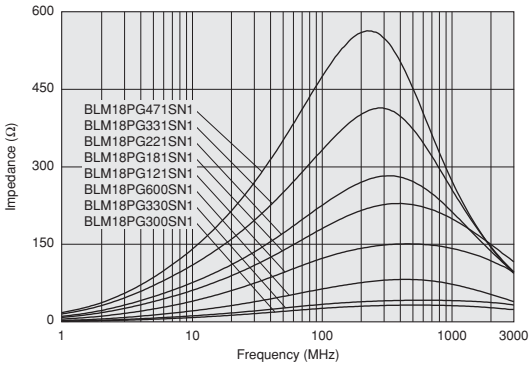
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM18PG300SN1□ | 30ohm (Typ.) | 1000mA | 0.05ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18PG330SN1□ | 33ohm ±25% | 3000mA | 0.025ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM18PG600SN1□ | 60ohm (Typ.) | 500mA | 0.10ohm max. | -55°C to +125°C | Kit |
| BLM18PG121SN1□ | 120ohm ±25% | 2000mA | 0.05ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18PG181SN1□ | 180ohm ±25% | 1500mA | 0.09ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18PG221SN1□ | 220ohm ±25% | 1400mA | 0.10ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18PG331SN1□ | 330ohm ±25% | 1200mA | 0.15ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18PG471SN1□ | 470ohm ±25% | 1000mA | 0.20ohm max. | -55°C to +125°C | Kit ≧1A |

Number of Circuits: 1

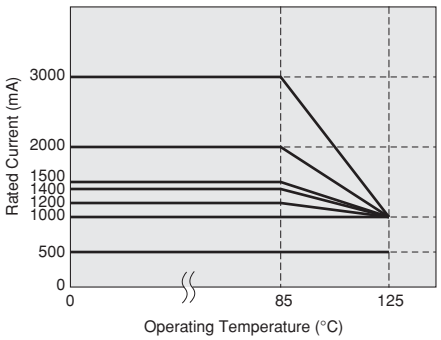
### ■ Impedance-Frequency Characteristics




### ■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM18PG series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current




Continued on the following page.

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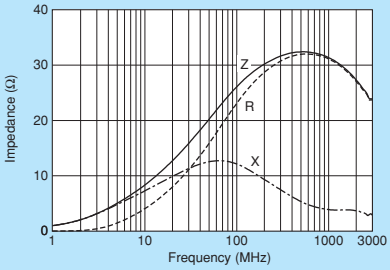
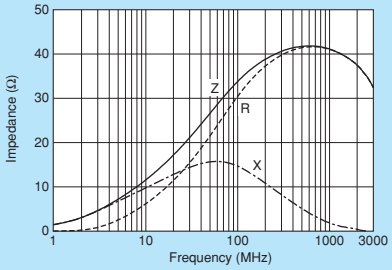
## ■ Impedance-Frequency Characteristics

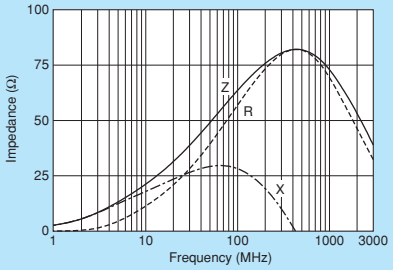
### BLM18PG300SN1



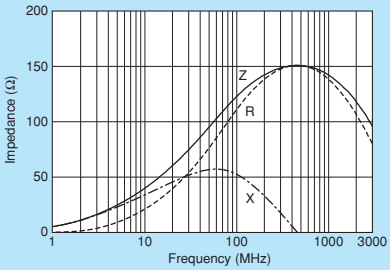

### BLM18PG330SN1



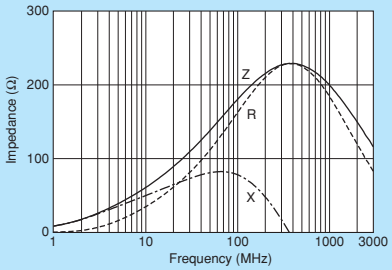

### BLM18PG600SN1



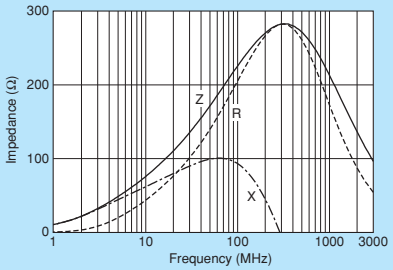

### BLM18PG121SN1



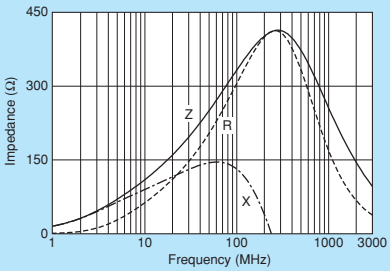

### BLM18PG181SN1



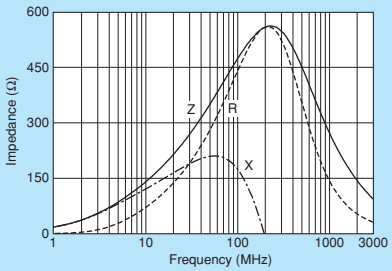

### BLM18PG221SN1




### BLM18PG331SN1




### BLM18PG471SN1



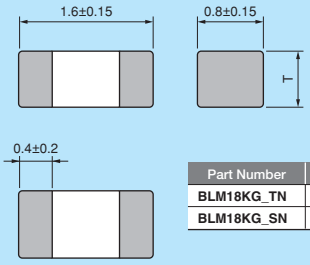
# BLM18K Series 0603/1608 (inch/mm)

Hi Power Flow OK Reflow OK

## 6A max., high performance type for power lines up to 600ohm.

*Please refer to the products designed for both power lines and signal lines.

### ■ Dimensions




| Part Number | T |
|---|---|
| BLM18KG_TN | 0.6±0.15 |
| BLM18KG_SN | 0.8±0.15 |

: Electrode

(in mm)

### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

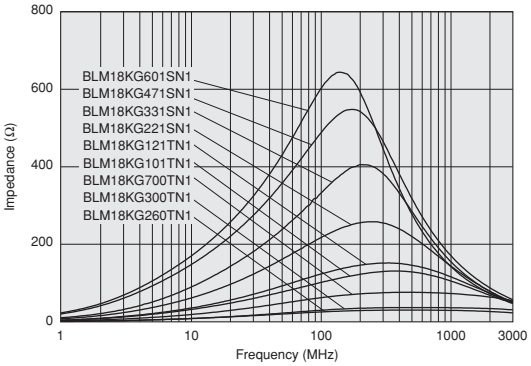
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM18KG260TN1□ | 26ohm ±25% | 6000mA | 0.007ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM18KG300TN1□ | 30ohm ±25% | 5000mA | 0.010ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM18KG700TN1□ | 70ohm ±25% | 3500mA | 0.022ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM18KG101TN1□ | 100ohm ±25% | 3000mA | 0.030ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM18KG121TN1□ | 120ohm ±25% | 3000mA | 0.030ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM18KG221SN1□ | 220ohm ±25% | 2200mA | 0.050ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18KG331SN1□ | 330ohm ±25% | 1700mA | 0.080ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18KG471SN1□ | 470ohm ±25% | 1500mA | 0.130ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18KG601SN1□ | 600ohm ±25% | 1300mA | 0.150ohm max. | -55°C to +125°C | Kit ≧1A |

Number of Circuits: 1

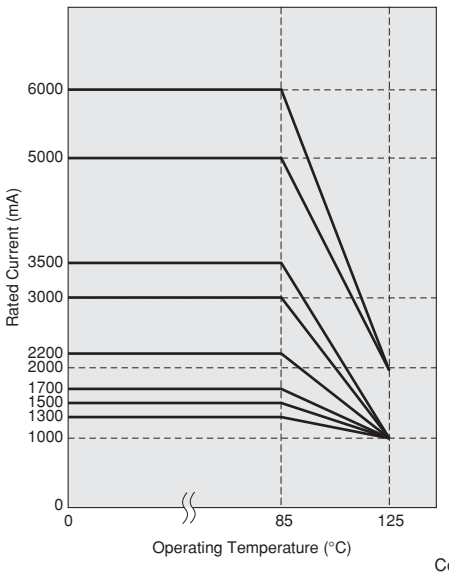
### ■ Impedance-Frequency Characteristics




### ■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM18KG series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current

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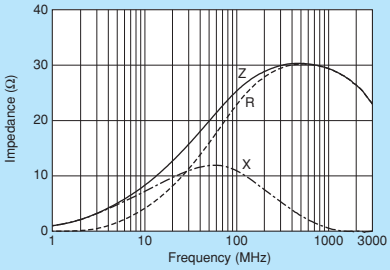
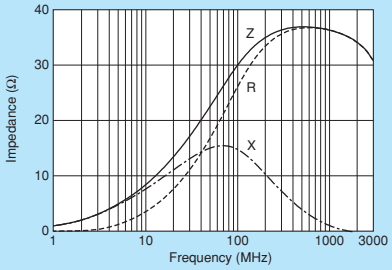
## ■ Impedance-Frequency Characteristics

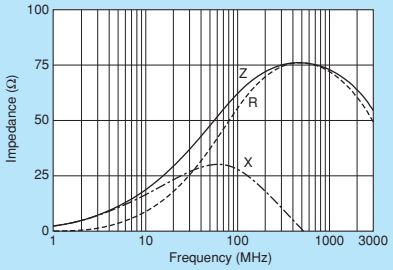
### BLM18KG260TN1



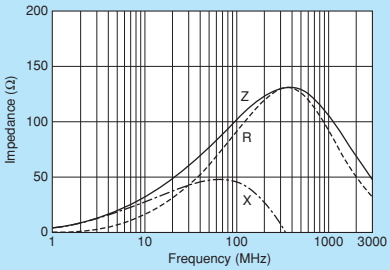

### BLM18KG300TN1



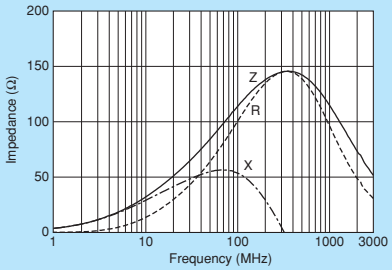

### BLM18KG700TN1



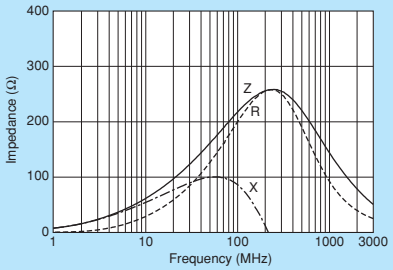

### BLM18KG101TN1



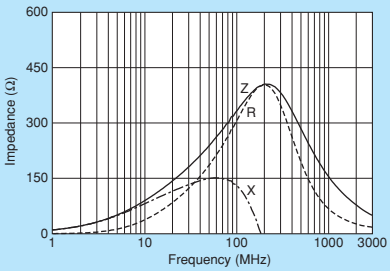

### BLM18KG121TN1



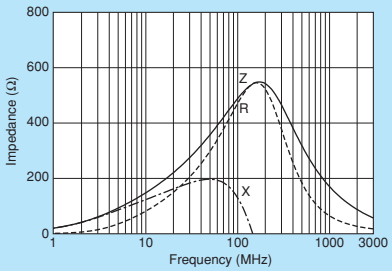

### BLM18KG221SN1



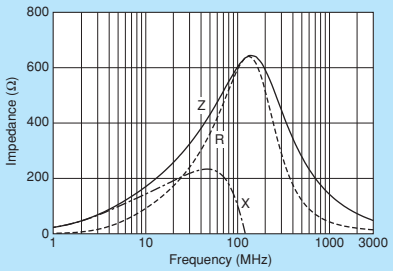

### BLM18KG331SN1




### BLM18KG471SN1




### BLM18KG601SN1



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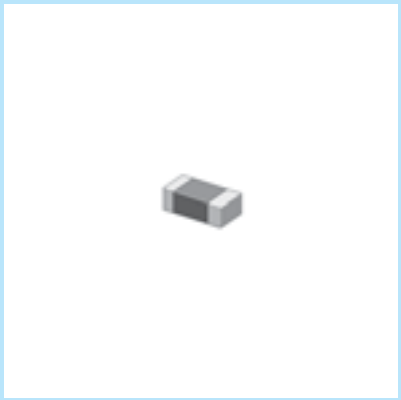
# BLM18S Series 0603/1608 (inch/mm)

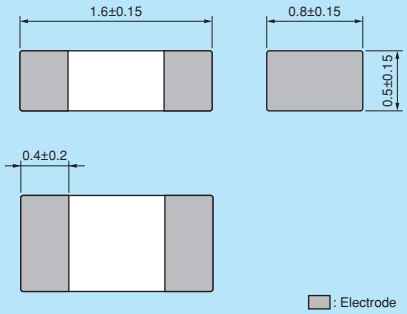
Hi Power | Flow OK | Reflow OK

## 6A max., high performance type for power lines.

*Please refer to the products designed for both power lines and signal lines.



### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| J | 330mm Reel Paper Tape | 30000 |
| B | Bulk(Bag) | 1000 |

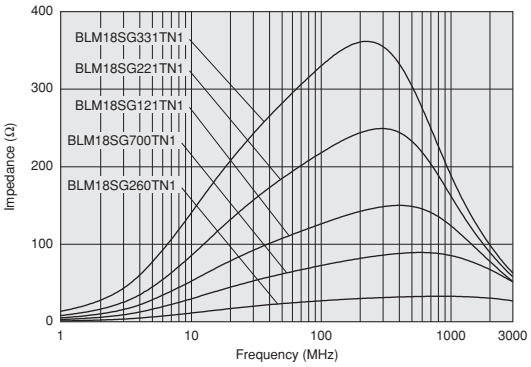
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM18SG260TN1□ | 26ohm ±25% | 6000mA | 0.007ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM18SG700TN1□ | 70ohm ±25% | 4000mA | 0.020ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM18SG121TN1□ | 120ohm ±25% | 3000mA | 0.025ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM18SG221TN1□ | 220ohm ±25% | 2500mA | 0.040ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18SG331TN1□ | 330ohm ±25% | 1500mA | 0.070ohm max. | -55°C to +125°C | Kit ≧1A |

Number of Circuits: 1

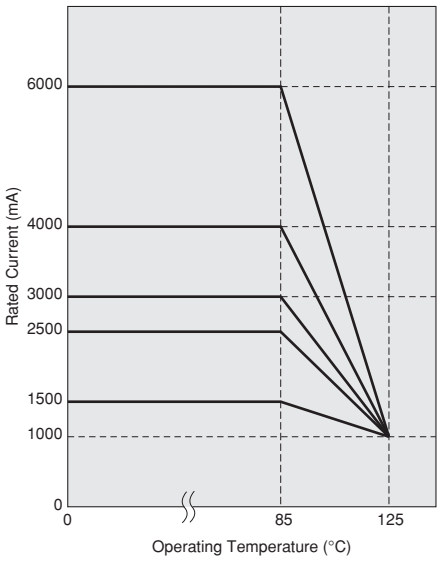
### ■ Impedance-Frequency Characteristics




### ■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM18SG series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current




Continued on the following page.

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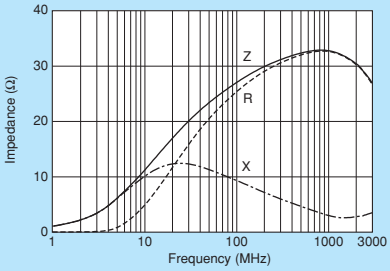
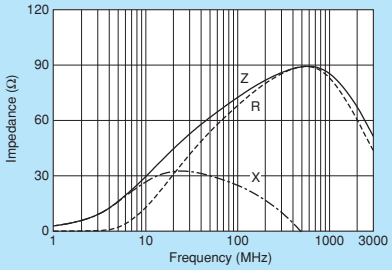
## ■ Impedance-Frequency Characteristics

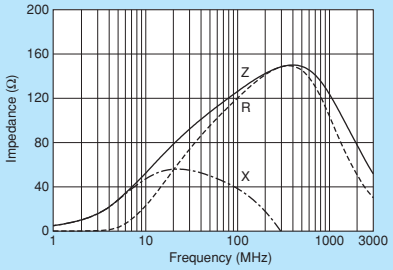
### BLM18SG260TN1



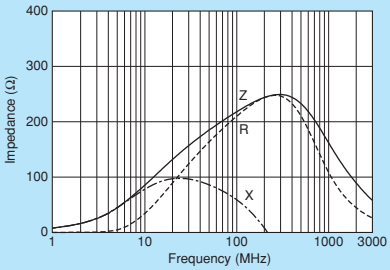

### BLM18SG700TN1



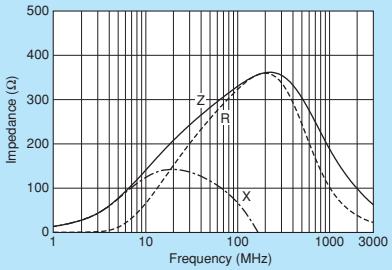

### BLM18SG121TN1




### BLM18SG221TN1




### BLM18SG331TN1



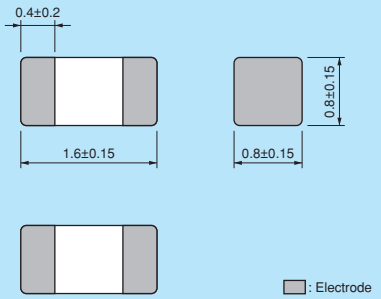
# BLM18A Series 0603/1608 (inch/mm)

Flow OK Reflow OK

## 0603 size for general signal lines.

*Please refer to BLM15A for downsizing.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

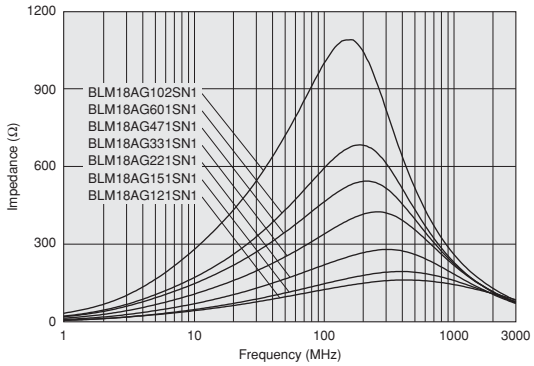
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM18AG121SN1□ | 120ohm ±25% | 500mA | 0.18ohm max. | -55°C to +125°C | Kit |
| BLM18AG151SN1□ | 150ohm ±25% | 500mA | 0.25ohm max. | -55°C to +125°C | Kit |
| BLM18AG221SN1□ | 220ohm ±25% | 500mA | 0.25ohm max. | -55°C to +125°C | Kit |
| BLM18AG331SN1□ | 330ohm ±25% | 500mA | 0.30ohm max. | -55°C to +125°C | Kit |
| BLM18AG471SN1□ | 470ohm ±25% | 500mA | 0.35ohm max. | -55°C to +125°C | Kit |
| BLM18AG601SN1□ | 600ohm ±25% | 500mA | 0.38ohm max. | -55°C to +125°C | Kit |
| BLM18AG102SN1□ | 1000ohm ±25% | 400mA | 0.50ohm max. | -55°C to +125°C | Kit |

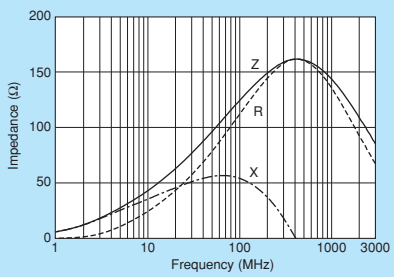
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

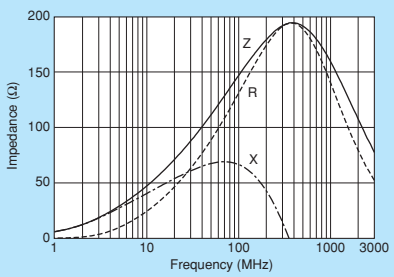



### ■ Impedance-Frequency Characteristics

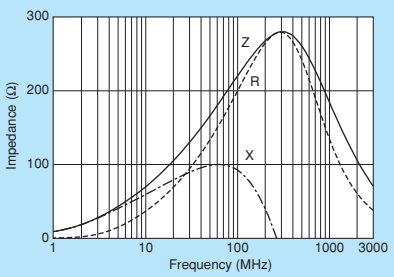
**BLM18AG121SN1**




**BLM18AG151SN1**




**BLM18AG221SN1**




Continued on the following page.

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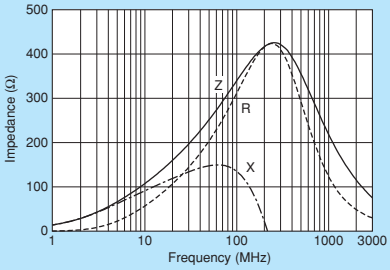
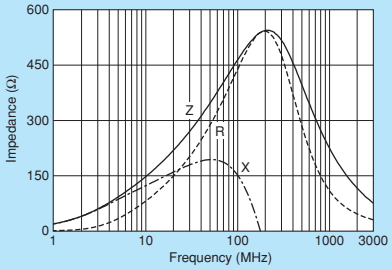
## ■ Impedance-Frequency Characteristics

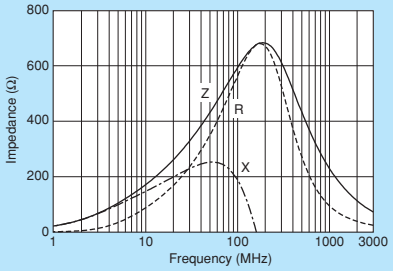
### BLM18AG331SN1



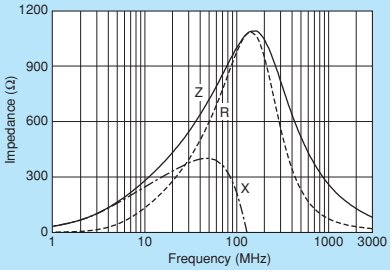

### BLM18AG471SN1




### BLM18AG601SN1




### BLM18AG102SN1



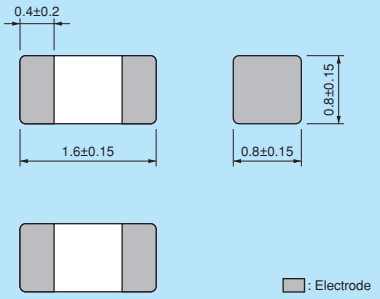
# BLM18B Series 0603/1608 (inch/mm)

Flow OK Reflow OK

## 0603 size for high speed signal lines.

*Please refer to BLM15B for downsizing.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM18BD470SN1□ | 47ohm ±25% | 500mA | 0.30ohm max. | -55°C to +125°C | Kit |
| BLM18BD121SN1□ | 120ohm ±25% | 200mA | 0.40ohm max. | -55°C to +125°C | Kit |
| BLM18BD151SN1□ | 150ohm ±25% | 200mA | 0.40ohm max. | -55°C to +125°C | Kit |
| BLM18BD221SN1□ | 220ohm ±25% | 200mA | 0.45ohm max. | -55°C to +125°C | Kit |
| BLM18BD331SN1□ | 330ohm ±25% | 200mA | 0.50ohm max. | -55°C to +125°C | Kit |
| BLM18BD421SN1□ | 420ohm ±25% | 200mA | 0.55ohm max. | -55°C to +125°C | Kit |
| BLM18BD471SN1□ | 470ohm ±25% | 200mA | 0.55ohm max. | -55°C to +125°C | Kit |
| BLM18BD601SN1□ | 600ohm ±25% | 200mA | 0.65ohm max. | -55°C to +125°C | Kit |
| BLM18BD102SN1□ | 1000ohm ±25% | 100mA | 0.85ohm max. | -55°C to +125°C | Kit |
| BLM18BD152SN1□ | 1500ohm ±25% | 50mA | 1.20ohm max. | -55°C to +125°C | Kit |
| BLM18BD182SN1□ | 1800ohm ±25% | 50mA | 1.50ohm max. | -55°C to +125°C | Kit |
| BLM18BD222SN1□ | 2200ohm ±25% | 50mA | 1.50ohm max. | -55°C to +125°C | Kit |
| BLM18BD252SN1□ | 2500ohm ±25% | 50mA | 1.50ohm max. | -55°C to +125°C | Kit |
| BLM18BB050SN1□ | 5ohm ±25% | 700mA | 0.05ohm max. | -55°C to +125°C | Kit |
| BLM18BB100SN1□ | 10ohm ±25% | 700mA | 0.10ohm max. | -55°C to +125°C | Kit |
| BLM18BB220SN1□ | 22ohm ±25% | 600mA | 0.20ohm max. | -55°C to +125°C | Kit |
| BLM18BB470SN1□ | 47ohm ±25% | 550mA | 0.25ohm max. | -55°C to +125°C | Kit |
| BLM18BB600SN1□ | 60ohm ±25% | 550mA | 0.25ohm max. | -55°C to +125°C | Kit |
| BLM18BB750SN1□ | 75ohm ±25% | 500mA | 0.30ohm max. | -55°C to +125°C | Kit |
| BLM18BB121SN1□ | 120ohm ±25% | 500mA | 0.30ohm max. | -55°C to +125°C | Kit |
| BLM18BB141SN1□ | 140ohm ±25% | 450mA | 0.35ohm max. | -55°C to +125°C | |
| BLM18BB151SN1□ | 150ohm ±25% | 450mA | 0.37ohm max. | -55°C to +125°C | Kit |
| BLM18BB221SN1□ | 220ohm ±25% | 450mA | 0.45ohm max. | -55°C to +125°C | Kit |
| BLM18BB331SN1□ | 330ohm ±25% | 400mA | 0.58ohm max. | -55°C to +125°C | Kit |
| BLM18BB471SN1□ | 470ohm ±25% | 300mA | 0.85ohm max. | -55°C to +125°C | Kit |
| BLM18BA050SN1□ | 5ohm ±25% | 500mA | 0.20ohm max. | -55°C to +125°C | Kit |
| BLM18BA100SN1□ | 10ohm ±25% | 500mA | 0.25ohm max. | -55°C to +125°C | Kit |
| BLM18BA220SN1□ | 22ohm ±25% | 500mA | 0.35ohm max. | -55°C to +125°C | |
| BLM18BA470SN1□ | 47ohm ±25% | 300mA | 0.55ohm max. | -55°C to +125°C | Kit |
| BLM18BA750SN1□ | 75ohm ±25% | 300mA | 0.70ohm max. | -55°C to +125°C | Kit |
| BLM18BA121SN1□ | 120ohm ±25% | 200mA | 0.90ohm max. | -55°C to +125°C | Kit |

Number of Circuits: 1

Continued on the following page.

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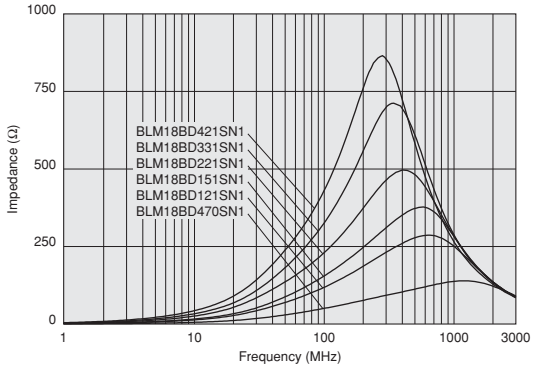
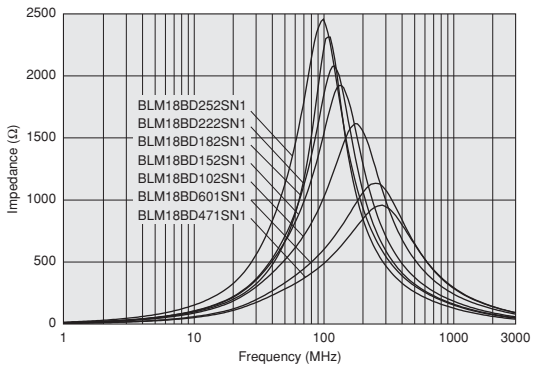
## ■ Impedance-Frequency Characteristics

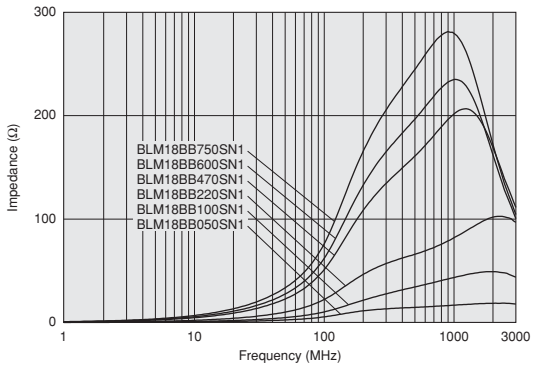
### BLM18BD Series (47ohm to 420ohm)



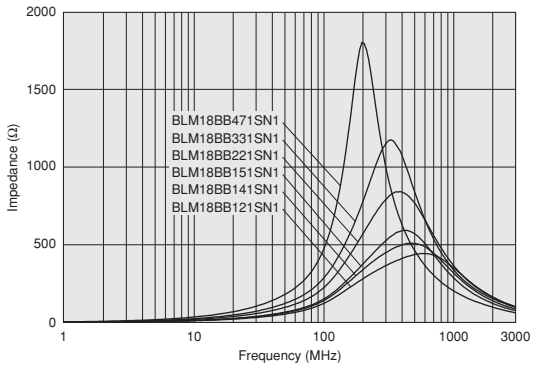

### BLM18BD Series (470ohm to 2500ohm)



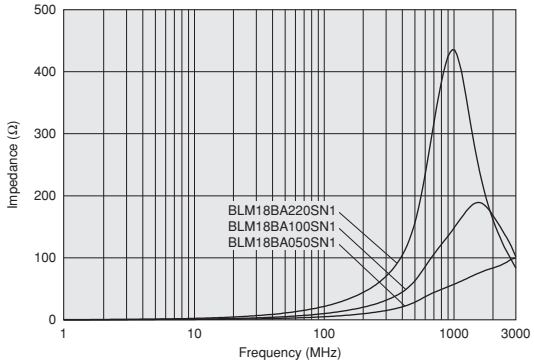

### BLM18BB Series (5ohm to 75ohm)



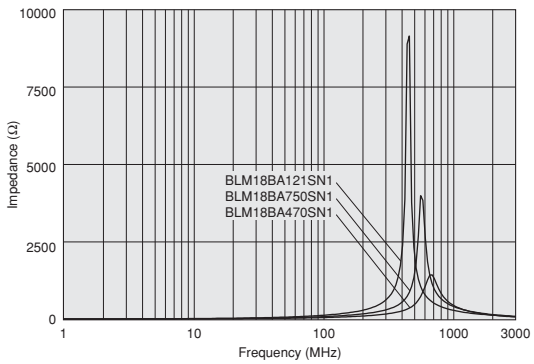

### BLM18BB Series (120ohm to 470ohm)




### BLM18BA Series (5ohm to 220ohm)

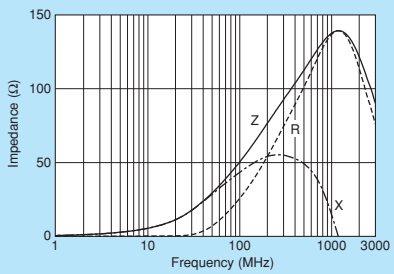



### BLM18BA Series (47ohm to 120ohm)

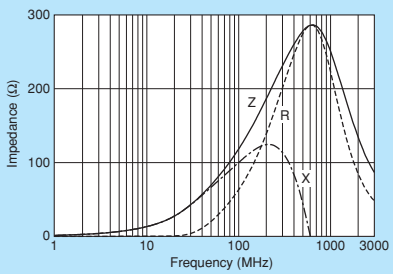



## ■ Impedance-Frequency Characteristics

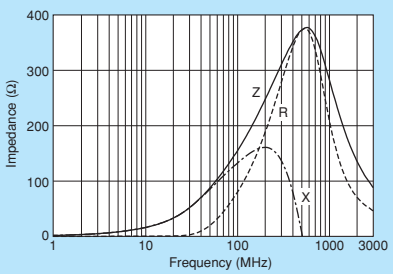
### BLM18BD470SN1




### BLM18BD121SN1




### BLM18BD151SN1




Continued on the following page.

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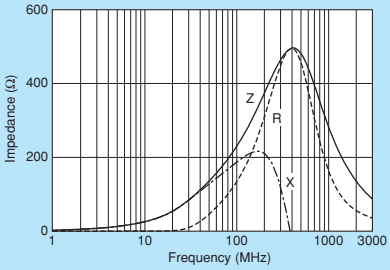
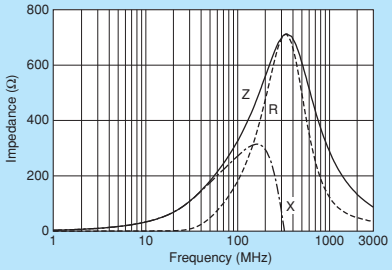
## ■ Impedance-Frequency Characteristics

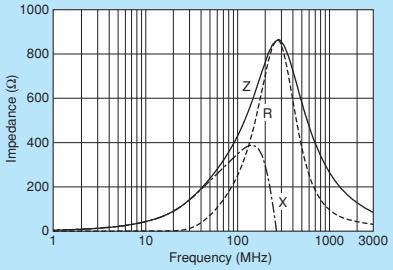
### BLM18BD221SN1



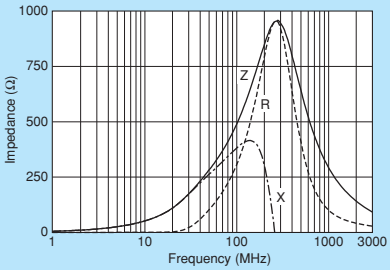

### BLM18BD331SN1



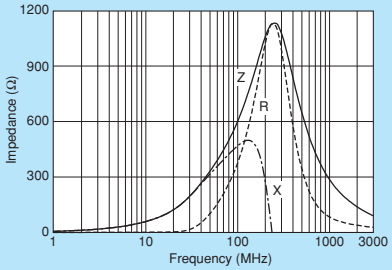

### BLM18BD421SN1



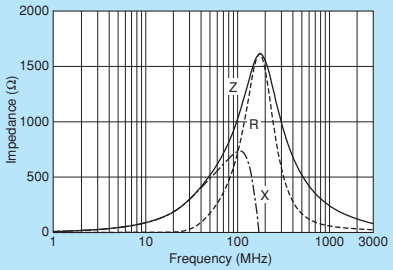

### BLM18BD471SN1



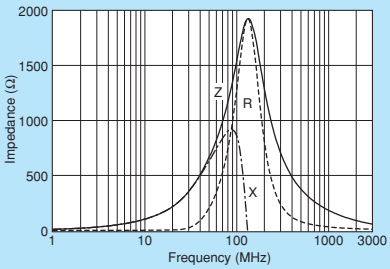

### BLM18BD601SN1



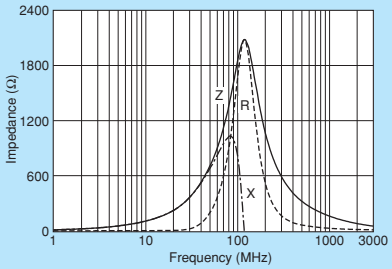

### BLM18BD102SN1



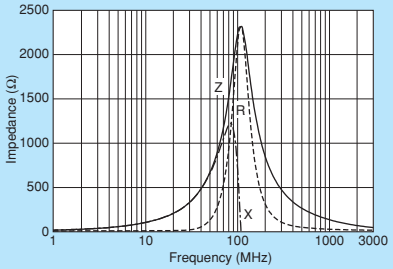

### BLM18BD152SN1



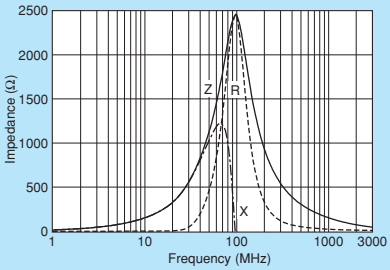

### BLM18BD182SN1



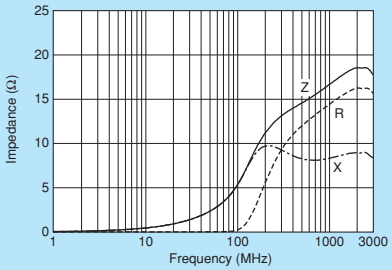

### BLM18BD222SN1



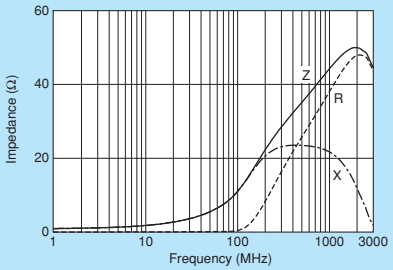

### BLM18BD252SN1



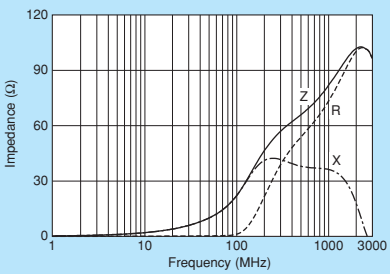

### BLM18BB050SN1



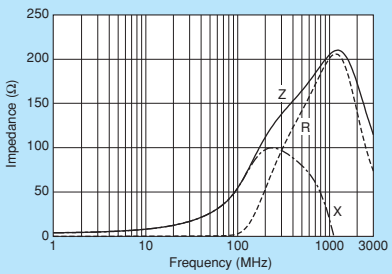

### BLM18BB100SN1



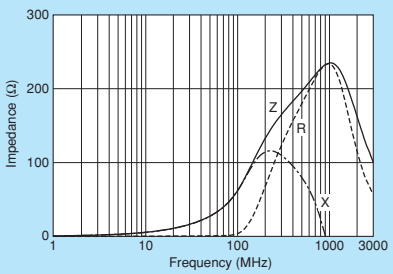

### BLM18BB220SN1




### BLM18BB470SN1




### BLM18BB600SN1




Continued on the following page.

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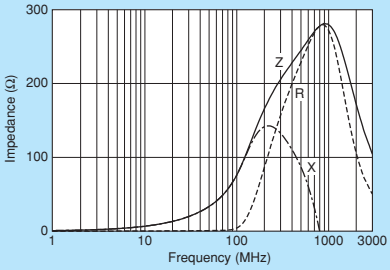
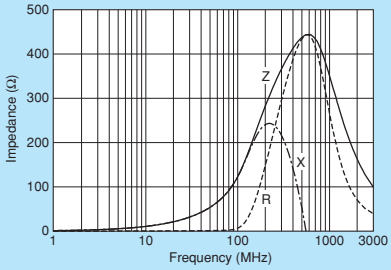
## ■ Impedance-Frequency Characteristics

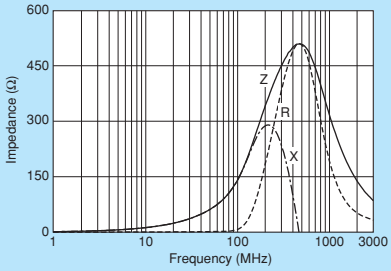
### BLM18BB750SN1



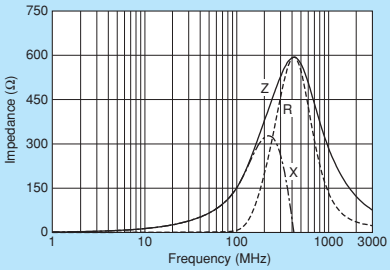

### BLM18BB121SN1



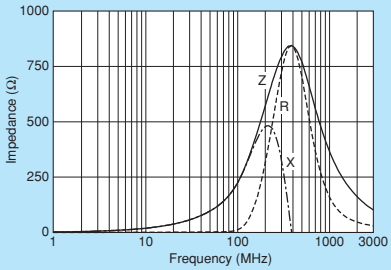

### BLM18BB141SN1



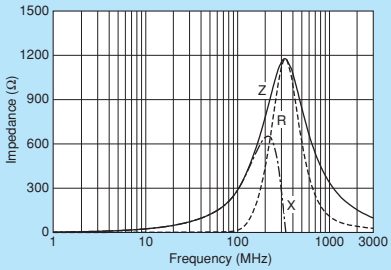

### BLM18BB151SN1



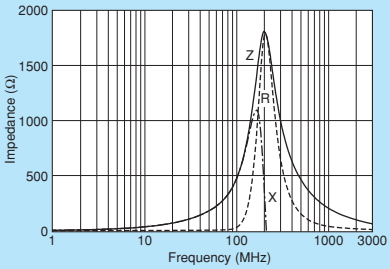

### BLM18BB221SN1



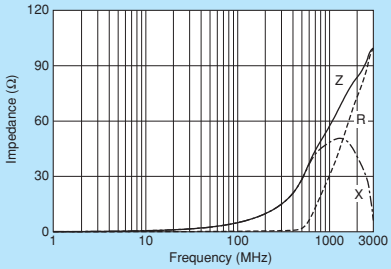

### BLM18BB331SN1



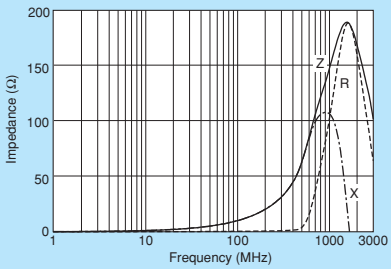

### BLM18BB471SN1



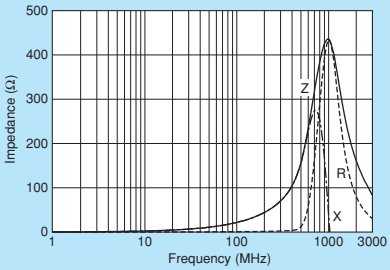

### BLM18BA050SN1



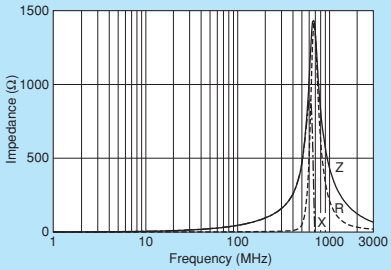

### BLM18BA100SN1



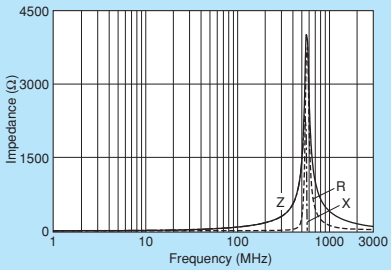

### BLM18BA220SN1



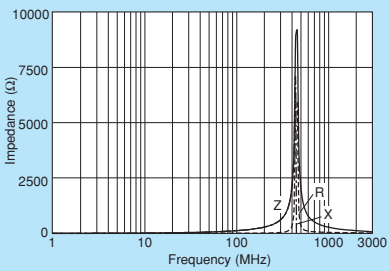

### BLM18BA470SN1




### BLM18BA750SN1




### BLM18BA121SN1



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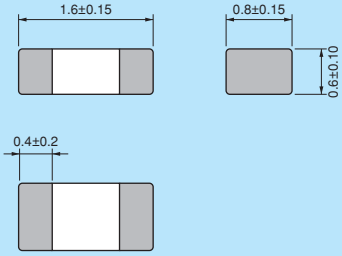
# BLM18T Series 0603/1608 (inch/mm)

Flow OK Reflow OK

## Thin 0603 size for general signal lines.



### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

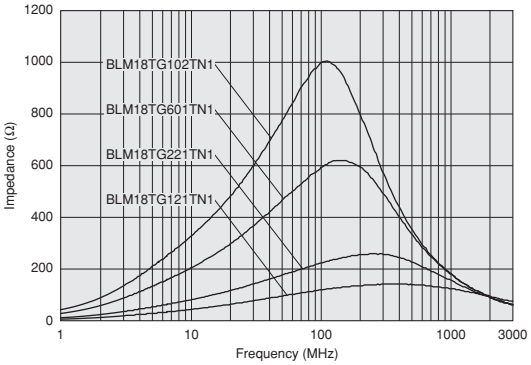
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range |
|---|---|---|---|---|
| BLM18TG121TN1□ | 120ohm ±25% | 200mA | 0.25ohm max. | -55°C to +125°C |
| BLM18TG221TN1□ | 220ohm ±25% | 200mA | 0.30ohm max. | -55°C to +125°C |
| BLM18TG601TN1□ | 600ohm ±25% | 200mA | 0.45ohm max. | -55°C to +125°C |
| BLM18TG102TN1□ | 1000ohm ±25% | 100mA | 0.60ohm max. | -55°C to +125°C |

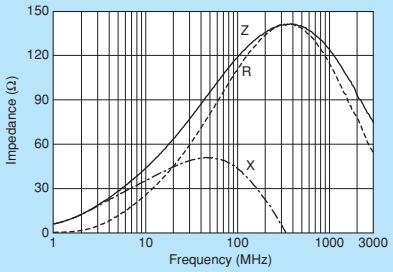
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

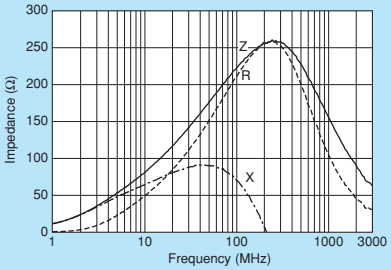



### ■ Impedance-Frequency Characteristics

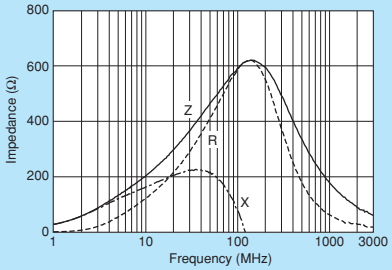
**BLM18TG121TN1**



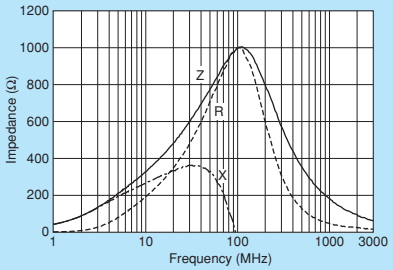

**BLM18TG221TN1**




**BLM18TG601TN1**




**BLM18TG102TN1**

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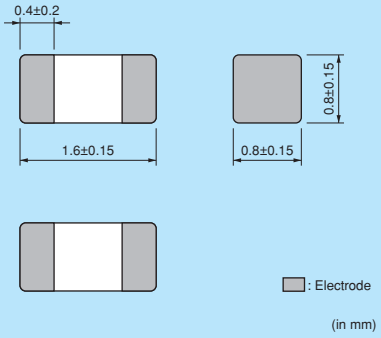
muRata

# BLM18R Series 0603/1608 (inch/mm)

Flow OK Reflow OK

## For digital I/F. Reduces the distortion of waveform created by resonance.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

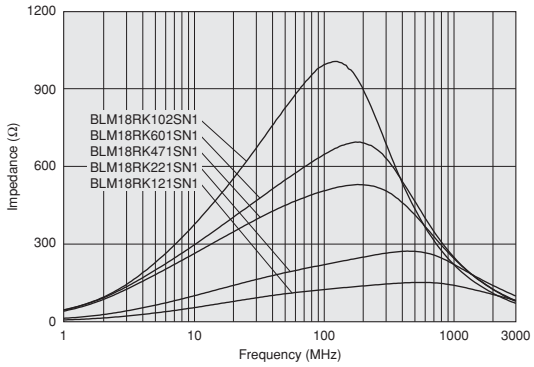
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range |
|---|---|---|---|---|
| BLM18RK121SN1□ | 120ohm ±25% | 200mA | 0.25ohm max. | -55°C to +125°C |
| BLM18RK221SN1□ | 220ohm ±25% | 200mA | 0.30ohm max. | -55°C to +125°C |
| BLM18RK471SN1□ | 470ohm ±25% | 200mA | 0.50ohm max. | -55°C to +125°C |
| BLM18RK601SN1□ | 600ohm ±25% | 200mA | 0.60ohm max. | -55°C to +125°C |
| BLM18RK102SN1□ | 1000ohm ±25% | 200mA | 0.80ohm max. | -55°C to +125°C |

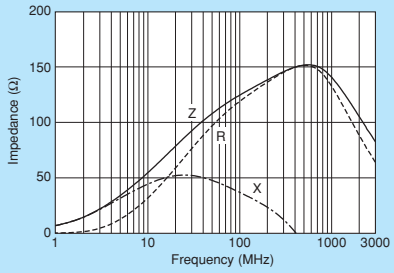
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

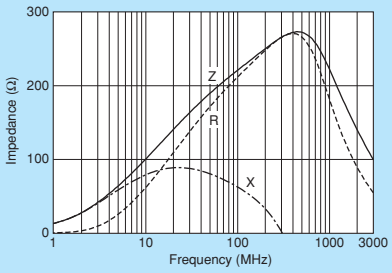



### ■ Impedance-Frequency Characteristics

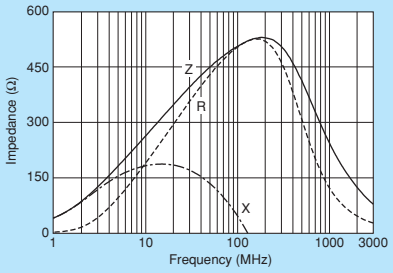
**BLM18RK121SN1**




**BLM18RK221SN1**




**BLM18RK471SN1**




Continued on the following page.

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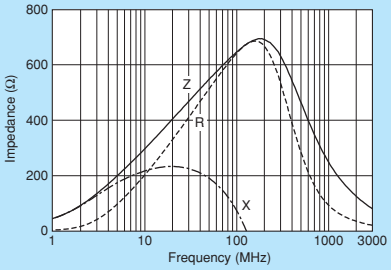
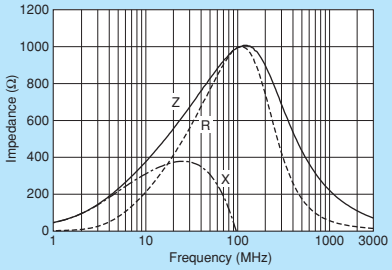
## ■ Impedance-Frequency Characteristics

**BLM18RK601SN1**




**BLM18RK102SN1**

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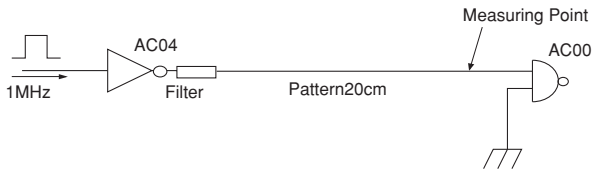
# Waveform Distortion Suppressing Performance of BLM□□R Series

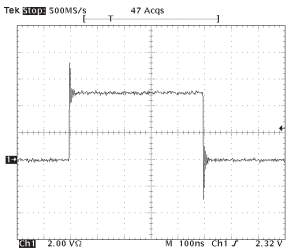
Measuring Circuits

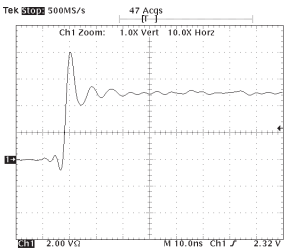


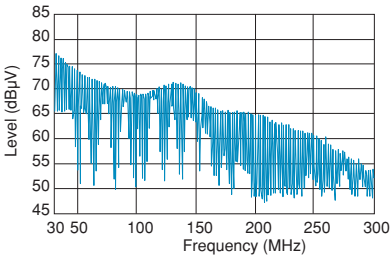

| Type of Filter | EMI Suppression Effect / Description |
|---|---|

**Initial (No filter)**

Signal waveform (100nsec/div, 2V/div) | Expand (10nsec/div, 2V/div) | Spectrum



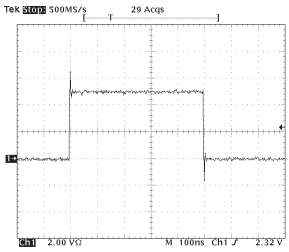



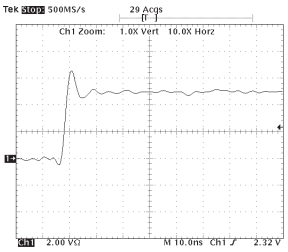



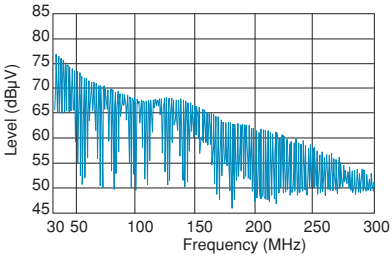

Ringing is caused on the signal waveform.
Such ringing contains several hundred MHz harmonic components and generates noise.

**Resister (47Ω) is used**

Signal waveform (100nsec/div, 2V/div) | Expand (10nsec/div, 2V/div) | Spectrum



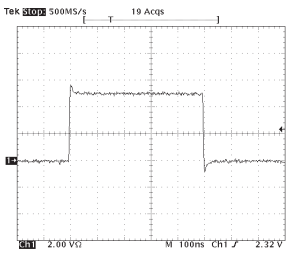



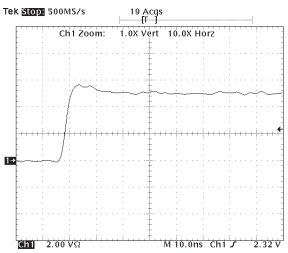



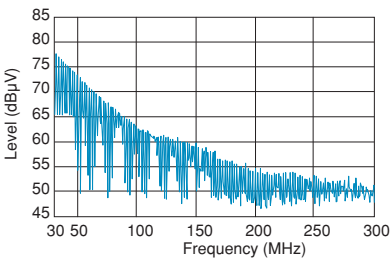

Comparing initial waveform, ringing is suppressed a little.
However, high level waveform distortion still remains.

**BLM18RK221SN1 (220Ω at 100MHz) is used**

Signal waveform (100nsec/div, 2V/div) | Expand (10nsec/div, 2V/div) | Spectrum




BLM18R has excellent performance for noise suppression and waveform distortion suppression.
BLM18R suppresses drastically not only the spectrum level in more than 100MHz range but waveform distortion.

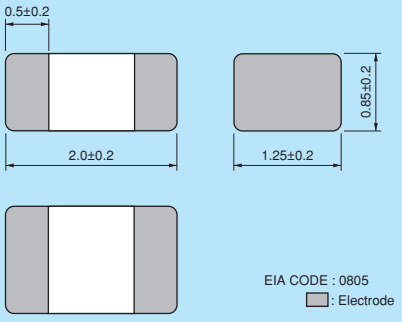
# BLM21P Series 0805/2012 (inch/mm)

Hi Power Flow OK Reflow OK

## 0805 size for power lines.

*Please refer to the products designed for both power lines and signal lines. *Please refer to BLM18K for downsizing.

### ■ Dimensions




EIA CODE : 0805
: Electrode

(in mm)

### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

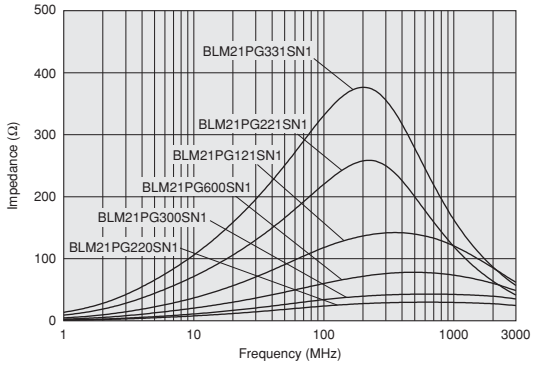
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM21PG220SN1□ | 22ohm ±25% | 6000mA | 0.009ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM21PG300SN1□ | 30ohm (Typ.) | 4000mA | 0.014ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM21PG600SN1□ | 60ohm ±25% | 3500mA | 0.02ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM21PG121SN1□ | 120ohm ±25% | 3000mA | 0.03ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM21PG221SN1□ | 220ohm ±25% | 2000mA | 0.045ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM21PG331SN1□ | 330ohm ±25% | 1500mA | 0.07ohm max. | -55°C to +125°C | Kit ≧1A |

Number of Circuits: 1

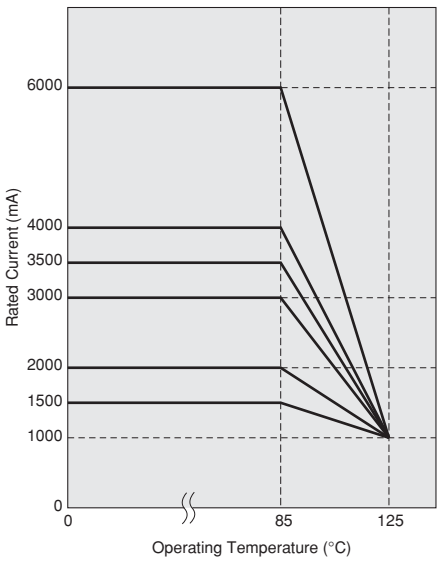
### ■ Impedance-Frequency Characteristics




### ■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM21PG series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current




Continued on the following page.

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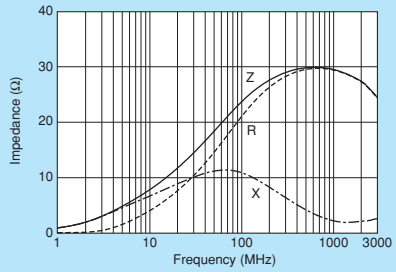
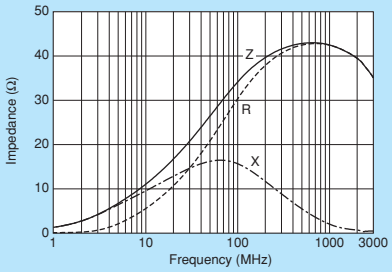
## ■ Impedance-Frequency Characteristics

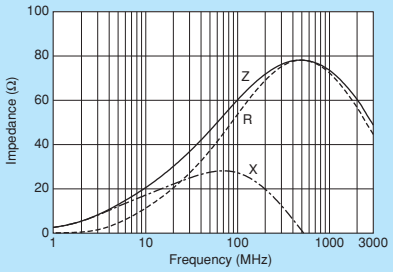
### BLM21PG220SN1



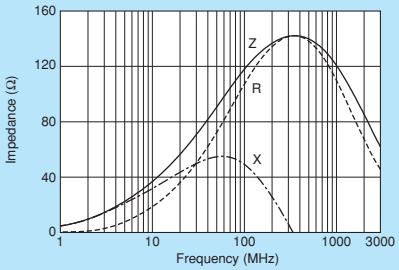

### BLM21PG300SN1



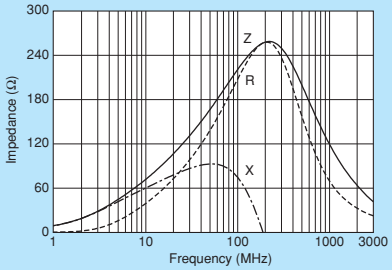

### BLM21PG600SN1



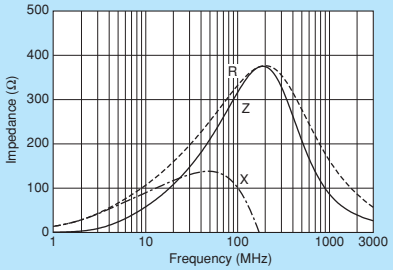

### BLM21PG121SN1




### BLM21PG221SN1




### BLM21PG331SN1



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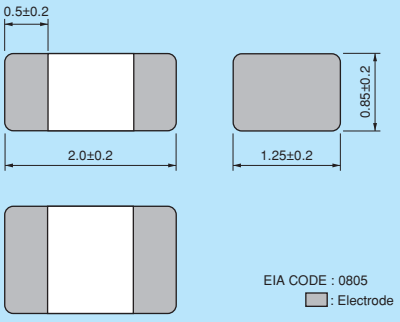
# BLM21A Series 0805/2012 (inch/mm)

Flow OK Reflow OK

## 0805 size for general signal lines.

### Dimensions




EIA CODE : 0805
: Electrode

(in mm)

### Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

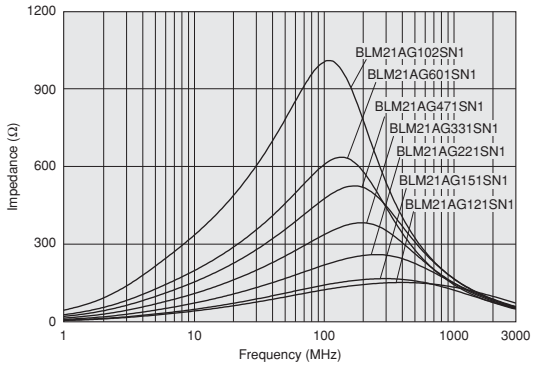
Refer to pages from p.100 to p.103 for mounting information.

### Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM21AG121SN1□ | 120ohm ±25% | 800mA | 0.10ohm max. | -55°C to +125°C | Kit |
| BLM21AG151SN1□ | 150ohm ±25% | 800mA | 0.10ohm max. | -55°C to +125°C | Kit |
| BLM21AG221SN1□ | 220ohm ±25% | 800mA | 0.13ohm max. | -55°C to +125°C | Kit |
| BLM21AG331SN1□ | 330ohm ±25% | 700mA | 0.16ohm max. | -55°C to +125°C | Kit |
| BLM21AG471SN1□ | 470ohm ±25% | 700mA | 0.19ohm max. | -55°C to +125°C | Kit |
| BLM21AG601SN1□ | 600ohm ±25% | 600mA | 0.21ohm max. | -55°C to +125°C | Kit |
| BLM21AG102SN1□ | 1000ohm ±25% | 500mA | 0.28ohm max. | -55°C to +125°C | Kit |

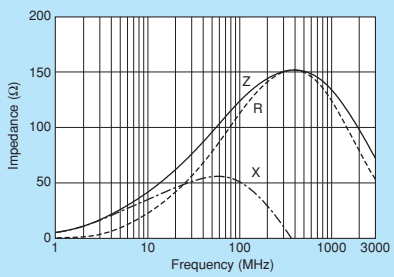
Number of Circuits: 1

### Impedance-Frequency Characteristics

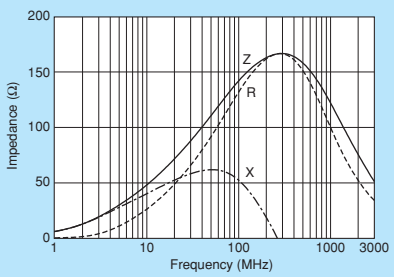



### Impedance-Frequency Characteristics

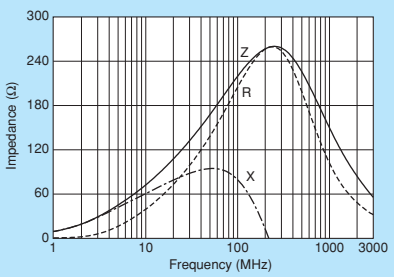
**BLM21AG121SN1**




**BLM21AG151SN1**




**BLM21AG221SN1**




Continued on the following page.

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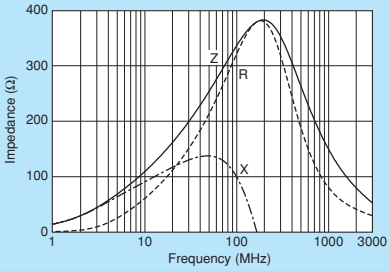
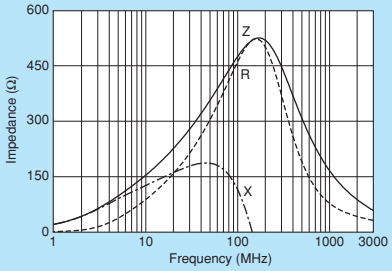
## ■ Impedance-Frequency Characteristics

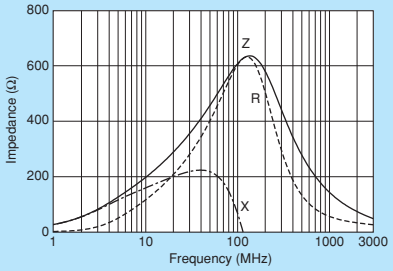
**BLM21AG331SN1**



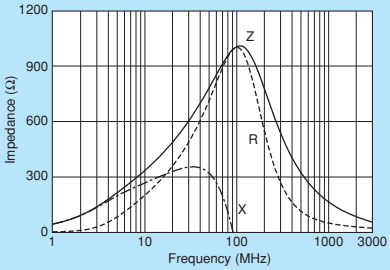

**BLM21AG471SN1**




**BLM21AG601SN1**




**BLM21AG102SN1**



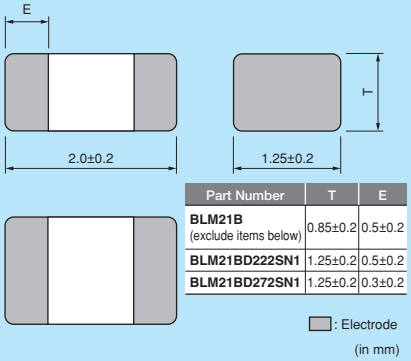
# BLM21B Series 0805/2012 (inch/mm)

Flow OK Reflow OK

## 0805 size for high speed signal lines.



### ■ Dimensions




| Part Number | T | E |
|---|---|---|
| BLM21B (exclude items below) | 0.85±0.2 | 0.5±0.2 |
| BLM21BD222SN1 | 1.25±0.2 | 0.5±0.2 |
| BLM21BD272SN1 | 1.25±0.2 | 0.3±0.2 |

: Electrode

(in mm)

### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

• All except for **BLM21BD222SN1/21BD272SN1**

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

• **BLM21BD222SN1/21BD272SN1** only

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Plastic Tape | 3000 |
| K | 330mm Reel Plastic Tape | 10000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM21BD121SN1□ | 120ohm ±25% | 200mA | 0.25ohm max. | -55°C to +125°C | Kit |
| BLM21BD151SN1□ | 150ohm ±25% | 200mA | 0.25ohm max. | -55°C to +125°C | |
| BLM21BD221SN1□ | 220ohm ±25% | 200mA | 0.25ohm max. | -55°C to +125°C | Kit |
| BLM21BD331SN1□ | 330ohm ±25% | 200mA | 0.30ohm max. | -55°C to +125°C | |
| BLM21BD421SN1□ | 420ohm ±25% | 200mA | 0.30ohm max. | -55°C to +125°C | Kit |
| BLM21BD471SN1□ | 470ohm ±25% | 200mA | 0.35ohm max. | -55°C to +125°C | Kit |
| BLM21BD601SN1□ | 600ohm ±25% | 200mA | 0.35ohm max. | -55°C to +125°C | Kit |
| BLM21BD751SN1□ | 750ohm ±25% | 200mA | 0.40ohm max. | -55°C to +125°C | |
| BLM21BD102SN1□ | 1000ohm ±25% | 200mA | 0.40ohm max. | -55°C to +125°C | Kit |
| BLM21BD152SN1□ | 1500ohm ±25% | 200mA | 0.45ohm max. | -55°C to +125°C | Kit |
| BLM21BD182SN1□ | 1800ohm ±25% | 200mA | 0.50ohm max. | -55°C to +125°C | Kit |
| BLM21BD222TN1□ | 2200ohm ±25% | 200mA | 0.60ohm max. | -55°C to +125°C | Kit |
| BLM21BD222SN1□ | 2250ohm (Typ.) | 200mA | 0.60ohm max. | -55°C to +125°C | Kit |
| BLM21BD272SN1□ | 2700ohm ±25% | 200mA | 0.80ohm max. | -55°C to +125°C | Kit |
| BLM21BB050SN1□ | 5ohm ±25% | 1000mA | 0.02ohm max. | -55°C to +125°C | Kit |
| BLM21BB600SN1□ | 60ohm ±25% | 800mA | 0.13ohm max. | -55°C to +125°C | Kit |
| BLM21BB750SN1□ | 75ohm ±25% | 700mA | 0.16ohm max. | -55°C to +125°C | Kit |
| BLM21BB121SN1□ | 120ohm ±25% | 600mA | 0.19ohm max. | -55°C to +125°C | Kit |
| BLM21BB151SN1□ | 150ohm ±25% | 600mA | 0.21ohm max. | -55°C to +125°C | |
| BLM21BB201SN1□ | 200ohm ±25% | 500mA | 0.26ohm max. | -55°C to +125°C | |
| BLM21BB221SN1□ | 220ohm ±25% | 500mA | 0.26ohm max. | -55°C to +125°C | Kit |
| BLM21BB331SN1□ | 330ohm ±25% | 400mA | 0.33ohm max. | -55°C to +125°C | Kit |
| BLM21BB471SN1□ | 470ohm ±25% | 400mA | 0.40ohm max. | -55°C to +125°C | Kit |

Number of Circuits: 1

Continued on the following page.

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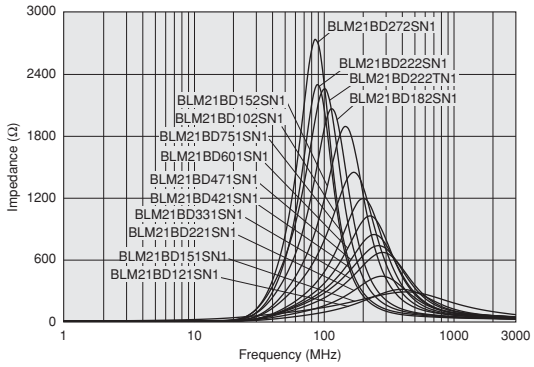
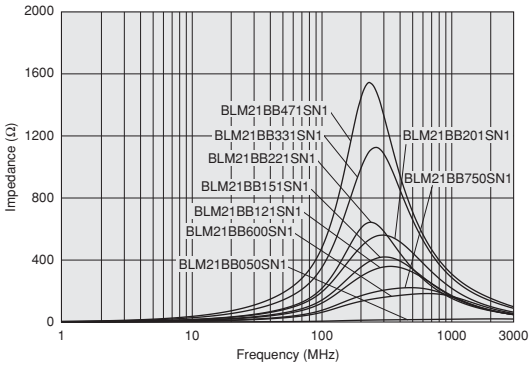
## ■ Impedance-Frequency Characteristics

### BLM21BD Series

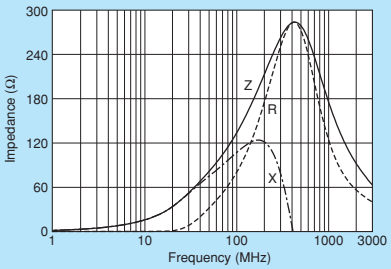



### BLM21BB Series

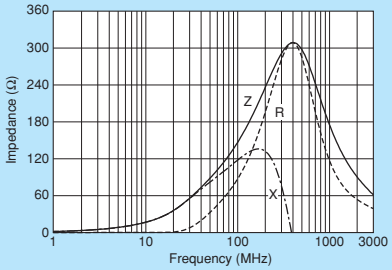



## ■ Impedance-Frequency Characteristics

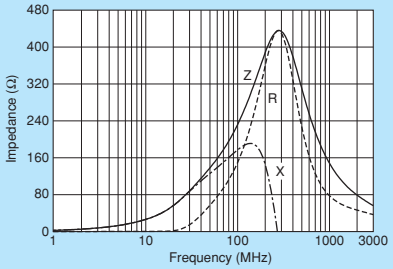
### BLM21BD121SN1



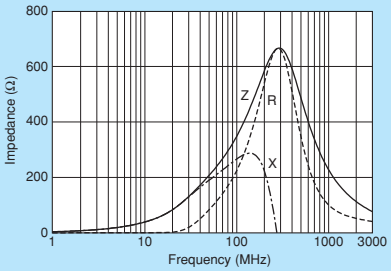

### BLM21BD151SN1



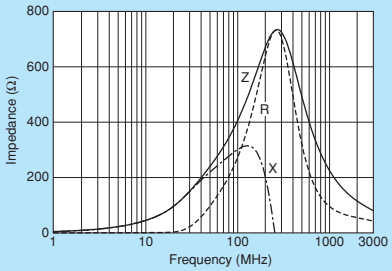

### BLM21BD221SN1



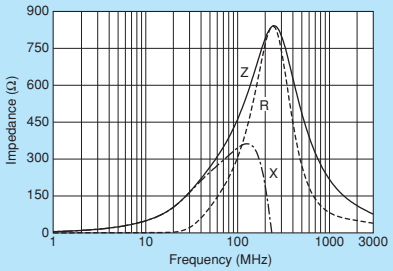

### BLM21BD331SN1



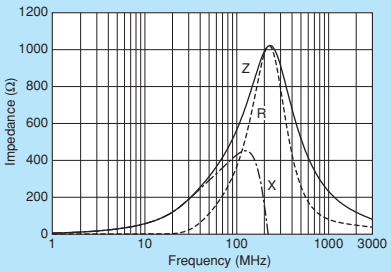

### BLM21BD421SN1



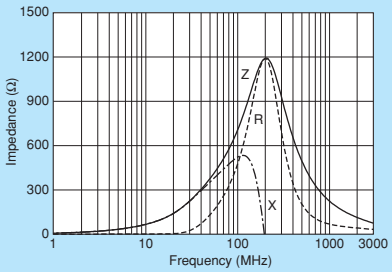

### BLM21BD471SN1



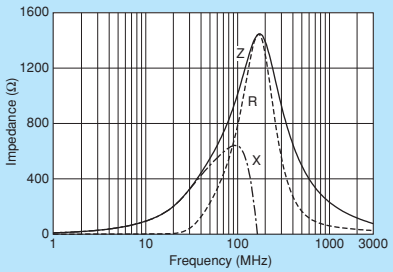

### BLM21BD601SN1




### BLM21BD751SN1




### BLM21BD102SN1

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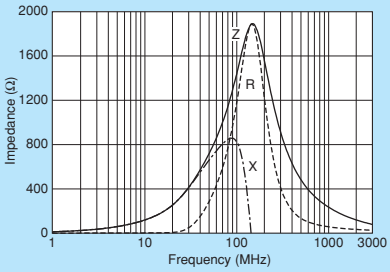
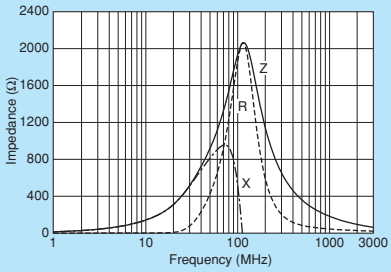
## ■ Impedance-Frequency Characteristics

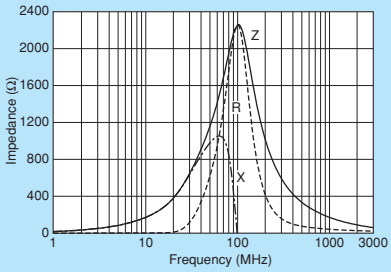
### BLM21BD152SN1



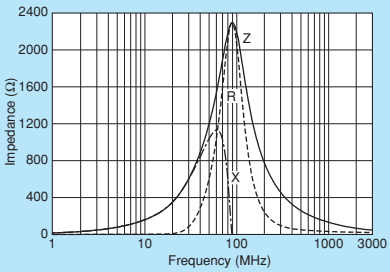

### BLM21BD182SN1



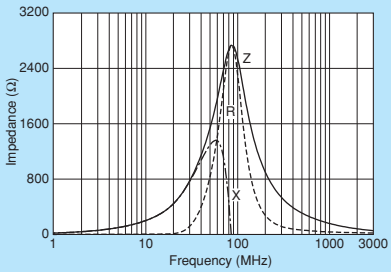

### BLM21BD222TN1



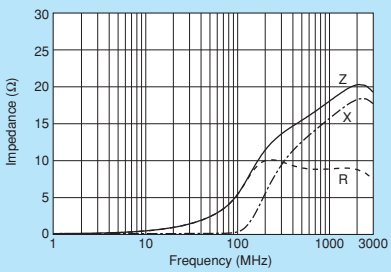

### BLM21BD222SN1



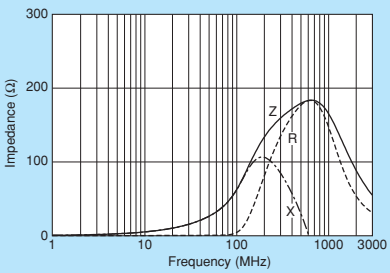

### BLM21BD272SN1



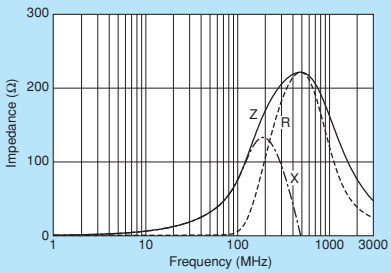

### BLM21BB050SN1



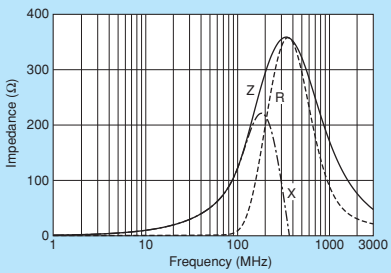

### BLM21BB600SN1



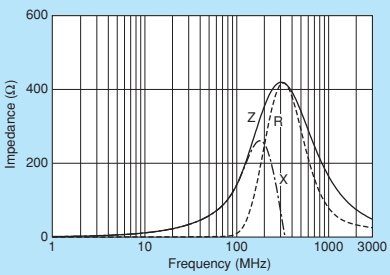

### BLM21BB750SN1



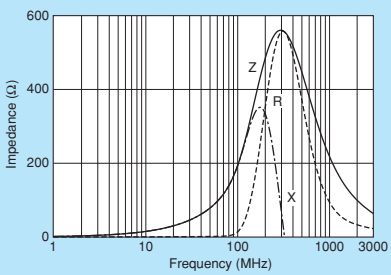

### BLM21BB121SN1



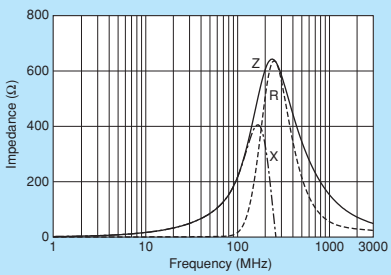

### BLM21BB151SN1



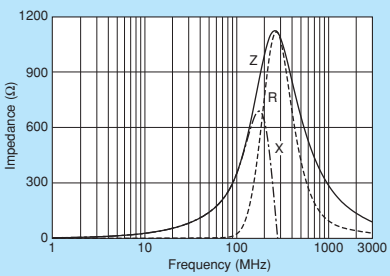

### BLM21BB201SN1



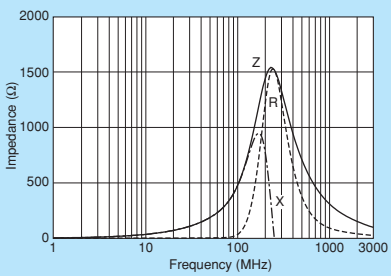

### BLM21BB221SN1




### BLM21BB331SN1




### BLM21BB471SN1

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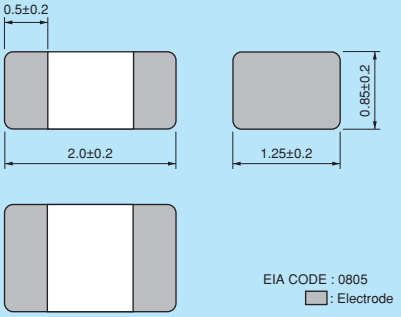
# BLM21R Series 0805/2012 (inch/mm)

Flow OK Reflow OK

## For digital I/F. Reduces the distortion of waveform created by resonance.

### ■ Dimensions




EIA CODE : 0805
: Electrode

(in mm)

### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

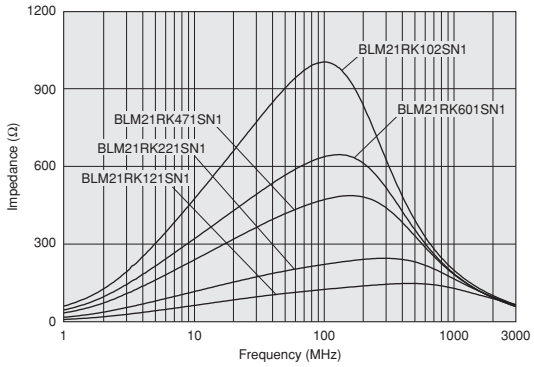
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range |
|---|---|---|---|---|
| BLM21RK121SN1□ | 120ohm ±25% | 200mA | 0.15ohm max. | -55°C to +125°C |
| BLM21RK221SN1□ | 220ohm ±25% | 200mA | 0.20ohm max. | -55°C to +125°C |
| BLM21RK471SN1□ | 470ohm ±25% | 200mA | 0.25ohm max. | -55°C to +125°C |
| BLM21RK601SN1□ | 600ohm ±25% | 200mA | 0.30ohm max. | -55°C to +125°C |
| BLM21RK102SN1□ | 1000ohm ±25% | 200mA | 0.50ohm max. | -55°C to +125°C |

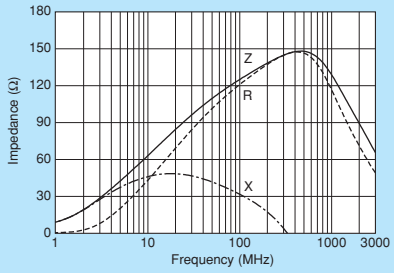
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

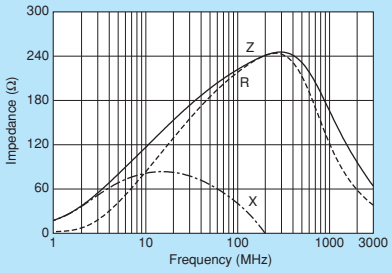



### ■ Impedance-Frequency Characteristics

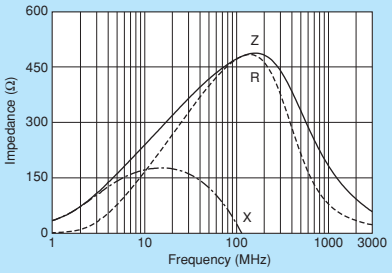
**BLM21RK121SN1**




**BLM21RK221SN1**




**BLM21RK471SN1**




Continued on the following page.

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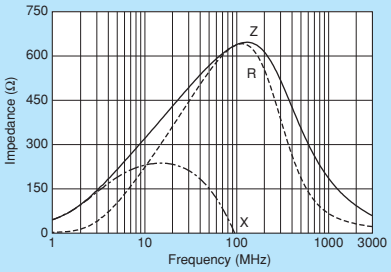
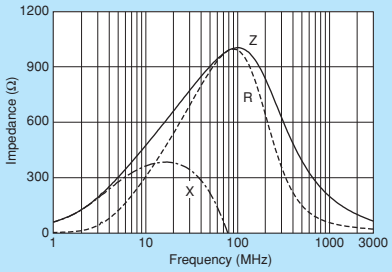
## ■ Impedance-Frequency Characteristics

**BLM21RK601SN1**




**BLM21RK102SN1**




⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
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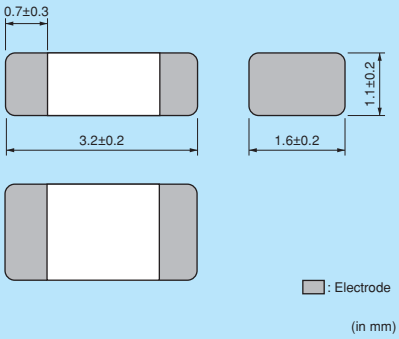
# BLM31P Series 1206/3216 (inch/mm)

Hi Power Flow OK Reflow OK

## 1206 size for power lines.

*Please refer to the products designed for both power lines and signal lines.

### Dimensions




### Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 3000 |
| K | 330mm Reel Embossed Tape | 10000 |
| B | Bulk(Bag) | 1000 |

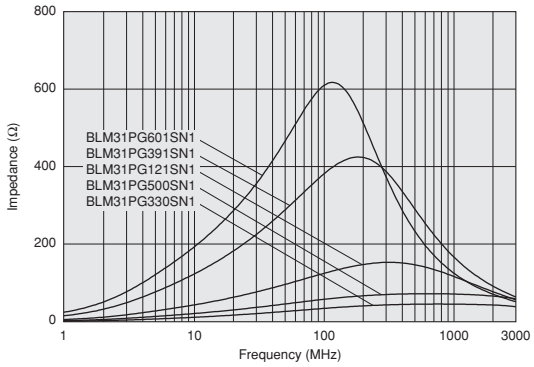
Refer to pages from p.100 to p.103 for mounting information.

### Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM31PG330SN1□ | 33ohm ±25% | 6000mA | 0.009ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM31PG500SN1□ | 50ohm (Typ.) | 3500mA | 0.015ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM31PG121SN1□ | 120ohm ±25% | 3500mA | 0.02ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM31PG391SN1□ | 390ohm ±25% | 2000mA | 0.05ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM31PG601SN1□ | 600ohm ±25% | 1500mA | 0.08ohm max. | -55°C to +125°C | Kit ≧1A |

Number of Circuits: 1

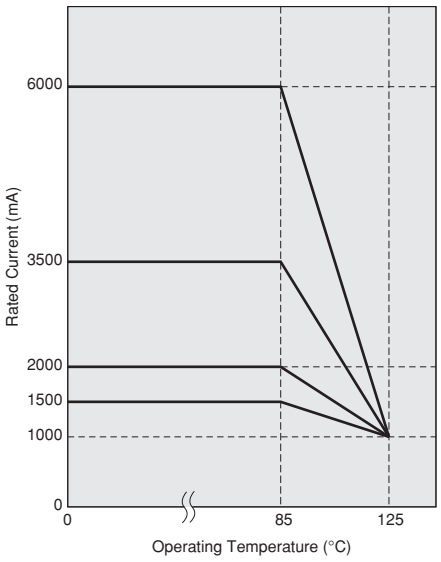
### Impedance-Frequency Characteristics




### Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM31PG series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current




Continued on the following page.

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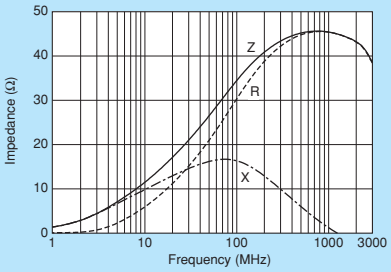
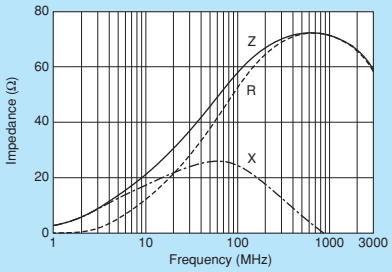
## ■ Impedance-Frequency Characteristics

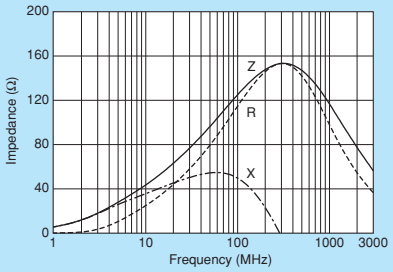
### BLM31PG330SN1



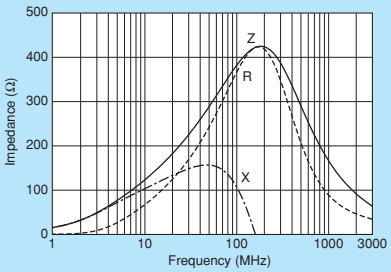

### BLM31PG500SN1



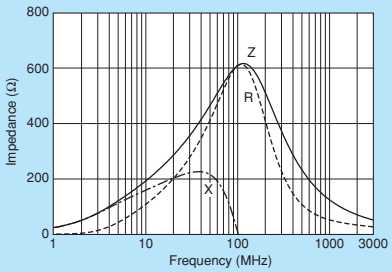

### BLM31PG121SN1




### BLM31PG391SN1




### BLM31PG601SN1



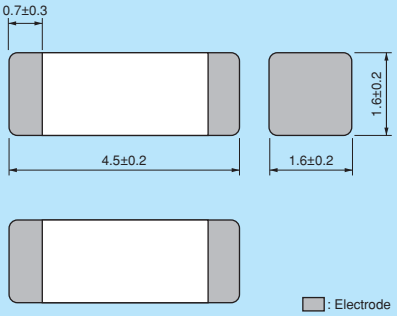
# BLM41P Series 1806/4516 (inch/mm)

Hi Power Flow OK Reflow OK

## 1806 size for power lines.

*Please refer to the products designed for both power lines and signal lines.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 2500 |
| K | 330mm Reel Embossed Tape | 8000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.100 to p.103 for mounting information.

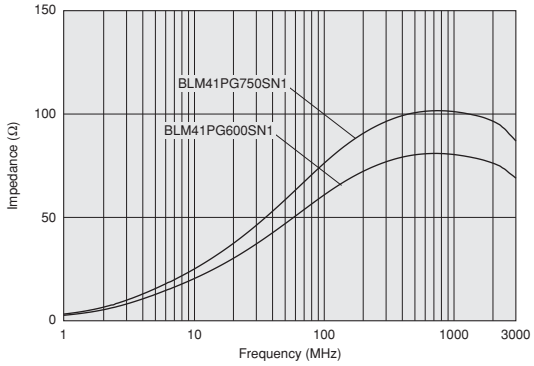
### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLM41PG600SN1□ | 60ohm (Typ.) | 6000mA | 0.009ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM41PG750SN1□ | 75ohm (Typ.) | 3500mA | 0.015ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM41PG181SN1□ | 180ohm ±25% | 3500mA | 0.02ohm max. | -55°C to +125°C | Kit ≧3A |
| BLM41PG471SN1□ | 470ohm ±25% | 2000mA | 0.05ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM41PG102SN1□ | 1000ohm ±25% | 1500mA | 0.09ohm max. | -55°C to +125°C | Kit ≧1A |

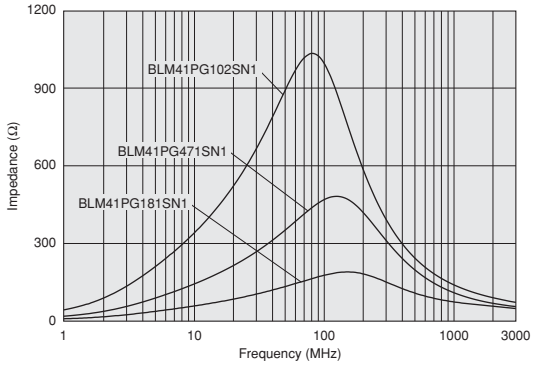
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

**BLM41PG Series (60ohm to 75ohm)**



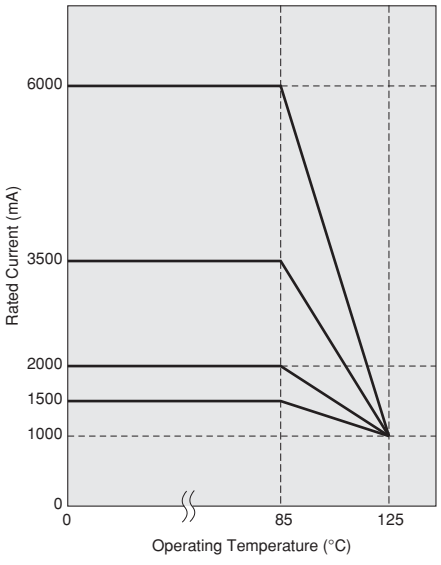

**BLM41PG Series (180ohm to 1000ohm)**




### ■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM41PG series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current

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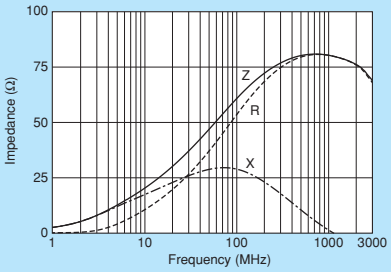
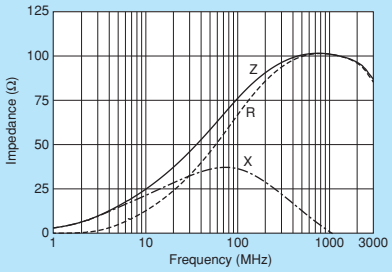
## ■ Impedance-Frequency Characteristics

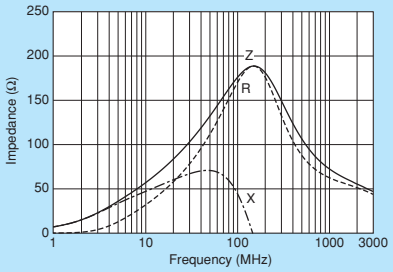
### BLM41PG600SN1



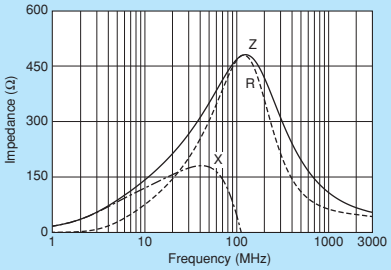

### BLM41PG750SN1



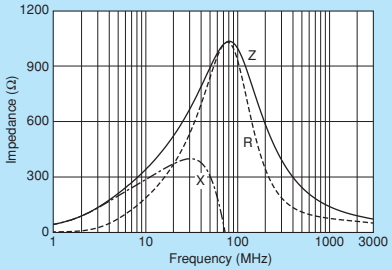

### BLM41PG181SN1




### BLM41PG471SN1




### BLM41PG102SN1




⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
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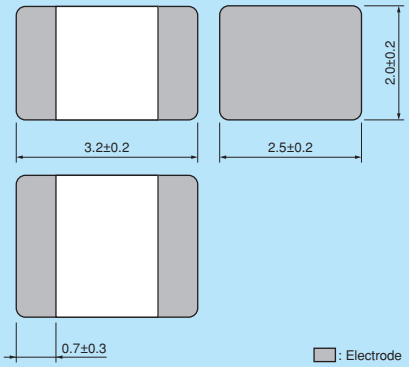
# BLE32P Series 1210/3225 (inch/mm)

Hi Power Flow OK Reflow OK

## 10A max., large current chip ferrite bead inductor.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 1500 |
| K | 330mm Reel Embossed Tape | 7000 |
| B | Bulk(Bag) | 1000 |

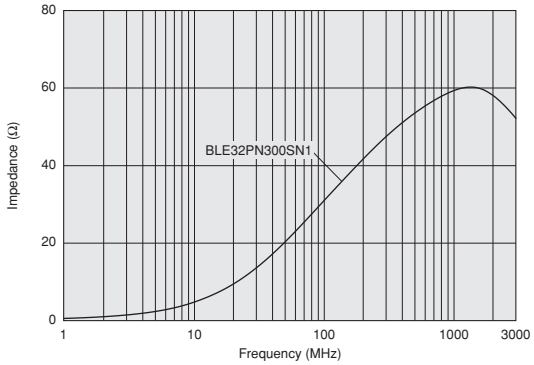
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|
| BLE32PN300SN1□ | 30ohm ±10ohm | 10000mA | 1.6m ohm max. | -55°C to +125°C | New ≧10A |

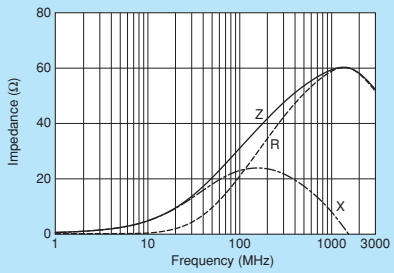
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics




### ■ Impedance-Frequency Characteristics

**BLE32PN300SN1**



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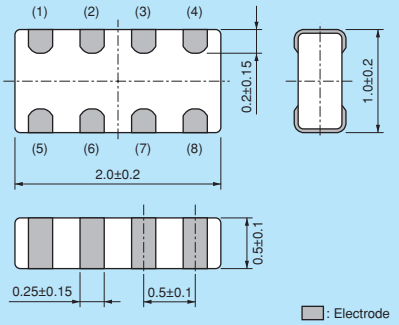
# BLA2AA/BLA2AB Series 0804/2010 (inch/mm)

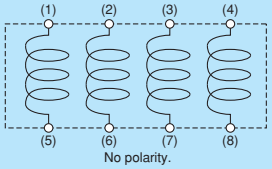
Reflow OK

## 4-line array, 0804 size.

### Dimensions




### Equivalent Circuit




### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.100 to p.103 for mounting information.

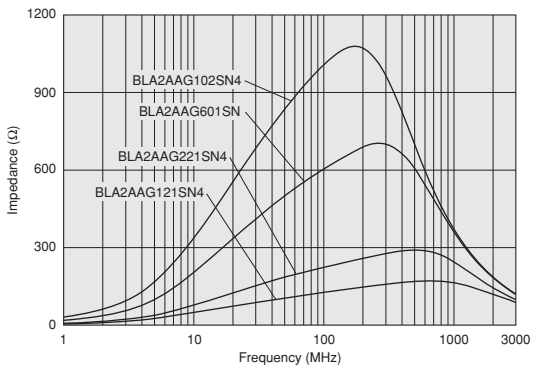
### Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range |
|---|---|---|---|---|
| BLA2AAG121SN4□ | 120ohm ±25% | 100mA | 0.50ohm max. | -55°C to +125°C |
| BLA2AAG221SN4□ | 220ohm ±25% | 50mA | 0.70ohm max. | -55°C to +125°C |
| BLA2AAG601SN4□ | 600ohm ±25% | 50mA | 1.10ohm max. | -55°C to +125°C |
| BLA2AAG102SN4□ | 1000ohm ±25% | 50mA | 1.30ohm max. | -55°C to +125°C |
| BLA2ABD750SN4□ | 75ohm ±25% | 200mA | 0.20ohm max. | -55°C to +125°C |
| BLA2ABD121SN4□ | 120ohm ±25% | 200mA | 0.35ohm max. | -55°C to +125°C |
| BLA2ABD221SN4□ | 220ohm ±25% | 100mA | 0.40ohm max. | -55°C to +125°C |
| BLA2ABD471SN4□ | 470ohm ±25% | 100mA | 0.65ohm max. | -55°C to +125°C |
| BLA2ABD601SN4□ | 600ohm ±25% | 100mA | 0.80ohm max. | -55°C to +125°C |
| BLA2ABD102SN4□ | 1000ohm ±25% | 50mA | 1.00ohm max. | -55°C to +125°C |
| BLA2ABB100SN4□ | 10ohm ±25% | 200mA | 0.1ohm max. | -55°C to +125°C |
| BLA2ABB220SN4□ | 22ohm ±25% | 200mA | 0.2ohm max. | -55°C to +125°C |
| BLA2ABB470SN4□ | 47ohm ±25% | 200mA | 0.35ohm max. | -55°C to +125°C |
| BLA2ABB121SN4□ | 120ohm ±25% | 50mA | 0.60ohm max. | -55°C to +125°C |
| BLA2ABB221SN4□ | 220ohm ±25% | 50mA | 0.90ohm max. | -55°C to +125°C |

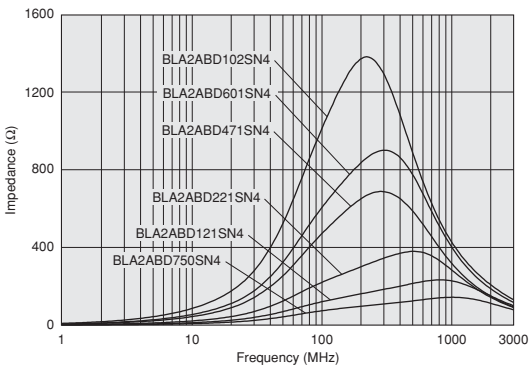
Number of Circuits: 4

### Impedance-Frequency Characteristics

#### BLA2AAG Series




#### BLA2ABD Series




Continued on the following page.

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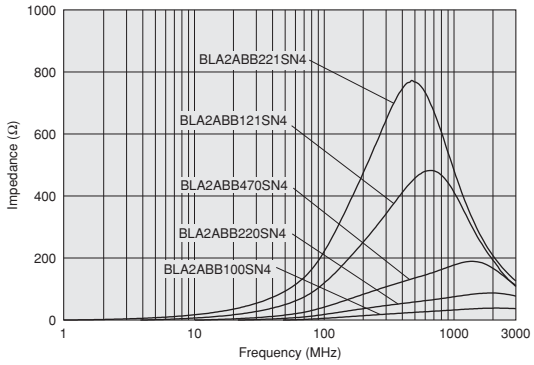
muRata

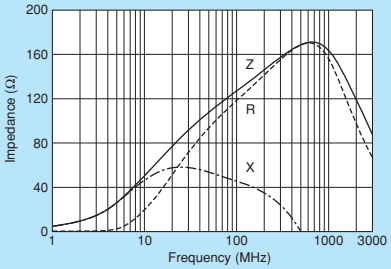
## ■ Impedance-Frequency Characteristics

### BLA2ABB Series

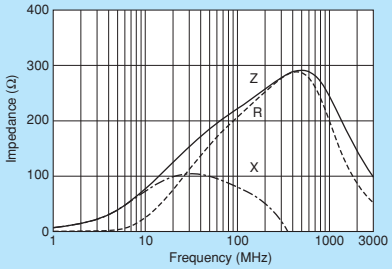



## ■ Impedance-Frequency Characteristics

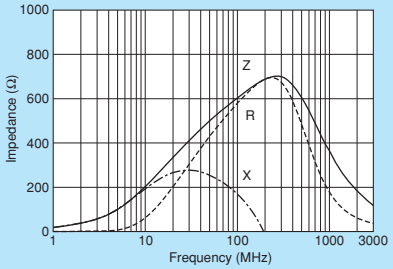
### BLA2AAG121SN4



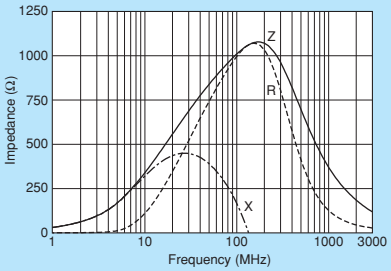

### BLA2AAG221SN4



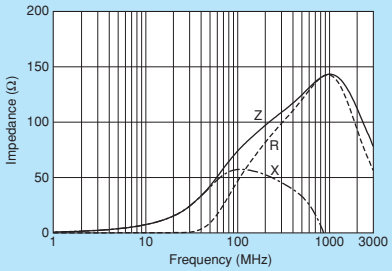

### BLA2AAG601SN4



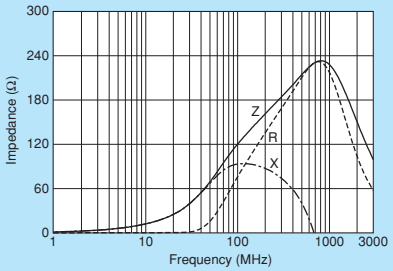

### BLA2AAG102SN4



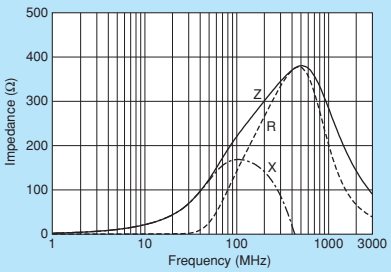

### BLA2ABD750SN4



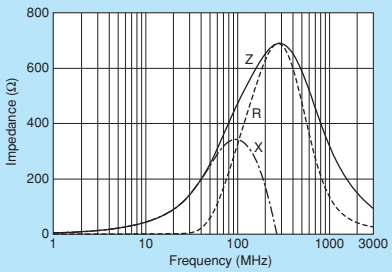

### BLA2ABD121SN4



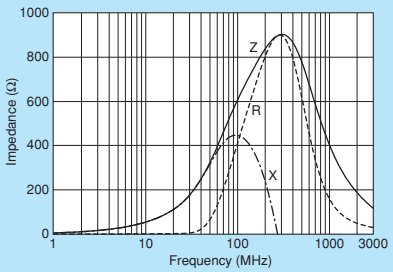

### BLA2ABD221SN4




### BLA2ABD471SN4




### BLA2ABD601SN4

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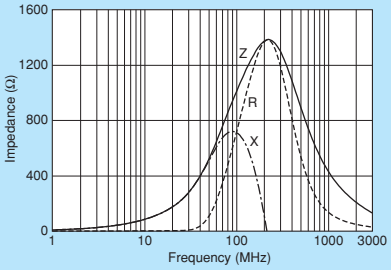
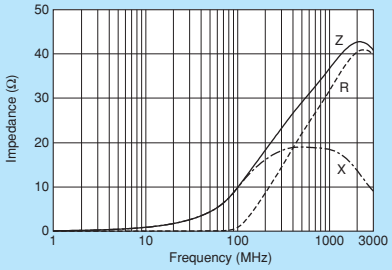
## ■ Impedance-Frequency Characteristics

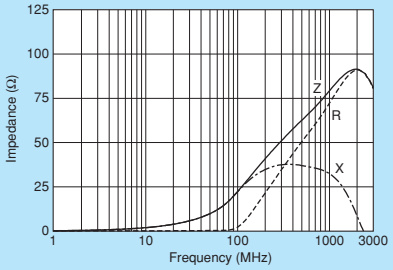
### BLA2ABD102SN4



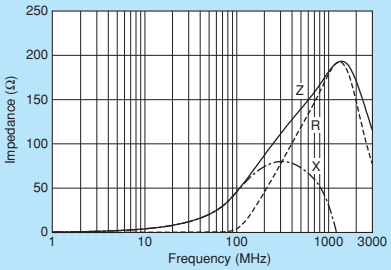

### BLA2ABB100SN4



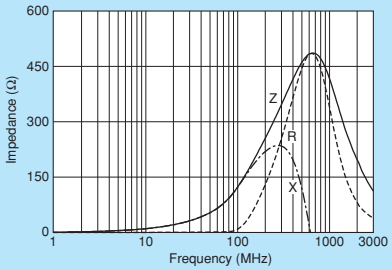

### BLA2ABB220SN4



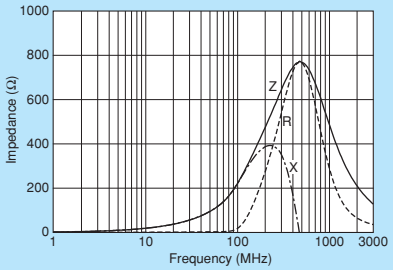

### BLA2ABB470SN4




### BLA2ABB121SN4




### BLA2ABB221SN4

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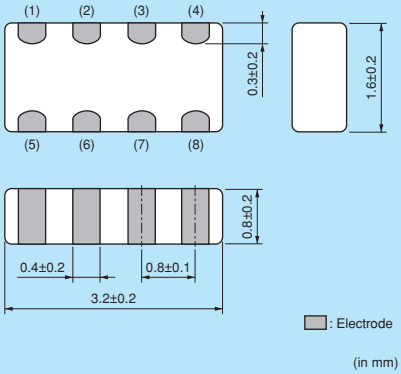
# BLA31A/BLA31B Series 1206/3216 (inch/mm)

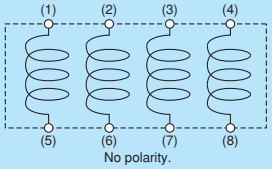
Flow OK Reflow OK

## 4-line array, 1206 size.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.100 to p.103 for mounting information.

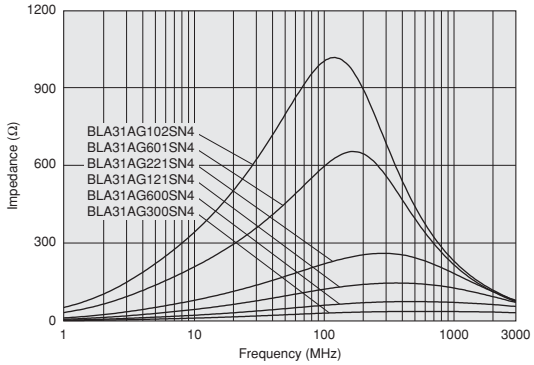
### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range |
|---|---|---|---|---|
| BLA31AG300SN4□ | 30ohm ±25% | 200mA | 0.10ohm max. | -55°C to +125°C |
| BLA31AG600SN4□ | 60ohm ±25% | 200mA | 0.15ohm max. | -55°C to +125°C |
| BLA31AG121SN4□ | 120ohm ±25% | 150mA | 0.20ohm max. | -55°C to +125°C |
| BLA31AG221SN4□ | 220ohm ±25% | 150mA | 0.25ohm max. | -55°C to +125°C |
| BLA31AG601SN4□ | 600ohm ±25% | 100mA | 0.35ohm max. | -55°C to +125°C |
| BLA31AG102SN4□ | 1000ohm ±25% | 50mA | 0.45ohm max. | -55°C to +125°C |
| BLA31BD121SN4□ | 120ohm ±25% | 150mA | 0.30ohm max. | -55°C to +125°C |
| BLA31BD221SN4□ | 220ohm ±25% | 150mA | 0.35ohm max. | -55°C to +125°C |
| BLA31BD471SN4□ | 470ohm ±25% | 100mA | 0.40ohm max. | -55°C to +125°C |
| BLA31BD601SN4□ | 600ohm ±25% | 100mA | 0.45ohm max. | -55°C to +125°C |
| BLA31BD102SN4□ | 1000ohm ±25% | 50mA | 0.55ohm max. | -55°C to +125°C |

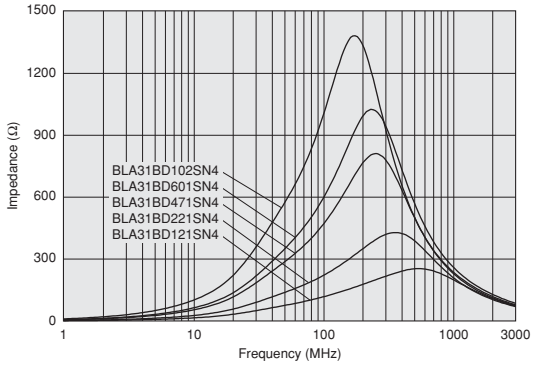
Number of Circuits: 4

### ■ Impedance-Frequency Characteristics

#### BLA31AG Series




#### BLA31BD Series

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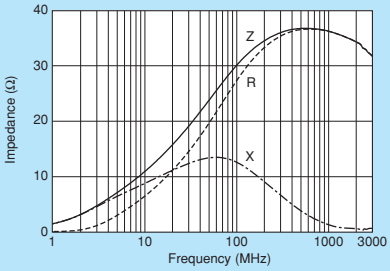
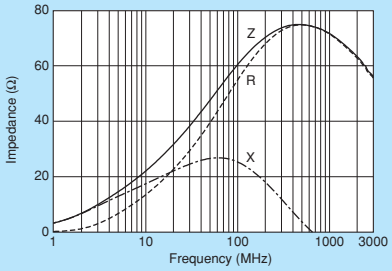
## ■ Impedance-Frequency Characteristics

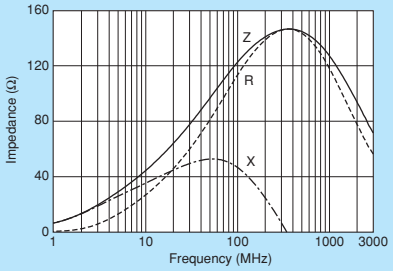
### BLA31AG300SN4



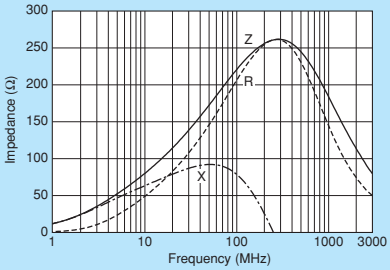

### BLA31AG600SN4



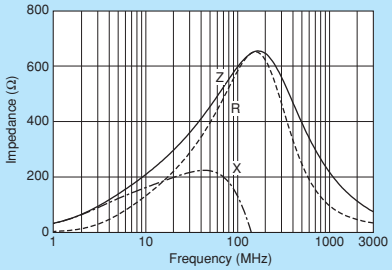

### BLA31AG121SN4



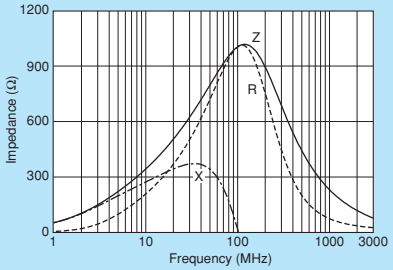

### BLA31AG221SN4



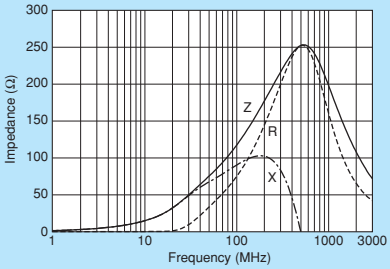

### BLA31AG601SN4



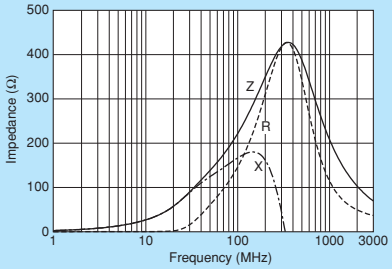

### BLA31AG102SN4



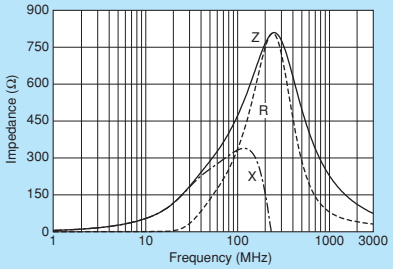

### BLA31BD121SN4



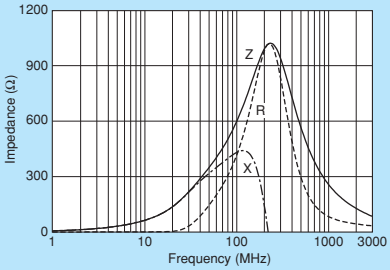

### BLA31BD221SN4



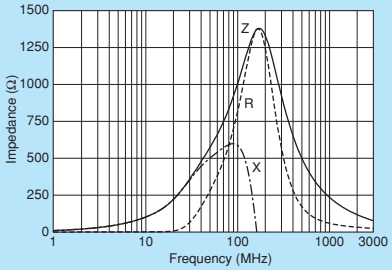

### BLA31BD471SN4




### BLA31BD601SN4




### BLA31BD102SN4

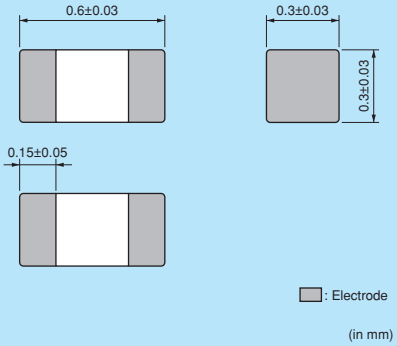


# BLM03H Series 0201/0603 (inch/mm)

GHz Reflow OK

## 0201 size for GHz band noise.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 15000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.100 to p.103 for mounting information.

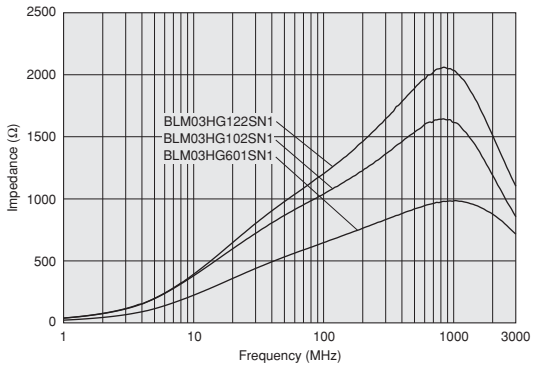
### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Impedance (at 1GHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| BLM03HG601SN1□ | 600ohm ±25% | 1000ohm ±40% | 150mA | 1.6ohm max. | -55°C to +125°C | Kit |
| BLM03HG102SN1□ | 1000ohm ±25% | 1800ohm ±40% | 125mA | 2.6ohm max. | -55°C to +125°C | Kit |
| BLM03HG122SN1□ | 1200ohm ±25% | 2000ohm ±40% | 100mA | 3.5ohm max. | -55°C to +125°C | New |
| BLM03HD331SN1□ | 330ohm ±25% | 750ohm ±40% | 200mA | 1.0ohm max. | -55°C to +125°C | Kit |
| BLM03HD471SN1□ | 470ohm ±25% | 1000ohm ±40% | 175mA | 1.3ohm max. | -55°C to +125°C | Kit |
| BLM03HD601SN1□ | 600ohm ±25% | 1500ohm ±40% | 150mA | 1.7ohm max. | -55°C to +125°C | Kit |
| BLM03HD102SN1□ | 1000ohm ±25% | 2300ohm ±40% | 120mA | 2.9ohm max. | -55°C to +125°C | Kit |
| BLM03HB191SN1□ | 190ohm ±25% | 1150ohm ±40% | 150mA | 2.0ohm max. | -55°C to +125°C | Kit |

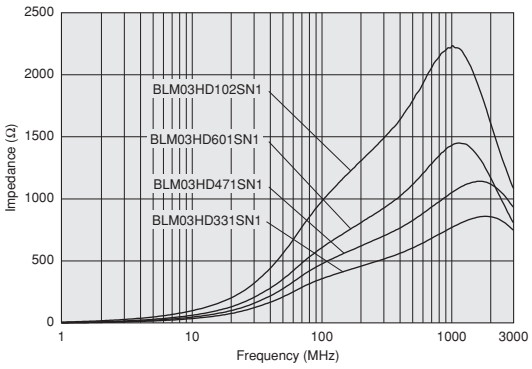
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

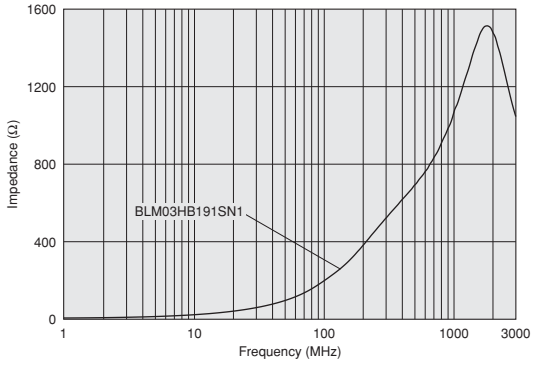
#### BLM03HG Series




#### BLM03HD Series




#### BLM03HB Series

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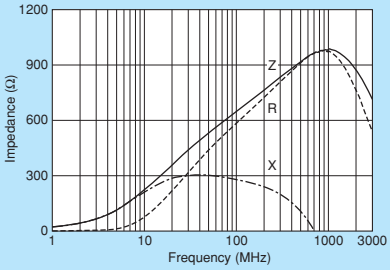
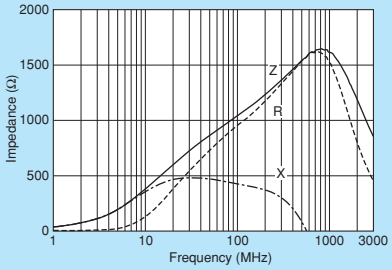
## ■ Impedance-Frequency Characteristics

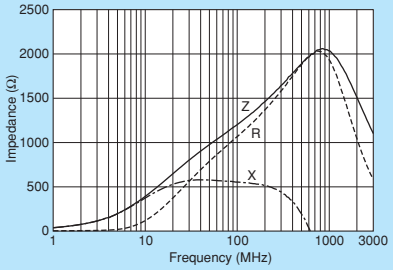
### BLM03HG601SN1



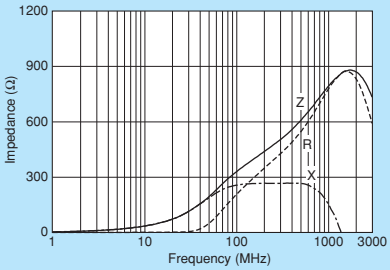

### BLM03HG102SN1



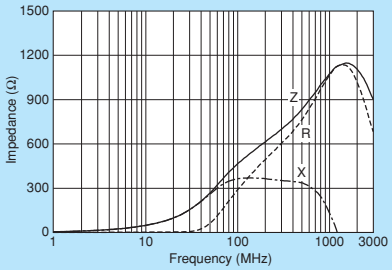

### BLM03HG122SN1



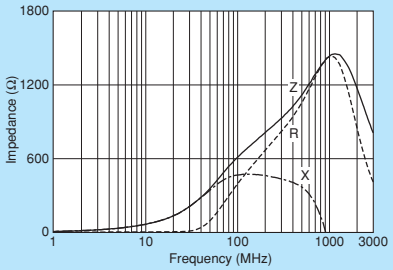

### BLM03HD331SN1



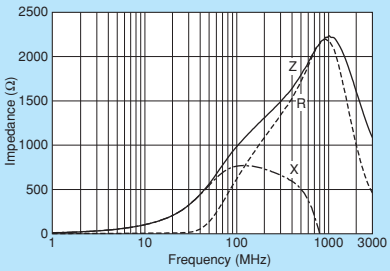

### BLM03HD471SN1



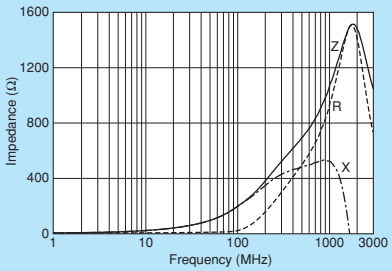

### BLM03HD601SN1




### BLM03HD102SN1




### BLM03HB191SN1

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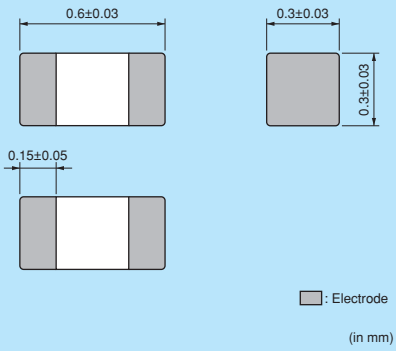
# BLM03E Series 0201/0603 (inch/mm)

GHz Reflow OK

## For GHz band noise and capable of large current.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 15000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

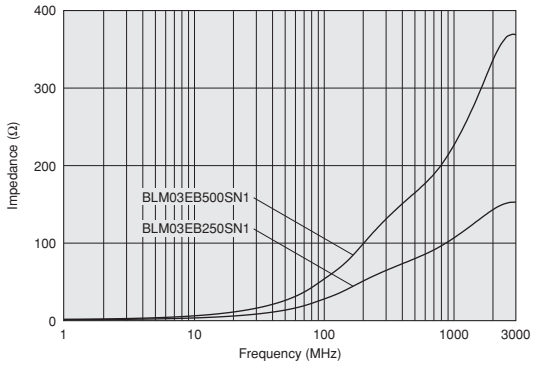
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Impedance (at 1GHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| BLM03EB250SN1□ | 25ohm ±25% | 105ohm ±40% | 600mA | 0.26ohm max. | -55°C to +125°C | Kit |
| BLM03EB500SN1□ | 50ohm ±25% | 255ohm ±40% | 400mA | 0.58ohm max. | -55°C to +125°C | Kit |

Number of Circuits: 1

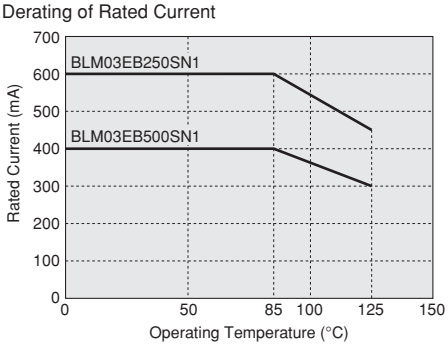
### ■ Impedance-Frequency Characteristics




### ■ Notice (Rating)

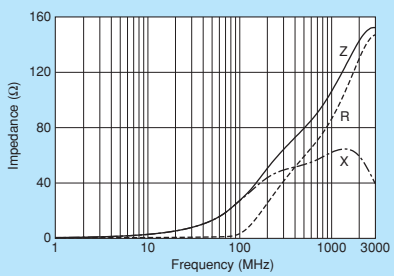
In operating temperature exceeding +85°C, derating of current is necessary for BLM03E series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current

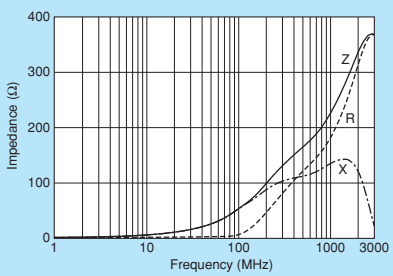



### ■ Impedance-Frequency Characteristics

**BLM03EB250SN1**




**BLM03EB500SN1**

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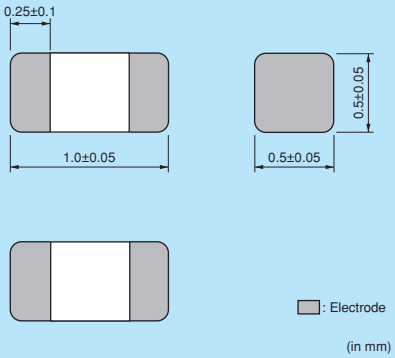
# BLM15H Series 0402/1005 (inch/mm)

GHz Reflow OK

## 0402 size for GHz band noise.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.100 to p.103 for mounting information.

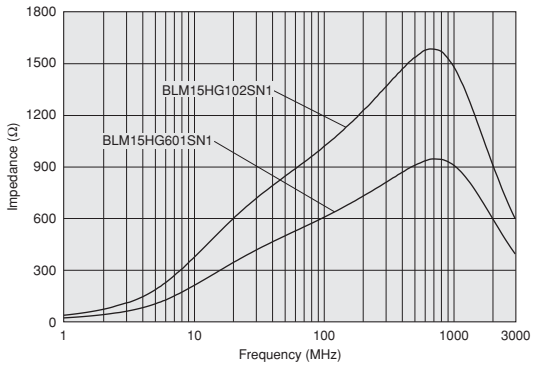
### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Impedance (at 1GHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| BLM15HG601SN1□ | 600ohm ±25% | 1000ohm ±40% | 300mA | 0.7ohm max. | -55°C to +125°C | Kit |
| BLM15HG102SN1□ | 1000ohm ±25% | 1400ohm ±40% | 250mA | 1.1ohm max. | -55°C to +125°C | Kit |
| BLM15HD601SN1□ | 600ohm ±25% | 1400ohm ±40% | 300mA | 0.85ohm max. | -55°C to +125°C | Kit |
| BLM15HD102SN1□ | 1000ohm ±25% | 2000ohm ±40% | 250mA | 1.25ohm max. | -55°C to +125°C | Kit |
| BLM15HD182SN1□ | 1800ohm ±25% | 2700ohm ±40% | 200mA | 2.2ohm max. | -55°C to +125°C | Kit |
| BLM15HB121SN1□ | 120ohm ±25% | 500ohm ±40% | 300mA | 0.7ohm max. | -55°C to +125°C | Kit |
| BLM15HB221SN1□ | 220ohm ±25% | 900ohm ±40% | 250mA | 1.0ohm max. | -55°C to +125°C | Kit |

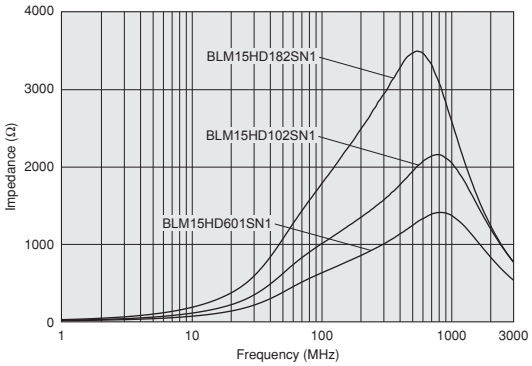
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

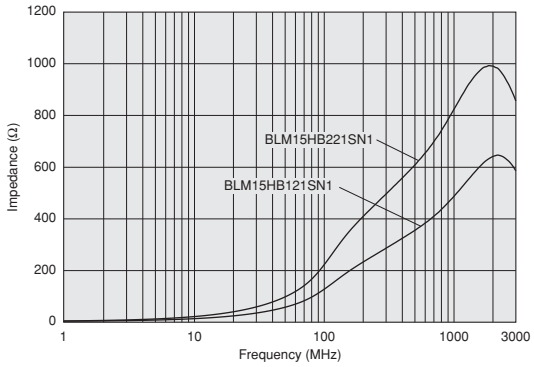
#### BLM15HG Series (For General Signal Lines)




#### BLM15HD Series (For High Speed Signal Lines)




#### BLM15HB Series (For High Speed Signal Lines)

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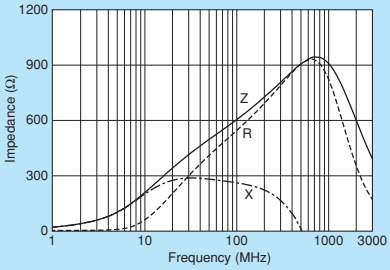
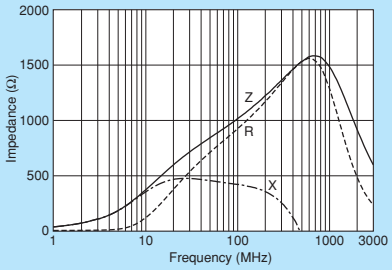
## ■ Impedance-Frequency Characteristics

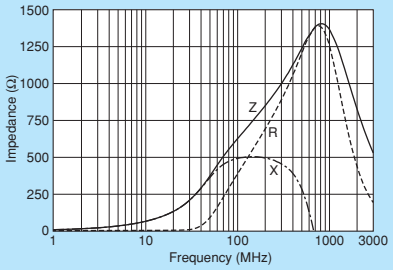
### BLM15HG601SN1



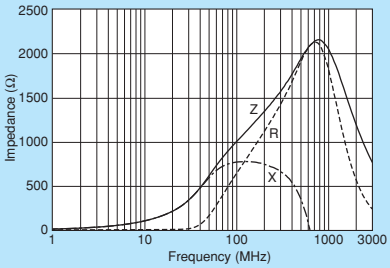

### BLM15HG102SN1



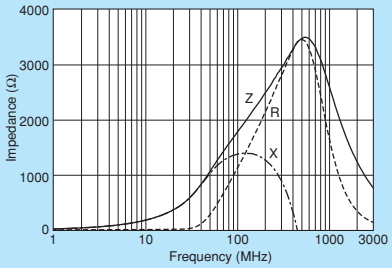

### BLM15HD601SN1



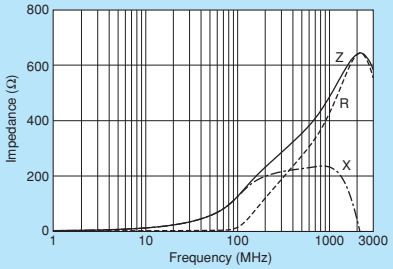

### BLM15HD102SN1



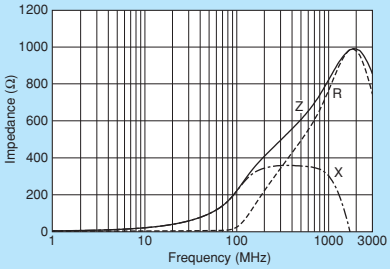

### BLM15HD182SN1




### BLM15HB121SN1




### BLM15HB221SN1

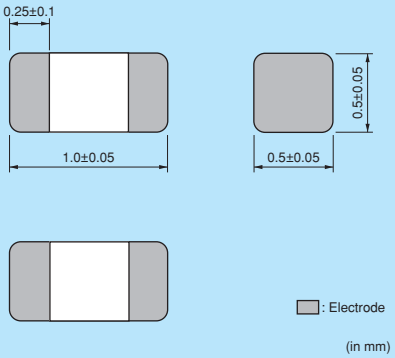


# BLM15E Series 0402/1005 (inch/mm)

GHz Hi Power Reflow OK

## For GHz band noise, also capable to large current.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

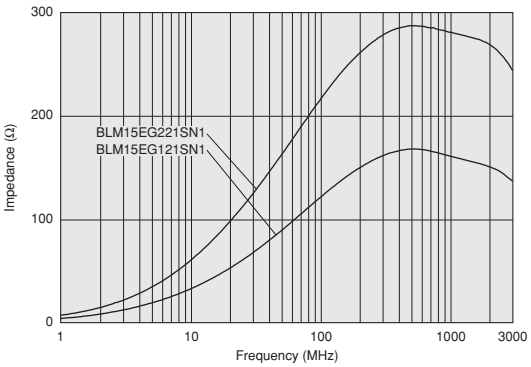
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Impedance (at 1GHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| BLM15EG121SN1□ | 120ohm ±25% | 145ohm (Typ.) | 1500mA | 0.095ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM15EG221SN1□ | 220ohm ±25% | 270ohm (Typ.) | 700mA | 0.28ohm max. | -55°C to +125°C | Kit |

Number of Circuits: 1

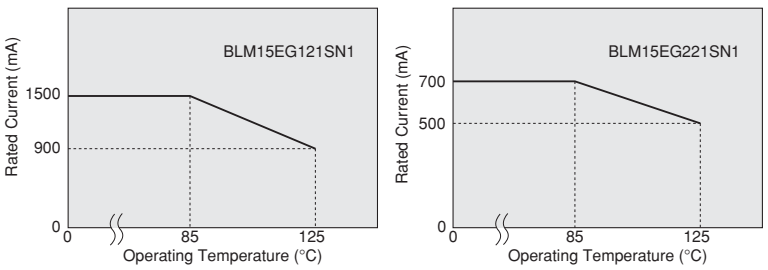
### ■ Impedance-Frequency Characteristics




### ■ Notice (Rating)

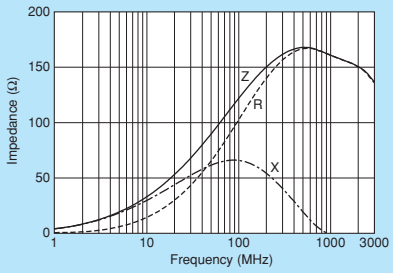
In operating temperature exceeding +85°C, derating of current is necessary for BLM15E series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current

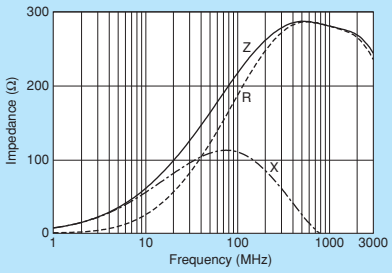



### ■ Impedance-Frequency Characteristics

**BLM15EG121SN1**




**BLM15EG221SN1**

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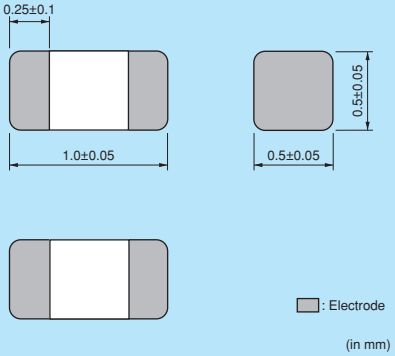
# BLM15G Series 0402/1005 (inch/mm)

Hi-GHz Reflow OK

## Available up to high-GHz band noise.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| J | 330mm Reel Paper Tape | 50000 |
| B | Bulk(Bag) | 1000 |

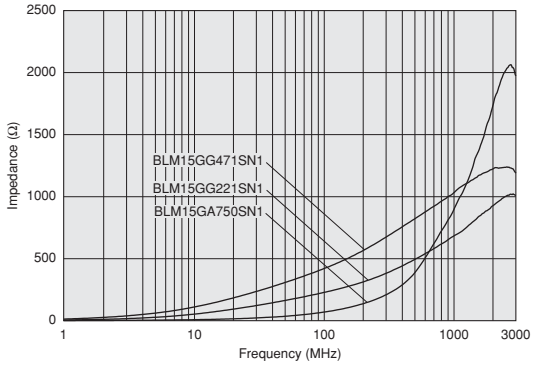
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Impedance (at 1GHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| BLM15GG221SN1□ | 220ohm ±25% | 600ohm ±40% | 300mA | 0.7ohm max. | -55°C to +125°C | Kit |
| BLM15GG471SN1□ | 470ohm ±25% | 1200ohm ±40% | 200mA | 1.3ohm max. | -55°C to +125°C | Kit |
| BLM15GA750SN1□ | 75ohm ±25% | 1000ohm ±40% | 200mA | 1.3ohm max. | -55°C to +125°C | Kit |

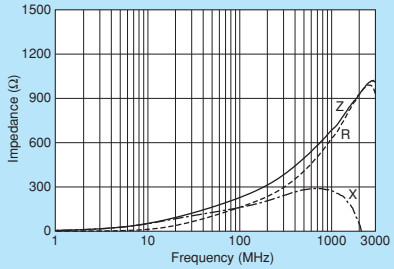
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

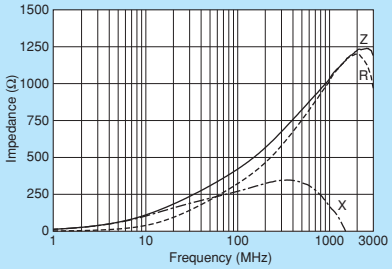



### ■ Impedance-Frequency Characteristics

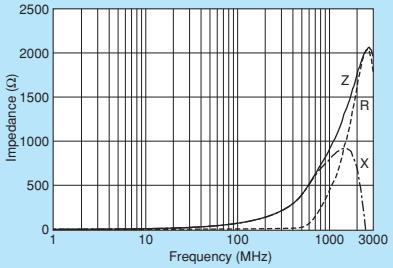
**BLM15GG221SN1**




**BLM15GG471SN1**




**BLM15GA750SN1**



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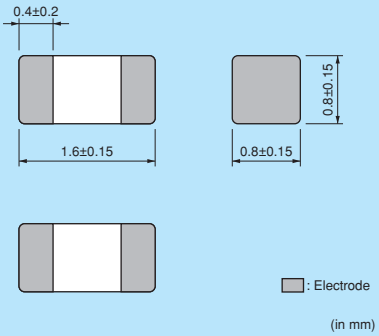
# BLM18H Series 0603/1608 (inch/mm)

GHz Flow OK Reflow OK

## 0603 size for GHz band noise. BLM18HE also supports power lines.

*Please refer to BLM15H for downsizing.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.100 to p.103 for mounting information.

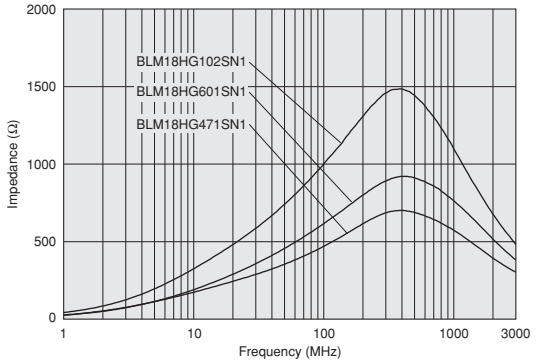
### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Impedance (at 1GHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| BLM18HG471SN1□ | 470ohm ±25% | 600ohm (Typ.) | 200mA | 0.85ohm max. | -55°C to +125°C | Kit |
| BLM18HG601SN1□ | 600ohm ±25% | 700ohm (Typ.) | 200mA | 1.00ohm max. | -55°C to +125°C | Kit |
| BLM18HG102SN1□ | 1000ohm ±25% | 1000ohm (Typ.) | 100mA | 1.60ohm max. | -55°C to +125°C | Kit |
| BLM18HE601SN1□ | 600ohm ±25% | 600ohm (Typ.) | 800mA | 0.25ohm max. | -55°C to +125°C | Kit |
| BLM18HE102SN1□ | 1000ohm ±25% | 1000ohm (Typ.) | 600mA | 0.35ohm max. | -55°C to +125°C | Kit |
| BLM18HE152SN1□ | 1500ohm ±25% | 1500ohm (Typ.) | 500mA | 0.50ohm max. | -55°C to +125°C | Kit |
| BLM18HD471SN1□ | 470ohm ±25% | 1000ohm (Typ.) | 100mA | 1.20ohm max. | -55°C to +125°C | Kit |
| BLM18HD601SN1□ | 600ohm ±25% | 1200ohm (Typ.) | 100mA | 1.50ohm max. | -55°C to +125°C | Kit |
| BLM18HD102SN1□ | 1000ohm ±25% | 1700ohm (Typ.) | 50mA | 1.80ohm max. | -55°C to +125°C | Kit |
| BLM18HB121SN1□ | 120ohm ±25% | 500ohm ±40% | 200mA | 0.50ohm max. | -55°C to +125°C | Kit |
| BLM18HB221SN1□ | 220ohm ±25% | 1100ohm ±40% | 100mA | 0.80ohm max. | -55°C to +125°C | Kit |
| BLM18HB331SN1□ | 330ohm ±25% | 1600ohm ±40% | 50mA | 1.20ohm max. | -55°C to +125°C | Kit |
| BLM18HK331SN1□ | 330ohm ±25% | 400ohm ±40% | 200mA | 0.50ohm max. | -55°C to +125°C | Kit |
| BLM18HK471SN1□ | 470ohm ±25% | 600ohm ±40% | 200mA | 0.70ohm max. | -55°C to +125°C | Kit |
| BLM18HK601SN1□ | 600ohm ±25% | 700ohm ±40% | 100mA | 0.90ohm max. | -55°C to +125°C | Kit |
| BLM18HK102SN1□ | 1000ohm ±25% | 1200ohm ±40% | 50mA | 1.50ohm max. | -55°C to +125°C | Kit |

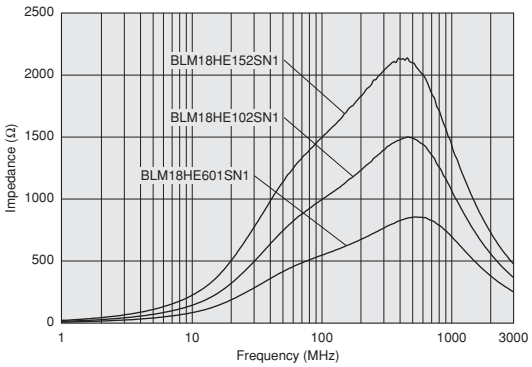
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics

#### BLM18HG Series (For General Signal Lines)




#### BLM18HE Series (For High Speed Signal Lines)

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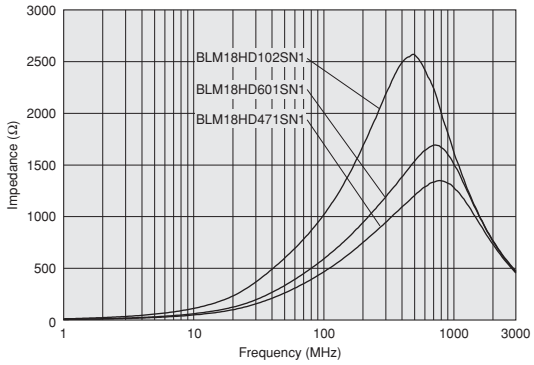
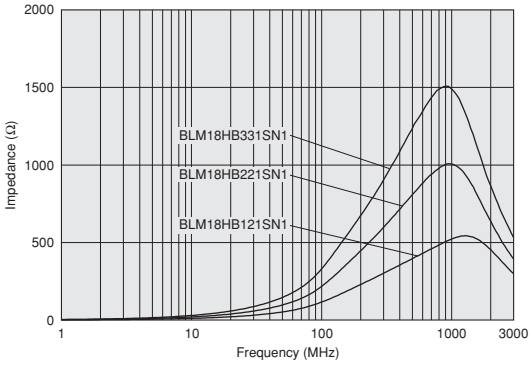
## ■ Impedance-Frequency Characteristics

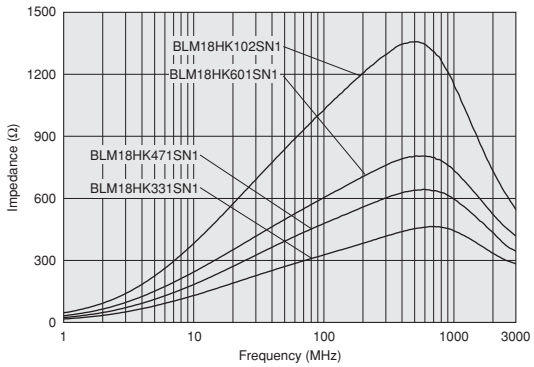
### BLM18HD Series (For High Speed Signal Lines)




### BLM18HB Series (For High Speed Signal Lines)



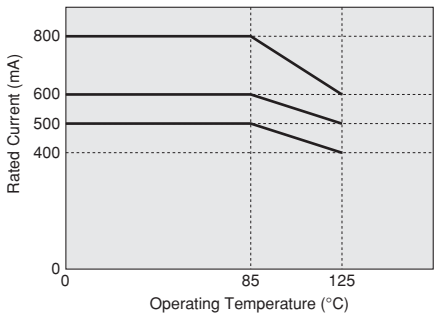

### BLM18HK Series (For Digital Interface Lines)




## ■ Notice (Rating)

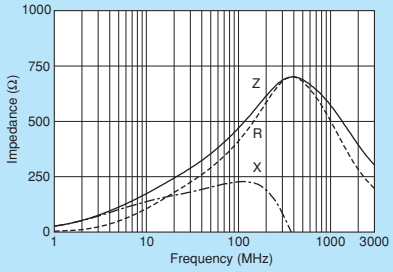
In operating temperature exceeding +85°C, derating of current is necessary for BLM18HE series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current

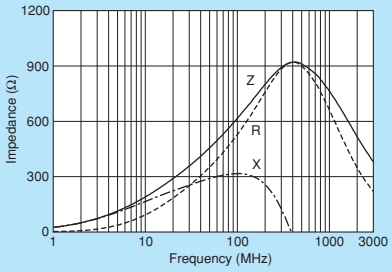



## ■ Impedance-Frequency Characteristics

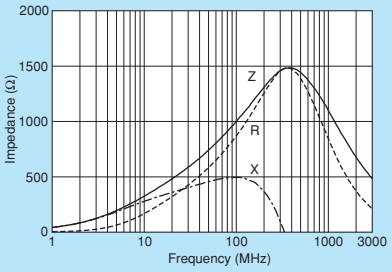
### BLM18HG471SN1



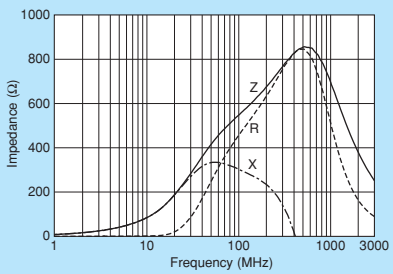

### BLM18HG601SN1



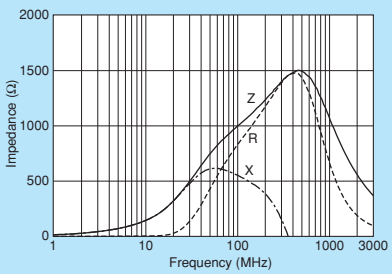

### BLM18HG102SN1



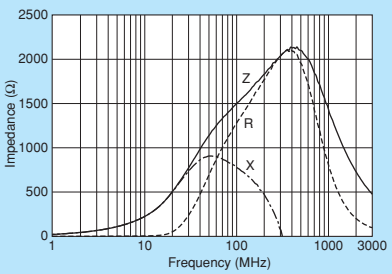

### BLM18HE601SN1




### BLM18HE102SN1




### BLM18HE152SN1




Continued on the following page.

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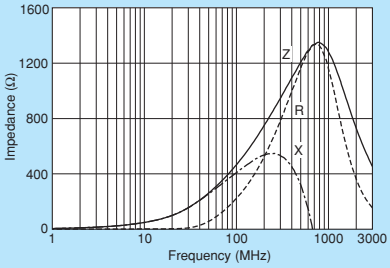
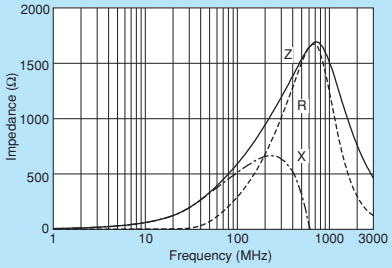
## ■ Impedance-Frequency Characteristics

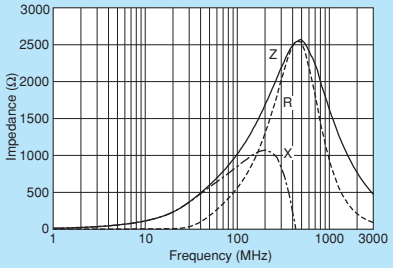
### BLM18HD471SN1



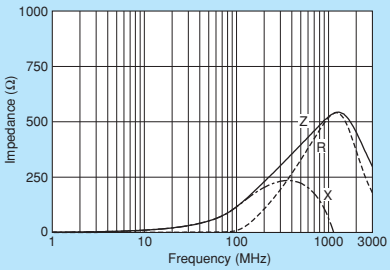

### BLM18HD601SN1



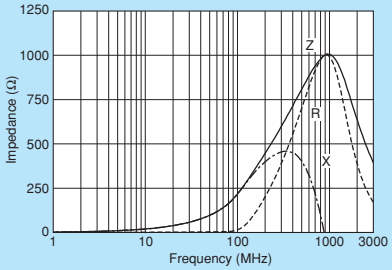

### BLM18HD102SN1



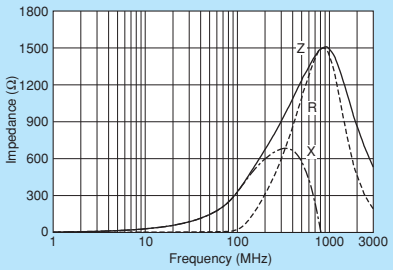

### BLM18HB121SN1



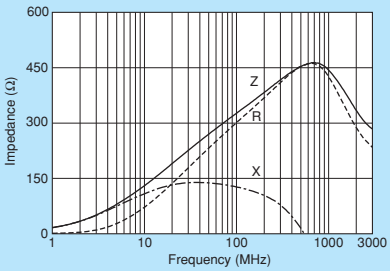

### BLM18HB221SN1



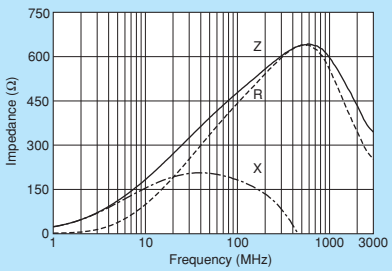

### BLM18HB331SN1



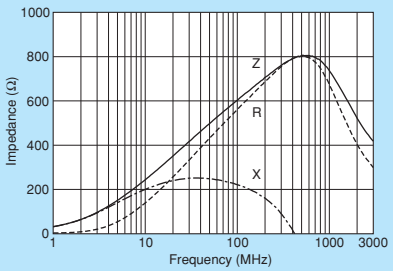

### BLM18HK331SN1



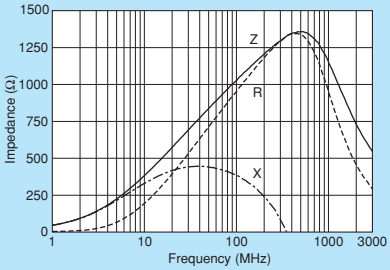

### BLM18HK471SN1




### BLM18HK601SN1




### BLM18HK102SN1

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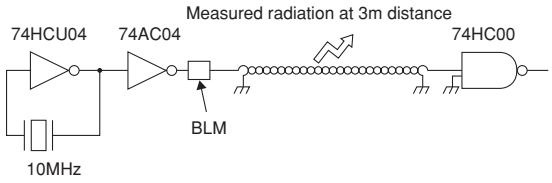
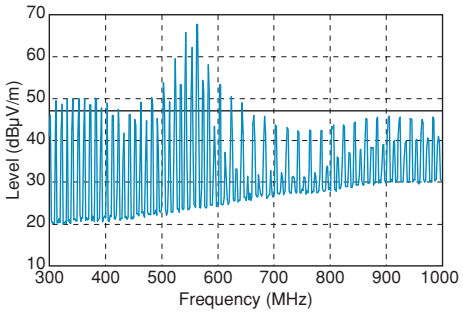
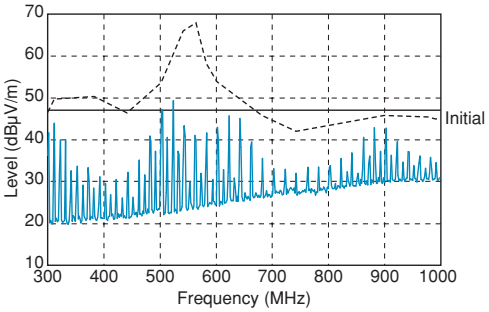
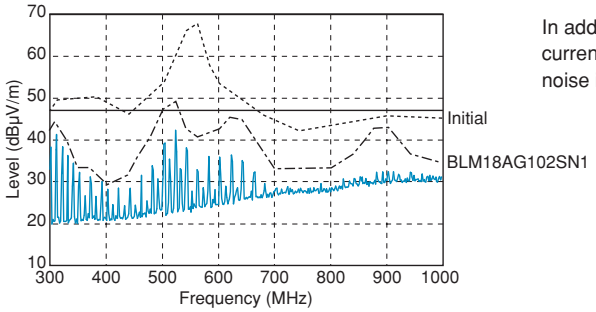
# Noise Suppression of BLM18H in UHF Range

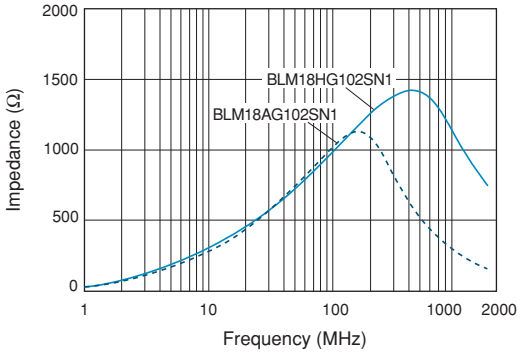
Testing Circuit




| Type of Filter | EMI Suppression Effect / Description |
|---|---|
| Initial (No filter) |  |
| Conventional Type **BLM18AG102SN1** (1000Ω at 100MHz) |  Current BLM18AG are effective in suppressing noise in the range between 300MHz and 700MHz. |
| for GHz Noise Suppression **BLM18HG102SN1** (1000Ω at 100MHz) |  In addition to the effectiveness of current BLM, BLM18HG suppresses noise in the range beyond 700MHz. |



Comparison between BLM18HG102SN1 and BLM18AG102SN1 (Current Item)

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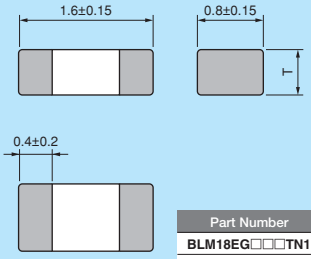
# BLM18E Series 0603/1608 (inch/mm)

GHz Hi Power Flow OK Reflow OK

## For GHz band noise, also capable to large current.



### Dimensions




| Part Number | T |
|---|---|
| BLM18EG□□□TN1 | 0.5±0.15 |
| BLM18EG□□□SN1 | 0.8±0.15 |

: Electrode

(in mm)

### Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.100 to p.103 for mounting information.

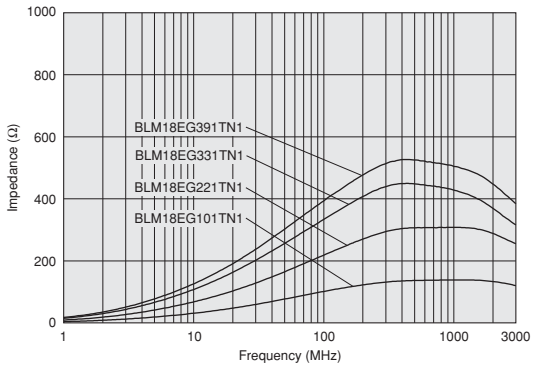
### Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Impedance (at 1GHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| BLM18EG101TN1□ | 100ohm ±25% | 140ohm (Typ.) | 2000mA | 0.045ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18EG121SN1□ | 120ohm ±25% | 145ohm (Typ.) | 2000mA | 0.04ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18EG221SN1□ | 220ohm ±25% | 260ohm (Typ.) | 2000mA | 0.05ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18EG221TN1□ | 220ohm ±25% | 300ohm (Typ.) | 1000mA | 0.15ohm max. | -55°C to +125°C | Kit ≧1A |
| BLM18EG331TN1□ | 330ohm ±25% | 450ohm (Typ.) | 500mA | 0.21ohm max. | -55°C to +125°C | Kit |
| BLM18EG391TN1□ | 390ohm ±25% | 520ohm (Typ.) | 500mA | 0.3ohm max. | -55°C to +125°C | Kit |
| BLM18EG471SN1□ | 470ohm ±25% | 550ohm (Typ.) | 500mA | 0.21ohm max. | -55°C to +125°C | Kit |
| BLM18EG601SN1□ | 600ohm ±25% | 700ohm (Typ.) | 500mA | 0.35ohm max. | -55°C to +125°C | Kit |

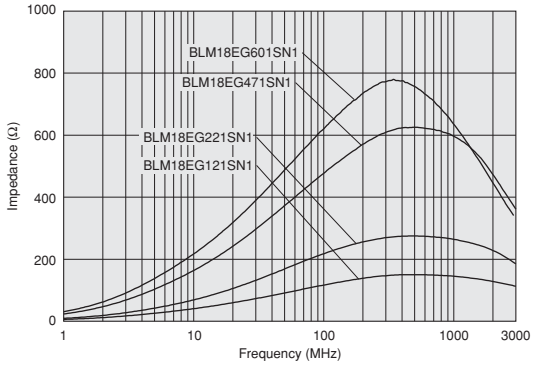
Number of Circuits: 1

### Impedance-Frequency Characteristics

#### BLM18EG_TN1 Series



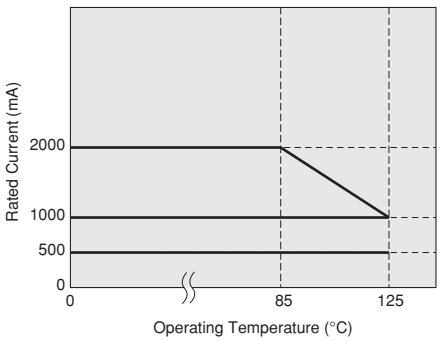

#### BLM18EG_SN1 Series




### Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM18EG series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current




Continued on the following page.

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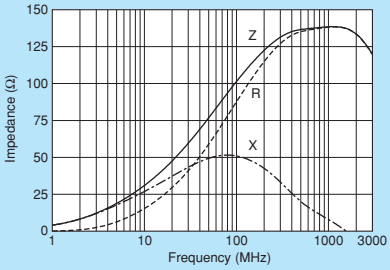
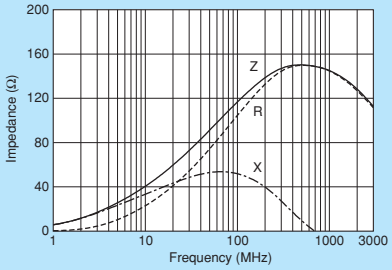
## ■ Impedance-Frequency Characteristics

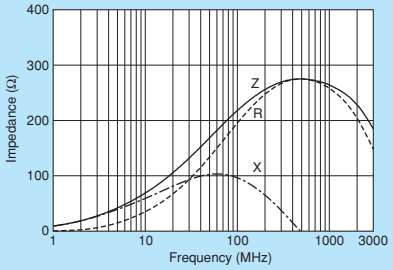
### BLM18EG101TN1



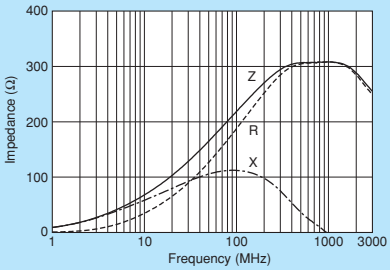

### BLM18EG121SN1



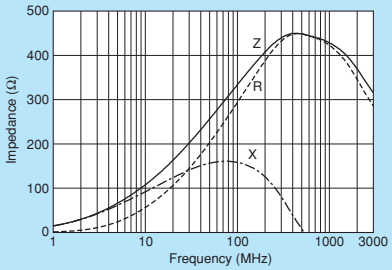

### BLM18EG221SN1



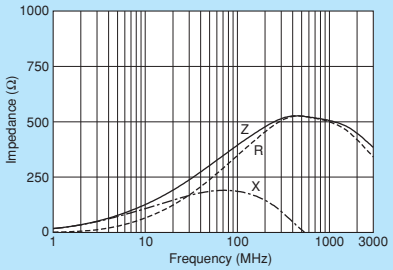

### BLM18EG221TN1



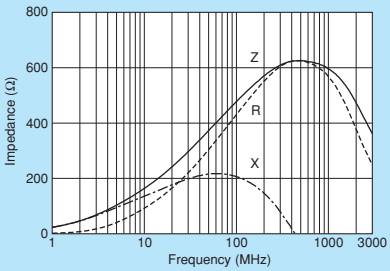

### BLM18EG331TN1



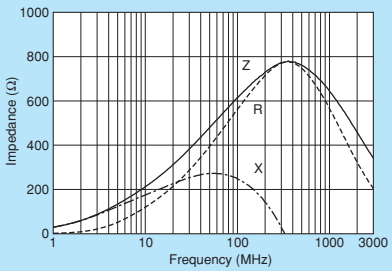

### BLM18EG391TN1




### BLM18EG471SN1




### BLM18EG601SN1

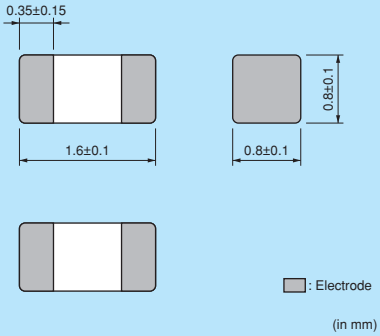


# BLM18G Series 0603/1608 (inch/mm)

Hi-GHz Reflow OK

## Available up to high-GHz band noise.

### ■ Dimensions




### ■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| J | 330mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

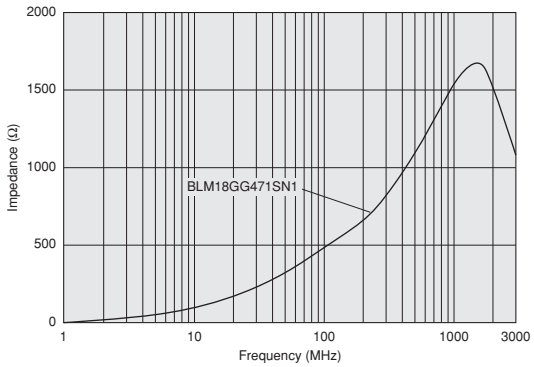
Refer to pages from p.100 to p.103 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Impedance (at 100MHz/20°C) | Impedance (at 1GHz/20°C) | Rated Current | DC Resistance | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| BLM18GG471SN1□ | 470ohm ±25% | 1800ohm ±30% | 200mA | 1.0ohm ±0.3ohm | -55°C to +125°C | Kit |

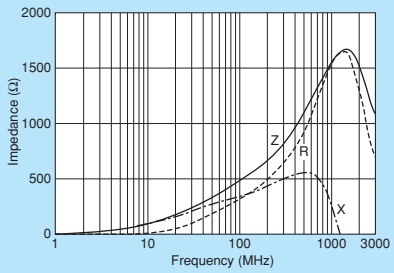
Number of Circuits: 1

### ■ Impedance-Frequency Characteristics




### ■ Impedance-Frequency Characteristics

**BLM18GG471SN1**



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## ⚠Caution

### ● Rating

1. About the Rated Current
   Do not use products beyond the rated current as this may create excessive heat and deteriorate the insulation resistance.
2. About the Excessive Surge Current
   Excessive surge current ( pulse current or rush current) than specified rated current applied to the product may cause a critical failure, such as an open circuit, burnout caused by excessive temperature rise.Please contact us in advance in case of applying the surge current.

### ● Soldering and Mounting

• Self-heating
Please pay special attention when mounting chip ferrite beads BLM_AX/P/K/S series bead inductor BLE series in close proximity to other products that radiate heat.
The heat generated by other products may deteriorate the insulation resistance and cause excessive heat in this component.

## Notice

### ● Storage and Operating Conditions

<Operating Environment>
Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
Do not use products in the environment close to the organic solvent.
<Storage and Handling Requirements>

1. Storage Period
   BLM15E/15H/15G series should be used within 12 months, the other series should be used within 6 months.
   Solderability should be checked if this period is exceeded.
2. Storage Conditions
   (1) Storage temperature: -10 to +40˚C
   Relative humidity: 15 to 85%
   Avoid sudden changes in temperature and humidity.
   (2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

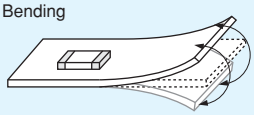
### ● Notice (Soldering and Mounting)

1. Cleaning
   Failure and degradation of a product are caused by the cleaning method. When you clean in conditions that are not in mounting information, please contact Murata engineering.
2. Soldering
   Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Other
   Noise suppression levels resulting from Murata's EMI suppression filters EMIFIL® may vary, depending on the circuits and ICs used, type of noise, mounting pattern, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

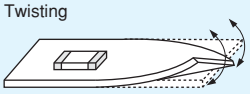
### ● Handling

1. Resin Coating
   Using resin for coating/molding products may affect the products performance.
   So please pay careful attention in selecting resin.
   Prior to use, please make the reliability evaluation with the product mounted in your application set.
2. Handling of a Substrate
   After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate.
   Excessive mechanical stress may cause cracking in the Product.

Bending



Twisting





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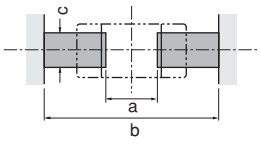
## 1. Standard Land Pattern Dimensions

Land Pattern + Solder Resist
Land Pattern Solder Resist
(in mm)

**BLE32**
**BLM02**
**BLM03**
**BLM15**
**BLM18**
**BLM21**
**BLM31**
**BLM41**

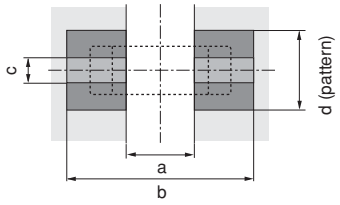
●Reflow and Flow
BLM Series




| Type | Soldering | a | b | c |
|---|---|---|---|---|
| BLM02 | Reflow | 0.16-0.2 | 0.4-0.56 | 0.2-0.23 |
| BLM03 | Reflow | 0.2-0.3 | 0.6-0.9 | 0.3 |
| BLM15 | Reflow | 0.4 | 1.2-1.4 | 0.5 |
| BLM18 | Flow (except 18G) | 0.7 | 2.2-2.6 | 0.7 |
| | Reflow | | 1.8-2.0 | |
| BLM21 | Flow/ Reflow | 1.2 | 3.0-4.0 | 1.0 |

• Except for BLM03PG·PX·EB/15AX·PD·PG·PX/18PG·KG·SG/21PG. And BLM02/03/15/18G is specially adapted for reflow soldering.

BLE32PN·BLM□□AX/P/K/S/E

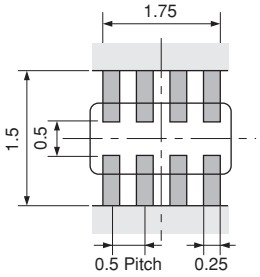



| Type | Rated Current (A) | Soldering | a | b | c | Land Pad Thickness and Dimension d 18μm | 35μm | 70μm |
|---|---|---|---|---|---|---|---|---|
| BLE32PN | 10 | Flow/ Reflow | 1.9 | 3.6 | 2.7 | - | 4.0 (Temperature 85°C or less) | - |
| | | | | | | - | 8.0 (Temperature 125°C or less) | - |
| BLM03AX<br>BLM03P□<br>BLM03EB | 0.9max. | Reflow | 0.2-0.3 | 0.6-0.9 | 0.3 | 0.3 | 0.3 | 0.3 |
| | 1.8max. | | | | | 1.2 | 0.7 | 0.3 |
| BLM15AX<br>BLM15PD<br>BLM15PG<br>BLM15PX | 1.5max. | Reflow | 0.4 | 1.2-1.4 | 0.5 | 0.5 | 0.5 | 0.5 |
| | 2.2max. | | | | | 1.2 | 0.7 | 0.5 |
| | 3.0max. | | | | | 2.4 | 1.2 | 0.5 |
| BLM18PG<br>BLM18KG<br>BLM18SG | 0.5-1.5 | Flow/ Reflow | 0.7 | Flow 2.2-2.6 Reflow 1.8-2.0 | 0.7 | 0.7 | 0.7 | 0.7 |
| | 1.7-2.5 | | | | | 1.2 | 0.7 | 0.7 |
| | 3-4 | | | | | 2.4 | 1.2 | 0.7 |
| | 5-6 | | | | | 6.4 | 3.3 | 1.65 |
| BLM21PG | 1.5 | | 1.2 | 3.0-4.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| | 2 | | | | | 1.2 | 1.0 | 1.0 |
| | 3-4 | | | | | 2.4 | 1.2 | 1.0 |
| | 6 | | | | | 6.4 | 3.3 | 1.65 |
| BLM31PG | 1.5-2 | | 2.0 | 4.2-5.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| | 3.5 | | | | | 2.4 | 1.2 | 1.2 |
| | 6 | | | | | 6.4 | 3.3 | 1.65 |
| BLM41PG | 1.5-2 | | 3.0 | 5.5-6.5 | | 1.2 | 1.2 | 1.2 |
| | 3.5 | | | | | 2.4 | 1.2 | 1.2 |
| | 6 | | | | | 6.4 | 3.3 | 1.65 |

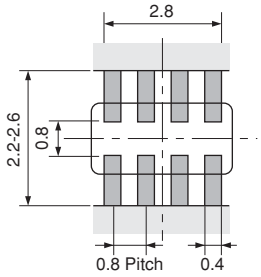
• About land pad thickness of BLE32PN, please note the upper limit of the temperature.
• Do not apply narrower pattern than listed above to BLM□□AX/P/K/S. Narrow pattern can cause excessive heat or open circuit.

**BLA2A**
**BLA31**

●Reflow Soldering
BLA2A




●Reflow and Flow
BLA31




• If there are high amounts of self-heating on pattern, the contact points of PCB and part may become damaged.

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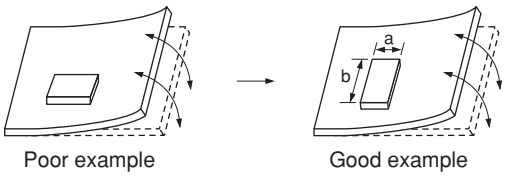
● PCB Warping

PCB should be designed so that products are not subjected to the mechanical stress caused by warping the board.

Products should be located in the sideways direction (Length: a<b) to the mechanical stress.

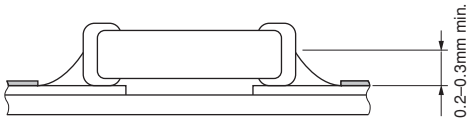
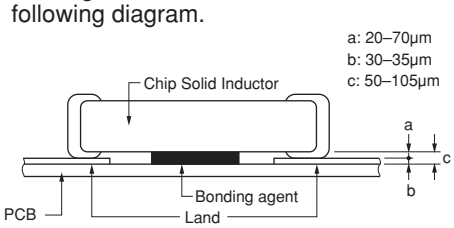
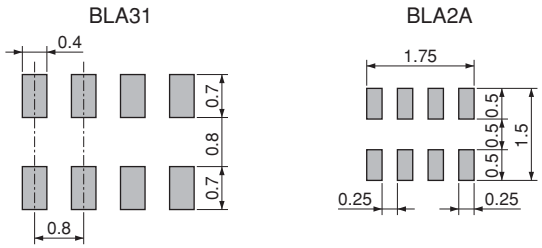
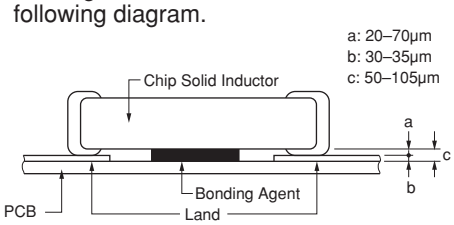



## 2. Solder Paste Printing and Adhesive Application

When reflow soldering the chip ferrite beads and bead inductor the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will be prone to damage by mechanical and thermal stress from the PCB and may crack.
Standard land dimensions should be used for resist and copper foil patterns.

When flow soldering the chip ferrite beads and bead inductor apply the adhesive in accordance with the following conditions.
If too much adhesive is applied, then it may overflow into the land or termination areas and yield poor solderability. In contrast, if insufficient adhesive is applied, or if the adhesive is not sufficiently hardened, then the chip may become detached during flow soldering process.

(in mm)

| Series | Solder Paste Printing | Adhesive Application |
|---|---|---|
| **BLM**<br>**BLE** | ●Ensure that solder is applied smoothly to a minimum height of 0.2mm to 0.3mm at the end surface of the part.<br>●Guideline of solder paste thickness:<br>50-80μm: BLM02<br>100-150μm: BLM03<br>100-200μm: BLM15/18/21/31/41/BLE32<br>  | ■BLM18/21/31/41 Series<br>(Except for BLM18G Series)<br>Coating amount is illustrated in the following diagram.<br>  |
| **BLA** | ●Guideline of solder paste thickness:<br>100-150μm: BLA2A<br>150-200μm: BLA31<br>  | ■BLA31 Series<br>Coating amount is illustrated in the following diagram.<br>  |

## 3. Standard Soldering Conditions

(1) Soldering Methods

Use flow and reflow soldering methods only.
Use standard soldering conditions when soldering chip ferrite beads and bead inductor.
In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

Solder: Use Sn-3.0Ag-0.5Cu solder. Use of Sn-Zn based solder will deteriorate performance of products. If using BLA series with Sn-Zn based solder, please contact Murata in advance.

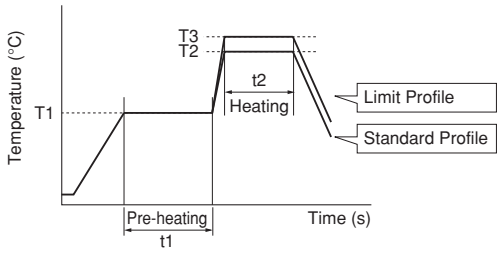
Flux:

- Use Rosin-based flux.
  In case of using RA type solder, products should be cleaned completely with no residual flux.
- Do not use strong acidic flux (with chlorine content exceeding 0.20wt%)
- Do not use water-soluble flux.

For additional mounting methods, please contact Murata.

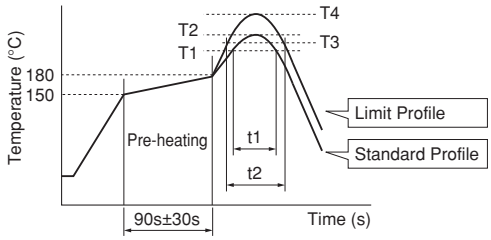
(2) Soldering Profile

●Flow Soldering Profile
( Sn-3.0Ag-0.5Cu Solder)




| Series | Pre-heating | | Standard Profile | | | Limit Profile | | |
|---|---|---|---|---|---|---|---|---|
| | | | Heating | | Cycle of Flow | Heating | | Cycle of Flow |
| | Temp. (T1) | Time. (t1) | Temp. (T2) | Time. (t2) | | Temp. (T3) | Time. (t2) | |
| **BLM** (Except for **BLM02/03/15/18G**)<br>**BLE**<br>**BLA31** | 150°C | 60s min. | 250°C | 4 to 6s | 2 times max. | 265±3°C | 5s max. | 2 times max. |

●Reflow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)




| Series | Standard Profile | | | | Limit Profile | | | |
|---|---|---|---|---|---|---|---|---|
| | Heating | | Peak Temperature (T2) | Cycle of Reflow | Heating | | Peak Temperature (T4) | Cycle of Reflow |
| | Temp. (T1) | Time. (t1) | | | Temp. (T3) | Time. (t2) | | |
| **BLM**<br>**BLE**<br>**BLA** | 220°C min. | 30 to 60s | 245±3°C | 2 times max. | 230°C min. | 60s max. | 260°C/10s | 2 times max. |

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(3) Reworking with Solder Iron

The following conditions must be strictly followed when using a soldering iron.(Except for BLM02 Series)

Pre-heating: 150°C 60s min.

Soldering iron power output / Tip diameter:
80W max. / ø3mm max.

Temperature of soldering iron tip / Soldering time / Times:
350°C max. / 3-4s / 2 times

Do not allow the tip of the soldering iron to directly contact the chip.

For additional methods of reworking with a soldering iron, please contact Murata engineering.

## 4. Cleaning

Following conditions should be observed when cleaning chip ferrite beads.

(1) Cleaning Temperature: 60°C max. (40°C max. for alcohol type cleaner)

(2) Ultrasonic
Output: 20W/liter max.
Duration: 5 minutes max.
Frequency: 28 to 40kHz

(3) Cleaning Agent
The following list of cleaning agents have been tested on the individual components. Evaluation of final assembly should be completed prior to production.

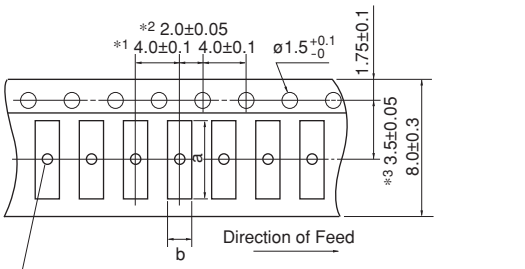
(a) Alcohol cleaning agent
Isopropyl alcohol (IPA)

(b) Aqueous cleaning agent
Pine Alpha ST-100S

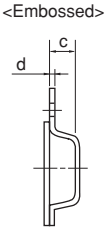
(4) Ensure that flux residue is completely removed.
Component should be thoroughly dried after aqueous agent has been removed with deionized water.

(5) BLM_G type is processed with resin. On rinsing the product, using water for ultrasonic cleaning may affect the resin quality used for the product by water element. In case of set cleaning conditions, please make sure the reliability according to the cleaning conditions.

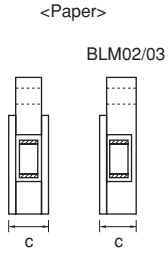
## ■ Minimum Quantity and Dimensions of 8mm Width Paper / Embossed Tape




There are holes in the cavities of the BLM21BD222SN1/BD272SN1 and BLM31 only. ø1.0 +0.3 -0.
BLE32 only. ø1.0 +0.2 -0.




c: Depth of Cavity (Embossed Tape)




c: Total Thickness of Tape (Paper Tape)

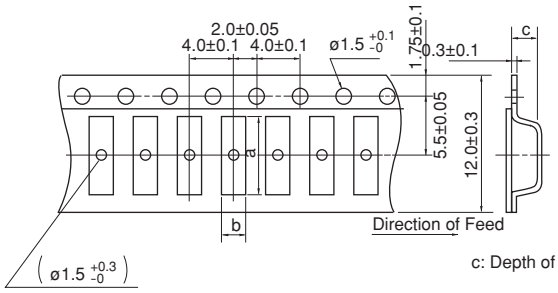
*1 BLM02/03/15: 2.0±0.05
BLM18S/18T/BLA2A: 2.0±0.1
*2 BLA2A/31: 2.0±0.1
*3 BLA2A/31: 3.5±0.1

Dimension of the cavity of embossed tape is measured at the bottom side.

| Part Number | Dimensions | | | | Minimum Qty. (pcs.) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | ø180mm Reel | | ø330mm Reel | | Bulk |
| | a | b | c | d | Paper Tape | Embossed Tape | Paper Tape | Embossed Tape | |
| **BLM02** | 0.45 | 0.25 | 0.40 max. | - | 20000 | - | - | - | 1000 |
| **BLM03** | 0.70 | 0.40 | 0.55 max. | - | 15000 | - | 50000 | - | 1000 |
| **BLM15** | 1.15 | 0.65 | 0.8 max. | - | 10000 | - | 50000 | - | 1000 |
| **BLM18A/B/P/R/H/G** | 1.85 | 1.05 | 1.1 max. | - | 4000 | - | 10000 | - | 1000 |
| **BLM18EG/KG_TN** | 1.85 | 1.05 | 0.85 max. | - | 4000 | - | 10000 | - | 1000 |
| **BLM18EG/KG_SN** | | | 1.1 max. | | | | | | |
| **BLM18S** | 1.85 | 1.05 | 0.90 max. | - | 10000 | - | 30000 | - | 1000 |
| **BLM18T** | 1.85 | 1.05 | 0.90 max. | - | 10000 | - | - | - | 1000 |
| **BLM21** | 2.25 | 1.45 | 1.1 max. | - | 4000 | - | 10000 | - | 1000 |
| **BLM31** | 3.5 | 1.9 | 1.3 | 0.2 | - | 3000 | - | 10000 | 1000 |
| **BLM21BD222SN1/272SN1** | 2.25 | 1.45 | 1.3 | 0.2 | - | 3000 | - | 10000 | 1000 |
| **BLE32** | 3.2 | 2.8 | 2.3 | 0.25 | - | 1500 | - | 7000 | 1000 |
| **BLA2A** | 2.2 | 1.2 | 0.8 max. | - | 10000 | - | 50000 | - | 1000 |
| **BLA31** | 3.4 | 1.8 | 1.1 max. | - | 4000 | - | 10000 | - | 1000 |

(in mm)

## ■ Minimum Quantity and Dimensions of 12mm Width Embossed Tape




c: Depth of Cavity

Dimension of the cavity is measured at the bottom side.

| Part Number | Dimensions | | | Minimum Qty. (pcs.) | | |
|---|---|---|---|---|---|---|
| | a | b | c | ø180mm Reel | ø330mm Reel | Bulk |
| **BLM41** | 4.8 | 1.9 | 1.75 | 2500 | 8000 | 1000 |

(in mm)

"Minimum Quantity" means the number of units of each delivery or order. The quantity should be an integral multiple of the "Minimum Quantity."

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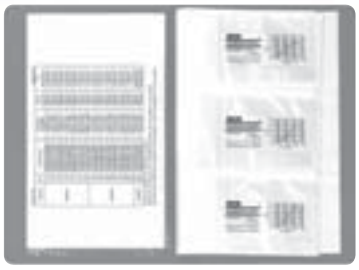

## ●EKEMBL03AL-KIT (Chip Ferrite Beads)

| No. | Part Number | Quantity (pcs.) | Impedance typ. (at 100MHz, 20 degrees C) | Rated Current (mA) | DC Resistance (Ω) max. |
|---|---|---|---|---|---|
| 1 | BLM02AX100SN1 | 20 | 10Ω±5Ω | 750 | 0.07 |
| 2 | BLM02AX700SN1 | 20 | 70Ω±25% | 300 | 0.4 |
| 3 | BLM02AX121SN1 | 20 | 120Ω±25% | 250 | 0.5 |
| 4 | BLM03AG100SN1 | 20 | 10Ω (Typ.) | 500 | 0.1 |
| 5 | BLM03AG700SN1 | 20 | 70Ω (Typ.) | 200 | 0.4 |
| 6 | BLM03AG800SN1 | 20 | 80Ω±25% | 200 | 0.4 |
| 7 | BLM03AG121SN1 | 20 | 120Ω±25% | 200 | 0.5 |
| 8 | BLM03AG241SN1 | 20 | 240Ω±25% | 200 | 0.8 |
| 9 | BLM03AG601SN1 | 20 | 600Ω±25% | 100 | 1.5 |
| 10 | BLM03AG102SN1 | 20 | 1000Ω±25% | 100 | 2.5 |
| 11 | BLM03AX100SN1 | 20 | 10Ω (Typ.) | 1000 | 0.05 |
| 12 | BLM03AX800SN1 | 20 | 80Ω±25% | 500 | 0.18 |
| 13 | BLM03AX121SN1 | 20 | 120Ω±25% | 450 | 0.23 |
| 14 | BLM03AX241SN1 | 20 | 240Ω±25% | 350 | 0.38 |
| 15 | BLM03AX601SN1 | 20 | 600Ω±25% | 250 | 0.85 |
| 16 | BLM03AX102SN1 | 20 | 1000Ω±25% | 200 | 1.25 |
| 17 | BLM03BB100SN1 | 20 | 10Ω±25% | 300 | 0.4 |
| 18 | BLM03BB220SN1 | 20 | 22Ω±25% | 200 | 0.5 |
| 19 | BLM03BB470SN1 | 20 | 47Ω±25% | 200 | 0.7 |
| 20 | BLM03BB750SN1 | 20 | 75Ω±25% | 200 | 1.0 |
| 21 | BLM03BB121SN1 | 20 | 120Ω±25% | 100 | 1.5 |
| 22 | BLM03BD750SN1 | 20 | 75Ω±25% | 300 | 0.4 |
| 23 | BLM03BD121SN1 | 20 | 120Ω±25% | 250 | 0.5 |
| 24 | BLM03BD241SN1 | 20 | 240Ω±25% | 200 | 0.8 |
| 25 | BLM03BD471SN1 | 20 | 470Ω±25% | 215 | 1.5 |
| 26 | BLM03BD601SN1 | 20 | 600Ω±25% | 200 | 1.7 |
| 27 | BLM03BC330SN1 | 20 | 33Ω±25% | 150 | 0.85 |
| 28 | BLM03BC560SN1 | 20 | 56Ω±25% | 100 | 1.05 |
| 29 | BLM03BC800SN1 | 20 | 80Ω±25% | 100 | 1.40 |
| 30 | BLM03EB250SN1 | 20 | 25Ω±25% | 600 | 0.26 |
| 31 | BLM03EB500SN1 | 20 | 50Ω±25% | 400 | 0.58 |
| 32 | BLM03HG601SN1 | 20 | 600Ω±25% | 150 | 1.6 |
| 33 | BLM03HG102SN1 | 20 | 1000Ω±25% | 125 | 2.6 |
| 34 | BLM03HB191SN1 | 20 | 190Ω±25% | 150 | 2.0 |
| 35 | BLM03HD331SN1 | 20 | 330Ω±25% | 200 | 1.0 |
| 36 | BLM03HD471SN1 | 20 | 470Ω±25% | 175 | 1.3 |
| 37 | BLM03HD601SN1 | 20 | 600Ω±25% | 150 | 1.7 |
| 38 | BLM03HD102SN1 | 20 | 1000Ω±25% | 120 | 2.9 |
| 39 | BLM03PG220SN1 | 20 | 22Ω±25% | 900 | 0.065 |
| 40 | BLM03PG330SN1 | 20 | 33Ω±25% | 750 | 0.090 |
| 41 | BLM03PX220SN1 | 20 | 22Ω±25% | 1800 | 0.040 |
| 42 | BLM03PX330SN1 | 20 | 33Ω±25% | 1500 | 0.055 |
| 43 | BLM03PX800SN1 | 20 | 80Ω±25% | 1000 | 0.130 |

## ●EKEMBL15AR-KIT (Chip Ferrite Beads)

| No. | Part Number | Quantity (pcs.) | Impedance typ. (at 100MHz, 20 degrees C) | Rated Current (mA) | DC Resistance (Ω) max. |
|---|---|---|---|---|---|
| 1 | BLM15AG100SN1 | 20 | 10Ω (Typ.) | 1000 | 0.025 |
| 2 | BLM15AG700SN1 | 20 | 70Ω (Typ.) | 600 | 0.15 |
| 3 | BLM15AG121SN1 | 20 | 120Ω±25% | 550 | 0.19 |
| 4 | BLM15AG221SN1 | 20 | 220Ω±25% | 450 | 0.29 |
| 5 | BLM15AG601SN1 | 20 | 600Ω±25% | 300 | 0.52 |
| 6 | BLM15AG102SN1 | 20 | 1000Ω±25% | 300 | 0.65 |
| 7 | BLM15AX100SN1 | 20 | 10Ω±5Ω | 1740 | 0.015 |
| 8 | BLM15AX300SN1 | 20 | 30Ω±25% | 1100 | 0.06 |

Continued on the following page.

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Design Kits
Chip Ferrite Bead
Chip EMIFIL®
Chip Common Mode Choke Coil
Block Type EMIFIL®
Microwave Absorber

Continued from the preceding page.

| No. | Part Number | Quantity (pcs.) | Impedance typ. (at 100MHz, 20 degrees C) | Rated Current (mA) | DC Resistance (Ω) max. |
|---|---|---|---|---|---|
| 9 | BLM15AX700SN1 | 20 | 70Ω±25% | 780 | 0.10 |
| 10 | BLM15AX121SN1 | 20 | 120Ω±25% | 700 | 0.13 |
| 11 | BLM15AX221SN1 | 20 | 220Ω±25% | 600 | 0.18 |
| 12 | BLM15AX601SN1 | 20 | 600Ω±25% | 500 | 0.34 |
| 13 | BLM15AX102SN1 | 20 | 1000Ω±25% | 350 | 0.49 |
| 14 | BLM15BA050SN1 | 20 | 5Ω±25% | 300 | 0.10 |
| 15 | BLM15BA100SN1 | 20 | 10Ω±25% | 300 | 0.20 |
| 16 | BLM15BA220SN1 | 20 | 22Ω±25% | 300 | 0.30 |
| 17 | BLM15BA330SN1 | 20 | 33Ω±25% | 300 | 0.40 |
| 18 | BLM15BA470SN1 | 20 | 47Ω±25% | 200 | 0.60 |
| 19 | BLM15BA750SN1 | 20 | 75Ω±25% | 200 | 0.80 |
| 20 | BLM15BB050SN1 | 20 | 5Ω±25% | 500 | 0.08 |
| 21 | BLM15BB100SN1 | 20 | 10Ω±25% | 300 | 0.10 |
| 22 | BLM15BB220SN1 | 20 | 22Ω±25% | 300 | 0.20 |
| 23 | BLM15BB470SN1 | 20 | 47Ω±25% | 300 | 0.35 |
| 24 | BLM15BB750SN1 | 20 | 75Ω±25% | 300 | 0.40 |
| 25 | BLM15BB121SN1 | 20 | 120Ω±25% | 300 | 0.55 |
| 26 | BLM15BB221SN1 | 20 | 220Ω±25% | 200 | 0.80 |
| 27 | BLM15BC121SN1 | 20 | 120Ω±25% | 350 | 0.45 |
| 28 | BLM15BC241SN1 | 20 | 240Ω±25% | 250 | 0.70 |
| 29 | BLM15BD750SN1 | 20 | 75Ω±25% | 300 | 0.20 |
| 30 | BLM15BD121SN1 | 20 | 120Ω±25% | 300 | 0.30 |
| 31 | BLM15BD221SN1 | 20 | 220Ω±25% | 300 | 0.40 |
| 32 | BLM15BD471SN1 | 20 | 470Ω±25% | 200 | 0.60 |
| 33 | BLM15BD601SN1 | 20 | 600Ω±25% | 200 | 0.65 |
| 34 | BLM15BD102SN1 | 20 | 1000Ω±25% | 200 | 0.90 |
| 35 | BLM15BD182SN1 | 20 | 1800Ω±25% | 100 | 1.40 |
| 36 | BLM15BX750SN1 | 20 | 75Ω±25% | 600 | 0.15 |
| 37 | BLM15BX121SN1 | 20 | 120Ω±25% | 600 | 0.17 |
| 38 | BLM15BX221SN1 | 20 | 220Ω±25% | 450 | 0.27 |
| 39 | BLM15BX471SN1 | 20 | 470Ω±25% | 350 | 0.41 |
| 40 | BLM15BX601SN1 | 20 | 600Ω±25% | 350 | 0.46 |
| 41 | BLM15BX102SN1 | 20 | 1000Ω±25% | 300 | 0.65 |
| 42 | BLM15BX182SN1 | 20 | 1800Ω±25% | 250 | 0.90 |
| 43 | BLM15HD601SN1 | 20 | 600Ω±25% | 300 | 0.85 |
| 44 | BLM15HD102SN1 | 20 | 1000Ω±25% | 250 | 1.25 |
| 45 | BLM15HD182SN1 | 20 | 1800Ω±25% | 200 | 2.20 |
| 46 | BLM15HG601SN1 | 20 | 600Ω±25% | 300 | 0.70 |
| 47 | BLM15HG102SN1 | 20 | 1000Ω±25% | 250 | 1.10 |
| 48 | BLM15HB121SN1 | 20 | 120Ω±25% | 300 | 0.70 |
| 49 | BLM15HB221SN1 | 20 | 220Ω±25% | 250 | 1.00 |
| 50 | BLM15EG121SN1 | 20 | 120Ω±25% | 1500 | 0.095 |
| 51 | BLM15EG221SN1 | 20 | 220Ω±25% | 700 | 0.28 |
| 52 | BLM15GG221SN1 | 20 | 220Ω±25% | 300 | 0.70 |
| 53 | BLM15GG471SN1 | 20 | 470Ω±25% | 200 | 1.30 |
| 54 | BLM15GA750SN1 | 20 | 75Ω±25% | 200 | 1.30 |
| 55 | BLM15PG100SN1 | 20 | 10Ω (Typ.) | 1000 | 0.025 |
| 56 | BLM15PD300SN1 | 20 | 30Ω±25% | 2200 | 0.035 |
| 57 | BLM15PD600SN1 | 20 | 60Ω±25% | 1700 | 0.06 |
| 58 | BLM15PD800SN1 | 20 | 80Ω±25% | 1500 | 0.07 |
| 59 | BLM15PD121SN1 | 20 | 120Ω±25% | 1300 | 0.09 |
| 60 | BLM15PX330SN1 | 20 | 33Ω±25% | 3000 | 0.022 |
| 61 | BLM15PX600SN1 | 20 | 60Ω±25% | 2500 | 0.032 |
| 62 | BLM15PX800SN1 | 20 | 80Ω±25% | 2300 | 0.038 |
| 63 | BLM15PX121SN1 | 20 | 120Ω±25% | 2000 | 0.055 |
| 64 | BLM15PX181SN1 | 20 | 180Ω±25% | 1500 | 0.090 |
| 65 | BLM15PX221SN1 | 20 | 220Ω±25% | 1400 | 0.10 |
| 66 | BLM15PX331SN1 | 20 | 330Ω±25% | 1200 | 0.15 |
| 67 | BLM15PX471SN1 | 20 | 470Ω±25% | 1000 | 0.20 |
| 68 | BLM15PX601SN1 | 20 | 600Ω±25% | 900 | 0.23 |

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## ●EKEMBL18AJ-KIT (Chip Ferrite Beads)

| No. | Part Number | Quantity (pcs.) | Impedance typ. (at 100MHz, 20 degrees C) | Rated Current (mA) | DC Resistance (Ω) max. |
|---|---|---|---|---|---|
| 1 | BLM18AG121SN1 | 20 | 120Ω±25% | 500 | 0.18 |
| 2 | BLM18AG151SN1 | 20 | 150Ω±25% | 500 | 0.25 |
| 3 | BLM18AG221SN1 | 20 | 220Ω±25% | 500 | 0.25 |
| 4 | BLM18AG331SN1 | 20 | 330Ω±25% | 500 | 0.30 |
| 5 | BLM18AG471SN1 | 20 | 470Ω±25% | 500 | 0.35 |
| 6 | BLM18AG601SN1 | 20 | 600Ω±25% | 500 | 0.38 |
| 7 | BLM18AG102SN1 | 20 | 1000Ω±25% | 400 | 0.50 |
| 8 | BLM18BA050SN1 | 20 | 5Ω±25% | 500 | 0.20 |
| 9 | BLM18BA100SN1 | 20 | 10Ω±25% | 500 | 0.25 |
| 10 | BLM18BA470SN1 | 20 | 47Ω±25% | 300 | 0.55 |
| 11 | BLM18BA750SN1 | 20 | 75Ω±25% | 300 | 0.70 |
| 12 | BLM18BA121SN1 | 20 | 120Ω±25% | 200 | 0.90 |
| 13 | BLM18BB050SN1 | 20 | 5Ω±25% | 700 | 0.05 |
| 14 | BLM18BB100SN1 | 20 | 10Ω±25% | 700 | 0.10 |
| 15 | BLM18BB220SN1 | 20 | 22Ω±25% | 600 | 0.20 |
| 16 | BLM18BB470SN1 | 20 | 47Ω±25% | 550 | 0.25 |
| 17 | BLM18BB600SN1 | 20 | 60Ω±25% | 550 | 0.25 |
| 18 | BLM18BB750SN1 | 20 | 75Ω±25% | 500 | 0.30 |
| 19 | BLM18BB121SN1 | 20 | 120Ω±25% | 500 | 0.30 |
| 20 | BLM18BB151SN1 | 20 | 150Ω±25% | 450 | 0.37 |
| 21 | BLM18BB221SN1 | 20 | 220Ω±25% | 450 | 0.45 |
| 22 | BLM18BB331SN1 | 20 | 330Ω±25% | 400 | 0.58 |
| 23 | BLM18BB471SN1 | 20 | 470Ω±25% | 300 | 0.85 |
| 24 | BLM18BD470SN1 | 20 | 47Ω±25% | 500 | 0.30 |
| 25 | BLM18BD121SN1 | 20 | 120Ω±25% | 200 | 0.40 |
| 26 | BLM18BD151SN1 | 20 | 150Ω±25% | 200 | 0.40 |
| 27 | BLM18BD221SN1 | 20 | 220Ω±25% | 200 | 0.45 |
| 28 | BLM18BD331SN1 | 20 | 330Ω±25% | 200 | 0.50 |
| 29 | BLM18BD421SN1 | 20 | 420Ω±25% | 200 | 0.55 |
| 30 | BLM18BD471SN1 | 20 | 470Ω±25% | 200 | 0.55 |
| 31 | BLM18BD601SN1 | 20 | 600Ω±25% | 200 | 0.65 |
| 32 | BLM18BD102SN1 | 20 | 1000Ω±25% | 100 | 0.85 |
| 33 | BLM18BD152SN1 | 20 | 1500Ω±25% | 50 | 1.20 |
| 34 | BLM18BD182SN1 | 20 | 1800Ω±25% | 50 | 1.50 |
| 35 | BLM18BD222SN1 | 20 | 2200Ω±25% | 50 | 1.50 |
| 36 | BLM18BD252SN1 | 20 | 2500Ω±25% | 50 | 1.50 |
| 37 | BLM18PG300SN1 | 20 | 30Ω (Typ.) | 1000 | 0.05 |
| 38 | BLM18PG330SN1 | 20 | 33Ω±25% | 3000 | 0.025 |
| 39 | BLM18PG600SN1 | 20 | 60Ω (Typ.) | 500 | 0.10 |
| 40 | BLM18PG121SN1 | 20 | 120Ω±25% | 2000 | 0.05 |
| 41 | BLM18PG181SN1 | 20 | 180Ω±25% | 1500 | 0.09 |
| 42 | BLM18PG221SN1 | 20 | 220Ω±25% | 1400 | 0.10 |
| 43 | BLM18PG331SN1 | 20 | 330Ω±25% | 1200 | 0.15 |
| 44 | BLM18PG471SN1 | 20 | 470Ω±25% | 1000 | 0.20 |
| 45 | BLM18KG260TN1 | 20 | 26Ω±25% | 6000 | 0.007 |
| 46 | BLM18KG300TN1 | 20 | 30Ω±25% | 5000 | 0.010 |
| 47 | BLM18KG700TN1 | 20 | 70Ω±25% | 3500 | 0.022 |
| 48 | BLM18KG101TN1 | 20 | 100Ω±25% | 3000 | 0.030 |
| 49 | BLM18KG121TN1 | 20 | 120Ω±25% | 3000 | 0.030 |
| 50 | BLM18KG221SN1 | 20 | 220Ω±25% | 2200 | 0.050 |
| 51 | BLM18KG331SN1 | 20 | 330Ω±25% | 1700 | 0.080 |
| 52 | BLM18KG471SN1 | 20 | 470Ω±25% | 1500 | 0.130 |
| 53 | BLM18KG601SN1 | 20 | 600Ω±25% | 1300 | 0.150 |
| 54 | BLM18SG260TN1 | 20 | 26Ω±25% | 6000 | 0.007 |
| 55 | BLM18SG700TN1 | 20 | 70Ω±25% | 4000 | 0.020 |
| 56 | BLM18SG121TN1 | 20 | 120Ω±25% | 3000 | 0.025 |
| 57 | BLM18SG221TN1 | 20 | 220Ω±25% | 2500 | 0.040 |
| 58 | BLM18SG331TN1 | 20 | 330Ω±25% | 1500 | 0.070 |

## ●EKEMBL8GAB-KIT (Chip Ferrite Beads / for High Frequency Type)

| No. | Part Number | Quantity (pcs.) | Impedance (at 100MHz, 20 degrees C) | Impedance (at 1GHz, 20 degrees C) | Rated Current (mA) | DC Resistance (Ω) max. |
|---|---|---|---|---|---|---|
| 1 | BLM18HG471SN1 | 20 | 470Ω±25% | 600Ω (Typ.) | 200 | 0.85 |
| 2 | BLM18HG601SN1 | 20 | 600Ω±25% | 700Ω (Typ.) | 200 | 1.00 |
| 3 | BLM18HG102SN1 | 20 | 1000Ω±25% | 1000Ω (Typ.) | 100 | 1.60 |

Continued on the following page.

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Continued from the preceding page.

| No. | Part Number | Quantity (pcs.) | Impedance (at 100MHz, 20 degrees C) | Impedance (at 1GHz, 20 degrees C) | Rated Current (mA) | DC Resistance (Ω) max. |
|---|---|---|---|---|---|---|
| 4 | BLM18HB121SN1 | 20 | 120Ω±25% | 500Ω±40% | 200 | 0.50 |
| 5 | BLM18HB221SN1 | 20 | 220Ω±25% | 1100Ω±40% | 100 | 0.80 |
| 6 | BLM18HB331SN1 | 20 | 330Ω±25% | 1600Ω±40% | 50 | 1.20 |
| 7 | BLM18HD471SN1 | 20 | 470Ω±25% | 1000Ω (Typ.) | 100 | 1.20 |
| 8 | BLM18HD601SN1 | 20 | 600Ω±25% | 1200Ω (Typ.) | 100 | 1.50 |
| 9 | BLM18HD102SN1 | 20 | 1000Ω±25% | 1700Ω (Typ.) | 50 | 1.80 |
| 10 | BLM18HE601SN1 | 20 | 600Ω±25% | 600Ω (Typ.) | 800 | 0.25 |
| 11 | BLM18HE102SN1 | 20 | 1000Ω±25% | 1000Ω (Typ.) | 600 | 0.35 |
| 12 | BLM18HE152SN1 | 20 | 1500Ω±25% | 1500Ω (Typ.) | 500 | 0.50 |
| 13 | BLM18HK331SN1 | 20 | 330Ω±25% | 400Ω (Typ.) | 200 | 0.50 |
| 14 | BLM18HK471SN1 | 20 | 470Ω±25% | 600Ω (Typ.) | 200 | 0.70 |
| 15 | BLM18HK601SN1 | 20 | 600Ω±25% | 700Ω (Typ.) | 100 | 0.90 |
| 16 | BLM18HK102SN1 | 20 | 1000Ω±25% | 1200Ω (Typ.) | 50 | 1.50 |
| 17 | BLM18EG101TN1 | 20 | 100Ω±25% | 140Ω (Typ.) | 2000 | 0.045 |
| 18 | BLM18EG121SN1 | 20 | 120Ω±25% | 145Ω (Typ.) | 2000 | 0.04 |
| 19 | BLM18EG221TN1 | 20 | 220Ω±25% | 300Ω (Typ.) | 1000 | 0.15 |
| 20 | BLM18EG221SN1 | 20 | 220Ω±25% | 260Ω (Typ.) | 2000 | 0.05 |
| 21 | BLM18EG331TN1 | 20 | 330Ω±25% | 450Ω (Typ.) | 500 | 0.21 |
| 22 | BLM18EG391TN1 | 20 | 390Ω±25% | 520Ω (Typ.) | 500 | 0.30 |
| 23 | BLM18EG471SN1 | 20 | 470Ω±25% | 550Ω (Typ.) | 500 | 0.21 |
| 24 | BLM18EG601SN1 | 20 | 600Ω±25% | 700Ω ( Typ.) | 500 | 0.35 |
| 25 | BLM18GG471SN1 | 20 | 470Ω±25% | 1800Ω±30% | 200 | 1.30 |

## ●EKEMBL21AF-KIT (Chip Ferrite Beads / for Large-current P Type)

| No. | Part Number | Quantity (pcs.) | Impedance typ. (at 100MHz, 20 degrees C) | Rated Current (mA) | DC Resistance (Ω) max. |
|---|---|---|---|---|---|
| 1 | BLM21AG121SN1 | 20 | 120Ω±25% | 800 | 0.10 |
| 2 | BLM21AG151SN1 | 20 | 150Ω±25% | 800 | 0.10 |
| 3 | BLM21AG221SN1 | 20 | 220Ω±25% | 800 | 0.13 |
| 4 | BLM21AG331SN1 | 20 | 330Ω±25% | 700 | 0.16 |
| 5 | BLM21AG471SN1 | 20 | 470Ω±25% | 700 | 0.19 |
| 6 | BLM21AG601SN1 | 20 | 600Ω±25% | 600 | 0.21 |
| 7 | BLM21AG102SN1 | 20 | 1000Ω±25% | 500 | 0.28 |
| 8 | BLM21BB050SN1 | 20 | 5Ω±25% | 1000 | 0.02 |
| 9 | BLM21BB600SN1 | 20 | 60Ω±25% | 800 | 0.13 |
| 10 | BLM21BB750SN1 | 20 | 75Ω±25% | 700 | 0.16 |
| 11 | BLM21BB121SN1 | 20 | 120Ω±25% | 600 | 0.19 |
| 12 | BLM21BB221SN1 | 20 | 220Ω±25% | 500 | 0.26 |
| 13 | BLM21BB331SN1 | 20 | 330Ω±25% | 400 | 0.33 |
| 14 | BLM21BB471SN1 | 20 | 470Ω±25% | 400 | 0.40 |
| 15 | BLM21BD121SN1 | 20 | 120Ω±25% | 200 | 0.25 |
| 16 | BLM21BD221SN1 | 20 | 220Ω±25% | 200 | 0.25 |
| 17 | BLM21BD421SN1 | 20 | 420Ω±25% | 200 | 0.30 |
| 18 | BLM21BD471SN1 | 20 | 470Ω±25% | 200 | 0.35 |
| 19 | BLM21BD601SN1 | 20 | 600Ω±25% | 200 | 0.35 |
| 20 | BLM21BD102SN1 | 20 | 1000Ω±25% | 200 | 0.40 |
| 21 | BLM21BD152SN1 | 20 | 1500Ω±25% | 200 | 0.45 |
| 22 | BLM21BD182SN1 | 20 | 1800Ω±25% | 200 | 0.50 |
| 23 | BLM21BD222SN1 | 20 | 2250Ω (Typ.) | 200 | 0.60 |
| 24 | BLM21BD222TN1 | 20 | 2200Ω±25% | 200 | 0.60 |
| 25 | BLM21BD272SN1 | 20 | 2700Ω±25% | 200 | 0.80 |
| 26 | BLM21PG220SN1 | 20 | 22Ω±25% | 6000 | 0.009 |
| 27 | BLM21PG300SN1 | 20 | 30Ω (Typ.) | 4000 | 0.014 |
| 28 | BLM21PG600SN1 | 20 | 60Ω±25% | 3500 | 0.02 |
| 29 | BLM21PG121SN1 | 20 | 120Ω±25% | 3000 | 0.03 |
| 30 | BLM21PG221SN1 | 20 | 220Ω±25% | 2000 | 0.045 |
| 31 | BLM21PG331SN1 | 20 | 330Ω±25% | 1500 | 0.07 |
| 32 | BLM31PG330SN1 | 20 | 33Ω±25% | 6000 | 0.009 |
| 33 | BLM31PG500SN1 | 20 | 50Ω (Typ.) | 3500 | 0.015 |
| 34 | BLM31PG121SN1 | 20 | 120Ω±25% | 3500 | 0.02 |
| 35 | BLM31PG391SN1 | 20 | 390Ω±25% | 2000 | 0.05 |
| 36 | BLM31PG601SN1 | 20 | 600Ω±25% | 1500 | 0.08 |
| 37 | BLM41PG600SN1 | 20 | 60Ω (Typ.) | 6000 | 0.009 |
| 38 | BLM41PG750SN1 | 20 | 75Ω (Typ.) | 3500 | 0.015 |
| 39 | BLM41PG181SN1 | 20 | 180Ω±25% | 3500 | 0.02 |

Continued on the following page.

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Continued from the preceding page.

| No. | Part Number | Quantity (pcs.) | Impedance typ. (at 100MHz, 20 degrees C) | Rated Current (mA) | DC Resistance (Ω) max. |
|---|---|---|---|---|---|
| 40 | **BLM41PG471SN1** | 20 | 470Ω±25% | 2000 | 0.05 |
| 41 | **BLM41PG102SN1** | 20 | 1000Ω±25% | 1500 | 0.09 |

Memo

# NF□

## Chip EMIFIL®





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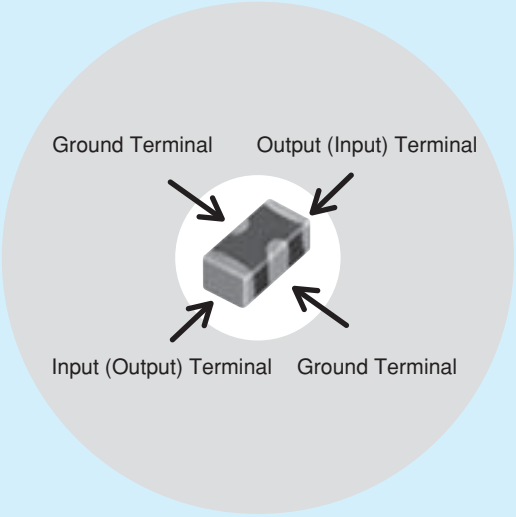
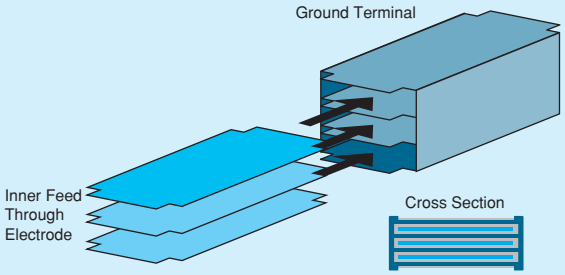
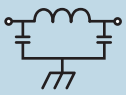
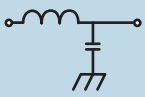



## Example of 3-Terminal Capacitor Structure

Chip 3-terminal capacitor is a chip-shaped 3-terminal capacitor designed for noise suppression. Its inner structure, like a feed-through capacitor, makes its ground impedance quite low. Owing to this structure, the 3-terminal capacitor has a good noise suppression effect at a high frequency range up to several hundred MHz.




| Series | Equivalent Circuit | Part Number |
|---|---|---|
| **NFM** Series (3-terminal capacitor) |  | **NFM18CC**<br>**NFM21CC**<br>**NFM18PC**<br>**NFM18PS**<br>**NFM21PC** |
| **NFL / NFW** Series (LC filter) |  | **NFL15ST**<br>**NFL18ST** |
| |  | **NFL18SP**<br>**NFL21SP**<br>**NFW31SP** |
| |  | **NFA21SL**<br>**NFA18SL**<br>**NFA18SD** |
| **NFR** Series (RC filter) |  | **NFR21GD**<br>**NFA31GD** |
| **NFE** Series (Feed through capacitor with ferrite cores) |  | **NFE31PT**<br>**NFE61PT** |

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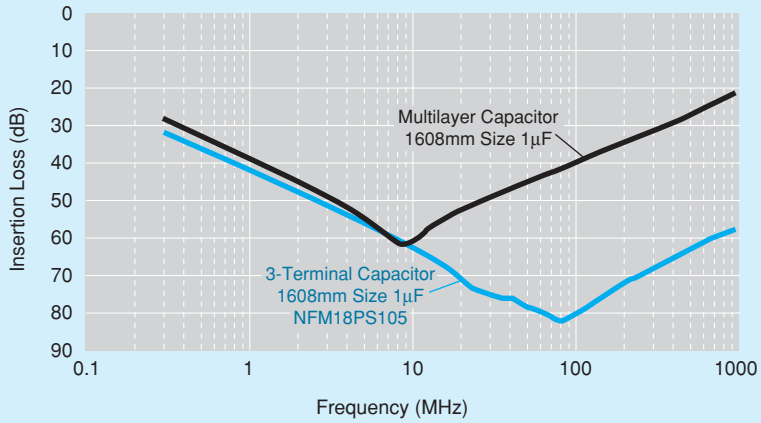
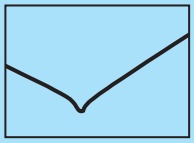
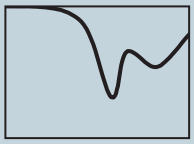
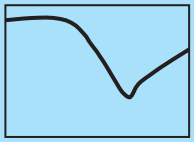
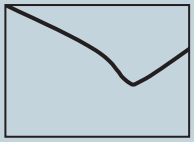



| Insertion Loss Sample | Features | Classification | | Applications | Example |
|---|---|---|---|---|---|
|  | Standard of 3-terminal capacitor | **NFM_CC** | Standard type with varied capacitance | Noise suppression in low speed signal lines | · Low speed interface lines<br>· Sensor |
| | | **NFM_PC** | Meet large current, high capacitance available, for power lines | Noise suppression in power lines | · Individual IC power lines |
|  | Sharp insertion loss curve enables low damage to signal waveform | **NFL_ST** | T-type filter, effective in low impedance circuits | Noise suppression in high speed signal lines | · High speed interface lines<br>· Bus lines<br>LCD lines<br>Camera I/Fs<br>· High speed analog lines<br>RGB / D terminal |
| | | **NFL_SP** | π-type filter, effective in high impedance circuits | | |
| | | **NFW_SP** | π-type filter, designed for low impedance circuits | | |
| | | **NFA_SL** | 4-line array, suitable for bus lines or flat cables | | |
|  | Limit noise using resistor, also loop back to ground | | | Noise suppression in signal line with unstable ground | · Interface lines<br>· Clock lines |
|  | Meets large current, good high frequency performance because of its feed through structure | | | Noise suppression in power lines / low impedance lines | · Various power lines<br>· Sensor |

# NF□ Chip EMIFIL® Part Numbering

## Capacitor

(Part Number) NF M 3D CC 102 R 1H 3 L
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾

*NFA□□SL/SD Series, please refer to p.116 (LC Combined (2)).
*NFA□□GD Series, please refer to p.116 (RC Combined).

❶Product ID

| Product ID | |
|---|---|
| NF | Chip EMIFIL® |

❷Structure

| Code | Structure |
|---|---|
| M | Capacitor Type |
| A | Capacitor Array Type |

❸Dimensions (L×W)

| Code | Dimensions (L×W) | EIA |
|---|---|---|
| 15 | 1.0×0.5mm | 0402 |
| 18 | 1.6×0.8mm | 0603 |
| 21 | 2.0×1.25mm | 0805 |
| 3D | 3.2×1.25mm | 1205 |
| 31 | 3.2×1.6mm | 1206 |
| 41 | 4.5×1.6mm | 1806 |

❹Features

| Code | Features |
|---|---|
| CC | Capacitor Type for Signal Lines |
| PC | Capacitor Type for Large Current |
| PS | High Insertion Loss Type for Large Current |
| KC | Capacitor Type for Very Large Current |

❺Capacitance

Expressed by three figures. The unit is in pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.

❻Characteristics

| Code | Capacitance Temperature Characteristics |
|---|---|
| B | ±10%, ±12.5%, +10/-13% |
| C | ±22% |
| D | +22/-33% |
| F | +30/-80%, +30/-84% |
| R | ±15%, +15/-18% |
| U | -750 ±120ppm/°C |
| S | +350 to -1000ppm/°C |

❼Rated Voltage

| Code | Rated Voltage |
|---|---|
| 0E | 2.5V |
| 0G | 4V |
| 0J | 6.3V |
| 1A | 10V |
| 1C | 16V |
| 1E | 25V |
| 1H | 50V |
| 2A | 100V |

❽Electrode/Others (**NFM** Series)

| Code | Electrode | Series |
|---|---|---|
| 3 | Sn Plating | **NFM** |

❽Number of Circuits (**NFA□□CC** Series)

| Code | Number of Circuits |
|---|---|
| 4 | 4 Circuits |

❾Packaging

| Code | Packaging | Series |
|---|---|---|
| L | Embossed Taping (ø180mm Reel) | **NFM3D/NFM31/NFM41** |
| B | Bulk | All series |
| D | Paper Taping (ø180mm Reel) | **NFM15/NFM18/NFM21/NFA□□CC** |

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## LC Combined (1)

(Part Number)

| NF | L | 18 | ST | 107 | X | 1C | 3 | L |
|---|---|---|---|---|---|---|---|---|
| ❶ | ❷ | ❸ | ❹ | ❺ | ❻ | ❼ | ❽ | ❾ |

❶Product ID

| Product ID | |
|---|---|
| NF | Chip EMIFIL® |

❷Structure

| Code | Structure |
|---|---|
| W | Wire Wound, LC Combined Type |
| L | Multilayer, LC Combined Type |
| E | Block, LC Combined Type |

❸Dimensions (L×W)

| Code | Dimensions (L×W) | EIA |
|---|---|---|
| 15 | 1.0×0.5mm | 0402 |
| 18 | 1.6×0.8mm | 0603 |
| 21 | 2.0×1.25mm | 0805 |
| 31 | 3.2×1.6mm | 1206 |
| 61 | 6.8×1.6mm | 2706 |

❹Features

| Code | Features |
|---|---|
| SP | π Circuit for Signal Lines |
| ST | T Circuit for Signal Lines |
| PT | T Circuit for Large Current |

❺Cut-off Frequency (**NFL/NFW** Series)
Expressed by three figures. The unit is in hertz (Hz). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.

❺Capacitance (**NFE** Series)
Expressed by three figures. The unit is in pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.

❻Characteristics (**NFL/NFW** Series)

| Code | Characteristics |
|---|---|
| H/X | Cut-off Frequency |

❻Characteristics (**NFE** Series)

| Code | Capacitance Temperature Characteristics |
|---|---|
| B | ±10% |
| C | ±20%, ±22% |
| D | +20/-30%, +22/-33% |
| E | +20/-55%, +22/-56% |
| F | +30/-80%, +22/-82% |
| R | ±15% |
| U | -750 ±120ppm/ ˚C |
| Z | Other |

❼Rated Voltage

| Code | Rated Voltage |
|---|---|
| 1A | 10V |
| 1C | 16V |
| 1E | 25V |
| 1H | 50V |
| 2A | 100V |

❽Electrode

| Code | Electrode | Series |
|---|---|---|
| 3/7 | Sn Plating | NFL |
| 4 | Lead Free Solder Coating | NFW |
| 9 | Others | NFE |

❾Packaging

| Code | Packaging | Series |
|---|---|---|
| K | Embossed Taping (ø330mm Reel) | NFW31/NFE |
| L | Embossed Taping (ø180mm Reel) | NFW31/NFE |
| B | Bulk | NFL18/NFL21/NFE |
| D | Paper Taping (ø180mm Reel) | NFL15/NFL18/NFL21 |



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## LC Combined (2)

(Part Number) NF A 21 SL 207 X 1A 4 5 L

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿

*NFA□□CC Series, please refer to p.114.
*NFA□□GD Series, please refer to p.116 (RC Combined).

❶Product ID

| Product ID | |
|---|---|
| NF | Chip EMIFIL® |

❷Structure

| Code | Structure |
|---|---|
| A | Array Type |

❸Dimensions (L×W)

| Code | Dimensions (L×W) | EIA |
|---|---|---|
| 18 | 1.6×0.8mm | 0603 |
| 21 | 2.0×1.25mm | 0805 |

❹Features (1)

| Code | Features |
|---|---|
| SL | L Circuit for Signal Lines |
| SD | L Circuit for Differential Signal |

❺Cut-off Frequency
Expressed by three figures. The unit is in hertz (Hz). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.

❻Features (2)

| Code | Features |
|---|---|
| X | Expressed by a letter |
| V | |

❼Rated Voltage

| Code | Rated Voltage |
|---|---|
| 1A | 10V |

❽Number of Circuits

| Code | Number of Circuits |
|---|---|
| 4 | 4 Circuits |

❾Dimensions (T)

| Code | Dimensions (T) |
|---|---|
| 5 | Low Profile |
| 8 | Standard |

❿Packaging

| Code | Packaging |
|---|---|
| B | Bulk |
| L | Embossed Taping (ø180mm Reel) |

## RC Combined

(Part Number) NF R 21 GD 470 470 2 L

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

*NFA□□CC Series, please refer to p.114.
*NFA□□SL/SD Series, please refer to p.116 (LC Combined (2)).

❶Product ID

| Product ID | |
|---|---|
| NF | Chip EMIFIL® |

❷Structure

| Code | Structure |
|---|---|
| R | RC Combined Type |
| A | RC Combined Array Type |

❸Dimensions (L×W)

| Code | Dimensions (L×W) | EIA |
|---|---|---|
| 21 | 2.0×1.25mm | 0805 |
| 31 | 3.2×1.6mm | 1206 |

❹Features

| Code | Features |
|---|---|
| GD | RC Combined Type for Signal Lines |

❺Capacitance
Expressed by three figures. The unit is in pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.

❻Resistance
Expressed by three-digit alphanumerics. The unit is in ohm (Ω). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures. If there is a decimal point, it is expressed by the capital letter "**R**." In this case, all figures are significant digits.

❼Electrode/Others (**NFR** Series)

| Code | Electrode |
|---|---|
| 2 | Sn Plating |

❼Number of Circuits (**NFA□□GD** Series)

| Code | Number of Circuits |
|---|---|
| 4 | 4 Circuits |

❽Packaging

| Code | Packaging | Series |
|---|---|---|
| L | Embossed Taping (ø180mm Reel) | **NFR** |
| B | Bulk | All Series |
| D | Paper Taping (ø180mm Reel) | **NFA□□GD** |

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| Type | Size Code in nch (in mm) | Thickness (mm) | Part Number | Rated Voltage | Capacitance | Nominal Cut-off Frequency | Rated Current | New / Kit / ≥1A / ≥3A / ≥10A / DTV / Flow / ReFlow |
|---|---|---|---|---|---|---|---|---|
| Capacitor Type for Signal Lines | p134 0402 (1005) | 0.4 | NFM15CC222D1A3 | 10Vdc | 2200pF+20%-20% | - | 1A | New Kit ≥1A ReFlow |
| | | 0.4 | NFM15CC222D1C3 | 16Vdc | 2200pF+20%-20% | - | 1A | New Kit ≥1A ReFlow |
| | | 0.4 | NFM15CC223C1A3 | 10Vdc | 22000pF+20%-20% | - | 1A | New Kit ≥1A ReFlow |
| | | 0.4 | NFM15CC223C1C3 | 16Vdc | 22000pF+20%-20% | - | 1A | New Kit ≥1A ReFlow |
| | p135 0603 (1608) | 0.6 | NFM18CC220U1C3 | 16Vdc | 22pF+20%-20% | - | 400mA | Kit ReFlow |
| | | 0.6 | NFM18CC470U1C3 | 16Vdc | 47pF+20%-20% | - | 400mA | Kit ReFlow |
| | | 0.6 | NFM18CC101R1C3 | 16Vdc | 100pF+20%-20% | - | 500mA | Kit ReFlow |
| | | 0.6 | NFM18CC221R1C3 | 16Vdc | 220pF+20%-20% | - | 500mA | Kit ReFlow |
| | | 0.6 | NFM18CC471R1C3 | 16Vdc | 470pF+20%-20% | - | 500mA | Kit ReFlow |
| | | 0.6 | NFM18CC102R1C3 | 16Vdc | 1000pF+20%-20% | - | 600mA | Kit ReFlow |
| | | 0.6 | NFM18CC222R1C3 | 16Vdc | 2200pF+20%-20% | - | 700mA | Kit ReFlow |
| | | 0.6 | NFM18CC223R1C3 | 16Vdc | 22000pF+20%-20% | - | 1000mA | Kit ≥1A ReFlow |
| | p136 0805 (2012) | 0.85 | NFM21CC220U1H3 | 50Vdc | 22pF+20%-20% | - | 700mA | Kit ReFlow |
| | | 0.85 | NFM21CC470U1H3 | 50Vdc | 47pF+20%-20% | - | 700mA | Kit ReFlow |
| | | 0.85 | NFM21CC101U1H3 | 50Vdc | 100pF+20%-20% | - | 700mA | Kit ReFlow |
| | | 0.85 | NFM21CC221R1H3 | 50Vdc | 220pF+20%-20% | - | 700mA | Kit ReFlow |
| | | 0.85 | NFM21CC471R1H3 | 50Vdc | 470pF+20%-20% | - | 1000mA | Kit ≥1A ReFlow |
| | | 0.85 | NFM21CC102R1H3 | 50Vdc | 1000pF+20%-20% | - | 1000mA | Kit ≥1A ReFlow |
| | | 0.85 | NFM21CC222R1H3 | 50Vdc | 2200pF+20%-20% | - | 1000mA | Kit ≥1A ReFlow |
| | | 0.85 | NFM21CC223R1H3 | 50Vdc | 22000pF+20%-20% | - | 2000mA | Kit ≥1A ReFlow |
| | p137 1205 (3212) | 0.7 | NFM3DCC220U1H3 | 50Vdc | 22pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 0.7 | NFM3DCC470U1H3 | 50Vdc | 47pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 0.7 | NFM3DCC101U1H3 | 50Vdc | 100pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 0.7 | NFM3DCC221R1H3 | 50Vdc | 220pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 0.7 | NFM3DCC471R1H3 | 50Vdc | 470pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 0.7 | NFM3DCC102R1H3 | 50Vdc | 1000pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 0.7 | NFM3DCC222R1H3 | 50Vdc | 2200pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 0.7 | NFM3DCC223R1H3 | 50Vdc | 22000pF+50%-20% | - | 300mA | Flow ReFlow |
| | p138 1806 (4516) | 1.0 | NFM41CC220U2A3 | 100Vdc | 22pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 1.0 | NFM41CC470U2A3 | 100Vdc | 47pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 1.0 | NFM41CC101U2A3 | 100Vdc | 100pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 1.0 | NFM41CC221U2A3 | 100Vdc | 220pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 1.0 | NFM41CC471R2A3 | 100Vdc | 470pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 1.0 | NFM41CC102R2A3 | 100Vdc | 1000pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 1.0 | NFM41CC222R2A3 | 100Vdc | 2200pF+50%-20% | - | 300mA | Flow ReFlow |
| | | 1.0 | NFM41CC223R2A3 | 100Vdc | 22000pF+50%-20% | - | 300mA | Flow ReFlow |
| Capacitor Array Type for Signal Lines | p139 1206 (3216) | 0.8 | NFA31CC220S1E4 | 25Vdc | 22pF+20%-20% | - | 200mA | Kit ReFlow |
| | | 0.8 | NFA31CC470S1E4 | 25Vdc | 47pF+20%-20% | - | 200mA | Kit ReFlow |
| | | 0.8 | NFA31CC101S1E4 | 25Vdc | 100pF+20%-20% | - | 200mA | Kit ReFlow |
| | | 0.8 | NFA31CC221S1E4 | 25Vdc | 220pF+20%-20% | - | 200mA | Kit ReFlow |
| | | 0.8 | NFA31CC471R1E4 | 25Vdc | 470pF+20%-20% | - | 200mA | Kit ReFlow |
| | | 0.8 | NFA31CC102R1E4 | 25Vdc | 1000pF+20%-20% | - | 200mA | Kit ReFlow |
| | | 0.8 | NFA31CC222R1E4 | 25Vdc | 2200pF+20%-20% | - | 200mA | Kit ReFlow |
| | | 0.8 | NFA31CC223R1C4 | 16Vdc | 22000pF+20%-20% | - | 200mA | Kit ReFlow |

Continued on the following page.



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| Type | Size Code in nch (in mm) | Thickness (mm) | Part Number | Rated Voltage | Capacitance | Nominal Cut-off Frequency | Rated Current | New | Kit | ≥1A ≥3A ≥10A | DTV | Flow | ReFlow |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Capacitor Type for Power Lines | p123 0402 (1005) | 0.4 | NFM15PC473C1A3 | 10Vdc | 0.047µF+20%-20% | - | 1A | New | Kit | ≥1A | | | ReFlow |
| | | 0.4 | NFM15PC473C1C3 | 16Vdc | 0.047µF+20%-20% | - | 1A | New | Kit | ≥1A | | | ReFlow |
| | | 0.4 | NFM15PC104D0J3 | 6.3Vdc | 0.1µF+20%-20% | - | 2A | New | Kit | ≥1A | | | ReFlow |
| | | 0.4 | NFM15PC104R1A3 | 10Vdc | 0.1µF+20%-20% | - | 2A | New | Kit | ≥1A | | | ReFlow |
| | | 0.4 | NFM15PC224D0J3 | 6.3Vdc | 0.22µF+20%-20% | - | 2A | New | Kit | ≥1A | | | ReFlow |
| | | 0.4 | NFM15PC224R1A3 | 10Vdc | 0.22µF+20%-20% | - | 2A | New | Kit | ≥1A | | | ReFlow |
| | | 0.3 | NFM15PC474D0G3 | 4Vdc | 0.47µF+20%-20% | - | 2A | New | Kit | ≥1A | | | ReFlow |
| | | 0.3 | NFM15PC474R0J3 | 6.3Vdc | 0.47µF+20%-20% | - | 2A | New | Kit | ≥1A | | | ReFlow |
| | | 0.3 | NFM15PC105R0G3 | 4Vdc | 1µF+20%-20% | - | 2A | New | Kit | ≥1A | | | ReFlow |
| | | 0.4 | NFM15PC435R0E3 | 2.5Vdc | 4.3µF+20%-20% | - | 2A | New | Kit | ≥1A | | | ReFlow |
| | p125 | 0.6 | NFM18PS474R0J3 | 6.3Vdc | 0.47µF+20%-20% | - | 2A | | Kit | ≥1A | | | ReFlow |
| | | 0.6 | NFM18PS105D0J3 | 6.3Vdc | 1.0µF+20%-20% | - | 2A | New | Kit | ≥1A | | | ReFlow |
| | | 0.6 | NFM18PS105R0J3 | 6.3Vdc | 1.0µF+20%-20% | - | 2A | | Kit | ≥1A | | | ReFlow |
| | p126 | 0.6 | NFM18PC104R1C3 | 16Vdc | 0.1µF+20%-20% | - | 2A | | Kit | ≥1A | | | ReFlow |
| | 0603 (1608) | 0.6 | NFM18PC224R0J3 | 6.3Vdc | 0.22µF+20%-20% | - | 2A | | Kit | ≥1A | | | ReFlow |
| | | 0.6 | NFM18PC474R0J3 | 6.3Vdc | 0.47µF+20%-20% | - | 2A | | Kit | ≥1A | | | ReFlow |
| | | 0.8 | NFM18PC105R0J3 | 6.3Vdc | 1.0µF+20%-20% | - | 4A | | Kit | ≥1A | | | ReFlow |
| | | 0.6 | NFM18PC225B0J3 | 6.3Vdc | 2.2µF+20%-20% | - | 2A | | Kit | ≥1A | | | ReFlow |
| | | 0.8 | NFM18PC225B1A3 | 10Vdc | 2.2µF+20%-20% | - | 4A | | Kit | ≥3A | | | ReFlow |
| | p128 | 0.85 | NFM21PS106B0J3 | 6.3Vdc | 10µF+20%-20% | - | 4A | | Kit | ≥3A | | | ReFlow |
| | p129 | 0.85 | NFM21PC104R1E3 | 25Vdc | 0.1µF+20%-20% | - | 2A | | Kit | ≥1A | | | ReFlow |
| | | 0.85 | NFM21PC224R1C3 | 16Vdc | 0.22µF+20%-20% | - | 2A | | Kit | ≥1A | | | ReFlow |
| | 0805 (2012) | 0.85 | NFM21PC474R1C3 | 16Vdc | 0.47µF+20%-20% | - | 2A | | Kit | ≥1A | | | ReFlow |
| | | 0.85 | NFM21PC105B1A3 | 10Vdc | 1.0µF+20%-20% | - | 4A | | Kit | ≥3A | | | ReFlow |
| | | 0.85 | NFM21PC105B1C3 | 16Vdc | 1.0µF+20%-20% | - | 4A | | Kit | ≥3A | | | ReFlow |
| | | 0.85 | NFM21PC225B0J3 | 6.3Vdc | 2.2µF+20%-20% | - | 4A | | Kit | ≥3A | | | ReFlow |
| | | 0.85 | NFM21PC475B1A3 | 10Vdc | 4.7µF+20%-20% | - | 6A | | Kit | ≥3A | | | ReFlow |
| | 1205 (3212) p130 | 0.7 | NFM3DPC223R1H3 | 50Vdc | 0.022µF+20%-20% | - | 2A | | | ≥1A | | Flow | ReFlow |
| | p131 | 1.3 | NFM31PC276B0J3 | 6.3Vdc | 27µF+20%-20% | - | 6A | | Kit | ≥3A | | Flow | ReFlow |
| | p132 | 1.3 | NFM31KC103R1H3 | 50Vdc | 10000pF+20%-20% | - | 10A | | Kit | ≥10A | | Flow | ReFlow |
| | | 1.3 | NFM31KC103R2A3 | 100Vdc | 10000pF+20%-20% | - | 10A | | Kit | ≥10A | | Flow | ReFlow |
| | | 1.3 | NFM31KC153R1H3 | 50Vdc | 15000pF+20%-20% | - | 10A | | Kit | ≥10A | | Flow | ReFlow |
| | 1206 (3216) | 1.3 | NFM31KC153R2A3 | 100Vdc | 15000pF+20%-20% | - | 10A | | Kit | ≥10A | | Flow | ReFlow |
| | | 1.3 | NFM31KC223R1H3 | 50Vdc | 22000pF+20%-20% | - | 10A | | Kit | ≥10A | | Flow | ReFlow |
| | | 1.3 | NFM31KC223R2A3 | 100Vdc | 22000pF+20%-20% | - | 10A | | Kit | ≥10A | | Flow | ReFlow |
| | | 1.3 | NFM31KC104R1H3 | 50Vdc | 100000pF+20%-20% | - | 6A | | Kit | ≥3A | | Flow | ReFlow |
| | | 1.3 | NFM31KC104R2A3 | 100Vdc | 100000pF+20%-20% | - | 6A | | Kit | ≥3A | | Flow | ReFlow |
| | p133 1806 (4516) | 1.0 | NFM41PC204F1H3 | 50Vdc | 0.2µF+80%-20% | - | 2A | | Kit | ≥1A | | Flow | ReFlow |
| | | 1.0 | NFM41PC155B1E3 | 25Vdc | 1.5µF+20%-20% | - | 6A | | Kit | ≥3A | | Flow | ReFlow |
| | | 1.0 | NFM41PC155B1H3 | 50Vdc | 1.5µF+20%-20% | - | 6A | New | | ≥3A | | Flow | ReFlow |
| LC Combined Type for Power Lines and Signal Lines | p121 1206 (3216) | 1.6 | NFE31PT220R1E9 | 25Vdc | 22pF+30%-30% | - | 6A | | | ≥3A | | | ReFlow |
| | | 1.6 | NFE31PT470C1E9 | 25Vdc | 47pF+50%-20% | - | 6A | | | ≥3A | | | ReFlow |
| | | 1.6 | NFE31PT101C1E9 | 25Vdc | 100pF+80%-20% | - | 6A | | | ≥3A | | | ReFlow |
| | | 1.6 | NFE31PT221D1E9 | 25Vdc | 220pF+50%-20% | - | 6A | | | ≥3A | | | ReFlow |
| | | 1.6 | NFE31PT471F1E9 | 25Vdc | 470pF+50%-20% | - | 6A | | | ≥3A | | | ReFlow |
| | | 1.6 | NFE31PT152Z1E9 | 25Vdc | 1500pF+50%-20% | - | 6A | | Kit | ≥3A | | | ReFlow |
| | | 1.6 | NFE31PT222Z1E9 | 25Vdc | 2200pF+50%-50% | - | 6A | | Kit | ≥3A | | | ReFlow |
| | p122 2706 (6816) | 1.6 | NFE61PT330B1H9 | 50Vdc | 33pF+30%-30% | - | 2A | | | ≥1A | | Flow | ReFlow |
| | | 1.6 | NFE61PT680B1H9 | 50Vdc | 68pF+30%-30% | - | 2A | | | ≥1A | | Flow | ReFlow |
| | | 1.6 | NFE61PT101Z1H9 | 50Vdc | 100pF+30%-30% | - | 2A | | | ≥1A | | Flow | ReFlow |
| | | 1.6 | NFE61PT181B1H9 | 50Vdc | 180pF+30%-30% | - | 2A | | | ≥1A | | Flow | ReFlow |
| | | 1.6 | NFE61PT361B1H9 | 50Vdc | 360pF+20%-20% | - | 2A | | | ≥1A | | Flow | ReFlow |
| | | 1.6 | NFE61PT681B1H9 | 50Vdc | 680pF+30%-30% | - | 2A | | | ≥1A | | Flow | ReFlow |
| | | 1.6 | NFE61PT102E1H9 | 50Vdc | 1000pF+80%-20% | - | 2A | | Kit | ≥1A | | Flow | ReFlow |
| | | 1.6 | NFE61PT472C1H9 | 50Vdc | 4700pF+80%-20% | - | 2A | | Kit | ≥1A | | Flow | ReFlow |

Continued on the following page.

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| Type | Size Code in nch (in mm) | Thickness (mm) | Part Number | Rated Voltage | Capacitance | Nominal Cut-off Frequency | Rated Current | New | Kit | ≥1A ≥3A ≥10A | DTV | Flow | ReFlow |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LC Combined Multilayer Type for Signal Lines | p140 0402 (1005) | 0.3 | NFL15ST157X0J3 | 6.3Vdc | 22pF (Typ.) | 150MHz | 50mA | | Kit | | DTV | | ReFlow |
| | | 0.3 | NFL15ST207X0J3 | 6.3Vdc | 17pF (Typ.) | 200MHz | 50mA | | Kit | | DTV | | ReFlow |
| | | 0.3 | NFL15ST307X0J3 | 6.3Vdc | 12pF (Typ.) | 300MHz | 50mA | | Kit | | | | ReFlow |
| | | 0.3 | NFL15ST507X0J3 | 6.3Vdc | 7pF (Typ.) | 500MHz | 50mA | | Kit | | | | ReFlow |
| | p141 0603 (1608) p142 | 0.6 | NFL18ST506H1A3 | 10Vdc | 110pF (Typ.) | 50MHz | 75mA | | Kit | | DTV | | ReFlow |
| | | 0.6 | NFL18ST706H1A3 | 10Vdc | 70pF (Typ.) | 70MHz | 75mA | | Kit | | DTV | | ReFlow |
| | | 0.6 | NFL18ST107H1A3 | 10Vdc | 50pF (Typ.) | 100MHz | 75mA | | Kit | | DTV | | ReFlow |
| | | 0.6 | NFL18ST207H1A3 | 10Vdc | 22pF (Typ.) | 200MHz | 100mA | | Kit | | DTV | | ReFlow |
| | | 0.6 | NFL18ST307H1A3 | 10Vdc | 16pF (Typ.) | 300MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.6 | NFL18ST507H1A3 | 10Vdc | 10pF (Typ.) | 500MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.8 | NFL18ST207X1C3 | 16Vdc | 25pF+20%-20% | 200MHz | 150mA | | Kit | | | | ReFlow |
| | | 0.8 | NFL18ST307X1C3 | 16Vdc | 18pF+20%-20% | 300MHz | 200mA | | Kit | | | | ReFlow |
| | | 0.8 | NFL18ST507X1C3 | 16Vdc | 10pF+20%-20% | 500MHz | 200mA | | Kit | | | | ReFlow |
| | p143 | 0.6 | NFL18SP157X1A3 | 10Vdc | 34pF+20%-20% | 150MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.6 | NFL18SP207X1A3 | 10Vdc | 24pF+20%-20% | 200MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.6 | NFL18SP307X1A3 | 10Vdc | 19pF+20%-20% | 300MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.6 | NFL18SP507X1A3 | 10Vdc | 11pF+20%-20% | 500MHz | 100mA | | Kit | | | | ReFlow |
| | p144 0805 (2012) | 0.85 | NFL21SP106X1C3 | 16Vdc | 670pF+20%-20% | 10MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.85 | NFL21SP206X1C7 | 16Vdc | 240pF+20%-20% | 20MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.85 | NFL21SP506X1C3 | 16Vdc | 84pF+20%-20% | 50MHz | 150mA | | Kit | | | | ReFlow |
| | | 0.85 | NFL21SP706X1C3 | 16Vdc | 76pF+20%-20% | 70MHz | 150mA | | Kit | | | | ReFlow |
| | | 0.85 | NFL21SP107X1C3 | 16Vdc | 44pF+20%-20% | 100MHz | 200mA | | Kit | | | | ReFlow |
| | | 0.85 | NFL21SP157X1C3 | 16Vdc | 28pF+20%-20% | 150MHz | 200mA | | Kit | | | | ReFlow |
| | | 0.85 | NFL21SP207X1C3 | 16Vdc | 22pF+20%-20% | 200MHz | 250mA | | Kit | | | | ReFlow |
| | | 0.85 | NFL21SP307X1C3 | 16Vdc | 19pF+10%-10% | 300MHz | 300mA | | Kit | | | | ReFlow |
| | | 0.85 | NFL21SP407X1C3 | 16Vdc | 16pF+10%-10% | 400MHz | 300mA | | Kit | | | | ReFlow |
| | | 0.85 | NFL21SP507X1C3 | 16Vdc | 12pF+10%-10% | 500MHz | 300mA | | Kit | | | | ReFlow |
| LC Combined Array Type for Signal Lines | p145 0603 (1608) p146 p147 | 0.6 | NFA18SL137V1A45 | 10Vdc | - | 130MHz | 50mA | | Kit | | DTV | | ReFlow |
| | | 0.6 | NFA18SL187V1A45 | 10Vdc | - | 180MHz | 50mA | | Kit | | DTV | | ReFlow |
| | | 0.6 | NFA18SL207V1A45 | 10Vdc | - | 200MHz | 50mA | | Kit | | DTV | | ReFlow |
| | | 0.6 | NFA18SL227V1A45 | 10Vdc | - | 220MHz | 25mA | | Kit | | DTV | | ReFlow |
| | | 0.5 | NFA18SL307V1A45 | 10Vdc | - | 300MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.5 | NFA18SL357V1A45 | 10Vdc | - | 350MHz | 35mA | | Kit | | | | ReFlow |
| | | 0.5 | NFA18SL407V1A45 | 10Vdc | - | 400MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.5 | NFA18SL487V1A45 | 10Vdc | - | 480MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.6 | NFA18SL506X1A45 | 10Vdc | - | 50MHz | 25mA | | Kit | | | | ReFlow |
| | | 0.6 | NFA18SD187X1A45 | 10Vdc | - | 180MHz | 25mA | | Kit | | DTV | | ReFlow |
| | | 0.6 | NFA18SD207X1A45 | 10Vdc | - | 200MHz | 25mA | | Kit | | DTV | | ReFlow |
| | p148 0805 (2012) p149 | 0.5 | NFA21SL287V1A45 | 10Vdc | - | 280MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.5 | NFA21SL317V1A45 | 10Vdc | - | 310MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.5 | NFA21SL337V1A45 | 10Vdc | - | 330MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.85 | NFA21SL287V1A48 | 10Vdc | - | 280MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.85 | NFA21SL317V1A48 | 10Vdc | - | 310MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.85 | NFA21SL337V1A48 | 10Vdc | - | 330MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.5 | NFA21SL207X1A45 | 10Vdc | - | 200MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.5 | NFA21SL307X1A45 | 10Vdc | - | 300MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.85 | NFA21SL506X1A48 | 10Vdc | - | 50MHz | 20mA | | Kit | | | | ReFlow |
| | | 0.85 | NFA21SL806X1A48 | 10Vdc | - | 80MHz | 20mA | | Kit | | | | ReFlow |
| | | 0.85 | NFA21SL207X1A48 | 10Vdc | - | 200MHz | 100mA | | Kit | | | | ReFlow |
| | | 0.85 | NFA21SL307X1A48 | 10Vdc | - | 300MHz | 100mA | | Kit | | | | ReFlow |
| LC Combined Wire Wound Type for Signal Lines | p150 1206 (3216) | 1.8 | NFW31SP106X1E4 | 25Vdc | - | 10MHz | 200mA | | Kit | | | Flow | ReFlow |
| | | 1.8 | NFW31SP206X1E4 | 25Vdc | - | 20MHz | 200mA | | Kit | | | Flow | ReFlow |
| | | 1.8 | NFW31SP506X1E4 | 25Vdc | - | 50MHz | 200mA | | Kit | | | Flow | ReFlow |
| | | 1.8 | NFW31SP107X1E4 | 25Vdc | - | 100MHz | 200mA | | Kit | | | Flow | ReFlow |
| | | 1.8 | NFW31SP157X1E4 | 25Vdc | - | 150MHz | 200mA | | Kit | | | Flow | ReFlow |
| | | 1.8 | NFW31SP207X1E4 | 25Vdc | - | 200MHz | 200mA | | Kit | | | Flow | ReFlow |
| | | 1.8 | NFW31SP307X1E4 | 25Vdc | - | 300MHz | 200mA | | Kit | | | Flow | ReFlow |
| | | 1.8 | NFW31SP407X1E4 | 25Vdc | - | 400MHz | 200mA | | Kit | | | Flow | ReFlow |
| | | 1.8 | NFW31SP507X1E4 | 25Vdc | - | 500MHz | 200mA | | Kit | | | Flow | ReFlow |

Continued on the following page.

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| Type | Size Code in nch (in mm) | Thickness (mm) | Part Number | Rated Voltage | Capacitance | Nominal Cut-off Frequency | Rated Current | New / Kit / ≥1A ≥3A ≥10A / DTV / Flow / ReFlow |
|---|---|---|---|---|---|---|---|---|
| RC Combined Type for Signal Lines | 0805 (2012) p152 | 0.5 | NFR21GD1002202 | 50Vdc | 10pF+20%-20% | - | 50mA | ReFlow |
| | | 0.5 | NFR21GD1004702 | 50Vdc | 10pF+20%-20% | - | 35mA | ReFlow |
| | | 0.5 | NFR21GD4702202 | 50Vdc | 47pF+20%-20% | - | 50mA | ReFlow |
| | | 0.5 | NFR21GD4704702 | 50Vdc | 47pF+20%-20% | - | 35mA | ReFlow |
| | | 0.5 | NFR21GD4706802 | 50Vdc | 47pF+20%-20% | - | 30mA | ReFlow |
| | | 0.5 | NFR21GD4701012 | 50Vdc | 47pF+20%-20% | - | 25mA | ReFlow |
| | | 0.5 | NFR21GD1012202 | 50Vdc | 100pF+20%-20% | - | 50mA | ReFlow |
| | | 0.5 | NFR21GD1014702 | 50Vdc | 100pF+20%-20% | - | 35mA | ReFlow |
| | | 0.5 | NFR21GD1016802 | 50Vdc | 100pF+20%-20% | - | 30mA | ReFlow |
| | | 0.5 | NFR21GD1011012 | 50Vdc | 100pF+20%-20% | - | 25mA | ReFlow |
| RC Combined Array Type for Signal Lines | 1206 (3216) p153 | 0.8 | NFA31GD1006R84 | 6Vdc | 10pF+20%-20% | - | 50mA | ReFlow |
| | | 0.8 | NFA31GD1004704 | 6Vdc | 10pF+20%-20% | - | 20mA | ReFlow |
| | | 0.8 | NFA31GD1001014 | 6Vdc | 10pF+20%-20% | - | 15mA | ReFlow |
| | | 0.8 | NFA31GD4706R84 | 6Vdc | 47pF+20%-20% | - | 50mA | ReFlow |
| | | 0.8 | NFA31GD4703304 | 6Vdc | 47pF+20%-20% | - | 20mA | ReFlow |
| | | 0.8 | NFA31GD4704704 | 6Vdc | 47pF+20%-20% | - | 20mA | ReFlow |
| | | 0.8 | NFA31GD4701014 | 6Vdc | 47pF+20%-20% | - | 15mA | ReFlow |
| | | 0.8 | NFA31GD1016R84 | 6Vdc | 100pF+20%-20% | - | 50mA | ReFlow |
| | | 0.8 | NFA31GD1014704 | 6Vdc | 100pF+20%-20% | - | 20mA | ReFlow |
| | | 0.8 | NFA31GD1011014 | 6Vdc | 100pF+20%-20% | - | 15mA | ReFlow |



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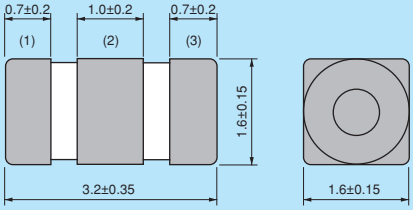
# NFE31PT Series 1206/3216 (inch/mm)

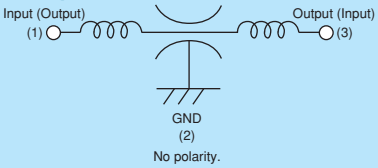
Hi Power Reflow OK

## Meets 6A, T-type filter with built-in ferrite bead.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 2000 |
| K | 330mm Reel Embossed Tape | 8000 |
| B | Bulk(Bag) | 500 |

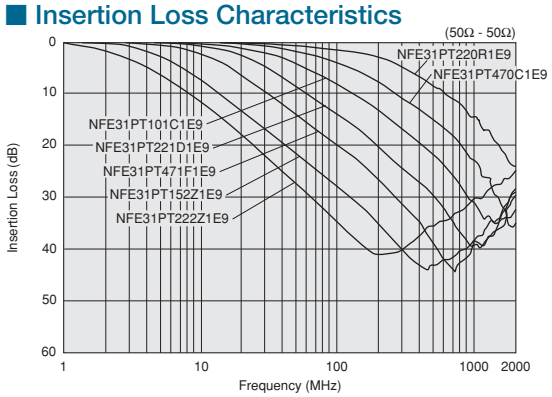
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFE31PT220R1E9□ | 22pF ±30% | 6A | 25Vdc | 1000M ohm | -40°C to +85°C | ≧3A |
| NFE31PT470C1E9□ | 47pF 50/-20% | 6A | 25Vdc | 1000M ohm | -40°C to +85°C | ≧3A |
| NFE31PT101C1E9□ | 100pF 80/-20% | 6A | 25Vdc | 1000M ohm | -40°C to +85°C | ≧3A |
| NFE31PT221D1E9□ | 220pF 50/-20% | 6A | 25Vdc | 1000M ohm | -40°C to +85°C | ≧3A |
| NFE31PT471F1E9□ | 470pF 50/-20% | 6A | 25Vdc | 1000M ohm | -40°C to +85°C | ≧3A |
| NFE31PT152Z1E9□ | 1500pF 50/-20% | 6A | 25Vdc | 1000M ohm | -40°C to +85°C | Kit ≧3A |
| NFE31PT222Z1E9□ | 2200pF ±50% | 6A | 25Vdc | 1000M ohm | -40°C to +85°C | Kit ≧3A |

Number of Circuit: 1

### ■ Insertion Loss Characteristics



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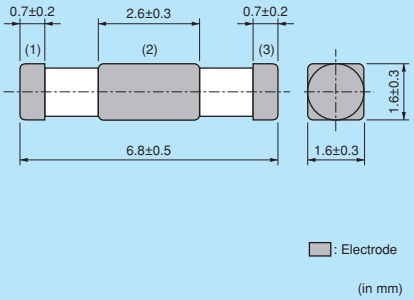
# NFE61PT Series 2706/6816 (inch/mm)

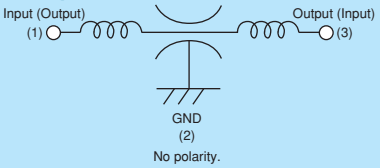
Hi Power Flow OK Reflow OK

## T-type filter with built-in ferrite bead.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 2500 |
| K | 330mm Reel Embossed Tape | 8000 |
| B | Bulk(Bag) | 500 |

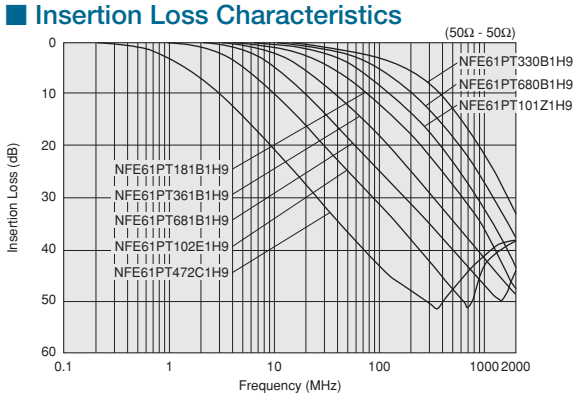
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFE61PT330B1H9□ | 33pF ±30% | 2A | 50Vdc | 1000M ohm | -40°C to +85°C | ≧1A |
| NFE61PT680B1H9□ | 68pF ±30% | 2A | 50Vdc | 1000M ohm | -40°C to +85°C | ≧1A |
| NFE61PT101Z1H9□ | 100pF ±30% | 2A | 50Vdc | 1000M ohm | -40°C to +85°C | ≧1A |
| NFE61PT181B1H9□ | 180pF ±30% | 2A | 50Vdc | 1000M ohm | -40°C to +85°C | ≧1A |
| NFE61PT361B1H9□ | 360pF ±20% | 2A | 50Vdc | 1000M ohm | -40°C to +85°C | ≧1A |
| NFE61PT681B1H9□ | 680pF ±30% | 2A | 50Vdc | 1000M ohm | -40°C to +85°C | ≧1A |
| NFE61PT102E1H9□ | 1000pF 80/-20% | 2A | 50Vdc | 1000M ohm | -40°C to +85°C | Kit ≧1A |
| NFE61PT472C1H9□ | 4700pF 80/-20% | 2A | 50Vdc | 1000M ohm | -40°C to +85°C | Kit ≧1A |

Number of Circuit: 1

### ■ Insertion Loss Characteristics



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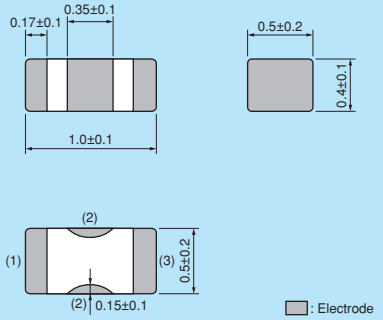
# NFM15PC Series 0402/1005 (inch/mm)

Reflow OK

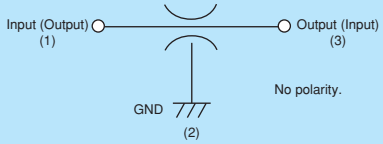
## 0402 size chip 3-terminal capacitor for power lines.

**NFM15PC** (0.047, 0.1, 0.22, 4.3μF)

### ■ Dimensions




### ■ Equivalent Circuit

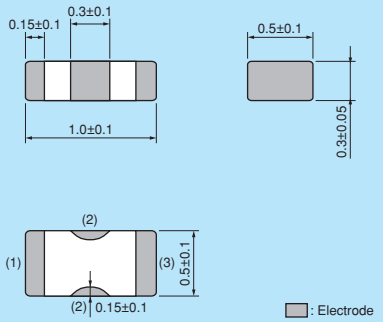



### ■ Packaging

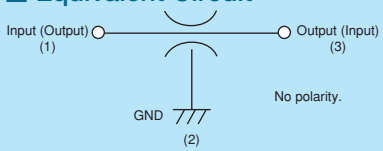
| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 500 |

**NFM15PCC** (0.47 to 1μF)

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 500 |

Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (☐: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFM15PC473C1A3☐ | 0.047μF ±20% | 1A | 10Vdc | 1000M ohm | -55°C to +105°C | New Kit ≧1A |
| NFM15PC473C1C3☐ | 0.047μF ±20% | 1A | 16Vdc | 1000M ohm | -55°C to +85°C | New Kit ≧1A |
| NFM15PC104D0J3☐ | 0.1μF ±20% | 2A | 6.3Vdc | 1000M ohm | -55°C to +105°C | New Kit ≧1A |
| NFM15PC104R1A3☐ | 0.1μF ±20% | 2A | 10Vdc | 1000M ohm | -55°C to +85°C | New Kit ≧1A |
| NFM15PC224D0J3☐ | 0.22μF ±20% | 2A | 6.3Vdc | 1000M ohm | -55°C to +105°C | New Kit ≧1A |
| NFM15PC224R1A3☐ | 0.22μF ±20% | 2A | 10Vdc | 1000M ohm | -55°C to +85°C | New Kit ≧1A |
| NFM15PC474D0G3☐ | 0.47μF ±20% | 2A | 4Vdc | 1000M ohm | -55°C to +105°C | New Kit ≧1A |
| NFM15PC474R0J3☐ | 0.47μF ±20% | 2A | 6.3Vdc | 1000M ohm | -55°C to +85°C | New Kit ≧1A |
| NFM15PC105R0G3☐ | 1μF ±20% | 2A | 4Vdc | 500M ohm | -55°C to +85°C | New Kit ≧1A |
| NFM15PC435R0E3☐ | 4.3μF ±20% | 2A | 2.5Vdc | 25M ohm | -55°C to +85°C | New Kit ≧1A |

Number of Circuit: 1

Continued on the following page.



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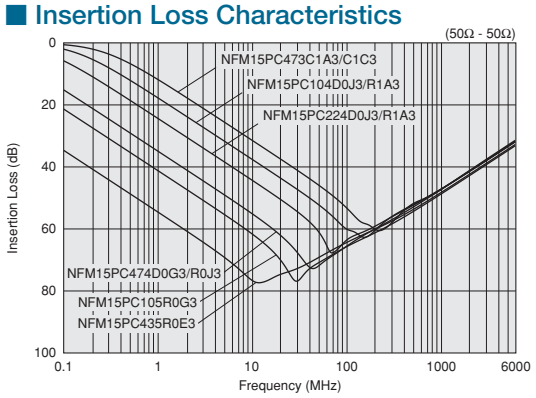
## Insertion Loss Characteristics



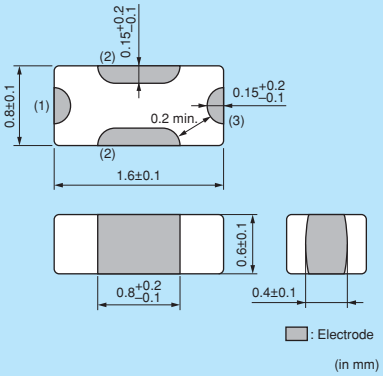
# NFM18PS Series 0603/1608 (inch/mm)

Hi Power Reflow OK

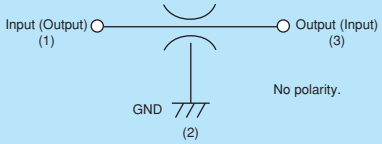
## 3-terminal capacitor for power lines whose ground impedance has reduced.

*Please refer to the products designed for both power lines and signal lines.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 500 |

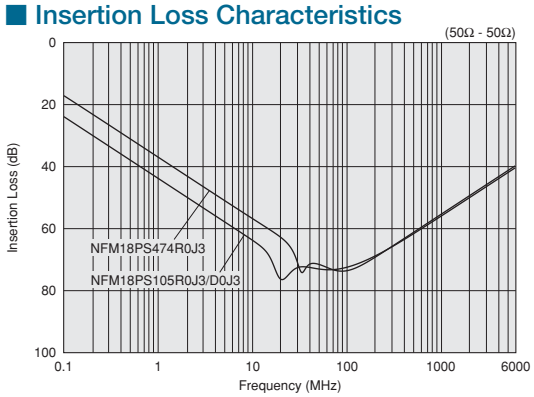
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFM18PS474R0J3□ | 0.47μF ±20% | 2A | 6.3Vdc | 1000M ohm | -55°C to +125°C | Kit ≧1A |
| NFM18PS105D0J3□ | 1.0μF ±20% | 2A | 6.3Vdc | 500M ohm | -55°C to +125°C | New Kit ≧1A |
| NFM18PS105R0J3□ | 1.0μF ±20% | 2A | 6.3Vdc | 500M ohm | -55°C to +105°C | Kit ≧1A |

Number of Circuit: 1

### ■ Insertion Loss Characteristics



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# NFM18PC Series 0603/1608 (inch/mm)

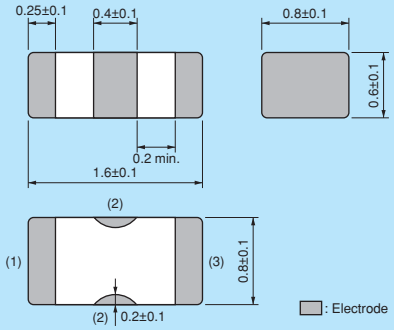
Hi Power Reflow OK

## 4A max., 0603 size chip 3-terminal capacitor for power lines.

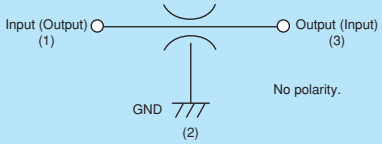
*Please refer to the products designed for both power lines and signal lines.

**NFM18PC** (0.1 to 0.47µF, 2.2µF - 6.3V)

### ■ Dimensions




### ■ Equivalent Circuit

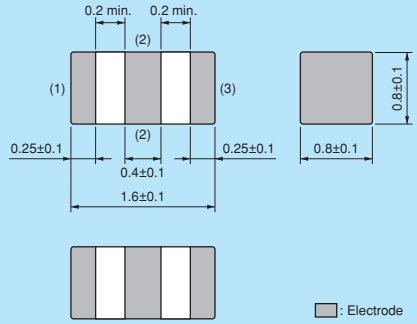



### ■ Packaging

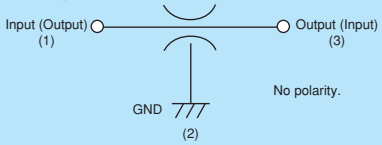
| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 500 |

**NFM18PC** (1µF, 2.2µF - 10V)

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 500 |

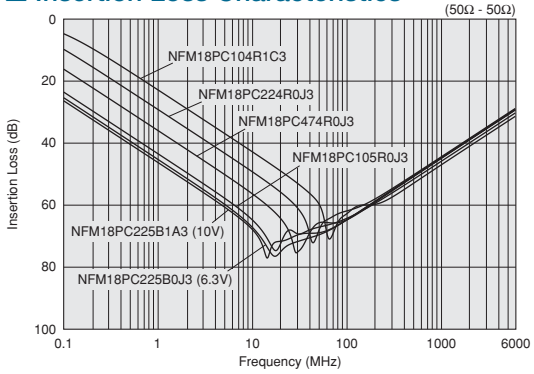
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFM18PC104R1C3□ | 0.1µF ±20% | 2A | 16Vdc | 1000M ohm | -55°C to +125°C | Kit ≧1A |
| NFM18PC224R0J3□ | 0.22µF ±20% | 2A | 6.3Vdc | 1000M ohm | -55°C to +125°C | Kit ≧1A |
| NFM18PC474R0J3□ | 0.47µF ±20% | 2A | 6.3Vdc | 1000M ohm | -55°C to +125°C | Kit ≧1A |
| NFM18PC105R0J3□ | 1.0µF ±20% | 4A | 6.3Vdc | 500M ohm | -55°C to +105°C | Kit ≧1A |
| NFM18PC225B0J3□ | 2.2µF ±20% | 2A | 6.3Vdc | 200M ohm | -40°C to +85°C | Kit ≧1A |
| NFM18PC225B1A3□ | 2.2µF ±20% | 4A | 10Vdc | 200M ohm | -40°C to +85°C | Kit ≧3A |

Number of Circuit: 1

### ■ Insertion Loss Characteristics

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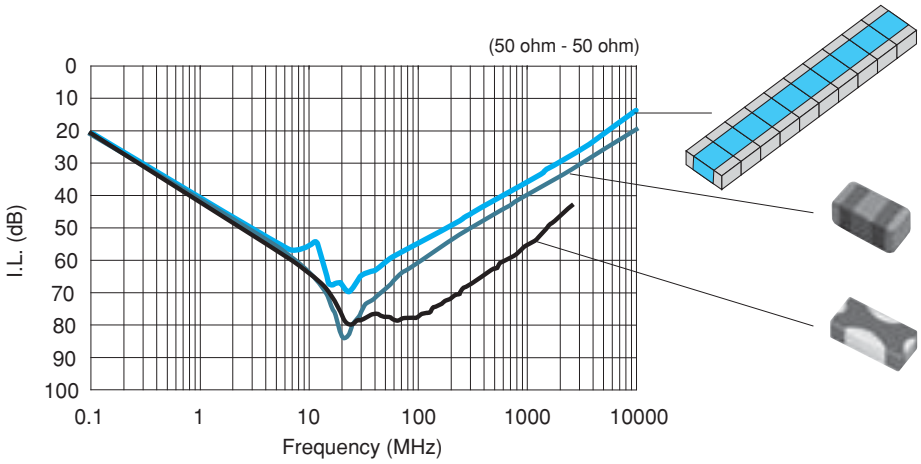
## • High frequency performance of NFM18PS series




**Chip 3-terminal capacitor**

2 terminal MLCC: 2012mm size
(0.1µFx10pcs parallel)

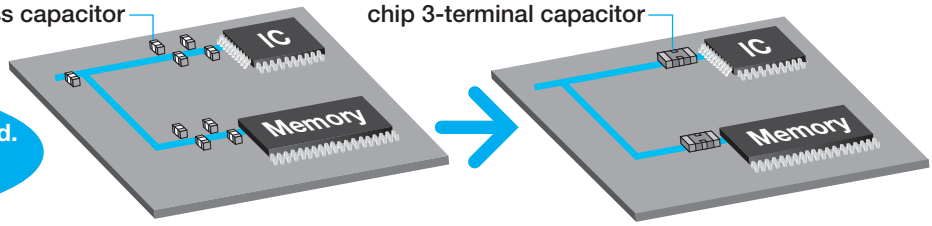
NFM18PC105R0J3 1pc
: 1608mm size (1.0µFx1)

NFM18PS105R0J3 1pc
: 1608mm size (1.0µFx1)

**NFM18PS series has better high-frequency performance compared to normal chip 3 terminal capacitors.**

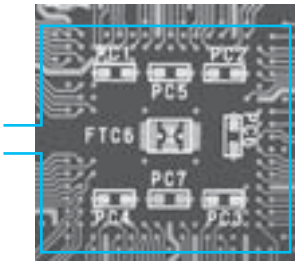
## • Optimize of bypass capacitors using chip 3-terminal capacitor

Number of parts can be reduced.
⇒ • Reduce PCB space
• Reduce mount cost

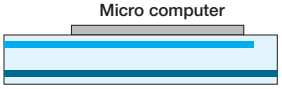


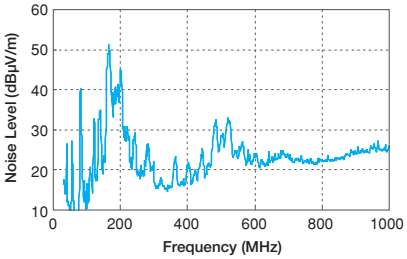

### Comparison of performance as a bypass capacitor

**Without capacitor**

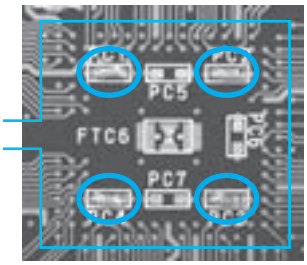



Micro computer

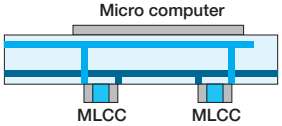


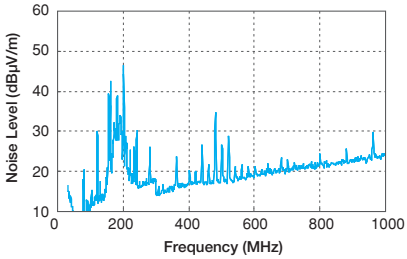



**With MLCC 0.22µFx4**

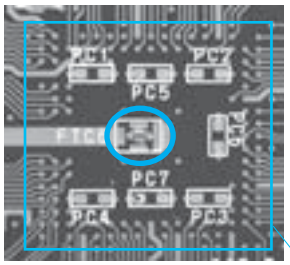



Micro computer



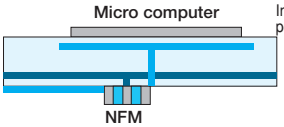

**With chip 3-terminal capacitor (NFM) 1µFx1**

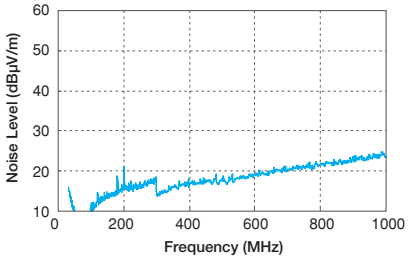



Micro computer

Inner layer power pattern

GND
Power line



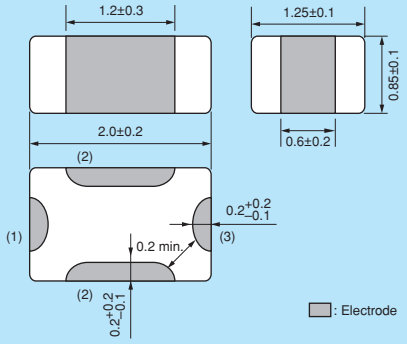

**Noise suppression effect of NFM series is better than MLCCs (1 NFM is better than 4 MLCCs).**

# NFM21PS Series 0805/2012 (inch/mm)

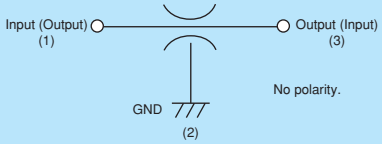
Hi Power Reflow OK

## 0805 size 3-terminal capacitor with very low ground impedance.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 500 |

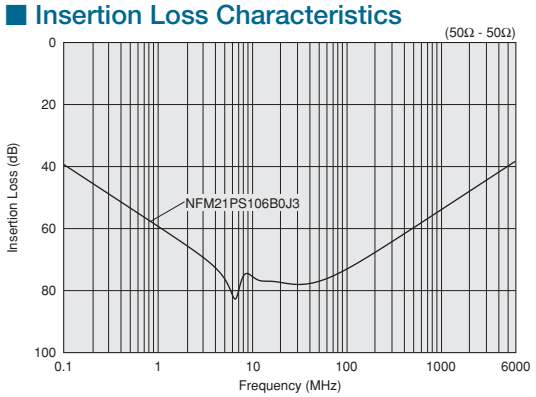
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFM21PS106B0J3□ | 10µF ±20% | 4A | 6.3Vdc | 50M ohm | -40°C to +85°C | Kit ≧3A |

Number of Circuit: 1

### ■ Insertion Loss Characteristics

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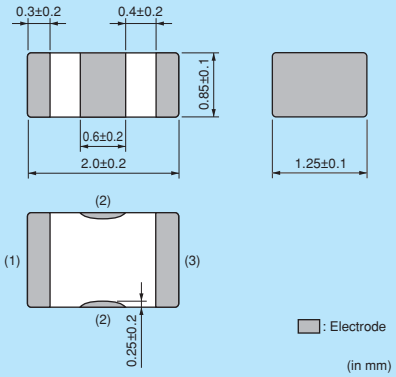
# NFM21PC Series 0805/2012 (inch/mm)

Hi Power Reflow OK

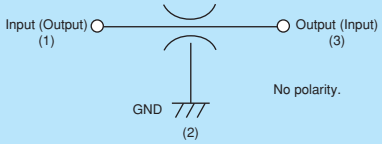
## 6A max., 0805 size chip 3-terminal capacitor for power lines.

*Please refer to the products designed for both power lines and signal lines.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 500 |

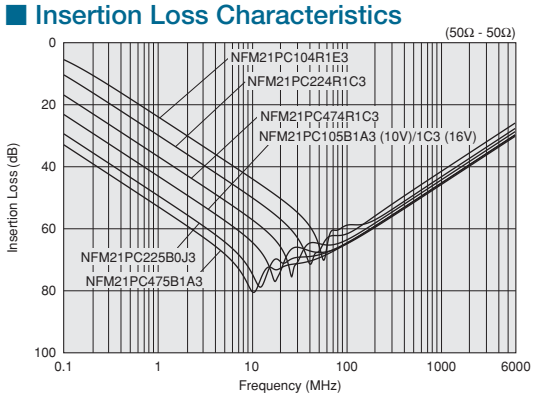
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFM21PC104R1E3□ | 0.1µF ±20% | 2A | 25Vdc | 1000M ohm | -55°C to +125°C | Kit ≧1A |
| NFM21PC224R1C3□ | 0.22µF ±20% | 2A | 16Vdc | 1000M ohm | -55°C to +125°C | Kit ≧1A |
| NFM21PC474R1C3□ | 0.47µF ±20% | 2A | 16Vdc | 1000M ohm | -55°C to +125°C | Kit ≧1A |
| NFM21PC105B1A3□ | 1.0µF ±20% | 4A | 10Vdc | 500M ohm | -40°C to +85°C | Kit ≧3A |
| NFM21PC105B1C3□ | 1.0µF ±20% | 4A | 16Vdc | 500M ohm | -40°C to +85°C | Kit ≧3A |
| NFM21PC225B0J3□ | 2.2µF ±20% | 4A | 6.3Vdc | 200M ohm | -40°C to +85°C | Kit ≧3A |
| NFM21PC475B1A3□ | 4.7µF ±20% | 6A | 10Vdc | 100M ohm | -40°C to +85°C | Kit ≧3A |

Number of Circuit: 1

### ■ Insertion Loss Characteristics



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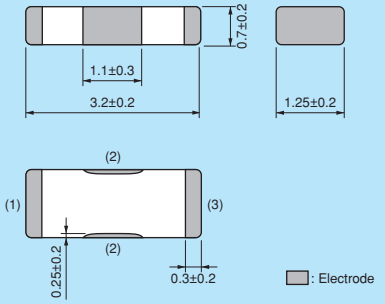
# NFM3DPC Series 1205/3212 (inch/mm)

Hi Power | Flow OK | Reflow OK

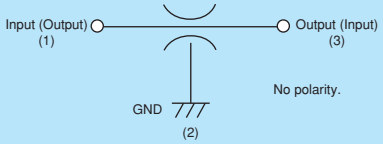
## 1205 size 3-terminal capacitor for power lines.

*Please refer to the products designed for both power lines and signal lines.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 4000 |
| B | Bulk(Bag) | 500 |

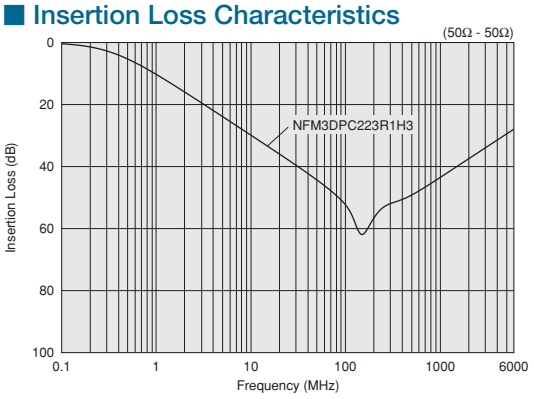
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFM3DPC223R1H3□ | 0.022μF ±20% | 2A | 50Vdc | 1000M ohm | -55°C to +125°C | ≧1A |

Number of Circuit: 1

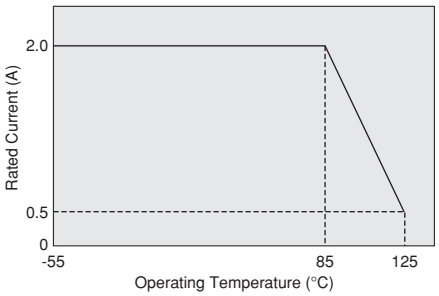
### ■ Insertion Loss Characteristics




### ■ Notice (Rating)

When NFM3DPC series is used in operating temperature exceeding +85°C, derating of current is necessary.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current

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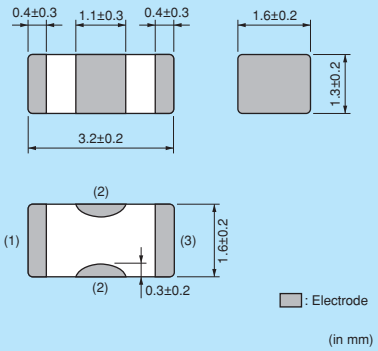
# NFM31PC Series 1206/3216 (inch/mm)

Hi Power | Flow OK | Reflow OK

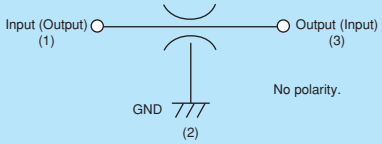
## 6A/27microF, 1206 size chip 3-terminal capacitor for power lines.

*Please refer to the products designed for both power lines and signal lines.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 3000 |
| B | Bulk(Bag) | 500 |

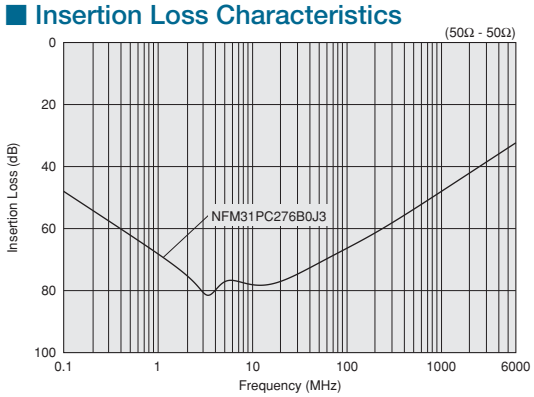
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFM31PC276B0J3□ | 27µF ±20% | 6A | 6.3Vdc | 20M ohm | -40°C to +85°C | Kit ≧3A |

Number of Circuit: 1

### ■ Insertion Loss Characteristics



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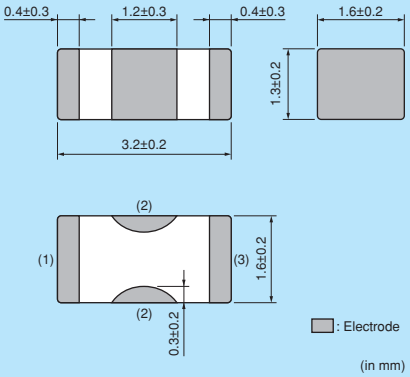
# NFM31KC Series 1206/3216 (inch/mm)

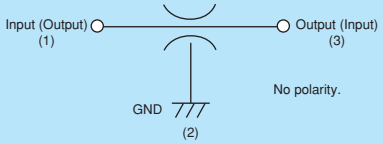
Hi Power Flow OK Reflow OK

## Capable for 10A max. Large current 3-terminal capacitor.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 3000 |
| B | Bulk(Bag) | 500 |

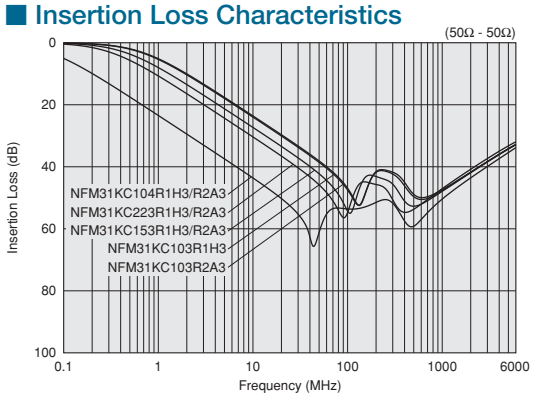
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFM31KC103R1H3□ | 10000pF ±20% | 10A | 50Vdc | 1000M ohm | -55°C to +125°C | Kit ≧10A |
| NFM31KC103R2A3□ | 10000pF ±20% | 10A | 100Vdc | 1000M ohm | -55°C to +125°C | Kit ≧10A |
| NFM31KC153R1H3□ | 15000pF ±20% | 10A | 50Vdc | 1000M ohm | -55°C to +125°C | Kit ≧10A |
| NFM31KC153R2A3□ | 15000pF ±20% | 10A | 100Vdc | 1000M ohm | -55°C to +105°C | Kit ≧10A |
| NFM31KC223R1H3□ | 22000pF ±20% | 10A | 50Vdc | 1000M ohm | -55°C to +125°C | Kit ≧10A |
| NFM31KC223R2A3□ | 22000pF ±20% | 10A | 100Vdc | 1000M ohm | -55°C to +105°C | Kit ≧10A |
| NFM31KC104R1H3□ | 100000pF ±20% | 6A | 50Vdc | 1000M ohm | -55°C to +125°C | Kit ≧3A |
| NFM31KC104R2A3□ | 100000pF ±20% | 6A | 100Vdc | 1000M ohm | -55°C to +105°C | Kit ≧3A |

Number of Circuit: 1

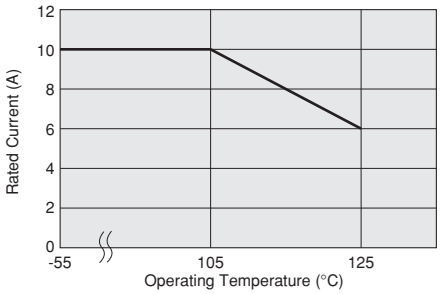
### ■ Insertion Loss Characteristics




### ■ Notice (Rating)

When NFM31KC series is used in operating temperatures exceeding +105°C, derating of current is necessary.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current
(Except for NFM31KC 153/223/104 R2A3, NFM31KC104R1H3)

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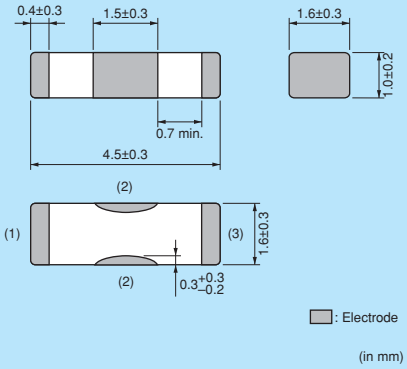
# NFM41PC Series 1806/4516 (inch/mm)

Hi Power Flow OK Reflow OK

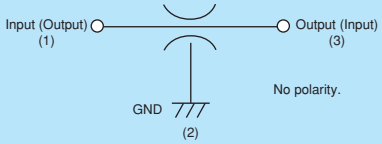
## 6A max., 1806 size chip 3-terminal capacitor for power lines.

*Please refer to the products designed for both power lines and signal lines.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 4000 |
| B | Bulk(Bag) | 500 |

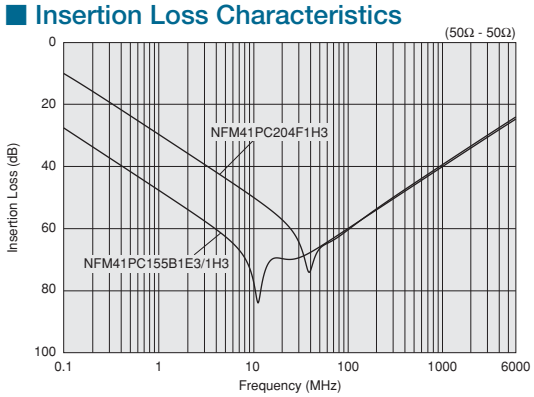
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFM41PC204F1H3□ | 0.2μF 80/-20% | 2A | 50Vdc | 1000M ohm | -55°C to +85°C | Kit ≧1A |
| NFM41PC155B1E3□ | 1.5μF ±20% | 6A | 25Vdc | 300M ohm | -55°C to +85°C | Kit ≧3A |
| NFM41PC155B1H3□ | 1.5μF ±20% | 6A | 50Vdc | 100M ohm | -55°C to +85°C | New ≧3A |

Number of Circuit: 1

### ■ Insertion Loss Characteristics



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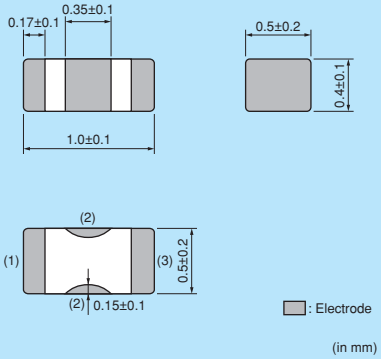
# NFM15CC Series 0402/1005 (inch/mm)

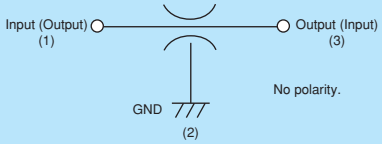
Reflow OK

## 0402 size chip 3-terminal capacitor for signal lines.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 500 |

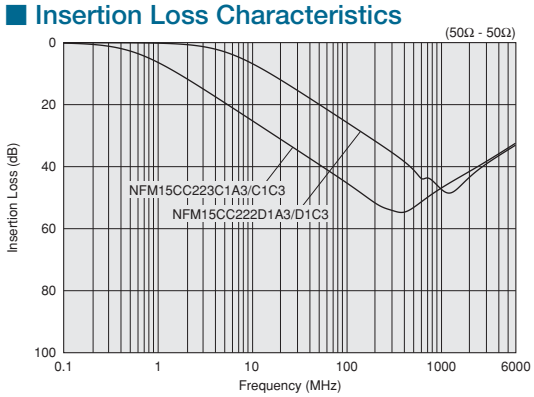
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFM15CC222D1A3□ | 2200pF ±20% | 1A | 10Vdc | 1000M ohm | -55°C to +105°C | New Kit ≧1A |
| NFM15CC222D1C3□ | 2200pF ±20% | 1A | 16Vdc | 1000M ohm | -55°C to +85°C | New Kit ≧1A |
| NFM15CC223C1A3□ | 22000pF ±20% | 1A | 10Vdc | 1000M ohm | -55°C to +105°C | New Kit ≧1A |
| NFM15CC223C1C3□ | 22000pF ±20% | 1A | 16Vdc | 1000M ohm | -55°C to +85°C | New Kit ≧1A |

Number of Circuit: 1

### ■ Insertion Loss Characteristics



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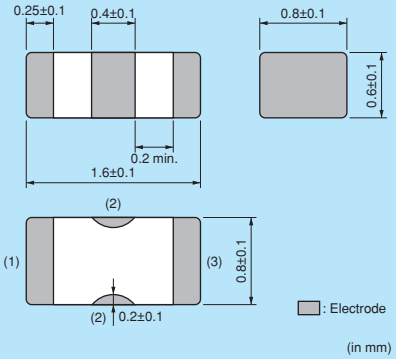
# NFM18CC Series 0603/1608 (inch/mm)

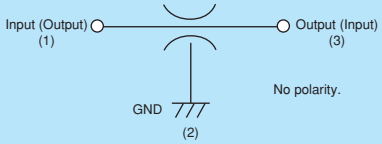
Reflow OK

## 0603 size general 3-terminal capacitor.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 500 |

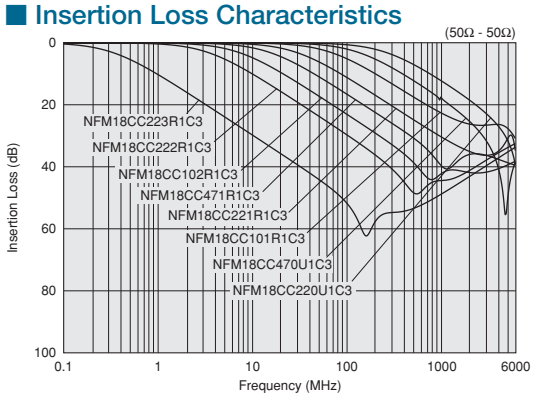
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFM18CC220U1C3□ | 22pF ±20% | 400mA | 16Vdc | 1000M ohm | -55°C to +125°C | Kit |
| NFM18CC470U1C3□ | 47pF ±20% | 400mA | 16Vdc | 1000M ohm | -55°C to +125°C | Kit |
| NFM18CC101R1C3□ | 100pF ±20% | 500mA | 16Vdc | 1000M ohm | -55°C to +125°C | Kit |
| NFM18CC221R1C3□ | 220pF ±20% | 500mA | 16Vdc | 1000M ohm | -55°C to +125°C | Kit |
| NFM18CC471R1C3□ | 470pF ±20% | 500mA | 16Vdc | 1000M ohm | -55°C to +125°C | Kit |
| NFM18CC102R1C3□ | 1000pF ±20% | 600mA | 16Vdc | 1000M ohm | -55°C to +125°C | Kit |
| NFM18CC222R1C3□ | 2200pF ±20% | 700mA | 16Vdc | 1000M ohm | -55°C to +125°C | Kit |
| NFM18CC223R1C3□ | 22000pF ±20% | 1000mA | 16Vdc | 1000M ohm | -55°C to +125°C | Kit ≧1A |

Number of Circuit: 1

### ■ Insertion Loss Characteristics



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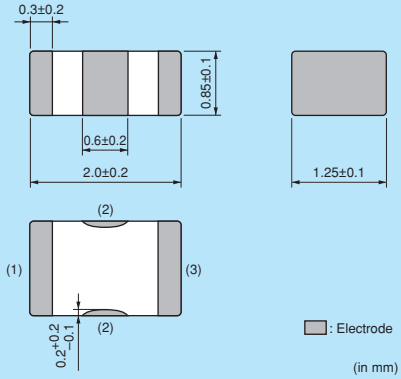
# NFM21CC Series 0805/2012 (inch/mm)

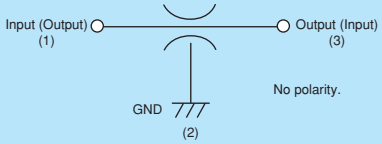
Reflow OK

## 0805 size general 3-terminal capacitor.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 500 |

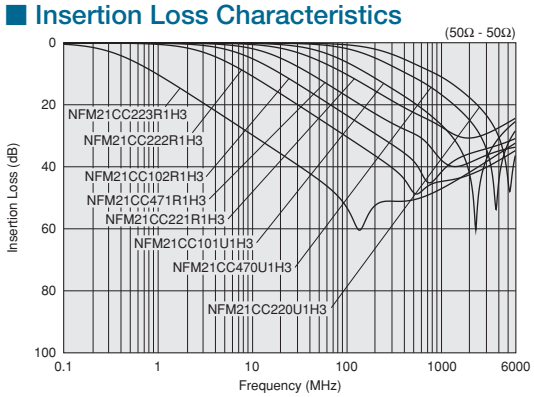
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFM21CC220U1H3□ | 22pF ±20% | 700mA | 50Vdc | 1000M ohm | -55°C to +125°C | Kit |
| NFM21CC470U1H3□ | 47pF ±20% | 700mA | 50Vdc | 1000M ohm | -55°C to +125°C | Kit |
| NFM21CC101U1H3□ | 100pF ±20% | 700mA | 50Vdc | 1000M ohm | -55°C to +125°C | Kit |
| NFM21CC221R1H3□ | 220pF ±20% | 700mA | 50Vdc | 1000M ohm | -55°C to +125°C | Kit |
| NFM21CC471R1H3□ | 470pF ±20% | 1000mA | 50Vdc | 1000M ohm | -55°C to +125°C | Kit ≧1A |
| NFM21CC102R1H3□ | 1000pF ±20% | 1000mA | 50Vdc | 1000M ohm | -55°C to +125°C | Kit ≧1A |
| NFM21CC222R1H3□ | 2200pF ±20% | 1000mA | 50Vdc | 1000M ohm | -55°C to +125°C | Kit ≧1A |
| NFM21CC223R1H3□ | 22000pF ±20% | 2000mA | 50Vdc | 1000M ohm | -55°C to +125°C | Kit ≧1A |

Number of Circuit: 1

### ■ Insertion Loss Characteristics



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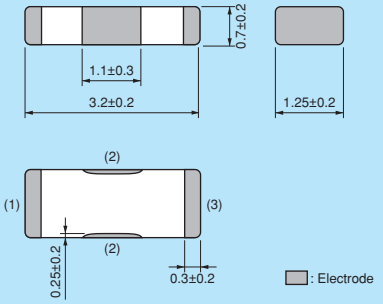
# NFM3DCC Series 1205/3212 (inch/mm)

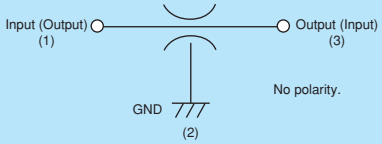
Flow OK Reflow OK

## 1205 size general 3-terminal capacitor.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 4000 |
| B | Bulk(Bag) | 500 |

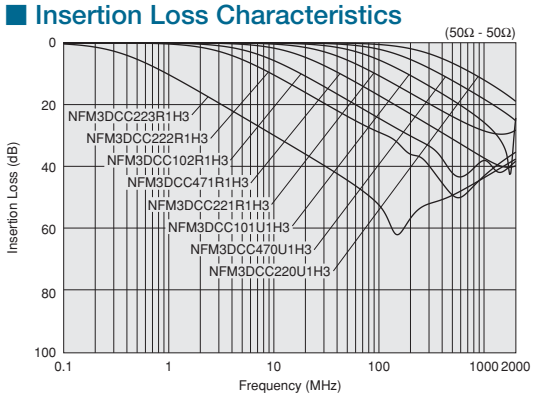
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range |
|---|---|---|---|---|---|
| NFM3DCC220U1H3□ | 22pF +50/-20% | 300mA | 50Vdc | 1000M ohm | -55°C to +125°C |
| NFM3DCC470U1H3□ | 47pF +50/-20% | 300mA | 50Vdc | 1000M ohm | -55°C to +125°C |
| NFM3DCC101U1H3□ | 100pF +50/-20% | 300mA | 50Vdc | 1000M ohm | -55°C to +125°C |
| NFM3DCC221R1H3□ | 220pF +50/-20% | 300mA | 50Vdc | 1000M ohm | -55°C to +125°C |
| NFM3DCC471R1H3□ | 470pF +50/-20% | 300mA | 50Vdc | 1000M ohm | -55°C to +125°C |
| NFM3DCC102R1H3□ | 1000pF +50/-20% | 300mA | 50Vdc | 1000M ohm | -55°C to +125°C |
| NFM3DCC222R1H3□ | 2200pF +50/-20% | 300mA | 50Vdc | 1000M ohm | -55°C to +125°C |
| NFM3DCC223R1H3□ | 22000pF +50/-20% | 300mA | 50Vdc | 1000M ohm | -55°C to +125°C |

Number of Circuit: 1

### ■ Insertion Loss Characteristics



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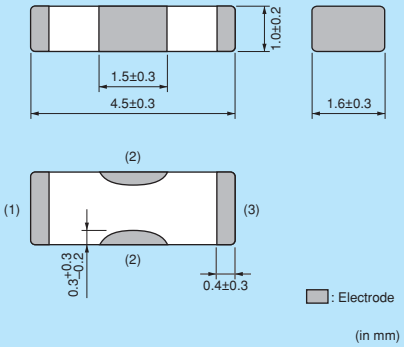
# NFM41CC Series 1806/4516 (inch/mm)

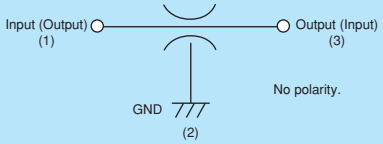
Flow OK Reflow OK

## 1806 size general 3-terminal capacitor.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 4000 |
| B | Bulk(Bag) | 500 |

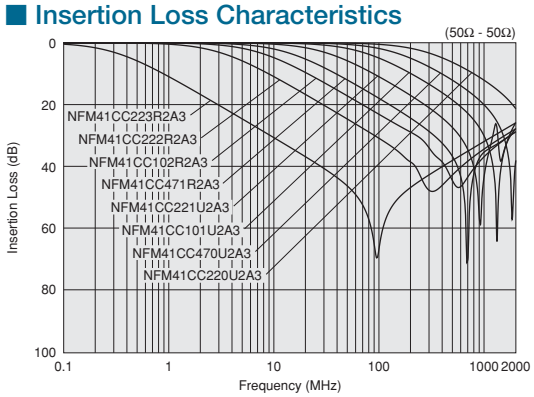
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range |
|---|---|---|---|---|---|
| NFM41CC220U2A3□ | 22pF +50/-20% | 300mA | 100Vdc | 10000M ohm | -55°C to +125°C |
| NFM41CC470U2A3□ | 47pF +50/-20% | 300mA | 100Vdc | 10000M ohm | -55°C to +125°C |
| NFM41CC101U2A3□ | 100pF +50/-20% | 300mA | 100Vdc | 10000M ohm | -55°C to +125°C |
| NFM41CC221U2A3□ | 220pF +50/-20% | 300mA | 100Vdc | 10000M ohm | -55°C to +125°C |
| NFM41CC471R2A3□ | 470pF +50/-20% | 300mA | 100Vdc | 10000M ohm | -55°C to +125°C |
| NFM41CC102R2A3□ | 1000pF +50/-20% | 300mA | 100Vdc | 10000M ohm | -55°C to +125°C |
| NFM41CC222R2A3□ | 2200pF +50/-20% | 300mA | 100Vdc | 10000M ohm | -55°C to +125°C |
| NFM41CC223R2A3□ | 22000pF +50/-20% | 300mA | 100Vdc | 10000M ohm | -55°C to +125°C |

Number of Circuit: 1

### ■ Insertion Loss Characteristics



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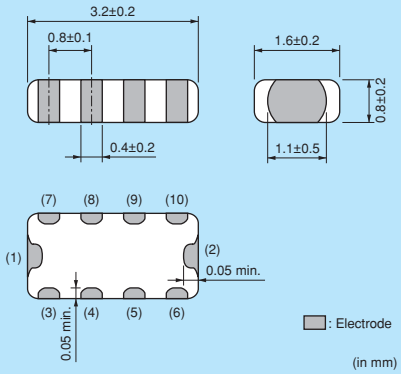
# NFA31CC Series 1206/3216 (inch/mm)

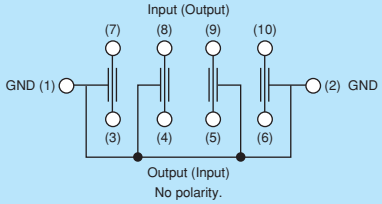
Reflow OK

## 4-line chip 3-terminal capacitor array, 1206 size.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 100 |

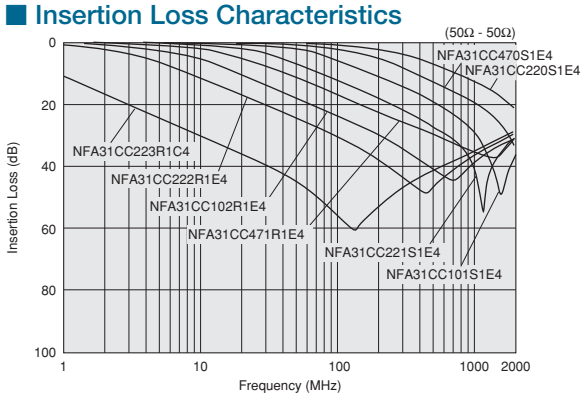
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range | |
|---|---|---|---|---|---|---|
| NFA31CC220S1E4□ | 22pF ±20% | 200mA | 25Vdc | 1000M ohm | -40°C to +85°C | Kit |
| NFA31CC470S1E4□ | 47pF ±20% | 200mA | 25Vdc | 1000M ohm | -40°C to +85°C | Kit |
| NFA31CC101S1E4□ | 100pF ±20% | 200mA | 25Vdc | 1000M ohm | -40°C to +85°C | Kit |
| NFA31CC221S1E4□ | 220pF ±20% | 200mA | 25Vdc | 1000M ohm | -40°C to +85°C | Kit |
| NFA31CC471R1E4□ | 470pF ±20% | 200mA | 25Vdc | 1000M ohm | -40°C to +85°C | Kit |
| NFA31CC102R1E4□ | 1000pF ±20% | 200mA | 25Vdc | 1000M ohm | -40°C to +85°C | Kit |
| NFA31CC222R1E4□ | 2200pF ±20% | 200mA | 25Vdc | 1000M ohm | -40°C to +85°C | Kit |
| NFA31CC223R1C4□ | 22000pF ±20% | 200mA | 16Vdc | 1000M ohm | -40°C to +85°C | Kit |

Number of Circuit: 4

### ■ Insertion Loss Characteristics



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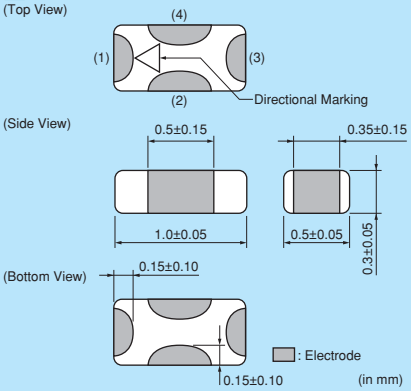
# NFL15ST Series 0402/1005 (inch/mm)

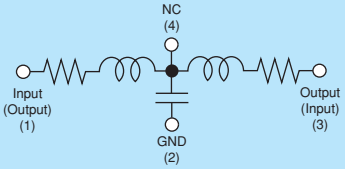
Reflow OK

## T-type LC filter, ultra-compact size of 0402.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 500 |

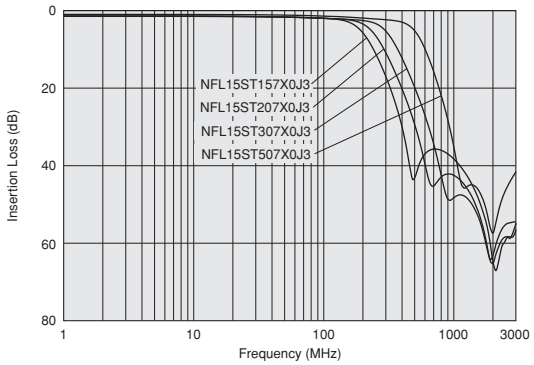
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Nominal Cut-off Frequency | Capacitance | Inductance | Insertion Loss 1 | Insertion Loss 2 | Rated Current | Rated Voltage | |
|---|---|---|---|---|---|---|---|---|
| NFL15ST157X0J3□ | 150MHz | 22pF (Typ.) | 115nH (Typ.) | 6dB max.(0 to 150MHz) | 25dB min.(400 to 1000MHz) | 50mA | 6.3Vdc | Kit DTV |
| NFL15ST207X0J3□ | 200MHz | 17pF (Typ.) | 105nH (Typ.) | 6dB max.(0 to 200MHz) | 25dB min.(600 to 1000MHz) | 50mA | 6.3Vdc | Kit DTV |
| NFL15ST307X0J3□ | 300MHz | 12pF (Typ.) | 95nH (Typ.) | 6dB max.(0 to 300MHz) | 25dB min.(800 to 1000MHz) | 50mA | 6.3Vdc | Kit |
| NFL15ST507X0J3□ | 500MHz | 7pF (Typ.) | 60nH (Typ.) | 6dB max.(0 to 500MHz) | 25dB min.(1000MHz) | 50mA | 6.3Vdc | Kit |

Insulation Resistance (min.): 1000M ohm Withstand Voltage: 18.9Vdc Operating Temperature Range: -40°C to +85°C Number of Circuits: 1

### ■ Insertion Loss Characteristics



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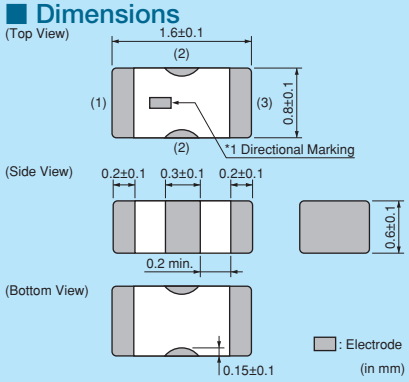
# NFL18ST Series 0603/1608 (inch/mm)

Reflow OK

## T-type LC filter. Reduces waveform distortion of high speed signal.

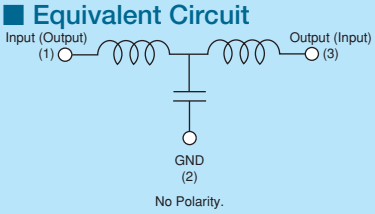
### NFL18ST_H

### ■ Dimensions




*1 There are no electrical polarity. But there is a directional marking on the top of product to identify inner physical direction.

### ■ Equivalent Circuit

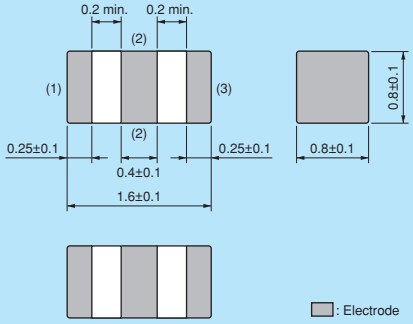



### ■ Packaging

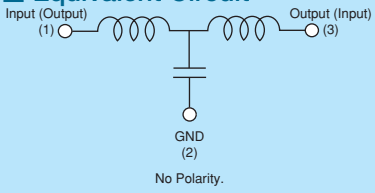
| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 1000 |

### NFL18ST_X

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.156 to p.162 for mounting information.

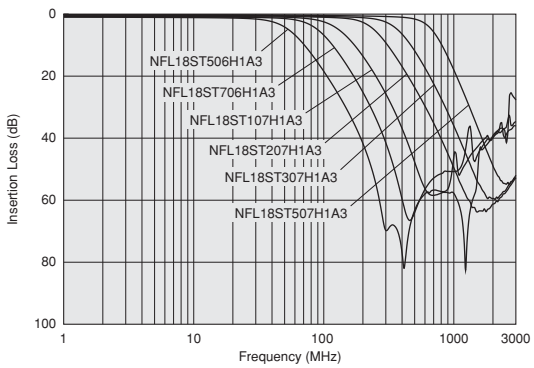
### ■ Rated Value (□: packaging code)

| Part Number | Nominal Cut-off Frequency | Capacitance | Inductance | Insertion Loss 1 | Insertion Loss 2 | Rated Current | Rated Voltage | |
|---|---|---|---|---|---|---|---|---|
| NFL18ST506H1A3□ | 50MHz | 110pF (Typ.) | 350nH (Typ.) | 6dB max.(0 to 50MHz) | 30dB min.(200 to 1000MHz) | 75mA | 10Vdc | Kit DTV |
| NFL18ST706H1A3□ | 70MHz | 70pF (Typ.) | 230nH (Typ.) | 6dB max.(0 to 70MHz) | 30dB min.(300 to 1000MHz) | 75mA | 10Vdc | Kit DTV |
| NFL18ST107H1A3□ | 100MHz | 50pF (Typ.) | 150nH (Typ.) | 6dB max.(0 to 100MHz) | 30dB min.(400 to 1000MHz) | 75mA | 10Vdc | Kit DTV |
| NFL18ST207H1A3□ | 200MHz | 22pF (Typ.) | 110nH (Typ.) | 6dB max.(0 to 200MHz) | 30dB min.(800 to 2000MHz) | 100mA | 10Vdc | Kit DTV |
| NFL18ST307H1A3□ | 300MHz | 16pF (Typ.) | 74nH (Typ.) | 6dB max.(0 to 300MHz) | 30dB min.(1200 to 2000MHz) | 100mA | 10Vdc | Kit |
| NFL18ST507H1A3□ | 500MHz | 10pF (Typ.) | 42nH (Typ.) | 6dB max.(0 to 500MHz) | 30dB min.(1700 to 2000MHz) | 100mA | 10Vdc | Kit |

Insulation Resistance (min.): 1000M ohm Withstand Voltage: 30Vdc Operating Temperature Range: -55°C to +125°C Number of Circuits: 1

### ■ Insertion Loss Characteristics

#### NFL18ST_H Series




Continued on the following page.

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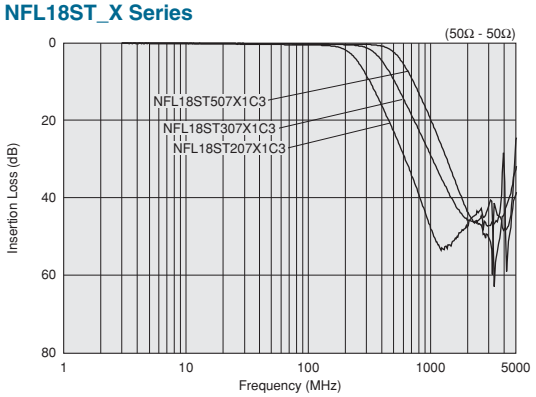
## ■ Rated Value (□: packaging code)

| Part Number | Nominal Cut-off Frequency | Capacitance | Inductance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | Operating Temperature Range | |
|---|---|---|---|---|---|---|---|---|---|
| NFL18ST207X1C3□ | 200MHz | 25pF±20% | 110nH±20% | 150mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |
| NFL18ST307X1C3□ | 300MHz | 18pF±20% | 62nH±20% | 200mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |
| NFL18ST507X1C3□ | 500MHz | 10pF±20% | 43nH±20% | 200mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |

Number of Circuits: 1

## ■ Insertion Loss Characteristics

### NFL18ST_X Series



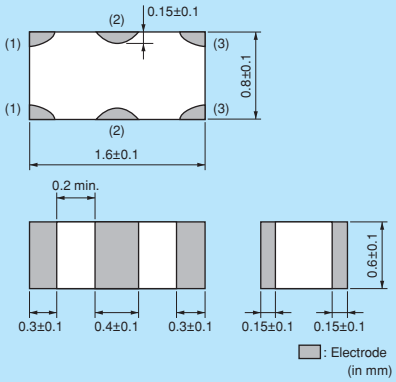

⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

# NFL18SP Series 0603/1608 (inch/mm)

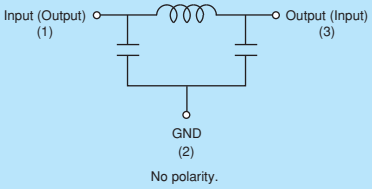
Reflow OK

## PI-type LC filter. Reduces waveform distortion of high speed signal.

### Dimensions




### Equivalent Circuit




### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 1000 |

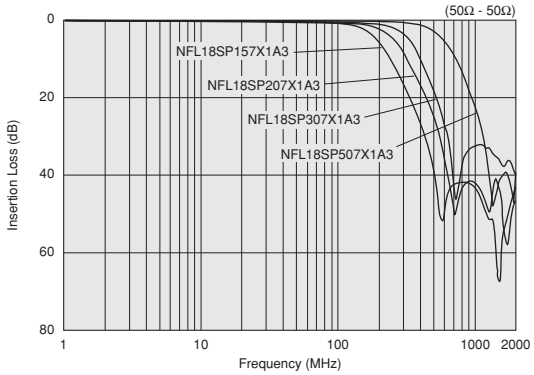
Refer to pages from p.156 to p.162 for mounting information.

### Rated Value (☐: packaging code)

| Part Number | Nominal Cut-off Frequency | Capacitance | Inductance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | Operating Temperature Range | |
|---|---|---|---|---|---|---|---|---|---|
| NFL18SP157X1A3☐ | 150MHz | 34pF±20% | 100nH±20% | 100mA | 10Vdc | 1000M ohm | 30Vdc | -55°C to +125°C | Kit |
| NFL18SP207X1A3☐ | 200MHz | 24pF±20% | 80nH±20% | 100mA | 10Vdc | 1000M ohm | 30Vdc | -55°C to +125°C | Kit |
| NFL18SP307X1A3☐ | 300MHz | 19pF±20% | 60nH±20% | 100mA | 10Vdc | 1000M ohm | 30Vdc | -55°C to +125°C | Kit |
| NFL18SP507X1A3☐ | 500MHz | 11pF±20% | 38nH±20% | 100mA | 10Vdc | 1000M ohm | 30Vdc | -55°C to +125°C | Kit |

Number of Circuits: 1

### Insertion Loss Characteristics



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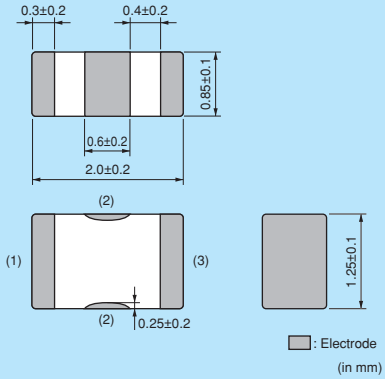
# NFL21SP Series 0805/2012 (inch/mm)

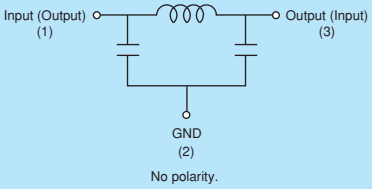
Reflow OK

## PI-type LC filter. Reduces waveform distortion of high speed signal.

### Dimensions




### Equivalent Circuit




### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 1000 |

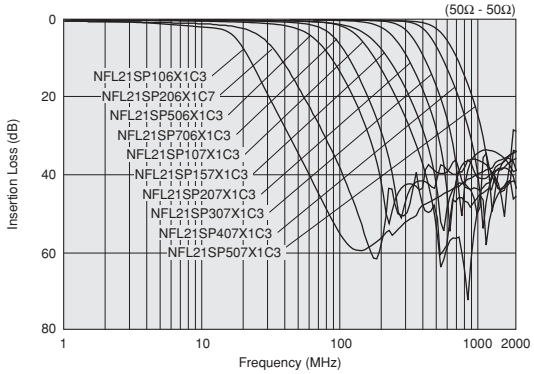
Refer to pages from p.156 to p.162 for mounting information.

### Rated Value (□: packaging code)

| Part Number | Nominal Cut-off Frequency | Capacitance | Inductance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | Operating Temperature Range | |
|---|---|---|---|---|---|---|---|---|---|
| NFL21SP106X1C3□ | 10MHz | 670pF±20% | 680nH±20% | 100mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |
| NFL21SP206X1C7□ | 20MHz | 240pF±20% | 700nH±20% | 100mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |
| NFL21SP506X1C3□ | 50MHz | 84pF±20% | 305nH±20% | 150mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |
| NFL21SP706X1C3□ | 70MHz | 76pF±20% | 185nH±20% | 150mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |
| NFL21SP107X1C3□ | 100MHz | 44pF±20% | 135nH±20% | 200mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |
| NFL21SP157X1C3□ | 150MHz | 28pF±20% | 128nH±20% | 200mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |
| NFL21SP207X1C3□ | 200MHz | 22pF±20% | 72nH±20% | 250mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |
| NFL21SP307X1C3□ | 300MHz | 19pF±10% | 45nH±10% | 300mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |
| NFL21SP407X1C3□ | 400MHz | 16pF±10% | 34nH±10% | 300mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |
| NFL21SP507X1C3□ | 500MHz | 12pF±10% | 31nH±10% | 300mA | 16Vdc | 1000M ohm | 50Vdc | -55°C to +125°C | Kit |

Number of Circuits: 1

### Insertion Loss Characteristics



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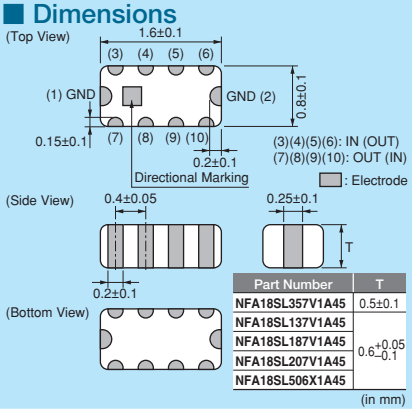
# NFA18SL Series 0603/1608 (inch/mm)

Reflow OK

## LC filter 4-line array for mobile phones.

### NFA18SL 137/187/207/357 V1A45
### NFA18SL506X1A45

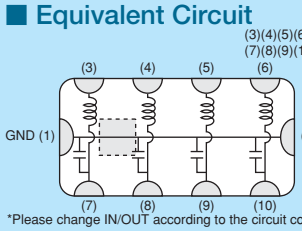
#### ■ Dimensions




| Part Number | T |
|---|---|
| NFA18SL357V1A45 | 0.5±0.1 |
| NFA18SL137V1A45 | $0.6^{+0.05}_{-0.1}$ |
| NFA18SL187V1A45 | |
| NFA18SL207V1A45 | |
| NFA18SL506X1A45 | |

(in mm)

#### ■ Equivalent Circuit



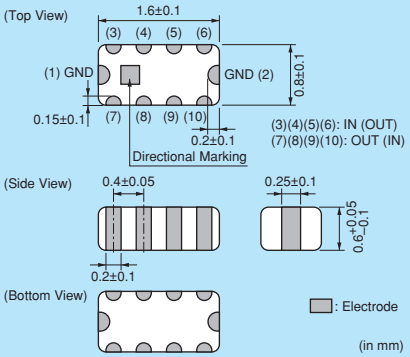

*Please change IN/OUT according to the circuit condition.

#### ■ Packaging

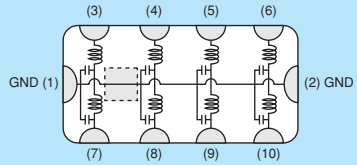
| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 4000 |
| B | Bulk(Bag) | 1000 |

### NFA18SL227V1A45

#### ■ Dimensions




#### ■ Equivalent Circuit

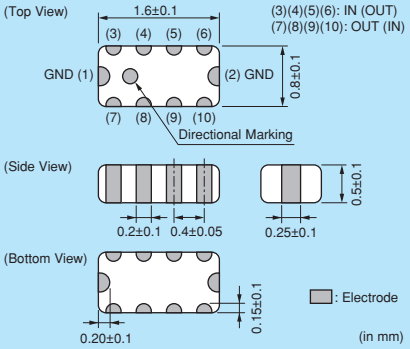



#### ■ Packaging

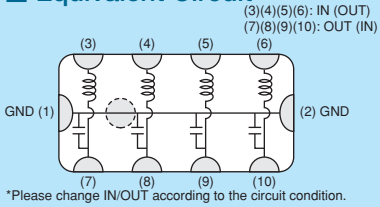
| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 4000 |
| B | Bulk(Bag) | 1000 |

### NFA18SL 307/407/487 V1A45

#### ■ Dimensions




#### ■ Equivalent Circuit




*Please change IN/OUT according to the circuit condition.

#### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 4000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (☐: packaging code)

| Part Number | Nominal Cut-off Frequency | Insertion Loss (Cut-off Frequency) | Insertion Loss (470MHz) (min.) | Insertion Loss (800MHz) (min.) | Insertion Loss (900MHz) (min.) | Insertion Loss (2000MHz) (min.) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NFA18SL137V1A45☐ | 130MHz | 6dB max. | 25dB | - | 25dB | - | 50mA | 10Vdc | 1000M ohm | 30Vdc | Kit DTV |
| NFA18SL187V1A45☐ | 180MHz | 6dB max. | 20dB | - | 20dB | - | 50mA | 10Vdc | 1000M ohm | 30Vdc | Kit DTV |
| NFA18SL207V1A45☐ | 200MHz | 6dB max. | 15dB | - | 15dB | - | 50mA | 10Vdc | 1000M ohm | 30Vdc | Kit DTV |
| NFA18SL227V1A45☐ | 220MHz | 6dB max. | - | - | 30dB | 30dB | 25mA | 10Vdc | 1000M ohm | 30Vdc | Kit DTV |
| NFA18SL307V1A45☐ | 300MHz | 6dB max. | - | 20dB | 20dB | - | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| NFA18SL357V1A45☐ | 350MHz | 6dB max. | - | - | 15dB | 13dB | 35mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| NFA18SL407V1A45☐ | 400MHz | 6dB max. | - | 18dB | 18dB | - | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| NFA18SL487V1A45☐ | 480MHz | 6dB max. | - | 15dB | 15dB | - | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |

Operating Temperature Range: -40°C to +85°C (NFA18SL 137/187/207/227/357 V1A45), -55°C to +125°C (NFA18SL 307/407/487 V1A45) Number of Circuits: 4

Continued on the following page.

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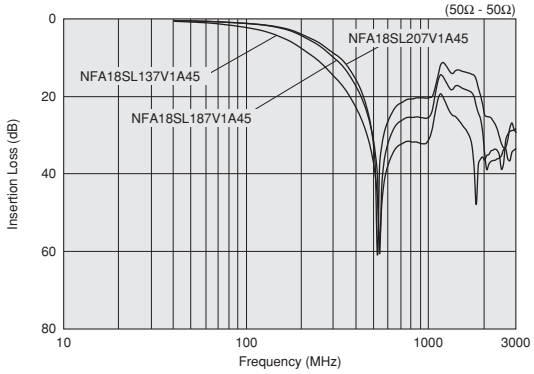
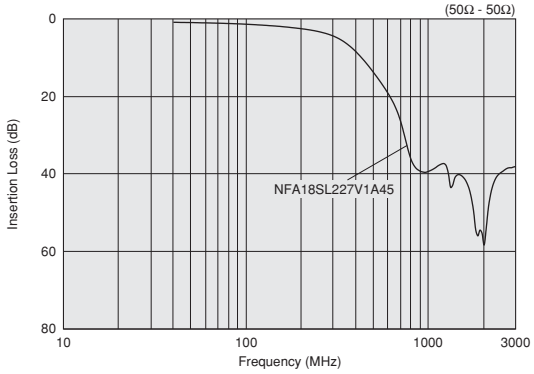
## ■ Insertion Loss Characteristics

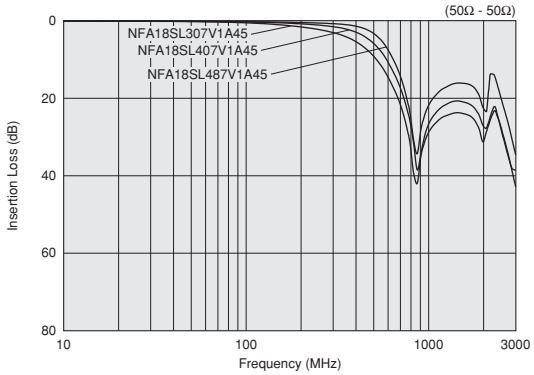
### NFA18SL 137/187/207 V1A45



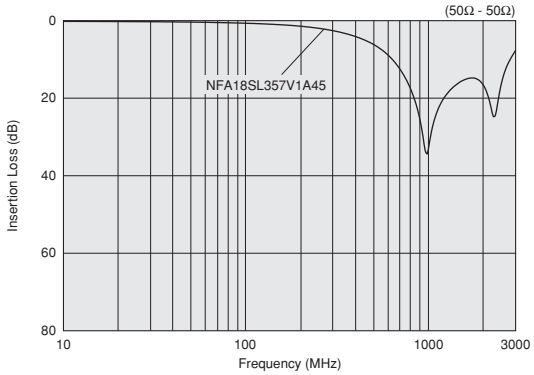

### NFA18SL227V1A45




### NFA18SL 307/407/487 V1A45




### NFA18SL357V1A45



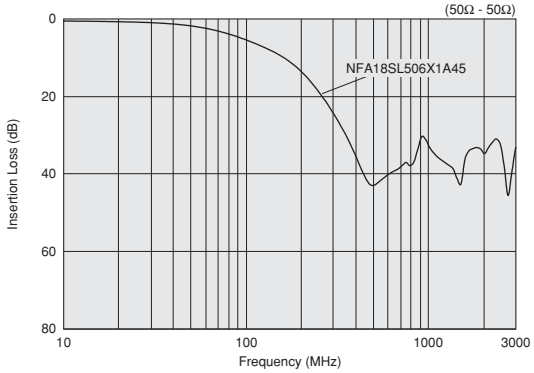

## ■ Rated Value (□: packaging code)

| Part Number | Nominal Cut-off Frequency | Insertion Loss (Cut-off Frequency) | Insertion Loss (500MHz) (min.) | Insertion Loss (1000MHz) (min.) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | |
|---|---|---|---|---|---|---|---|---|---|
| NFA18SL506X1A45□ | 50MHz | 6dB max. | 30dB | 25dB | 25mA | 10Vdc | 1000M ohm | 30Vdc | Kit |

Operating Temperature Range: -40°C to +85°C Number of Circuits: 4

## ■ Insertion Loss Characteristics

### NFA18SL_X

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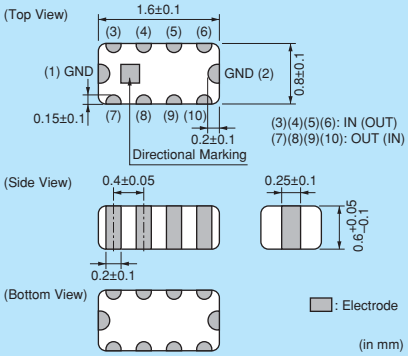
# NFA18SD Series 0603/1608 (inch/mm)

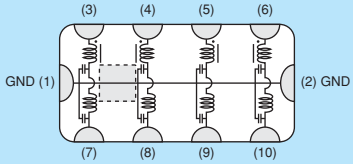
Reflow OK

## For differential signal I/F of LCD or camera in mobile phones.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 4000 |
| B | Bulk(Bag) | 1000 |

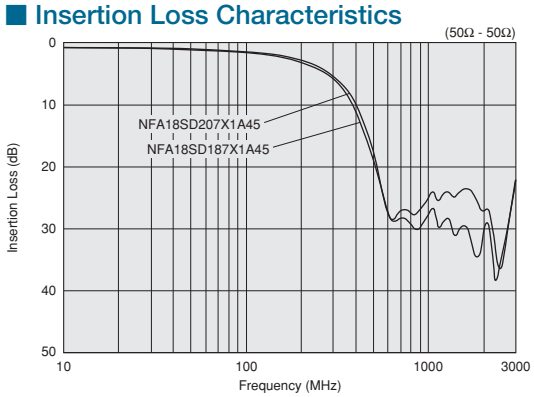
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Nominal Cut-off Frequency | Insertion Loss (Cut-off Frequency) | Insertion Loss (500MHz) (min.) | Insertion Loss (900MHz) (min.) | Insertion Loss (1500MHz) (min.) | Insertion Loss (2000MHz) (min.) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NFA18SD187X1A45□ | 180MHz | 6dB max. | 15dB | 20dB | 20dB | 20dB | 25mA | 10Vdc | 1000M ohm | 30Vdc | Kit DTV |
| NFA18SD207X1A45□ | 200MHz | 6dB max. | 13dB | 20dB | 20dB | 20dB | 25mA | 10Vdc | 1000M ohm | 30Vdc | Kit DTV |

Operating Temperature Range: -40°C to +85°C Number of Circuits: 4

### ■ Insertion Loss Characteristics





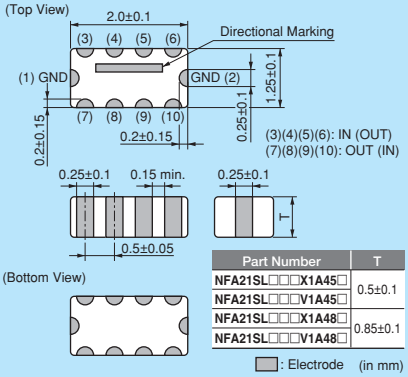

⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

# NFA21SL Series 0805/2012 (inch/mm)

Reflow OK

## L-type LC filter 4-line array for mobile phones.

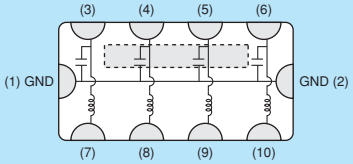
### Dimensions




| Part Number | T |
|---|---|
| NFA21SL□□□X1A45□ | 0.5±0.1 |
| NFA21SL□□□V1A45□ | |
| NFA21SL□□□X1A48□ | 0.85±0.1 |
| NFA21SL□□□V1A48□ | |

: Electrode (in mm)

### Equivalent Circuit




### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 4000 |
| B | Bulk(Bag) | 1000 |

Refer to pages from p.156 to p.162 for mounting information.

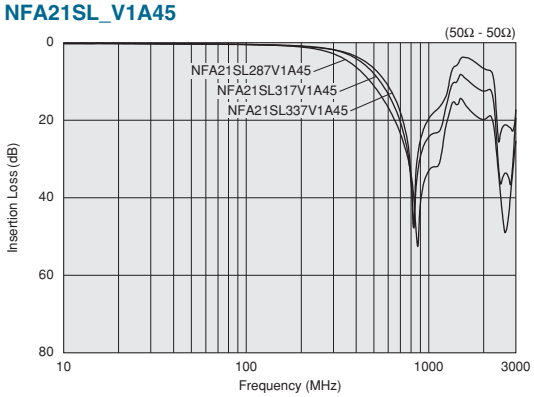
### Rated Value (□: packaging code)

| Part Number | Nominal Cut-off Frequency | Insertion Loss (Cut-off Frequency) | Insertion Loss (800MHz) (min.) | Insertion Loss (900MHz) (min.) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | |
|---|---|---|---|---|---|---|---|---|---|
| NFA21SL287V1A45□ | 280MHz | 6dB max. | 25dB | 25dB | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| NFA21SL317V1A45□ | 310MHz | 6dB max. | 20dB | 20dB | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| NFA21SL337V1A45□ | 330MHz | 6dB max. | 15dB | 15dB | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| NFA21SL287V1A48□ | 280MHz | 6dB max. | 25dB | 25dB | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| NFA21SL317V1A48□ | 310MHz | 6dB max. | 20dB | 20dB | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| NFA21SL337V1A48□ | 330MHz | 6dB max. | 20dB | 20dB | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |

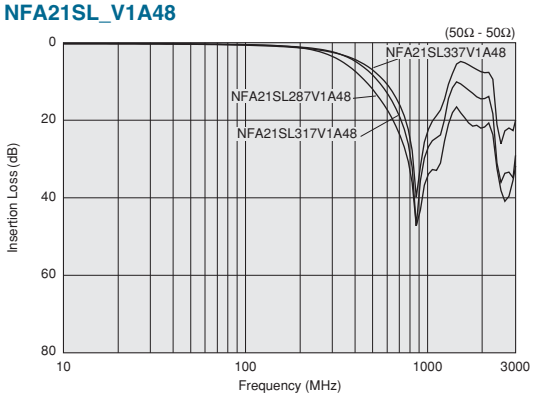
Operating Temperature Range: -55°C to +125°C Number of Circuits: 4

### Insertion Loss Characteristics

**NFA21SL_V1A45**




**NFA21SL_V1A48**




Continued on the following page.

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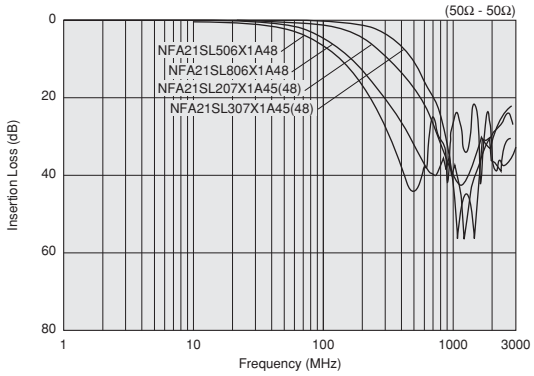
## ■ Rated Value (□: packaging code)

| Part Number | Nominal Cut-off Frequency | Insertion Loss (Cut-off Frequency) | Insertion Loss (500MHz) (min.) | Insertion Loss (800MHz) (min.) | Insertion Loss (1000MHz) (min.) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | |
|---|---|---|---|---|---|---|---|---|---|---|
| **NFA21SL207X1A45□** | 200MHz | 2dB to 7dB | 13dB | 25dB | 25dB | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| **NFA21SL307X1A45□** | 300MHz | 2dB to 7dB | 7dB | 20dB | 25dB | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| **NFA21SL506X1A48□** | 50MHz | 0dB to 6dB | 30dB | - | 20dB | 20mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| **NFA21SL806X1A48□** | 80MHz | 2dB to 7dB | 25dB | - | 25dB | 20mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| **NFA21SL207X1A48□** | 200MHz | 2dB to 7dB | 13dB | 25dB | 25dB | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |
| **NFA21SL307X1A48□** | 300MHz | 2dB to 7dB | 7dB | 20dB | 25dB | 100mA | 10Vdc | 1000M ohm | 30Vdc | Kit |

Operating Temperature Range: -55°C to +125°C  Number of Circuits: 4

## ■ Insertion Loss Characteristics

### NFA21SL_X



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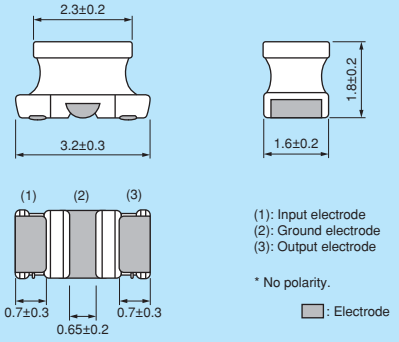
# NFW31SP Series 1206/3216 (inch/mm)

Flow OK Reflow OK

## Wire-wound PI-type LC filter.

### ■ Dimensions



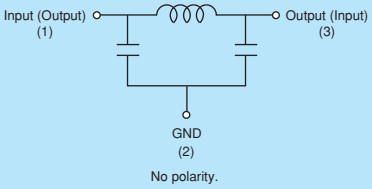

(1): Input electrode
(2): Ground electrode
(3): Output electrode

* No polarity.

: Electrode

(in mm)

### ■ Equivalent Circuit




No polarity.

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 2000 |
| K | 330mm Reel Embossed Tape | 7500 |

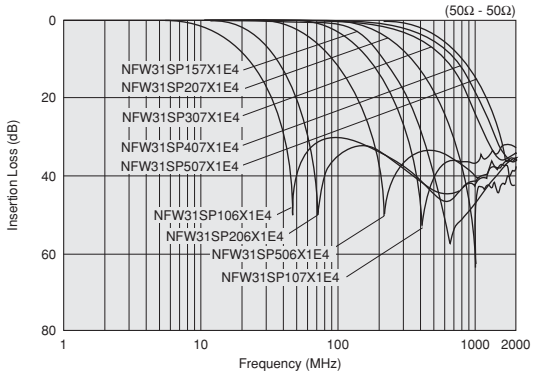
Refer to pages from p.156 to p.162 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Nominal Cut-off Frequency | Insertion Loss at 10MHz | Insertion Loss at 20MHz | Insertion Loss at 50MHz | Insertion Loss at 100MHz | Insertion Loss at 150MHz | Insertion Loss at 200MHz | Insertion Loss at 300MHz | Insertion Loss at 400MHz | Insertion Loss at 500MHz | Insertion Loss at 1000MHz | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NFW31SP106X1E4□ | 10MHz | 6dB max. | 5dB min. | 25dB min. | 25dB min. | - | 25dB min. | - | - | 30dB min. | 30dB min. | Kit |
| NFW31SP206X1E4□ | 20MHz | - | 6dB max. | 5dB min. | 25dB min. | - | 25dB min. | - | - | 30dB min. | 30dB min. | Kit |
| NFW31SP506X1E4□ | 50MHz | - | - | 6dB max. | 10dB min. | - | 30dB min. | - | - | 30dB min. | 30dB min. | Kit |
| NFW31SP107X1E4□ | 100MHz | - | - | - | 6dB max. | - | 5dB min. | - | - | 20dB min. | 30dB min. | Kit |
| NFW31SP157X1E4□ | 150MHz | - | - | - | - | 6dB max. | - | 10dB min. | 20dB min. | 30dB min. | 30dB min. | Kit |
| NFW31SP207X1E4□ | 200MHz | - | - | - | - | - | 6dB max. | - | - | 10dB min. | 30dB min. | Kit |
| NFW31SP307X1E4□ | 300MHz | - | - | - | - | - | - | 6dB max. | - | 5dB min. | 15dB min. | Kit |
| NFW31SP407X1E4□ | 400MHz | - | - | - | - | - | - | - | 6dB max. | - | 10dB min. | Kit |
| NFW31SP507X1E4□ | 500MHz | - | - | - | - | - | - | - | - | 6dB max. | 10dB min. | Kit |

Rated Current: 200mA Rated Voltage: 25Vdc Operating Temperature Range: -40°C to +85°C Number of Circuit: 1

### ■ Insertion Loss Characteristics



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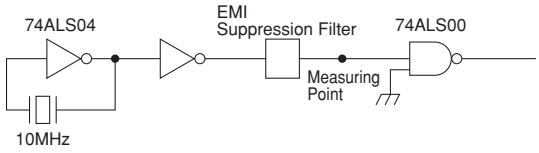
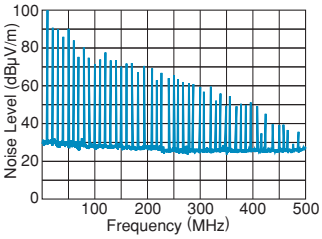
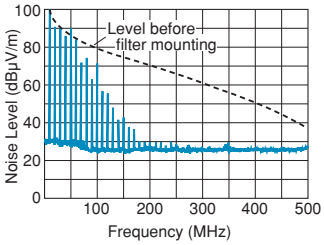
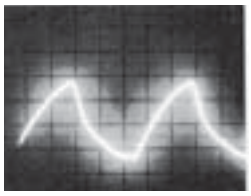
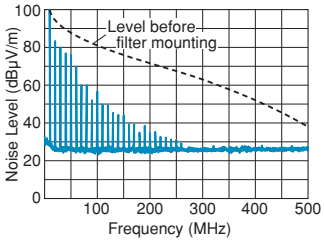
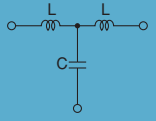
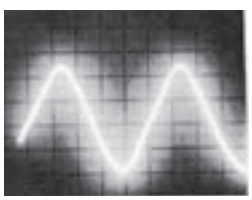
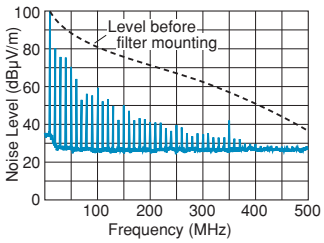
# Example of EMI Suppression in an Actual Circuit

Measuring Circuit




| Type of Filter | Signal Wave Form (20ns/div, 1V/div) / EMI Suppression Effect / Description |
|---|---|
| Signal Waveform and Noise Spectrum before Filter Mounting |  Signal Waveform (20ns/div, 1V/div)<br>  Noise Spectrum (10:1 Active Probe) |
| **NFW31SP** Series (Cut-off frequency 50MHz) |  <br>  NFW31SP's steep attenuation characteristic means excellent EMI suppression without waveform cornering. |
| Conventional Chip Solid Type EMI Filter (**NFM41CC** 470pF)  |  <br>  3-terminal capacitors suppress signal frequencies as EMI frequencies so the signal waveform is distorted. |
| Filter Combined with Conventional LCs  L: Chip Inductor C: Chip Capacitor (270pF) |  <br>  Combinations of inductors and capacitors can yield a steep attenuation characteristic, but they require a great deal more mounting space. Moreover, at high frequencies the EMI suppression is less than that obtained by NFW31S. |



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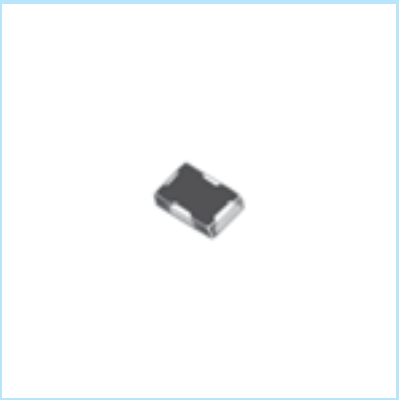
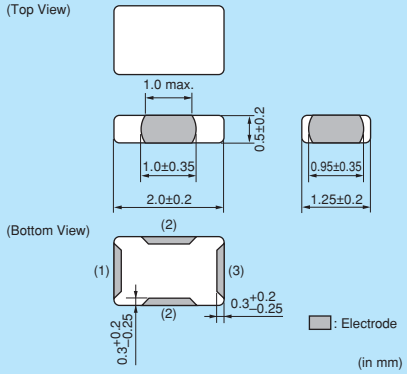
# NFR21GD Series 0805/2012 (inch/mm)

Reflow OK

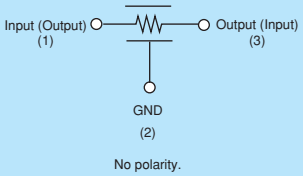
## 3-terminal RC filter, dampens the noise current and returns back to ground.



### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 4000 |
| B | Bulk(Bag) | 500 |

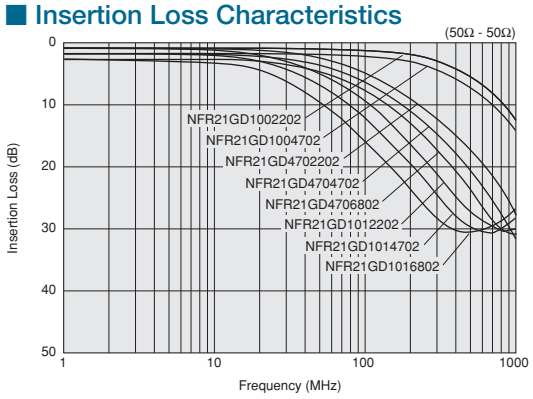
Refer to pages from p.156 to p.162 for mounting information.

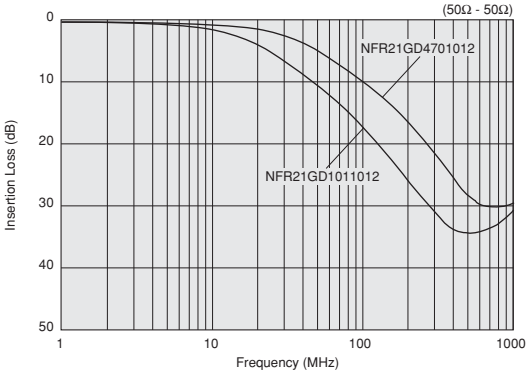
### ■ Rated Value (□: packaging code)

| Part Number | Capacitance | Resistance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range |
|---|---|---|---|---|---|---|
| NFR21GD1002202□ | 10pF ±20% | 22ohm ±30% | 50mA | 50Vdc | 1000M ohm | -40°C to +85°C |
| NFR21GD1004702□ | 10pF ±20% | 47ohm ±30% | 35mA | 50Vdc | 1000M ohm | -40°C to +85°C |
| NFR21GD4702202□ | 47pF ±20% | 22ohm ±30% | 50mA | 50Vdc | 1000M ohm | -40°C to +85°C |
| NFR21GD4704702□ | 47pF ±20% | 47ohm ±30% | 35mA | 50Vdc | 1000M ohm | -40°C to +85°C |
| NFR21GD4706802□ | 47pF ±20% | 68ohm ±30% | 30mA | 50Vdc | 1000M ohm | -40°C to +85°C |
| NFR21GD4701012□ | 47pF ±20% | 100ohm ±30% | 25mA | 50Vdc | 1000M ohm | -40°C to +85°C |
| NFR21GD1012202□ | 100pF ±20% | 22ohm ±30% | 50mA | 50Vdc | 1000M ohm | -40°C to +85°C |
| NFR21GD1014702□ | 100pF ±20% | 47ohm ±30% | 35mA | 50Vdc | 1000M ohm | -40°C to +85°C |
| NFR21GD1016802□ | 100pF ±20% | 68ohm ±30% | 30mA | 50Vdc | 1000M ohm | -40°C to +85°C |
| NFR21GD1011012□ | 100pF ±20% | 100ohm ±30% | 25mA | 50Vdc | 1000M ohm | -40°C to +85°C |

Number of Circuit: 1

### ■ Insertion Loss Characteristics

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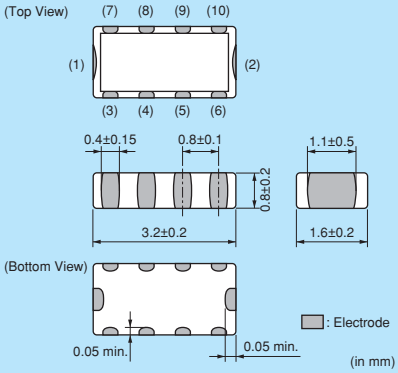
muRata

# NFA31GD Series 1206/3216 (inch/mm)

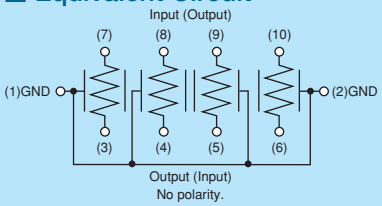
Reflow OK

## 3-terminal RC filter array.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 4000 |
| B | Bulk(Bag) | 100 |

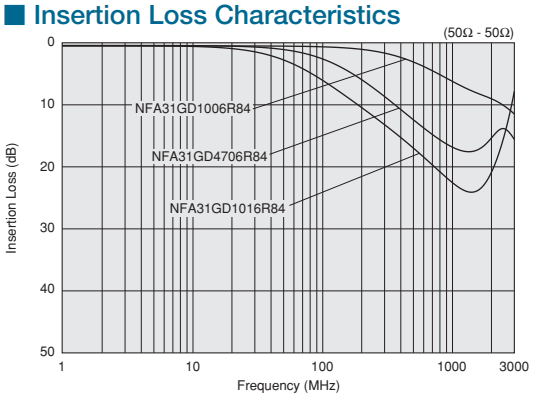
Refer to pages from p.156 to p.162 for mounting information.

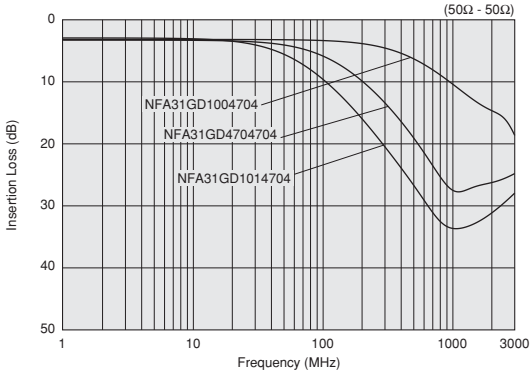
### ■ Rated Value (□: packaging code)

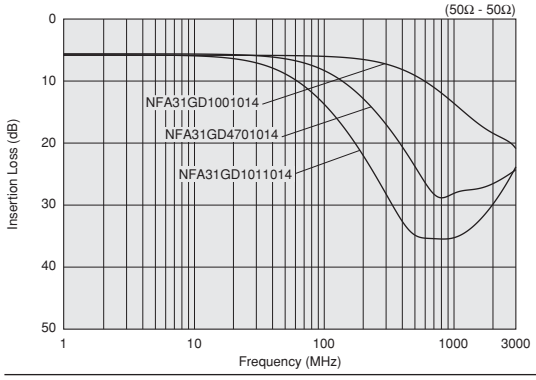
| Part Number | Capacitance | Resistance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Operating Temperature Range |
|---|---|---|---|---|---|---|
| NFA31GD1006R84□ | 10pF ±20% | 6.8ohm ±40% | 50mA | 6Vdc | 1000M ohm | -40°C to +85°C |
| NFA31GD1004704□ | 10pF ±20% | 47ohm ±30% | 20mA | 6Vdc | 1000M ohm | -40°C to +85°C |
| NFA31GD1001014□ | 10pF ±20% | 100ohm ±30% | 15mA | 6Vdc | 1000M ohm | -40°C to +85°C |
| NFA31GD4706R84□ | 47pF ±20% | 6.8ohm ±40% | 50mA | 6Vdc | 1000M ohm | -40°C to +85°C |
| NFA31GD4703304□ | 47pF ±20% | 33ohm ±30% | 20mA | 6Vdc | 1000M ohm | -40°C to +85°C |
| NFA31GD4704704□ | 47pF ±20% | 47ohm ±30% | 20mA | 6Vdc | 1000M ohm | -40°C to +85°C |
| NFA31GD4701014□ | 47pF ±20% | 100ohm ±30% | 15mA | 6Vdc | 1000M ohm | -40°C to +85°C |
| NFA31GD1016R84□ | 100pF ±20% | 6.8ohm ±40% | 50mA | 6Vdc | 1000M ohm | -40°C to +85°C |
| NFA31GD1014704□ | 100pF ±20% | 47ohm ±30% | 20mA | 6Vdc | 1000M ohm | -40°C to +85°C |
| NFA31GD1011014□ | 100pF ±20% | 100ohm ±30% | 15mA | 6Vdc | 1000M ohm | -40°C to +85°C |

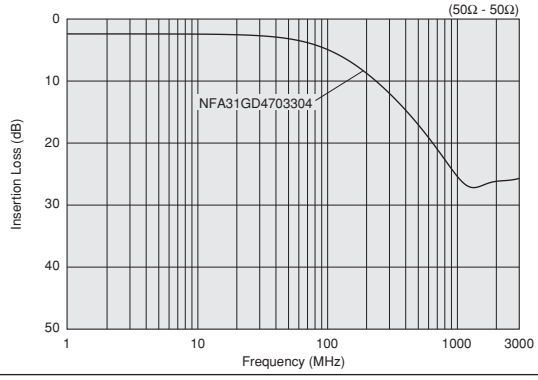
Number of Circuit: 4

### ■ Insertion Loss Characteristics

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## ⚠Caution

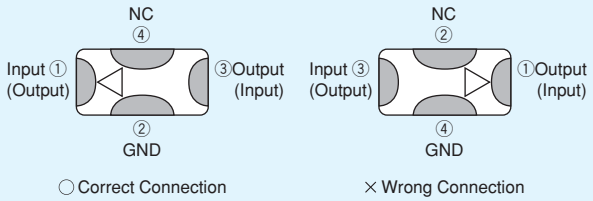
### ● Rating

Do not use products beyond the rated current and rated voltage as this may create excessive heat and deteriorate the insulation resistance.

### ● Soldering and Mounting

1. Self-heating
   Please provide special attention when mounting chip EMIFIL® NFM□□P/K series in close proximity to other products that radiate heat.
   The heat generated by other products may deteriorate the insulation resistance and cause excessive heat in this component.

2. NFL15ST_X Series Mounting Direction
   Mount products in right direction, because products have a direction. Wrong direction which is 180° rotated from right direction cause fuming or partial dispersion, because input or output signal terminals short-circuit to ground.



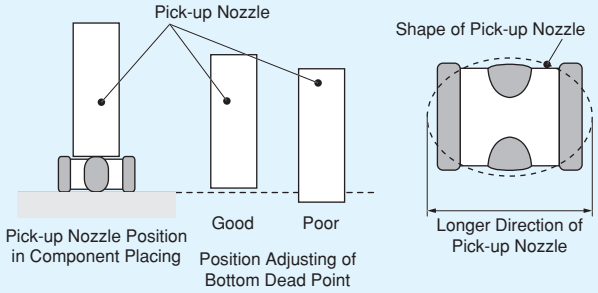

## Notice

### ● Storage and Operating Conditions

<Operating Environment>
Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
Do not use products in the environment close to the organic solvent.
<Storage and Handling Requirements>
1. Storage Period
   Should be used within 12 months.
   Solderability should be checked if this period is exceeded.
2. Storage Conditions
   (1) Storage temperature: -10 to +40˚C
   Relative humidity: 15 to 85%
   Avoid sudden changes in temperature and humidity.
   (2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

### ● Notice (Soldering and Mounting)

1. Cleaning
   Failure and degradation of a product are caused by the cleaning method. When you clean in conditions that are not in mounting information, please contact Murata engineering.
2. Soldering
   Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Points of Attention about NFM Pattern Forms
   The loaded stresses are different to a chip depend on PCB materials and structures.
   When the chip will be mounted on the metal PCB contained alumina material, PCB heat expansion/contraction will be a cause of chip cracks because the coefficients of thermal expressions are different between metal PCB and the chip itself.
   In case of mounting 0402 or smaller size of NFM on single-layered glass epoxy board, chip cracks will be also occurred because of the same reason.
4. Component Mounting: 0402 size or smaller of NFM
   If low bottom dead point of the pick-up nozzle is too low, chip cracks will be occurred because an extra power will be added to the chip during mounting. Therefore, the bottom dead point of pick-up nozzle must be set on/over the upper surface of the PCB. Adjusting is required when the bottom dead point will be set by correcting board warp. It is recommended that using the larger pick-up nozzle than chip length for avoiding what force impact will be centered to the middle point of components. Before assembling, please confirm its mounting accuracy under the best condition.




5. Other
   Noise suppression levels resulting from Murata's EMI suppression filters EMIFIL® may vary, depending on the circuits and ICs used, type of noise, mounting pattern, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

Continued on the following page.

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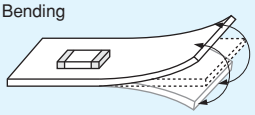
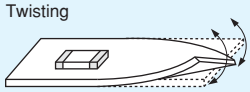
## ● Handling

1. Resin Coating
   Using resin for coating/molding products may affect the products performance.
   So please pay careful attention in selecting resin.
   Prior to use, please make the reliability evaluation with the product mounted in your application set.
2. Caution for Use (NFW Series)
   When you hold products with a tweezer, please hold by the sides. Sharp materials, such as a pair of tweezers or other material such as bristles of cleaning brush, should not touch the winding portion of this product to prevent breaking the wire. Mechanical shock should not be applied to the products mounted on the board to prevent breaking the core.
3. Handling of a Substrate
   After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate.
   Excessive mechanical stress may cause cracking in the Product.

Bending



Twisting



## 1. Standard Land Pattern Dimensions

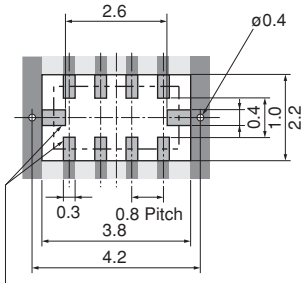
NF□ series suppress noise by conducting the high-frequency noise element to ground. Therefore, to obtain maximum performance from these filters, the ground pattern should be made as large as possible during the PCB design stage. As shown below, one side of the PCB is used for chip mounting, and the other is used for grounding.
Small diameter feedthrough holes are then used to connect the grounds on each side of the PCB. This reduces the high-frequency impedance of the grounding and maximizes the filter's performance.

Land Pattern + Solder Resist
Land Pattern
Solder Resist
(in mm)

**NFA31CC**
**NFA31GD**
**NFM15CC**
**NFM15PC**
**NFM18CC**
**NFM18PC**
**NFM18PS**
**NFM21CC**
**NFM21PC**
**NFM21PS**
**NFR21GD**

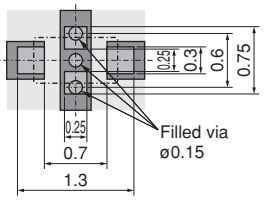
● Reflow Soldering

NFA31CC/NFA31GD

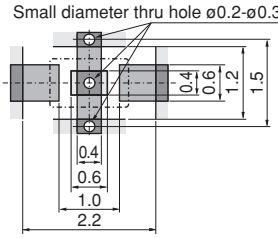



R0.1 to R0.2 is preferred to obtain high voltage withstanding

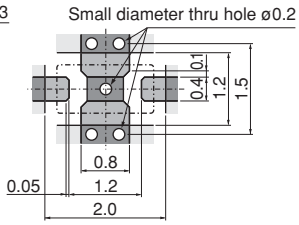
NFM15CC/NFM15PC



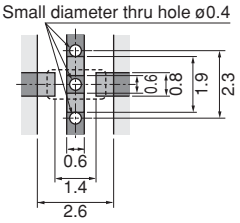

NFM18CC/NFM18PC



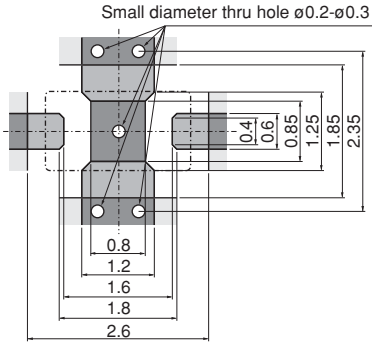

NFM18PS




NFM21CC/NFM21PC/NFR21GD




NFM21PS

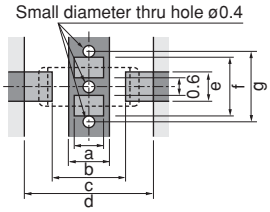



Please contact us if using thinner land pad than 18µm.

**NFM3DCC**
**NFM3DPC**
**NFM31PC**
**NFM31KC**
**NFM41CC**
**NFM41PC**

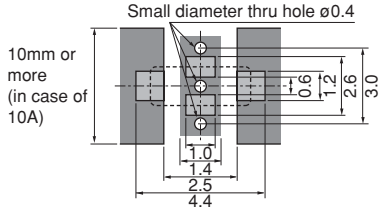
● Reflow Soldering Chip mounting side

NFM3DCC/NFM3DPC/NFM31PC/NFM41CC/NFM41PC



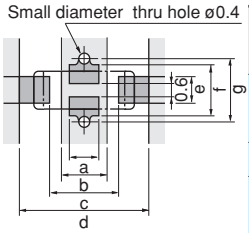

| Part Number | Size (mm) | | | | | | |
|---|---|---|---|---|---|---|---|
| | a | b | c | d | e | f | g |
| NFM3DCC NFM3DPC | 1.0 | 1.4 | 2.5 | 4.4 | 1.0 | 2.0 | 2.4 |
| NFM31PC | 1.0 | 1.4 | 2.5 | 4.4 | 1.2 | 2.6 | 3.0 |
| NFM41CC NFM41PC | 1.5 | 2.0 | 3.5 | 6.0 | 1.2 | 2.6 | 3.0 |

NFM31KC*1



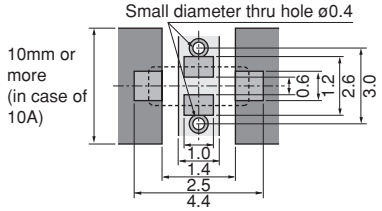

*1 For large current design, width of signal land pattern should be wider not less than 1mm per 1A (1mm/A).
For example, in case of 10A, signal land pattern width should be 10mm or more.
(1mm/A*10A=10mm)

● Flow Soldering Chip mounting side




| Part Number | Size (mm) | | | | | | |
|---|---|---|---|---|---|---|---|
| | a | b | c | d | e | f | g |
| NFM3DCC NFM3DPC | 1.0 | 1.4 | 2.5 | 4.4 | 1.0 | 2.0 | 2.4 |
| NFM31PC | 1.0 | 1.4 | 2.5 | 4.4 | 1.2 | 2.6 | 3.0 |
| NFM41CC NFM41PC | 1.5 | 2.0 | 3.5 | 6.0 | 1.2 | 2.6 | 3.0 |

NFM31KC*1




*1 For large current design, width of signal land pattern should be wider not less than 1mm per 1A (1mm/A).
For example, in case of 10A, signal land pattern width should be 10mm or more.
(1mm/A*10A=10mm)

Continued on the following page.

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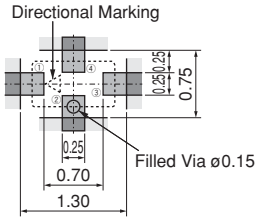
Land Pattern + Solder Resist
Land Pattern Solder Resist
(in mm)

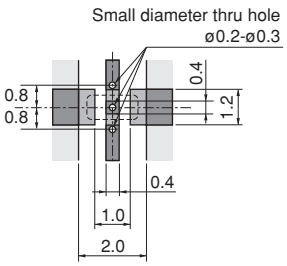
**NFL15ST**
**NFL18SP**
**NFL18ST**
**NFL21SP**

● Reflow Soldering

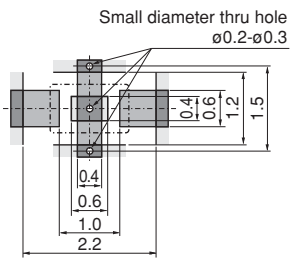
NFL15ST



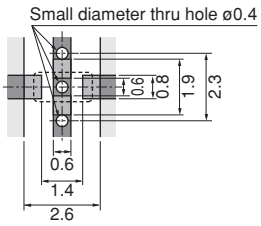

NFL18SP




NFL18ST




NFL21SP

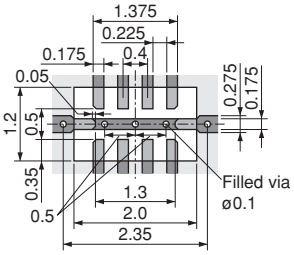



Please contact us if using thinner land pad than 18µm.

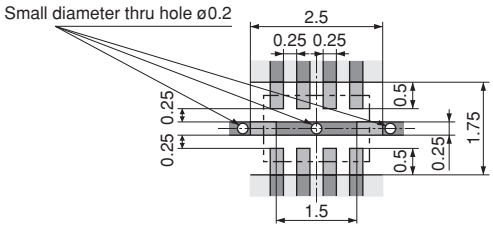
**NFA18SL**
**NFA18SD**
**NFA21SL**

● Reflow Soldering

NFA18SL/NFA18SD

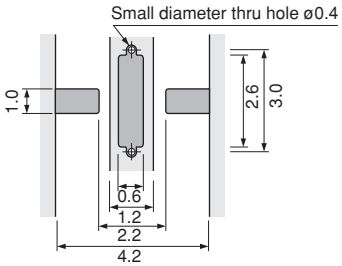



NFA21SL




**NFW31SP**
**NFE31PT**

● Reflow and Flow NFW31SP
● Reflow Soldering NFE31PT




Continued on the following page.



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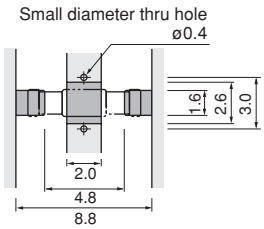
Land Pattern + Solder Resist
Land Pattern
Solder Resist

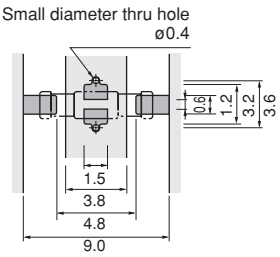
(in mm)

**NFE61PT**

● Reflow Soldering



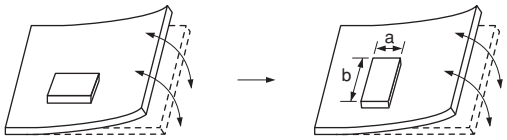

● Flow Soldering




● PCB Warping

PCB should be designed so that products are not subjected to the mechanical stress caused by warping the board.

Products should be located in the sideways direction (Length: a<b) to the mechanical stress.




Poor example　　Good example

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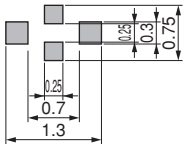
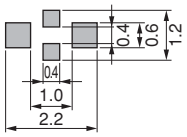
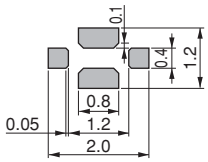
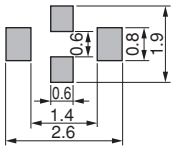
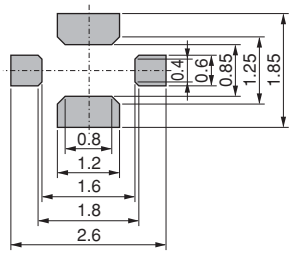
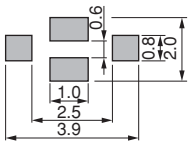
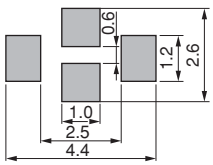
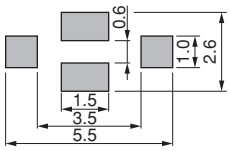
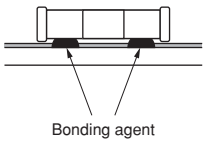
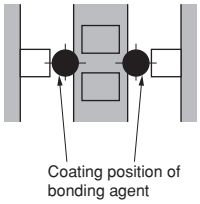
## 2. Solder Paste Printing and Adhesive Application

When reflow soldering the chip EMI suppression filter, the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will be prone to damage by mechanical and thermal stress from the PCB and may crack.
Standard land dimensions should be used for resist and copper foil patterns.

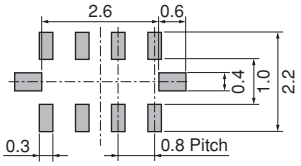
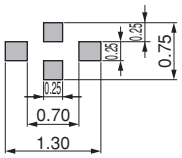
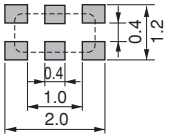
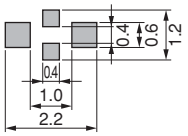
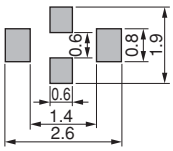
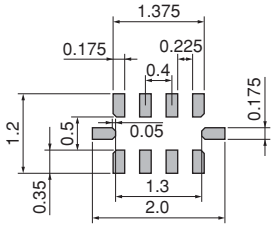
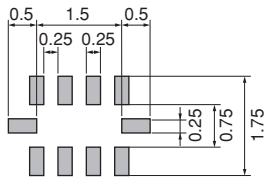
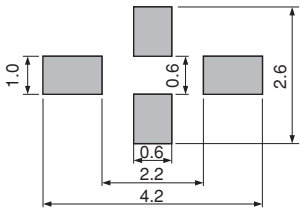
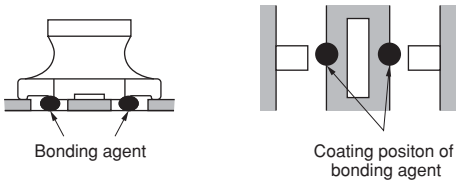
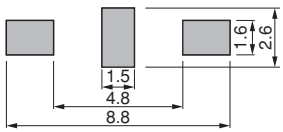
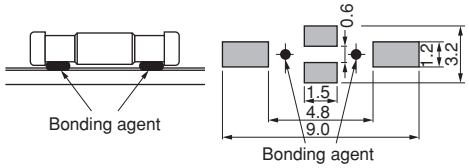
When flow soldering the EMI suppression filter, apply the adhesive in accordance with the following conditions.
If too much adhesive is applied, then it may overflow into the land or termination areas and yield poor solderability. In contrast, if insufficient adhesive is applied, or if the adhesive is not sufficiently hardened, then the chip may become detached during flow soldering process.

(in mm)

| Series | Solder Paste Printing | Adhesive Application |
|---|---|---|
| **NFM15CC**<br>**NFM15PC**<br>**NFM18CC**<br>**NFM18PC**<br>**NFM18PS**<br>**NFM21CC**<br>**NFM21PC**<br>**NFM21PS**<br>**NFM3DCC**<br>**NFM3DPC**<br>**NFM31PC**<br>**NFM31KC**<br>**NFM41CC**<br>**NFM41PC**<br>**NFR21GD** | ●Guideline of solder paste thickness:<br>100-150μm: NFM15/18/21/3D/31, NFR<br>100-200μm: NFM41<br><br>NFM15CC/15PC<br>  <br><br><br>NFM18CC/18PC<br>  <br><br><br>NFM18PS<br>  <br><br><br>NFM21CC/21PC<br>NFR21GD<br>  <br><br><br>NFM21PS<br>  <br><br><br>NFM3DCC/3DPC<br>  <br><br><br>NFM31PC/31KC<br>  <br><br><br>NFM41CC/41PC<br>  <br> | ■ NFM3D/31/41 Series<br>Apply 0.1mg for NFM41C/41 and 0.06mg for NFM3D/NFM31 of bonding agent at each chip.<br>Do not cover electrodes.<br><br>  <br><br><br>  <br> |

Continued on the following page.

(in mm)

| Series | Solder Paste Printing | Adhesive Application |
|---|---|---|
| **NFA31CC**<br>**NFA31GD** | ●Guideline of solder paste thickness:<br>100-200µm: NFA31CC/31GD<br>NFA31CC/31GD<br>  | |
| **NFL15ST**<br>**NFL18SP**<br>**NFL18ST**<br>**NFL21SP**<br>**NFA18SL**<br>**NFA18SD**<br>**NFA21SL** | ●Guideline of solder paste thickness:<br>100-150µm: NFL, NFA18SL/18SD/21SL<br>NFL15ST<br>  <br>NFL18SP<br>  <br>NFL18ST<br>  <br>NFL21SP<br>  <br>NFA18SL/18SD<br>  <br>NFA21SL<br>  | |
| **NFW31SP**<br>**NFE31PT** | ●Guideline of solder paste thickness:<br>150-200µm<br>  | ■ NFW31SP Series<br>Apply 0.2mg of bonding agent at each chip.<br>  |
| **NFE61PT** | ●Guideline of solder paste thickness:<br>150-200µm<br>  | Apply 1.0mg of bonding agent at each chip.<br>  |

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muRata

## 3. Standard Soldering Conditions

(1) Soldering Methods

Use flow and reflow soldering methods only.
Use standard soldering conditions when soldering chip EMI suppression filters.
In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

Solder: Use Sn-3.0Ag-0.5Cu solder. Use of Sn-Zn based solder will deteriorate performance of products.
If using NFM series with Sn-Zn based solder, please contact Murata in advance.

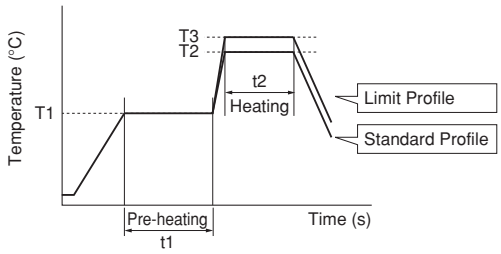
Flux:

- Use Rosin-based flux.
  In case of using RA type solder, products should be cleaned completely with no residual flux.
- Do not use strong acidic flux (with chlorine content exceeding 0.20wt%)
- Do not use water-soluble flux.

For additional mounting methods, please contact Murata.

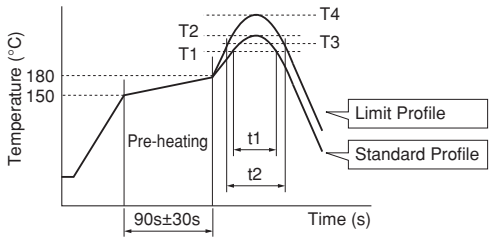
(2) Soldering Profile

●Flow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)




| Series | Pre-heating | | Standard Profile | | | Limit Profile | | |
|---|---|---|---|---|---|---|---|---|
| | | | Heating | | Cycle of Flow | Heating | | Cycle of Flow |
| | Temp. (T1) | Time. (t1) | Temp. (T2) | Time. (t2) | | Temp. (T3) | Time. (t2) | |
| **NFM3D/31/41** | 150°C | 60s min. | 250°C | 4 to 6s | 2 times max. | 265±3°C | 5s max. | 2 times max. |
| **NFE61PT** | 150°C | 60s min. | 250°C | 4 to 6s | 2 times max. | 265±3°C | 5s max. | 2 times max. |
| **NFW31SP** | 150°C | 60s min. | 250°C | 4 to 6s | 2 times max. | 265±3°C | 5s max. | 1 time max. |

●Reflow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)




| Series | Standard Profile | | | | Limit Profile | | | |
|---|---|---|---|---|---|---|---|---|
| | Heating | | Peak Temperature (T2) | Cycle of Reflow | Heating | | Peak Temperature (T4) | Cycle of Reflow |
| | Temp. (T1) | Time. (t1) | | | Temp. (T3) | Time. (t2) | | |
| **NFM NFA31CC/31GD, NFR** | 220°C min. | 30 to 60s | 245±3°C | 2 times max. | 230°C min. | 60s max. | 260°C/10s | 2 times max. |
| **NFA18S/21S (Except for NFA31CC/31GD) NFE, NFL** | 220°C min. | 30 to 60s | 245±3°C | 2 times max. | 230°C min. | 60s max. | 260°C/10s | 2 times max. |
| **NFW31SP** | 220°C min. | 30 to 60s | 245±3°C | 2 times max. | 230°C min. | 60s max. | 260°C/10s | 1 time max. |



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(3) Reworking with Solder Iron

The following conditions must be strictly followed when using a soldering iron.

Pre-heating: 150°C 60s min.

Soldering iron power output / Tip diameter:

30W max. / ø3mm max.*1

*1 NFM15: 30W max. / ø2mm max.

Temperature of soldering iron tip / Soldering time / Times:

350°C max. / 3-4s / 2 times*2

*2 NFM15: 340°C max. / 3-4s / 1 time

NFE31PT152Z1E9: 280°C max. / 10s max. / 2 times

Do not allow the tip of the soldering iron to directly contact the chip.

For additional methods of reworking with a soldering iron, please contact Murata engineering.

## 4. Cleaning

Following conditions should be observed when cleaning chip EMI filter.

(1) Cleaning Temperature: 60°C max. (40°C max. for alcohol type cleaner)

(2) Ultrasonic

Output: 20W/liter max.

Duration: 5 minutes max.

Frequency: 28 to 40kHz

(3) Cleaning Agent

The following list of cleaning agents have been tested on the individual components. Evaluation of final assembly should be completed prior to production.

(a) Alcohol cleaning agent

Isopropyl alcohol (IPA)

(b) Aqueous cleaning agent

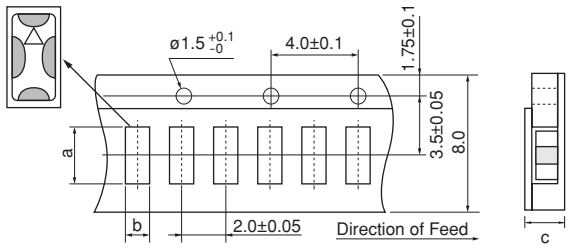
Pine Alpha ST-100S

(4) Ensure that flux residue is completely removed.

Component should be thoroughly dried after aqueous agent has been removed with deionized water.

## ■ Minimum Quantity and Dimensions of 8mm Width Paper / Embossed Tape

(Paper Tape)

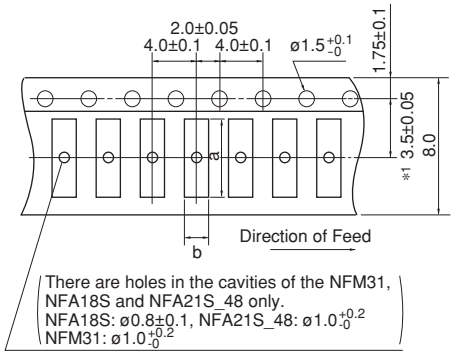



c: Total Thickness of Tape

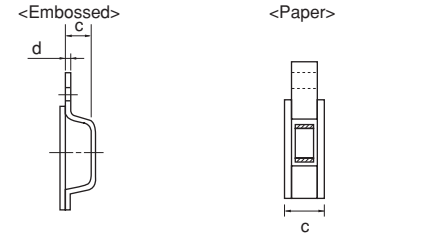
| Part Number | Dimensions | | | | Minimum Qty. (pcs.) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | ø180mm Reel | | ø330mm Reel | | Bulk |
| | a | b | c | d | Paper Tape | Embossed Tape | Paper Tape | Embossed Tape | |
| NFL15ST | 1.12 | 0.62 | 0.8 max. | - | 10000 | - | - | - | 500 |

(in mm)

(Common to Paper Tape / Embossed Tape)




*1 NFM31: 3.5±0.1




c: Depth of Cavity (Embossed Tape)

c: Total Thickness of Tape (Paper Tape)

Dimension of the cavity of embossed tape is measured at the bottom side.

| Part Number | Dimensions | | | | Minimum Qty. (pcs.) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | ø180mm Reel | | ø330mm Reel | | Bulk |
| | a | b | c | d | Paper Tape | Embossed Tape | Paper Tape | Embossed Tape | |
| NFM15CC/ NFM15PC (Except for474/105) | 1.15 | 0.75 | 0.75 max. | - | 10000 | - | - | - | 500 |
| NFM15PC474/105 | 1.15 | 0.65 | 0.6 max. | - | 10000 | - | - | - | 500 |
| NFM18CC/ NFM18PC (Except for105R/225B1A) NFM18PS | 1.85 | 1.05 | 0.9 max. | - | 4000 | - | - | - | 500 |
| NFM18PC105R/225B1A | | | 1.1 max. | - | 4000 | - | - | - | 500 |
| NFL18SP/NFL18ST_H | 1.85 | 1.05 | 0.9 max. | - | 4000 | - | - | - | 1000 |
| NFL18ST_X | | | 1.1 max. | | | | | | |
| NFL21SP | 2.3 | 1.55 | 1.1 max. | | | | | | |
| NFM21CC/21PC/21PS | 2.3 | 1.55 | 1.1 max. | - | 4000 | - | - | - | 500 |
| NFM3DCC/3DPC | 3.4 | 1.4 | 0.85 | 0.2 | - | 4000 | - | - | 500 |
| NFM31PC/31KC | 3.5 | 1.9 | 1.5 | 0.25 | - | 3000 | - | - | 500 |
| NFA18SL/18SD | 1.8 | 1.0 | 0.7 | 0.25 | - | 4000 | - | - | 1000 |
| NFA21SL_45 | 2.30 | 1.55 | 0.7 | 0.25 | - | 4000 | - | - | 1000 |
| NFA21SL_48 | 2.25 | 1.45 | 1.05 | 0.25 | - | 4000 | - | - | 1000 |
| NFA31GD/31CC | 3.5 | 2.0 | 1.1 max. | - | 4000 | - | - | - | 100 |
| NFE31PT | 3.6 | 1.8 | 1.85 | 0.2 | - | 2000 | - | 8000 | 500 |
| NFR21GD | 2.3 | 1.55 | 0.7 | 0.25 | - | 4000 | - | - | 500 |
| NFW31SP | 3.6 | 1.9 | 2.0 | 0.2 | - | 2000 | - | 7500 | - |

(in mm)

"Minimum Quantity" means the number of units of each delivery or order. The quantity should be an integral multiple of the "Minimum Quantity."

Continued on the following page.

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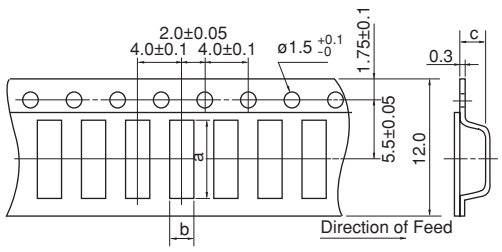
## ■ Minimum Quantity and Dimensions of 12mm Width Embossed Tape




c: Depth of Cavity

Dimension of the cavity is measured at the bottom side.

(in mm)

| Part Number | Dimensions | | | Minimum Qty. (pcs.) | | |
|---|---|---|---|---|---|---|
| | a | b | c | ø180mm Reel | ø330mm Reel | Bulk |
| NFM41CC/41PC | 4.8 | 1.8 | 1.1 | 4000 | - | 500 |
| NFE61PT | 7.2 | 1.9 | 1.75 | 2500 | 8000 | 500 |

"Minimum Quantity" means the number of units of each delivery or order. The quantity should be an integral multiple of the "Minimum Quantity."

## ●EKEMNFMCC-KIT (Chip EMIFIL® Capacitor Type for Signal Lines)

| No. | Part Number | Quantity (pcs.) | Capacitance | Rated Voltage (Vdc) | Rated Current (mA) |
|---|---|---|---|---|---|
| 1 | NFM15CC222D1A3 | 10 | 2200pF±20% | 10 | 1000 |
| 2 | NFM15CC222D1C3 | 10 | 2200pF±20% | 16 | 1000 |
| 3 | NFM15CC223C1A3 | 10 | 22000pF±20% | 10 | 1000 |
| 4 | NFM15CC223C1C3 | 10 | 22000pF±20% | 16 | 1000 |
| 5 | NFM18CC220U1C3 | 10 | 22pF±20% | 16 | 400 |
| 6 | NFM18CC470U1C3 | 10 | 47pF±20% | 16 | 400 |
| 7 | NFM18CC101R1C3 | 10 | 100pF±20% | 16 | 500 |
| 8 | NFM18CC221R1C3 | 10 | 220pF±20% | 16 | 500 |
| 9 | NFM18CC471R1C3 | 10 | 470pF±20% | 16 | 500 |
| 10 | NFM18CC102R1C3 | 10 | 1000pF±20% | 16 | 600 |
| 11 | NFM18CC222R1C3 | 10 | 2200pF±20% | 16 | 700 |
| 12 | NFM18CC223R1C3 | 10 | 22000pF±20% | 16 | 1000 |
| 13 | NFM21CC220U1H3 | 10 | 22pF±20% | 50 | 700 |
| 14 | NFM21CC470U1H3 | 10 | 47pF±20% | 50 | 700 |
| 15 | NFM21CC101U1H3 | 10 | 100pF±20% | 50 | 700 |
| 16 | NFM21CC221R1H3 | 10 | 220pF±20% | 50 | 700 |
| 17 | NFM21CC471R1H3 | 10 | 470pF±20% | 50 | 1000 |
| 18 | NFM21CC102R1H3 | 10 | 1000pF±20% | 50 | 1000 |
| 19 | NFM21CC222R1H3 | 10 | 2200pF±20% | 50 | 1000 |
| 20 | NFM21CC223R1H3 | 10 | 22000pF±20% | 50 | 2000 |

## ●EKEMFA31E-KIT (Chip EMIFIL® Capacitor Array Type / RC Combined Array Type)

| No. | Part Number | Quantity (pcs.) | Capacitance | Rated Voltage (Vdc) | Rated Current (mA) |
|---|---|---|---|---|---|
| 1 | NFA31CC220S1E4 | 10 | 22pF±20% | 25 | 200 |
| 2 | NFA31CC470S1E4 | 10 | 47pF±20% | 25 | 200 |
| 3 | NFA31CC101S1E4 | 10 | 100pF±20% | 25 | 200 |
| 4 | NFA31CC221S1E4 | 10 | 220pF±20% | 25 | 200 |
| 5 | NFA31CC471R1E4 | 10 | 470pF±20% | 25 | 200 |
| 6 | NFA31CC102R1E4 | 10 | 1000pF±20% | 25 | 200 |
| 7 | NFA31CC222R1E4 | 10 | 2200pF±20% | 25 | 200 |
| 8 | NFA31CC223R1C4 | 10 | 22000pF±20% | 16 | 200 |

## ●EKEMFL18AG-KIT (Chip EMIFIL® LC Combined Type)

| No. | Part Number | Quantity (pcs.) | Cut-off Frequency | Rated Voltage (Vdc) | Rated Current (mA) |
|---|---|---|---|---|---|
| 1 | NFL15ST157X0J3 | 10 | 150MHz | 6.3 | 50 |
| 2 | NFL15ST207X0J3 | 10 | 200MHz | 6.3 | 50 |
| 3 | NFL15ST307X0J3 | 10 | 300MHz | 6.3 | 50 |
| 4 | NFL15ST507X0J3 | 10 | 500MHz | 6.3 | 50 |
| 5 | NFL18ST506H1A3 | 10 | 50MHz | 10 | 75 |
| 6 | NFL18ST706H1A3 | 10 | 70MHz | 10 | 75 |
| 7 | NFL18ST107H1A3 | 10 | 100MHz | 10 | 75 |
| 8 | NFL18ST207H1A3 | 10 | 200MHz | 10 | 100 |
| 9 | NFL18ST307H1A3 | 10 | 300MHz | 10 | 100 |
| 10 | NFL18ST507H1A3 | 10 | 500MHz | 10 | 100 |
| 11 | NFL18ST207X1C3 | 10 | 200MHz | 16 | 150 |
| 12 | NFL18ST307X1C3 | 10 | 300MHz | 16 | 200 |
| 13 | NFL18ST507X1C3 | 10 | 500MHz | 16 | 200 |
| 14 | NFL18SP157X1A3 | 10 | 150MHz | 10 | 100 |
| 15 | NFL18SP207X1A3 | 10 | 200MHz | 10 | 100 |
| 16 | NFL18SP307X1A3 | 10 | 300MHz | 10 | 100 |
| 17 | NFL18SP507X1A3 | 10 | 500MHz | 10 | 100 |
| 18 | NFL21SP106X1C3 | 10 | 10MHz | 16 | 100 |
| 19 | NFL21SP206X1C7 | 10 | 20MHz | 16 | 100 |

Continued on the following page.

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| No. | Part Number | Quantity (pcs.) | Cut-off Frequency | Rated Voltage (Vdc) | Rated Current (mA) |
|---|---|---|---|---|---|
| 20 | NFL21SP506X1C3 | 10 | 50MHz | 16 | 150 |
| 21 | NFL21SP706X1C3 | 10 | 70MHz | 16 | 150 |
| 22 | NFL21SP107X1C3 | 10 | 100MHz | 16 | 200 |
| 23 | NFL21SP157X1C3 | 10 | 150MHz | 16 | 200 |
| 24 | NFL21SP207X1C3 | 10 | 200MHz | 16 | 250 |
| 25 | NFL21SP307X1C3 | 10 | 300MHz | 16 | 300 |
| 26 | NFL21SP407X1C3 | 10 | 400MHz | 16 | 300 |
| 27 | NFL21SP507X1C3 | 10 | 500MHz | 16 | 300 |

| No. | Part Number | Quantity (pcs.) | Cut-off Frequency | Attenuation (dB min.) | | | | | | | | | | Rated Current | Rated Voltage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 10MHz | 20MHz | 50MHz | 100MHz | 150MHz | 200MHz | 300MHz | 400MHz | 500MHz | 1GHz | | |
| 28 | NFW31SP106X1E4 | 10 | 10MHz | 6dB max. | 5 | 25 | 25 | - | 25 | - | - | 30 | 30 | 200mA | 25V |
| 29 | NFW31SP206X1E4 | 10 | 20MHz | - | 6dB max. | 5 | 25 | - | 25 | - | - | 30 | 30 | 200mA | 25V |
| 30 | NFW31SP506X1E4 | 10 | 50MHz | - | - | 6dB max. | 10 | - | 30 | - | - | 30 | 30 | 200mA | 25V |
| 31 | NFW31SP107X1E4 | 10 | 100MHz | - | - | - | 6dB max. | - | 5 | - | - | 20 | 30 | 200mA | 25V |
| 32 | NFW31SP157X1E4 | 10 | 150MHz | - | - | - | - | 6dB max. | - | 10 | 20 | 30 | 30 | 200mA | 25V |
| 33 | NFW31SP207X1E4 | 10 | 200MHz | - | - | - | - | - | 6dB max. | - | - | 10 | 30 | 200mA | 25V |
| 34 | NFW31SP307X1E4 | 10 | 300MHz | - | - | - | - | - | - | 6dB max. | - | 5 | 15 | 200mA | 25V |
| 35 | NFW31SP407X1E4 | 10 | 400MHz | - | - | - | - | - | - | - | 6dB max. | - | 10 | 200mA | 25V |
| 36 | NFW31SP507X1E4 | 10 | 500MHz | - | - | - | - | - | - | - | - | 6dB max. | 10 | 200mA | 25V |

## ●EKEMFA20AH-KIT (Chip EMIFIL® LC Combined Array Type)

| No. | Part Number | Quantity (pcs.) | Cut-off Frequency | Rated Voltage (Vdc) | Rated Current (mA) |
|---|---|---|---|---|---|
| 1 | NFA18SL506X1A45 | 10 | 50MHz | 10 | 25 |
| 2 | NFA18SL137V1A45 | 10 | 130MHz | 10 | 50 |
| 3 | NFA18SL187V1A45 | 10 | 180MHz | 10 | 50 |
| 4 | NFA18SL207V1A45 | 10 | 200MHz | 10 | 50 |
| 5 | NFA18SL227V1A45 | 10 | 220MHz | 10 | 25 |
| 6 | NFA18SL307V1A45 | 10 | 300MHz | 10 | 100 |
| 7 | NFA18SL357V1A45 | 10 | 350MHz | 10 | 35 |
| 8 | NFA18SL407V1A45 | 10 | 400MHz | 10 | 100 |
| 9 | NFA18SL487V1A45 | 10 | 480MHz | 10 | 100 |
| 10 | NFA18SD187X1A45 | 10 | 180MHz | 10 | 25 |
| 11 | NFA18SD207X1A45 | 10 | 200MHz | 10 | 25 |
| 12 | NFA21SL506X1A48 | 10 | 50MHz | 10 | 20 |
| 13 | NFA21SL806X1A48 | 10 | 80MHz | 10 | 20 |
| 14 | NFA21SL207X1A45 | 10 | 200MHz | 10 | 100 |
| 15 | NFA21SL207X1A48 | 10 | 200MHz | 10 | 100 |
| 16 | NFA21SL307X1A45 | 10 | 300MHz | 10 | 100 |
| 17 | NFA21SL307X1A48 | 10 | 300MHz | 10 | 100 |
| 18 | NFA21SL287V1A45 | 10 | 280MHz | 10 | 100 |
| 19 | NFA21SL287V1A48 | 10 | 280MHz | 10 | 100 |
| 20 | NFA21SL317V1A45 | 10 | 310MHz | 10 | 100 |
| 21 | NFA21SL317V1A48 | 10 | 310MHz | 10 | 100 |
| 22 | NFA21SL337V1A45 | 10 | 330MHz | 10 | 100 |
| 23 | NFA21SL337V1A48 | 10 | 330MHz | 10 | 100 |

## ●EKEMNFMPAN-KIT (Chip EMIFIL® for Large Current)

| No. | Part Number | Quantity (pcs.) | Capacitance | Rated Voltage (Vdc) | Rated Current (A) |
|---|---|---|---|---|---|
| 1 | NFM15CC222D1A3 | 10 | 2200pF±20% | 10 | 1 |
| 2 | NFM15CC222D1C3 | 10 | 2200pF±20% | 16 | 1 |
| 3 | NFM15CC223C1A3 | 10 | 22000pF±20% | 10 | 1 |
| 4 | NFM15CC223C1C3 | 10 | 22000pF±20% | 16 | 1 |
| 5 | NFM15PC473C1A3 | 10 | 0.047μF±20% | 10 | 1 |
| 6 | NFM15PC473C1C3 | 10 | 0.047μF±20% | 16 | 1 |
| 7 | NFM15PC104D0J3 | 10 | 0.1μF±20% | 6.3 | 2 |
| 8 | NFM15PC104R1A3 | 10 | 0.1μF±20% | 10 | 2 |
| 9 | NFM15PC224D0J3 | 10 | 0.22μF±20% | 6.3 | 2 |
| 10 | NFM15PC224R1A3 | 10 | 0.22μF±20% | 10 | 2 |
| 11 | NFM15PC474D0G3 | 10 | 0.47μF±20% | 4 | 2 |
| 12 | NFM15PC474R0J3 | 10 | 0.47μF±20% | 6.3 | 2 |
| 13 | NFM15PC105R0G3 | 10 | 1μF±20% | 4 | 2 |
| 14 | NFM15PC435R0E3 | 10 | 4.3μF±20% | 2.5 | 2 |

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| No. | Part Number | Quantity (pcs.) | Capacitance | Rated Voltage (Vdc) | Rated Current (A) |
|---|---|---|---|---|---|
| 15 | **NFM18PC104R1C3** | 10 | 0.1μF±20% | 16 | 2 |
| 16 | **NFM18PC224R0J3** | 10 | 0.22μF±20% | 6.3 | 2 |
| 17 | **NFM18PC474R0J3** | 10 | 0.47μF±20% | 6.3 | 2 |
| 18 | **NFM18PC105R0J3** | 10 | 1μF±20% | 6.3 | 4 |
| 19 | **NFM18PC225B0J3** | 10 | 2.2μF±20% | 6.3 | 2 |
| 20 | **NFM18PC225B1A3** | 10 | 2.2μF±20% | 10 | 4 |
| 21 | **NFM18PS474R0J3** | 10 | 0.47μF±20% | 6.3 | 2 |
| 22 | **NFM18PS105R0J3** | 10 | 1μF±20% | 6.3 | 2 |
| 23 | **NFM18PS105D0J3** | 10 | 1μF±20% | 6.3 | 2 |
| 24 | **NFM21PC104R1E3** | 10 | 0.1μF±20% | 25 | 2 |
| 25 | **NFM21PC224R1C3** | 10 | 0.22μF±20% | 16 | 2 |
| 26 | **NFM21PC474R1C3** | 10 | 0.47μF±20% | 16 | 2 |
| 27 | **NFM21PC105B1A3** | 10 | 1μF±20% | 10 | 4 |
| 28 | **NFM21PC105B1C3** | 10 | 1μF±20% | 16 | 4 |
| 29 | **NFM21PC225B0J3** | 10 | 2.2μF±20% | 6.3 | 4 |
| 30 | **NFM21PC475B1A3** | 10 | 4.7μF±20% | 10 | 6 |
| 31 | **NFM21PS106B0J3** | 10 | 10μF±20% | 6.3 | 4 |
| 32 | **NFM31PC276B0J3** | 10 | 27μF±20% | 6.3 | 6 |
| 33 | **NFM41PC204F1H3** | 10 | 0.2μF+80/-20% | 50 | 2 |
| 34 | **NFM41PC155B1E3** | 10 | 1.5μF±20% | 25 | 6 |
| 35 | **NFM31KC103R1H3** | 10 | 10000pF±20% | 50 | 10 |
| 36 | **NFM31KC103R2A3** | 10 | 10000pF±20% | 100 | 10 |
| 37 | **NFM31KC153R1H3** | 10 | 15000pF±20% | 50 | 10 |
| 38 | **NFM31KC153R2A3** | 10 | 15000pF±20% | 100 | 10 |
| 39 | **NFM31KC223R1H3** | 10 | 22000pF±20% | 50 | 10 |
| 40 | **NFM31KC223R2A3** | 10 | 22000pF±20% | 100 | 10 |
| 41 | **NFM31KC104R1H3** | 10 | 100000pF±20% | 50 | 6 |
| 42 | **NFM31KC104R2A3** | 10 | 100000pF±20% | 100 | 6 |
| 43 | **NFE31PT152Z1E9** | 10 | 1500pF+50/-20% | 25 | 6 |
| 44 | **NFE31PT222Z1E9** | 10 | 2200pF±50% | 25 | 6 |
| 45 | **NFE61PT102E1H9** | 10 | 1000pF+80/-20% | 50 | 2 |
| 46 | **NFE61PT472C1H9** | 10 | 4700pF+80/-20% | 50 | 2 |



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Memo

# DL□/PL□

## Chip Common Mode Choke Coil
### Large Current Common Mode Choke Coil for Automotive Available





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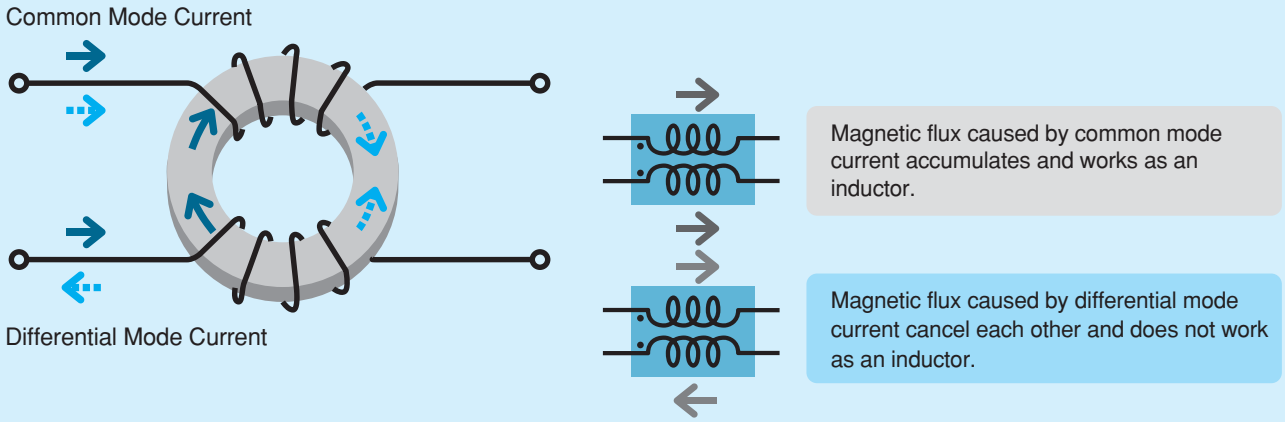
# DL□ Series Introduction




| Category | Features, Classification | Structure | Part Number | Comments |
|---|---|---|---|---|
| High cut-off frequency High Coupling (For high speed differential signal lines) | Ultra high cut-off frequency for high speed differential signal lines | Film type | DLP0QSA<br>DLP0NSA<br>DLP11SA<br>DLP11RB<br>DLP11TB<br>DLP2ADA | · Low profile, small size, suitable for mobile equipment.<br>· Tight terminal pitch enables high density layout.<br>· Ultra high cut-off frequency and its matching to line impedance enables good transmission of high speed signal. |
| | | Wound type | DLW21SN_HQ2<br>DLW21HN_HQ2 | · Ultra high self-resonance frequency enables high cut-off frequency.<br>· Its matching to line impedance enables good transmission of high speed signal. |
| | High cut-off frequency for high speed differential signal lines | Multilayer type | DLM11SN | · Enables noise suppression for differential signal line without distortion in high-speed signal transmission. |
| | | Film type | DLP0QSN<br>DLP0NS<br>DLP11SN<br>DLP11RN<br>DLP2AD | · Low profile, small size, suitable for mobile equipment.<br>· Tight terminal pitch enables high density layout.<br>· High cut-off frequency enables good transmission of high speed signal. |
| | | Wound type | DLW21SN_SQ2<br>DLW31S<br>DLW21HN_SQ2 | · Ultra high self-resonance frequency enables high cut-off frequency.<br>· DLW21H is designed as low profile. |
| | For general differential signal lines | Film type | DLP31S<br>DLP31D | · Low profile,small size, suitable for mobile equipment.<br>· Tight terminal pitch enables high density layout. |
| Large current High coupling (For power lines) | | Wound type | DLW5AH<br>DLW5BS<br>DLW5AT<br>DLW5BT | · Large current (6A max.), suitable for input connector from an AC adaptor.<br>· DLW5AT/DLW5BT is designed as low profile. |
| Relative high differential mode impedance Low coupling (For audio lines) | | Multilayer type | DLM11G | · Modified differential mode impedance is higher than other common mode choke coils; this feature makes it possible to suppress both common mode and differential mode noise.<br>· Ideal to keep low distortion audio signal. |
| Large current Automotive Available (For power lines) | Available up to 18A | Winding type Cased structure | PLT10HH | · Large current, high reliability, suitable for motors in automobiles. |

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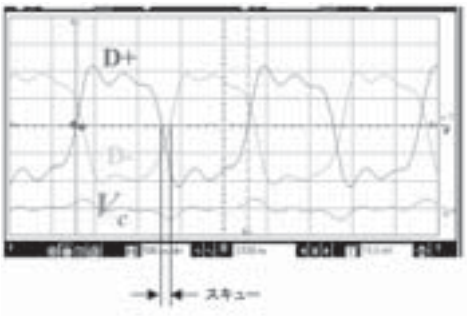
## Skew Improvement Effect of Common Mode Choke Coil

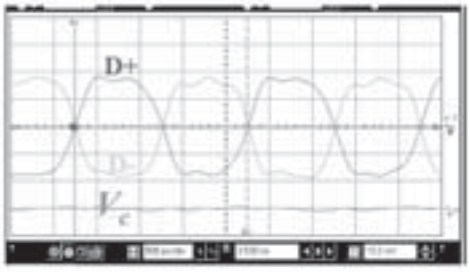
Example of Skew Improvement by Common Mode Choke Coil
(Tested using pulse generator waveform)

Waveform is equivalent to 1000Mbps signal

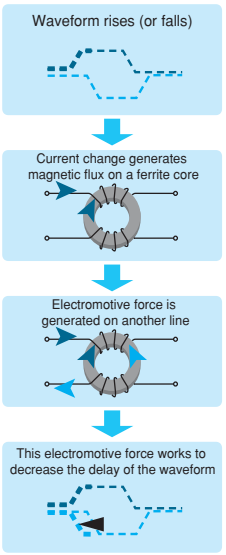
Waveform with intentionally made skew (skew: 100ps)




Skew is improved by common mode choke coil

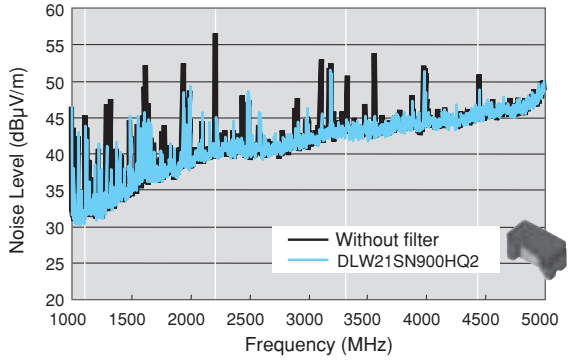


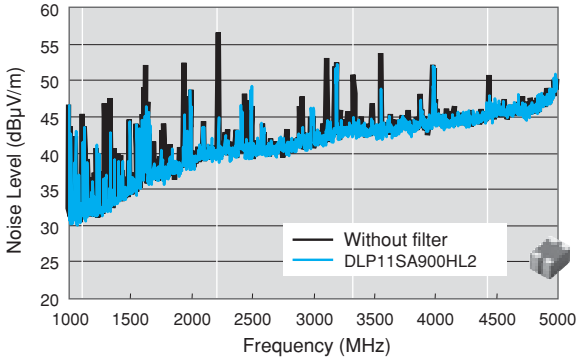

Mechanism of Skew Improvement




## Noise Suppression of Common Mode Choke Coil in HDMI Line

Device under test / Transmitter : game machine
/ Receiver : projector
/ Cable : HDMI categoly 2 3m cable
Test resolution / 1080p Deep color 12bit (Data 1.11GHz) DVD play mode

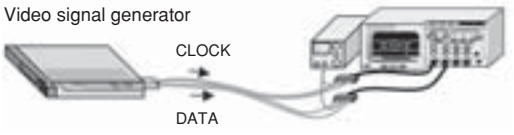


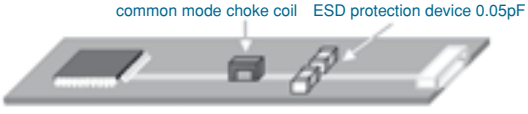




## Test Example of HDMI1.3 Waveform Transmission

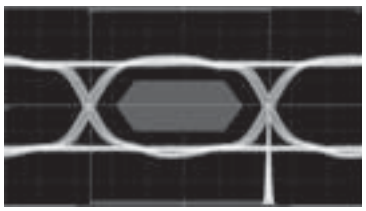
~Using ESD protection device
LXES15AAA1-100 (0.05pF)~

Signal frequency : 1.11GHz (Deep color 12bit)

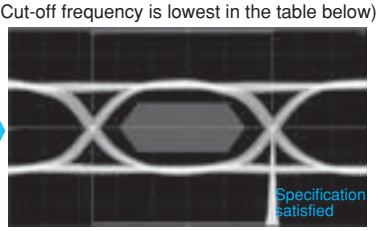



ESD protection device only



Film Type DLP11SN900HL2
(Cut-off frequency is lowest in the table below)




| | Wound Type DLW21SN900HQ2 | Film Type DLP11SA900HL2 | Film Type Array DLP2ADN900HL4 |
|---|---|---|---|
| Cut-off Frequency | Over 10GHz | Around 6GHz | Around 4GHz |
| Judge | Specification satisfied | Specification satisfied | Specification satisfied |
| Transition Time | Rise time: 83.4ps<br>Fall time: 77.4ps | Rise time: 90.4ps<br>Fall time: 85.5ps | Rise time: 100ps<br>Fall time: 97.4ps |

Each common mode choke coil can keep the waveform and satisfy the specification.



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# Part Numbering



(Part Number)

| DL | W | 21 | S | N | 371 | S | Q | 2 | L |
|---|---|---|---|---|---|---|---|---|---|
| ❶ | ❷ | ❸ | ❹ | ❺ | ❻ | ❼ | ❽ | ❾ | ❿ |

❶Product ID

| Product ID | |
|---|---|
| DL | Chip Common Mode Choke Coils |

❷Structure

| Code | Structure |
|---|---|
| W | Wire Wound Type |
| M | Multilayer Type |
| P | Film Type |

❸Dimensions (L×W)

| Code | Dimensions (L×W) | EIA |
|---|---|---|
| 0Q | 0.65×0.5mm | 025020 |
| 0N | 0.85×0.65mm | 03025 |
| 11 | 1.25×1.0mm | 0504 |
| 1N | 1.5×0.65mm | 05025 |
| 21 | 2.0×1.2mm | 0805 |
| 2A | 2.0×1.0mm | 0804 |
| 31 | 3.2×1.6mm | 1206 |
| 43 | 4.5×3.2mm | 1812 |
| 5A | 5.0×3.6mm | 2014 |
| 5B | 5.0×5.0mm | 2020 |

❹Features (1)

| Code | Type |
|---|---|
| S | Magnetically Shielded One Circuit Type |
| D | Magnetically Shielded Two Circuit Type |
| H | Open Magnetic One Circuit Type |
| G | Magnetically Shielded Audio Type |
| R/T | One Circuit Low Profile Type |

❺Category

| Code | Category |
|---|---|
| A | Expressed by a letter. |
| B | |
| C | |
| H | |
| M | |
| N | |
| R | |

❻Impedance

Typical impedance at 100MHz is expressed by three figures. The unit is in ohm (Ω). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.

❻Inductance (DLW43SH)

Expressed by three figures. The unit is micro-henry (μH). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

❼Circuit

| Code | Circuit |
|---|---|
| S | Expressed by a letter. |
| M | |
| H | |
| U | |
| T | |
| X | |

❽Features (2)

| Code | Features |
|---|---|
| D | Expressed by a letter. |
| K | |
| P | |
| L | |
| Q | |
| Y | |

❾Number of Signal Lines

| Code | Number of Signal Lines |
|---|---|
| 2 | Two Lines |
| 4 | Four Lines |

❿Packaging

| Code | Packaging | Series |
|---|---|---|
| K | Embossed Taping (ø330mm Reel) | **DLW5AH/DLW5BS/DLW5BT** |
| L | Embossed Taping (ø180mm Reel) | All Series |
| B | Bulk | All Series |
| D | Paper Taping (ø180mm Reel) | **DLP0QS/DLM11G** |

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# Part Numbering

(Part Number)

| PL | T | 10H | H | 102 | 6R0 | P | N | B |
|---|---|---|---|---|---|---|---|---|
| ❶ | ❷ | ❸ | ❹ | ❺ | ❻ | ❼ | ❽ | ❾ |

❶Product ID

| Product ID | |
|---|---|
| PL | Common Mode Choke Coils |

❷Type

| Code | Type |
|---|---|
| T | DC Type |

❸Applications

| Code | Applications |
|---|---|
| 10H | for DC Line High-frequency Type |

❹Features

| Code | Features |
|---|---|
| H | for Automotive |

❺Impedance

Expressed by three figures. The unit is ohm (Ω). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.

❻Rated Current

Expressed by three figures. The unit is ampere (A). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.
A decimal point is expressed by the capital letter "R." In this case, all figures are significant digits.

❼Winding Mode

| Code | Winding Mode |
|---|---|
| P | Aligned Winding Type |

❽Lead Dimensions

| Code | Lead Dimensions |
|---|---|
| N | No Lead Terminal (SMD) |

❾Packaging

| Code | Packaging | Series |
|---|---|---|
| B | Bulk | PLT10H |
| L | Embossed Taping (ø178mm/ø180mm Reel) | PLT10H |
| K | Embossed Taping (ø330mm Reel) | PLT10H |



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| Type | Size Code in inch (in mm) | Thickness (mm) | Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | New | Kit | ≥1A ≥3A | HD UD | Zmatch | Flow | ReFlow |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Multilayer Type for Audio Lines | 0504(1210) p184 | 0.5 | DLM11GN601SD2 | 600ohm±25% | 100mA | | | | | | | ReFlow |
| Multilayer Type for Differential Signal Lines | p185 0504(1210) | 0.5 | DLM11SN450HY2 | 45ohm±25% | 100mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.5 | DLM11SN900HY2 | 90ohm±25% | 100mA | | Kit | | HD | Zmatch | | ReFlow |
| Film Type for Differential Signal Lines | p186 025020(0605) | 0.3 | DLP0QSN600HL2 | 60ohm±25% | 50mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.3 | DLP0QSA070HL2 | 7ohm±2ohm | 100mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 0.3 | DLP0QSA150HL2 | 15ohm±5ohm | 100mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 0.3 | DLP0QSA350HL2 | 35ohm±10ohm | 100mA | | Kit | | UD | Zmatch | | ReFlow |
| | p187 03025(0806) | 0.45 | DLP0NSC280HL2 | 28ohm±20% | 100mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.45 | DLP0NSN350HL2 | 35ohm±10ohm | 100mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.45 | DLP0NSN670HL2 | 67ohm±20% | 110mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.45 | DLP0NSN900HL2 | 90ohm±20% | 100mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.45 | DLP0NSN121HL2 | 120ohm±20% | 90mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.45 | DLP0NSA070HL2 | 7ohm±2ohm | 100mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 0.45 | DLP0NSA150HL2 | 15ohm±5ohm | 100mA | | Kit | | UD | Zmatch | | ReFlow |
| | p189 0504(1210) | 0.82 | DLP11SN670SL2 | 67ohm±20% | 180mA | | Kit | | HD | | | ReFlow |
| | | 0.82 | DLP11SN121SL2 | 120ohm±20% | 140mA | | Kit | | HD | | | ReFlow |
| | | 0.82 | DLP11SN161SL2 | 160ohm±20% | 120mA | | Kit | | HD | | | ReFlow |
| | | 0.82 | DLP11SN900HL2 | 90ohm±20% | 150mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.82 | DLP11SN201HL2 | 200ohm±20% | 110mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.82 | DLP11SN241HL2 | 240ohm±20% | 100mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.82 | DLP11SN281HL2 | 280ohm±20% | 90mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.82 | DLP11SN331HL2 | 330ohm±20% | 80mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.82 | DLP11SA350HL2 | 35ohm±20% | 170mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 0.82 | DLP11SA670HL2 | 67ohm±20% | 150mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 0.82 | DLP11SA900HL2 | 90ohm±20% | 150mA | | Kit | | UD | Zmatch | | ReFlow |
| | p190 | 0.5 | DLP11RN450UL2 | 45ohm±25% | 100mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.5 | DLP11RB150UL2 | 15ohm±5ohm | 100mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 0.5 | DLP11RB400UL2 | 40ohm±10ohm | 100mA | | Kit | | UD | Zmatch | | ReFlow |
| | p191 | 0.3 | DLP11TB800UL2 | 80ohm±25% | 100mA | | Kit | | UD | Zmatch | | ReFlow |
| | p192 1206(3216) | 1.15 | DLP31SN121ML2 | 120ohm±20% | 100mA | | | | HD | | | ReFlow |
| | | 1.15 | DLP31SN221ML2 | 220ohm±20% | 100mA | | | | HD | | | ReFlow |
| | | 1.15 | DLP31SN551ML2 | 550ohm±20% | 100mA | | | | HD | | | ReFlow |
| Film Array Type for Differential Signal Lines | p193 05025(1506) | 0.45 | DLP1NDN350HL4 | 35ohm±20% | 100mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.45 | DLP1NDN670HL4 | 67ohm±20% | 80mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.45 | DLP1NDN900HL4 | 90ohm±20% | 60mA | | Kit | | HD | Zmatch | | ReFlow |
| | p194 0804(2010) | 0.82 | DLP2ADA350HL4 | 35ohm±20% | 150mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 0.82 | DLP2ADA670HL4 | 67ohm±20% | 130mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 0.82 | DLP2ADA900HL4 | 90ohm±20% | 120mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 0.82 | DLP2ADN670HL4 | 67ohm±20% | 140mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.82 | DLP2ADN900HL4 | 90ohm±20% | 130mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.82 | DLP2ADN121HL4 | 120ohm±20% | 120mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.82 | DLP2ADN161HL4 | 160ohm±20% | 100mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.82 | DLP2ADN201HL4 | 200ohm±20% | 90mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.82 | DLP2ADN241HL4 | 240ohm±20% | 80mA | | Kit | | HD | Zmatch | | ReFlow |
| | | 0.82 | DLP2ADN281HL4 | 280ohm±20% | 80mA | | Kit | | HD | Zmatch | | ReFlow |
| | p196 1206(3216) | 1.15 | DLP31DN900ML4 | 90ohm±20% | 160mA | | | | HD | | | ReFlow |
| | | 1.15 | DLP31DN131ML4 | 130ohm±20% | 120mA | | | | HD | | | ReFlow |
| | | 1.15 | DLP31DN201ML4 | 200ohm±20% | 100mA | | | | HD | | | ReFlow |
| | | 1.15 | DLP31DN321ML4 | 320ohm±20% | 80mA | | | | HD | | | ReFlow |
| | | 1.15 | DLP31DN441ML4 | 440ohm±20% | 70mA | | | | HD | | | ReFlow |
| Wire Wound Type for Differential Signal Lines | p197 0805(2012) | 1.2 | DLW21SN670SQ2 | 67ohm±25% | 400mA | | Kit | | HD | | | ReFlow |
| | | 1.2 | DLW21SN900SQ2 | 90ohm±25% | 330mA | | Kit | | HD | | | ReFlow |
| | | 1.2 | DLW21SN121SQ2 | 120ohm±25% | 370mA | | Kit | | HD | | | ReFlow |
| | | 1.2 | DLW21SN181SQ2 | 180ohm±25% | 330mA | | Kit | | HD | | | ReFlow |
| | | 1.2 | DLW21SN261SQ2 | 260ohm±25% | 300mA | | Kit | | HD | | | ReFlow |
| | | 1.2 | DLW21SN371SQ2 | 370ohm±25% | 280mA | | Kit | | HD | | | ReFlow |
| | | 1.2 | DLW21SN501SK2 | 500ohm±25% | 250mA | | Kit | | HD | | | ReFlow |
| | | 1.2 | DLW21SN670HQ2 | 67ohm±25% | 320mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 1.2 | DLW21SN900HQ2 | 90ohm±25% | 280mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 1.2 | DLW21SN121HQ2 | 120ohm±25% | 280mA | | Kit | | UD | Zmatch | | ReFlow |
| | p198 | 1.2 | DLW21SN181XQ2 | 180ohm±25% | 240mA | New | Kit | | HD | | | ReFlow |
| | | 1.2 | DLW21SN261XQ2 | 260ohm±25% | 220mA | New | Kit | | HD | | | ReFlow |

Continued on the following page.

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| Type | Size Code in inch (in mm) | Thickness (mm) | Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | New | Kit | ≥1A ≥3A | HD UD | Zmatch | Flow | ReFlow |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Wound Type for Differential Signal Lines | p198 | 1.2 | DLW21SN491XQ2 | 490ohm±25% | 190mA | New | Kit | | HD | | | ReFlow |
| | p197 | 1.2 | DLW21SR670HQ2 | 67ohm±25% | 400mA | | Kit | | UD | Zmatch | | ReFlow |
| | p199 | 0.9 | DLW21HN670SQ2 | 67ohm±25% | 330mA | | Kit | | HD | | | ReFlow |
| | | 0.9 | DLW21HN900SQ2 | 90ohm±25% | 330mA | | Kit | | HD | | | ReFlow |
| | 0805(2012) | 0.9 | DLW21HN121SQ2 | 120ohm±25% | 280mA | | Kit | | HD | | | ReFlow |
| | | 0.9 | DLW21HN181SQ2 | 180ohm±25% | 250mA | | Kit | | HD | | | ReFlow |
| | | 0.9 | DLW21HN670HQ2 | 67ohm±25% | 240mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 0.9 | DLW21HN900HQ2 | 90ohm±25% | 220mA | | Kit | | UD | Zmatch | | ReFlow |
| | | 0.9 | DLW21HN121HQ2 | 120ohm±25% | 200mA | | Kit | | UD | Zmatch | | ReFlow |
| | p200 | 1.9 | DLW31SN900SQ2 | 90ohm±25% | 370mA | | | | HD | | | ReFlow |
| | | 1.9 | DLW31SN161SQ2 | 160ohm±25% | 340mA | | | | HD | | | ReFlow |
| | | 1.9 | DLW31SN261SQ2 | 260ohm±25% | 310mA | | | | HD | | | ReFlow |
| | 1206(3216) | 1.9 | DLW31SN601SQ2 | 600ohm±25% | 260mA | | | | HD | | | ReFlow |
| | | 1.9 | DLW31SN102SQ2 | 1000ohm±25% | 230mA | | | | HD | | | ReFlow |
| | | 1.9 | DLW31SN222SQ2 | 2200ohm±25% | 200mA | | | | HD | | | ReFlow |
| Wire Wound Type for Differential Signal Lines Automotive Type | p201 | 2.6 | DLW43SH110XK2 | - | 360mA | | | | | | | ReFlow |
| | | 2.6 | DLW43SH220XK2 | - | 310mA | | | | | | | ReFlow |
| | 1812(4532) | 2.6 | DLW43SH510XK2 | - | 230mA | | | | | | | ReFlow |
| | | 2.6 | DLW43SH101XK2 | - | 200mA | | | | | | | ReFlow |
| | | 2.7 | DLW43SH101XP2 | - | 170mA | | | | | | | ReFlow |
| Wire Wound Type for Power Lines and Signal Lines | p177 | 4.3 | DLW5AHN402SQ2 | 4000ohm (Typ.) | 200mA | | Kit | | | | | ReFlow |
| | p179 | 2.2 | DLW5ATN111SQ2 | 110ohm (Typ.) | 5000mA | | Kit | ≥3A | | | | ReFlow |
| | | 2.2 | DLW5ATN401SQ2 | 400ohm (Typ.) | 2000mA | | Kit | ≥1A | | | | ReFlow |
| | | 2.2 | DLW5ATN501SQ2 | 500ohm (Typ.) | 1500mA | | Kit | ≥1A | | | | ReFlow |
| | | 2.2 | DLW5ATN851SQ2 | 850ohm (Typ.) | 1500mA | | Kit | ≥1A | | | | ReFlow |
| | | 2.2 | DLW5ATN272SQ2 | 2700ohm (Typ.) | 1000mA | | Kit | ≥1A | | | | ReFlow |
| | p182 | 2.2 | DLW5ATN500MQ2 | 50ohm (Typ.) | 6000mA | | Kit | ≥3A | | | Flow | ReFlow |
| | 2014(5036) | 2.2 | DLW5ATN151MQ2 | 150ohm (Typ.) | 5000mA | | Kit | ≥3A | | | Flow | ReFlow |
| | | 2.2 | DLW5ATN331MQ2 | 330ohm (Typ.) | 4000mA | | Kit | ≥3A | | | Flow | ReFlow |
| | | 2.2 | DLW5ATN501MQ2 | 500ohm (Typ.) | 2500mA | New | Kit | ≥1A | | | Flow | ReFlow |
| | | 2.2 | DLW5ATN112MQ2 | 1100ohm (Typ.) | 2000mA | | Kit | ≥1A | | | Flow | ReFlow |
| | | 2.2 | DLW5ATN111TQ2 | 100ohm (Typ.) | 5000mA | | Kit | ≥3A | | | | ReFlow |
| | | 2.2 | DLW5ATN231TQ2 | 230ohm (Typ.) | 4000mA | | Kit | ≥3A | | | | ReFlow |
| | | 2.2 | DLW5ATN401TQ2 | 400ohm (Typ.) | 2500mA | New | Kit | ≥1A | | | | ReFlow |
| | | 2.2 | DLW5ATN501TQ2 | 500ohm (Typ.) | 2000mA | | Kit | ≥1A | | | | ReFlow |
| | p177 | 4.5 | DLW5BSM501TQ2 | 500ohm (Typ.) | 1000mA | New | Kit | ≥1A | | | | ReFlow |
| | | 4.5 | DLW5BSM601TQ2 | 600ohm (Typ.) | 1400mA | New | Kit | ≥1A | | | | ReFlow |
| | | 4.5 | DLW5BSM801TQ2 | 800ohm (Typ.) | 2000mA | New | Kit | ≥1A | | | | ReFlow |
| | | 4.5 | DLW5BSM191SQ2 | 190ohm (Typ.) | 5000mA | | Kit | ≥3A | | | | ReFlow |
| | | 4.5 | DLW5BSM351SQ2 | 350ohm (Typ.) | 2000mA | | Kit | ≥1A | | | | ReFlow |
| | | 4.5 | DLW5BSM102SQ2 | 1000ohm (Typ.) | 1500mA | | Kit | ≥1A | | | | ReFlow |
| | | 4.5 | DLW5BSM152SQ2 | 1500ohm (Typ.) | 1000mA | | Kit | ≥1A | | | | ReFlow |
| | | 4.5 | DLW5BSM302SQ2 | 3000ohm (Typ.) | 500mA | | Kit | | | | | ReFlow |
| | p179 | 2.35 | DLW5BTM101SQ2 | 100ohm (Typ.) | 6000mA | | Kit | ≥3A | | | | ReFlow |
| | 2020(5050) | 2.35 | DLW5BTM251SQ2 | 250ohm (Typ.) | 5000mA | | Kit | ≥3A | | | | ReFlow |
| | | 2.35 | DLW5BTM501SQ2 | 500ohm (Typ.) | 4000mA | | Kit | ≥3A | | | | ReFlow |
| | | 2.35 | DLW5BTM102SQ2 | 1000ohm (Typ.) | 2000mA | | Kit | ≥1A | | | | ReFlow |
| | | 2.35 | DLW5BTM142SQ2 | 1400ohm (Typ.) | 1500mA | | Kit | ≥1A | | | | ReFlow |
| | p182 | 2.35 | DLW5BTM101TQ2 | 100ohm (Typ.) | 6000mA | | Kit | ≥3A | | | | ReFlow |
| | | 2.35 | DLW5BTM251TQ2 | 250ohm (Typ.) | 5000mA | | Kit | ≥3A | | | | ReFlow |
| | | 2.35 | DLW5BTM501TQ2 | 500ohm (Typ.) | 4000mA | | Kit | ≥3A | | | | ReFlow |
| | | 2.35 | DLW5BTM102TQ2 | 1000ohm (Typ.) | 2500mA | New | Kit | ≥1A | | | | ReFlow |
| | | 2.35 | DLW5BTM142TQ2 | 1400ohm (Typ.) | 2000mA | | Kit | ≥1A | | | | ReFlow |



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• This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

| Type | Size in inch (in mm) | Thickness (mm) | Part Number | Common Mode Impedance (at 10MHz/20°C) | Rated Current | New / Kit / ≧3A ≧10A / HD UD / Zmatch / Flow / ReFlow |
|---|---|---|---|---|---|---|
| Large Current Common Mode Choke Coil for Automotive Available | p202 (12.9x6.6) | 9.4 | **PLT10HH450180PN** | 45ohm (Typ.) | 18A | Kit ≧10A ReFlow |
| | | 9.4 | **PLT10HH101150PN** | 100ohm (Typ.) | 15A | Kit ≧10A ReFlow |
| | | 9.4 | **PLT10HH401100PN** | 400ohm (Typ.) | 10A | Kit ≧10A ReFlow |
| | | 9.4 | **PLT10HH501100PN** | 500ohm (Typ.) | 10A | Kit ≧10A ReFlow |
| | | 9.4 | **PLT10HH9016R0PN** | 900ohm (Typ.) | 6A | Kit ≧3A ReFlow |
| | | 9.4 | **PLT10HH1026R0PN** | 1000ohm (Typ.) | 6A | Kit ≧3A ReFlow |



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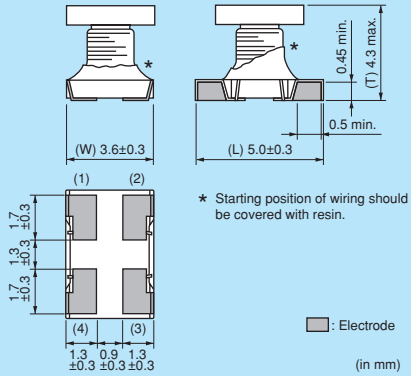
# DLW5AH/DLW5BS Series 2014/5036 (inch/mm) 2020/5050 (inch/mm) Hi Power Reflow OK

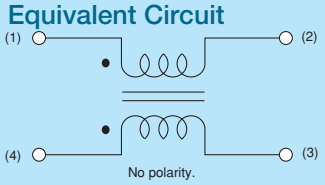
## 5A max., common mode choke coil for power lines.

### DLW5AH

### ■ Dimensions




### ■ Equivalent Circuit

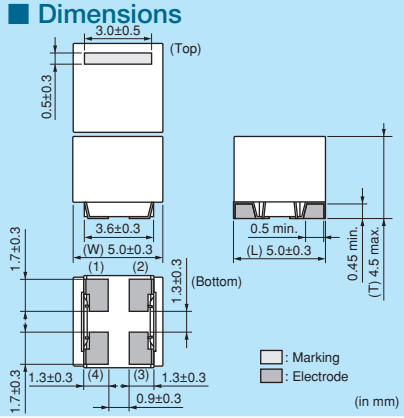



### ■ Packaging

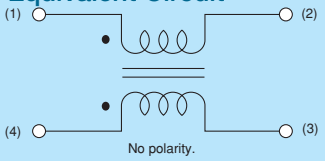
| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 400 |
| K | 330mm Reel Embossed Tape | 1500 |
| B | Bulk(Bag) | 100 |

### DLW5BS

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 400 |
| K | 330mm Reel Embossed Tape | 1500 |
| B | Bulk(Bag) | 100 |

Refer to pages from p.205 to p.209 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 10MHz/20°C) | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|---|
| DLW5AHN402SQ2□ | - | 4000ohm (Typ.) | 200mA | 50Vdc | 10M ohm | 125Vdc | 3.0ohm max. | Kit |
| DLW5BSM501TQ2□ | 2800ohm ±40% | 500ohm (Typ.) | 1000mA | 50Vdc | 10M ohm | 125Vdc | 0.23ohm max. | New Kit ≧1A |
| DLW5BSM601TQ2□ | 1200ohm ±40% | 600ohm (Typ.) | 1400mA | 50Vdc | 10M ohm | 125Vdc | 0.12ohm max. | New Kit ≧1A |
| DLW5BSM801TQ2□ | 550ohm ±40% | 800ohm (Typ.) | 2000mA | 50Vdc | 10M ohm | 125Vdc | 0.056ohm max. | New Kit ≧1A |
| DLW5BSM191SQ2□ | - | 190ohm (Typ.) | 5000mA | 50Vdc | 10M ohm | 125Vdc | 0.02ohm max. | Kit ≧3A |
| DLW5BSM351SQ2□ | - | 350ohm (Typ.) | 2000mA | 50Vdc | 10M ohm | 125Vdc | 0.04ohm max. | Kit ≧1A |
| DLW5BSM102SQ2□ | - | 1000ohm (Typ.) | 1500mA | 50Vdc | 10M ohm | 125Vdc | 0.06ohm max. | Kit ≧1A |
| DLW5BSM152SQ2□ | - | 1500ohm (Typ.) | 1000mA | 50Vdc | 10M ohm | 125Vdc | 0.1ohm max. | Kit ≧1A |
| DLW5BSM302SQ2□ | - | 3000ohm (Typ.) | 500mA | 50Vdc | 10M ohm | 125Vdc | 0.3ohm max. | Kit |

Operating Temperature Range: -25°C to +85°C (DLW5AH), -40°C to +105°C (DLW5BS_TQ2), -40°C to +85°C (DLW5BS_SQ2) Number of Circuit: 1

Continued on the following page.



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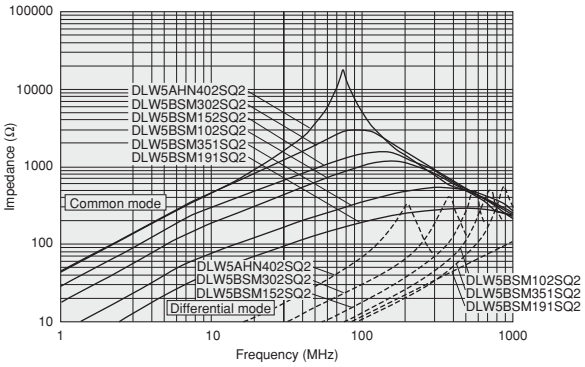
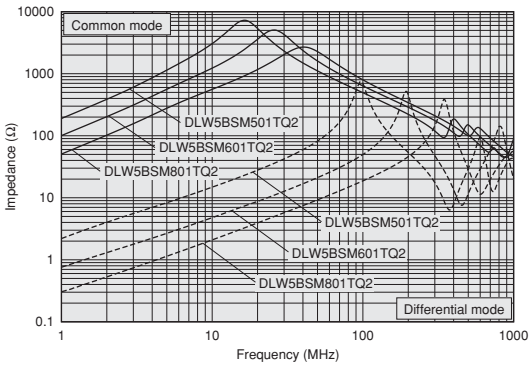
## ■ Impedance-Frequency Characteristics

### DLW5AH_SQ2/DLW5BS_SQ2 Series



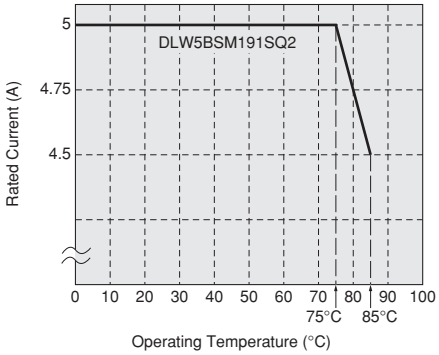

### DLW5BS_TQ2 Series




## ■ Notice (Rating)

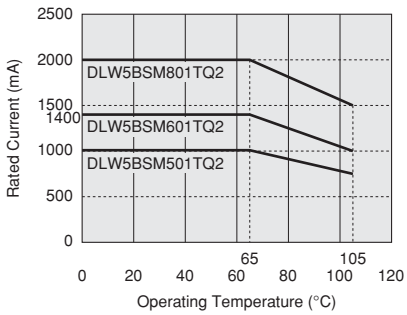
In operating temperature exceeding +75°C, derating of current is necessary for DLW5BSM191SQ2.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current




In operating temperature exceeding +65°C, derating of current is necessary for DLW5BS_TQ2 series. Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current

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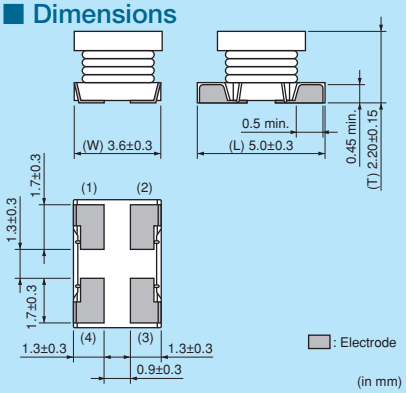
# DLW5AT/DLW5BT Series 2014/5036 (inch/mm) 2020/5050 (inch/mm)

Hi Power Reflow OK

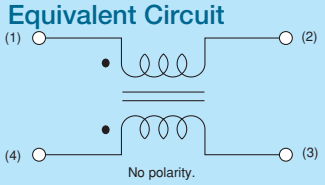
## Low profile wire-wound common choke coil for power lines.

### DLW5AT

### ■ Dimensions




### ■ Equivalent Circuit

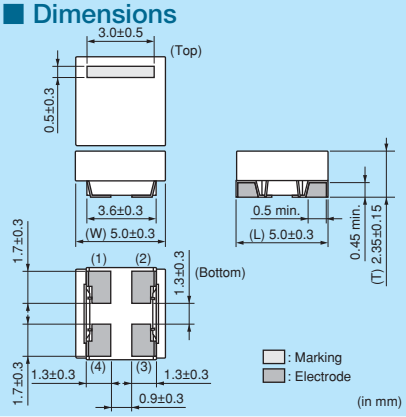



### ■ Packaging

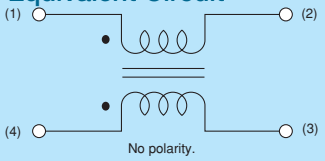
| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 700 |
| K | 330mm Reel Embossed Tape | 2500 |
| B | Bulk(Bag) | 100 |

### DLW5BT

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 700 |
| K | 330mm Reel Embossed Tape | 2500 |
| B | Bulk(Bag) | 100 |

Refer to pages from p.205 to p.209 for mounting information.

## ■ Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLW5ATN111SQ2□ | 110ohm (Typ.) | 5000mA | 50Vdc | 10M ohm | 125Vdc | 0.020ohm max. | Kit ≧3A |
| DLW5ATN401SQ2□ | 400ohm (Typ.) | 2000mA | 50Vdc | 10M ohm | 125Vdc | 0.034ohm max. | Kit ≧1A |
| DLW5ATN501SQ2□ | 500ohm (Typ.) | 1500mA | 50Vdc | 10M ohm | 125Vdc | 0.056ohm max. | Kit ≧1A |
| DLW5ATN851SQ2□ | 850ohm (Typ.) | 1500mA | 50Vdc | 10M ohm | 125Vdc | 0.073ohm max. | Kit ≧1A |
| DLW5ATN272SQ2□ | 2700ohm (Typ.) | 1000mA | 50Vdc | 10M ohm | 125Vdc | 0.12ohm max. | Kit ≧1A |
| DLW5BTM101SQ2□ | 100ohm (Typ.) | 6000mA | 50Vdc | 10M ohm | 125Vdc | 0.013ohm max. | Kit ≧3A |
| DLW5BTM251SQ2□ | 250ohm (Typ.) | 5000mA | 50Vdc | 10M ohm | 125Vdc | 0.020ohm max. | Kit ≧3A |
| DLW5BTM501SQ2□ | 500ohm (Typ.) | 4000mA | 50Vdc | 10M ohm | 125Vdc | 0.027ohm max. | Kit ≧3A |
| DLW5BTM102SQ2□ | 1000ohm (Typ.) | 2000mA | 50Vdc | 10M ohm | 125Vdc | 0.034ohm max. | Kit ≧1A |
| DLW5BTM142SQ2□ | 1400ohm (Typ.) | 1500mA | 50Vdc | 10M ohm | 125Vdc | 0.056ohm max. | Kit ≧1A |

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1

Continued on the following page.



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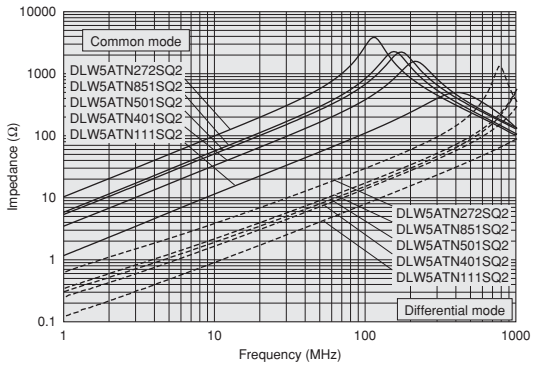
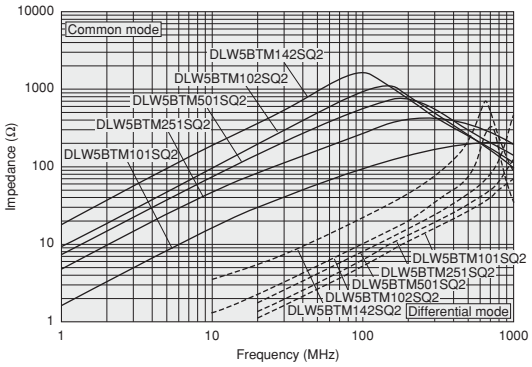
## ■ Impedance-Frequency Characteristics

### DLW5AT Series



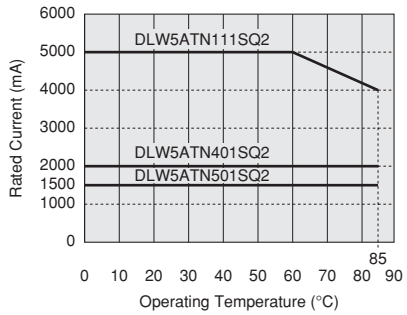

### DLW5BT Series

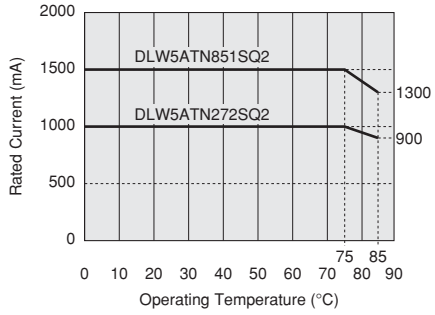



## ■ Notice (Rating)

In operating temperature exceeding +60°C, derating of current is necessary for DLW5AT series. Please apply the derating curve shown in chart according to the operating temperature.

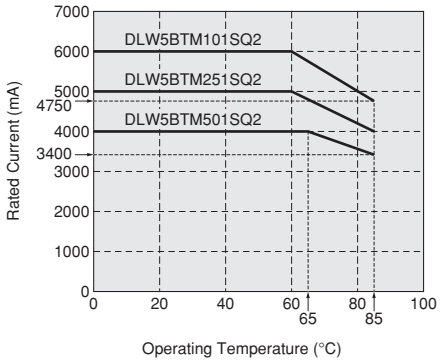
Derating of Rated Current




In operating temperature exceeding +60°C, derating of current is necessary for the following part name of DLW5BT series. Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current

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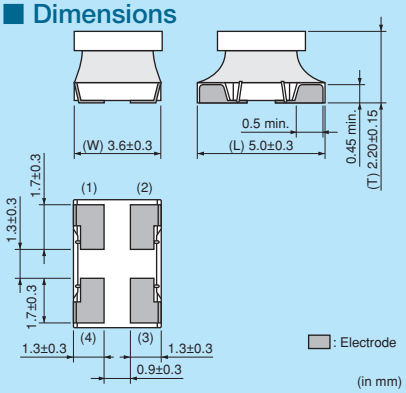
# DLW5AT/DLW5BT Series (105degreeC available type)

Hi Power

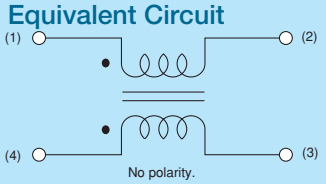
## Low profile wire-wound common choke coil for power lines. (105degreeC available type)

### DLW5AT_MQ2

#### Dimensions




#### Equivalent Circuit

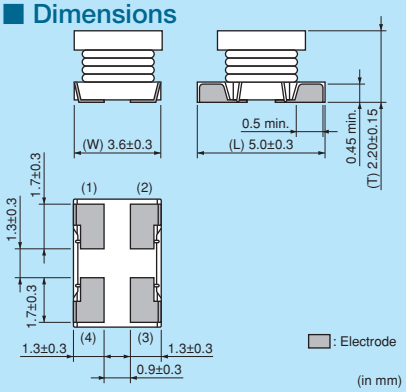



#### Packaging

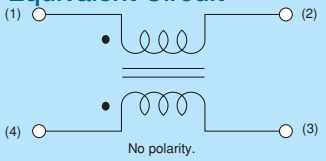
| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 700 |
| K | 330mm Reel Embossed Tape | 2500 |
| B | Bulk(Bag) | 100 |

### DLW5AT_TQ2

#### Dimensions




#### Equivalent Circuit

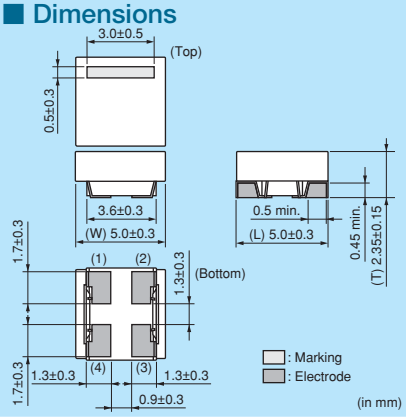



#### Packaging

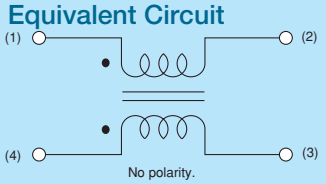
| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 700 |
| K | 330mm Reel Embossed Tape | 2500 |
| B | Bulk(Bag) | 100 |

### DLW5BT_TQ2

#### Dimensions




#### Equivalent Circuit




#### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 700 |
| K | 330mm Reel Embossed Tape | 2500 |
| B | Bulk(Bag) | 100 |

Refer to pages from p.205 to p.209 for mounting information.

Continued on the following page.

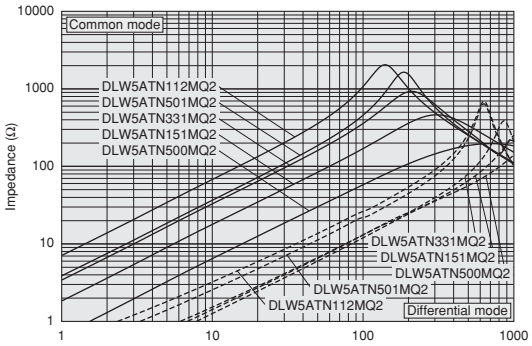
## ■ Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLW5ATN500MQ2□ | 50ohm (Typ.) | 6000mA | 50Vdc | 10M ohm | 125Vdc | 0.013ohm max. | Kit ≧3A Flow ReFlow |
| DLW5ATN151MQ2□ | 150ohm (Typ.) | 5000mA | 50Vdc | 10M ohm | 125Vdc | 0.020ohm max. | Kit ≧3A Flow ReFlow |
| DLW5ATN331MQ2□ | 330ohm (Typ.) | 4000mA | 50Vdc | 10M ohm | 125Vdc | 0.027ohm max. | Kit ≧3A Flow ReFlow |
| DLW5ATN501MQ2□ | 500ohm (Typ.) | 2500mA | 50Vdc | 10M ohm | 125Vdc | 0.034ohm max. | New Kit ≧1A Flow ReFlow |
| DLW5ATN112MQ2□ | 1100ohm (Typ.) | 2000mA | 50Vdc | 10M ohm | 125Vdc | 0.056ohm max. | Kit ≧1A Flow ReFlow |
| DLW5ATN111TQ2□ | 110ohm (Typ.) | 5000mA | 50Vdc | 10M ohm | 125Vdc | 0.020ohm max. | Kit ≧3A ReFlow |
| DLW5ATN231TQ2□ | 230ohm (Typ.) | 4000mA | 50Vdc | 10M ohm | 125Vdc | 0.027ohm max. | Kit ≧3A ReFlow |
| DLW5ATN401TQ2□ | 400ohm (Typ.) | 2500mA | 50Vdc | 10M ohm | 125Vdc | 0.034ohm max. | New Kit ≧1A ReFlow |
| DLW5ATN501TQ2□ | 500ohm (Typ.) | 2000mA | 50Vdc | 10M ohm | 125Vdc | 0.056ohm max. | Kit ≧1A ReFlow |
| DLW5BTM101TQ2□ | 100ohm (Typ.) | 6000mA | 50Vdc | 10M ohm | 125Vdc | 0.013ohm max. | Kit ≧3A ReFlow |
| DLW5BTM251TQ2□ | 250ohm (Typ.) | 5000mA | 50Vdc | 10M ohm | 125Vdc | 0.020ohm max. | Kit ≧3A ReFlow |
| DLW5BTM501TQ2□ | 500ohm (Typ.) | 4000mA | 50Vdc | 10M ohm | 125Vdc | 0.027ohm max. | Kit ≧3A ReFlow |
| DLW5BTM102TQ2□ | 1000ohm (Typ.) | 2500mA | 50Vdc | 10M ohm | 125Vdc | 0.034ohm max. | New Kit ≧1A ReFlow |
| DLW5BTM142TQ2□ | 1400ohm (Typ.) | 2000mA | 50Vdc | 10M ohm | 125Vdc | 0.056ohm max. | Kit ≧1A ReFlow |

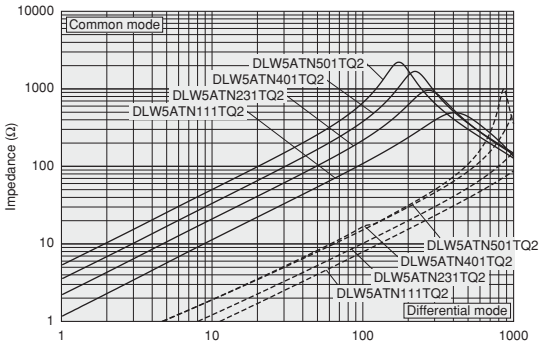
Operating Temperature Range: -40°C to +105°C Number of Circuit: 1

## ■ Impedance-Frequency Characteristics

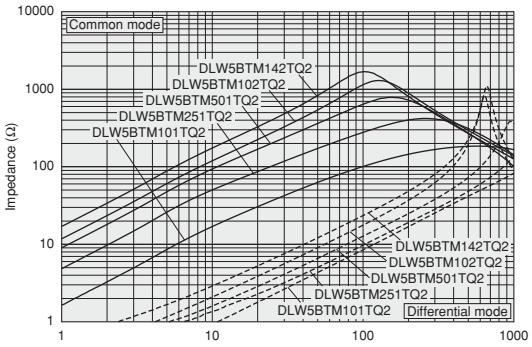
### DLW5AT_MQ2 Series




### DLW5AT_TQ2 Series




### DLW5BT_TQ2 Series

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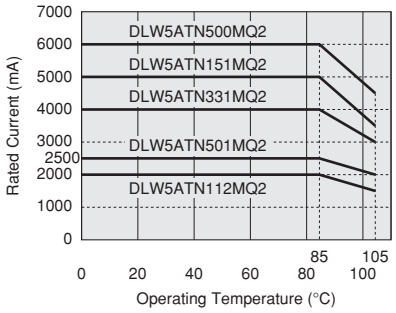
## ■ Notice (Rating)

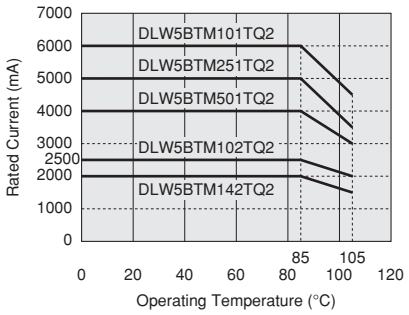
In operating temperature exceeding +85°C, derating of current is necessary for DLW5AT series (105 degree C available type). Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current



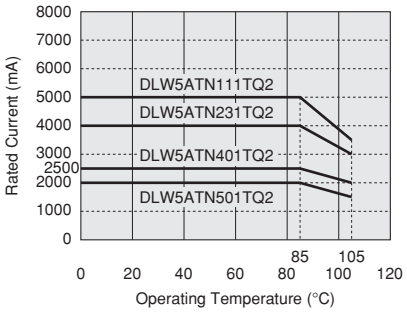

In operating temperature exceeding +85°C, derating of current is necessary for DLW5BT series (105 degree C available type). Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current




In operating temperature exceeding +85°C, derating of current is necessary for DLW5AT series (105 degree C available type). Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current

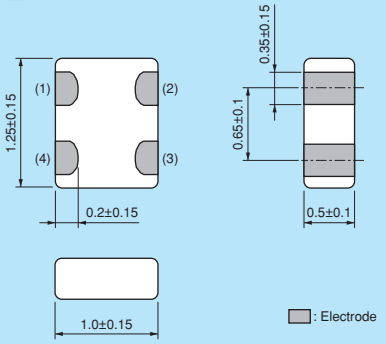


# DLM11G Series 0504/1210 (inch/mm)

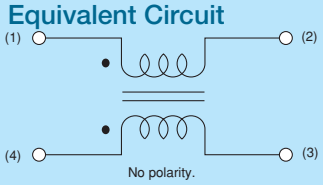
Reflow OK

## Audio line common choke also effective to differential mode.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 10000 |
| B | Bulk(Bag) | 1000 |

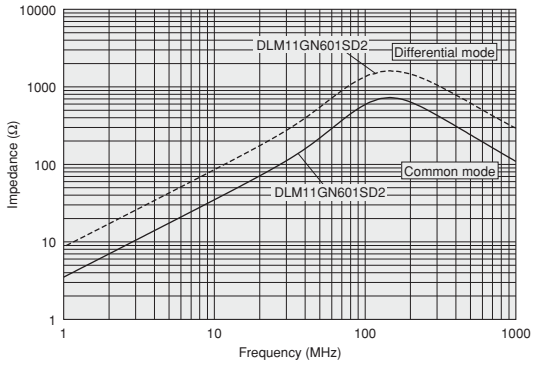
Refer to pages from p.205 to p.209 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | Operating Temperature Range |
|---|---|---|---|---|---|---|---|
| DLM11GN601SD2□ | 600ohm ±25% | 100mA | 5Vdc | 100M ohm | 25Vdc | 0.8ohm max. | -40°C to +85°C |

Number of Circuit: 1

### ■ Impedance-Frequency Characteristics



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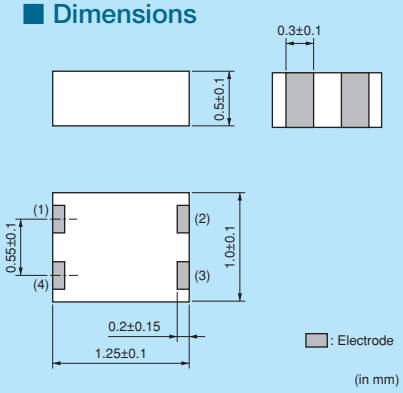
# DLM11S Series 0504/1210 (inch/mm)

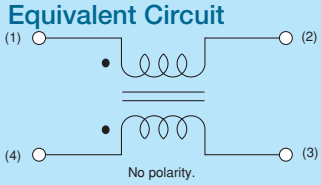
Reflow OK

## 0504 size multilayer type chip common mode choke coil.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 4000 |
| B | Bulk(Bag) | 500 |

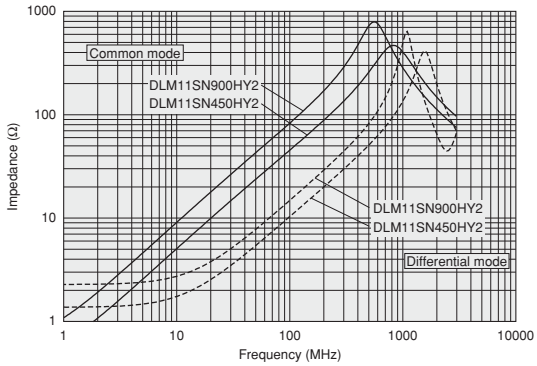
Refer to pages from p.205 to p.209 for mounting information.

### ■ Rated Value (□: packaging code)

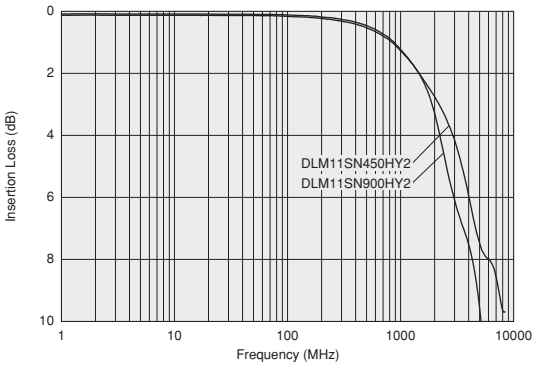
| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLM11SN450HY2□ | 45ohm ±25% | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 0.7ohm±25% | Kit HD Imp Match |
| DLM11SN900HY2□ | 90ohm ±25% | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 1.1ohm±25% | Kit HD Imp Match |

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1

### ■ Impedance-Frequency Characteristics




### ■ Differential Mode Transmission Characteristics (Typ.)



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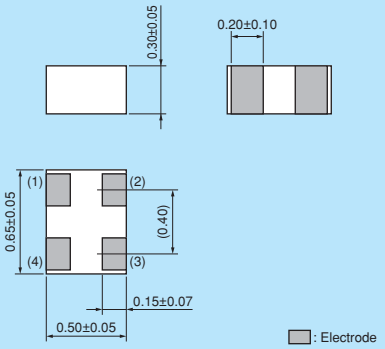
# DLP0QS Series 025020/0605 (inch/mm)

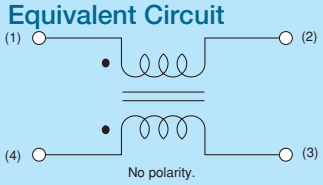
Reflow OK

## 025020 size, very small chip common mode choke coil, Cut-off frequency 8GHz max. Some of them are ready for Display port or SATA.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| D | 180mm Reel Paper Tape | 15000 |
| B | Bulk(Bag) | 500 |

Refer to pages from p.205 to p.209 for mounting information.

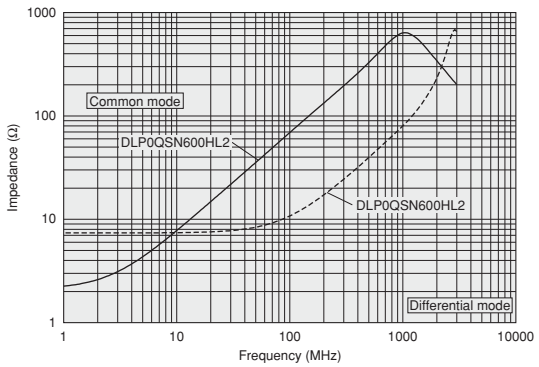
### ■ Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLP0QSN600HL2□ | 60ohm ±25% | 50mA | 5Vdc | 100M ohm | 12.5Vdc | 3.8ohm±25% | Kit HD Imp Match |
| DLP0QSA070HL2□ | 7ohm ±2ohm | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 0.7ohm±25% | Kit UD Imp Match |
| DLP0QSA150HL2□ | 15ohm ±5ohm | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 0.8ohm±25% | Kit UD Imp Match |
| DLP0QSA350HL2□ | 35ohm ±10ohm | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 2.2ohm±25% | Kit UD Imp Match |

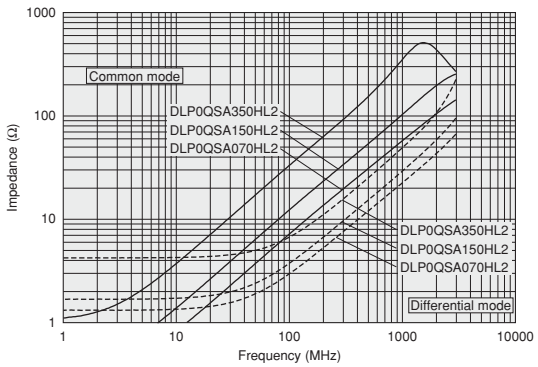
Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

### ■ Impedance-Frequency Characteristics

#### DLP0QSN Series

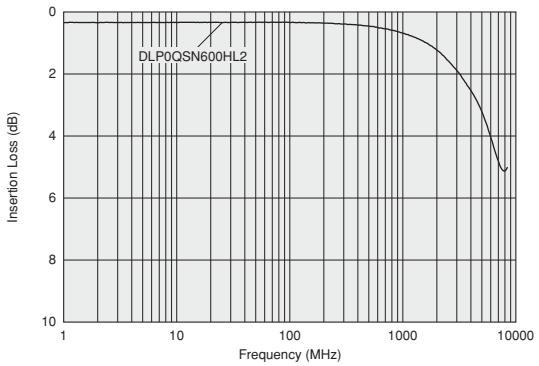



#### DLP0QSA Series

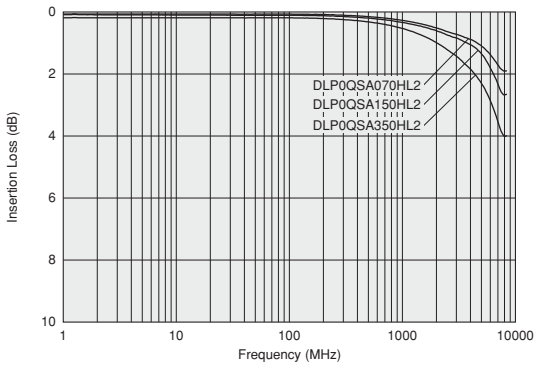



### ■ Differential Mode Transmission Characteristics (Typ.)

#### DLP0QSN Series




#### DLP0QSA Series

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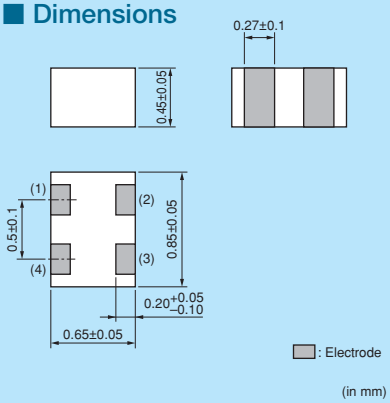
# DLP0NS Series 03025/0806 (inch/mm)

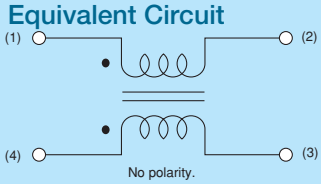
Reflow OK

## 03025 size, very small chip common mode choke coil, Cut-off frequency 8GHz max. Some of them are ready for mipi, Display port or SATA.

### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 10000 |
| B | Bulk(Bag) | 500 |

Refer to pages from p.205 to p.209 for mounting information.

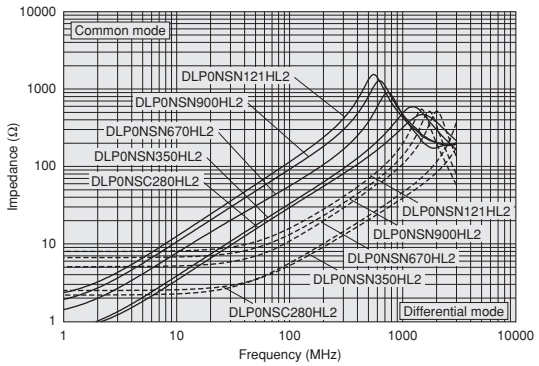
### ■ Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLP0NSC280HL2□ | 28ohm ±20% | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 1.3ohm±25% | Kit HD Imp Match |
| DLP0NSN350HL2□ | 35ohm ±10ohm | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 1.2ohm±25% | Kit HD Imp Match |
| DLP0NSN670HL2□ | 67ohm ±20% | 110mA | 5Vdc | 100M ohm | 12.5Vdc | 2.4ohm±25% | Kit HD Imp Match |
| DLP0NSN900HL2□ | 90ohm ±20% | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 3.0ohm±25% | Kit HD Imp Match |
| DLP0NSN121HL2□ | 120ohm ±20% | 90mA | 5Vdc | 100M ohm | 12.5Vdc | 3.8ohm±25% | Kit HD Imp Match |
| DLP0NSA070HL2□ | 7ohm ±2ohm | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 0.6ohm±25% | Kit UD Imp Match |
| DLP0NSA150HL2□ | 15ohm ±5ohm | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 0.95ohm±25% | Kit UD Imp Match |

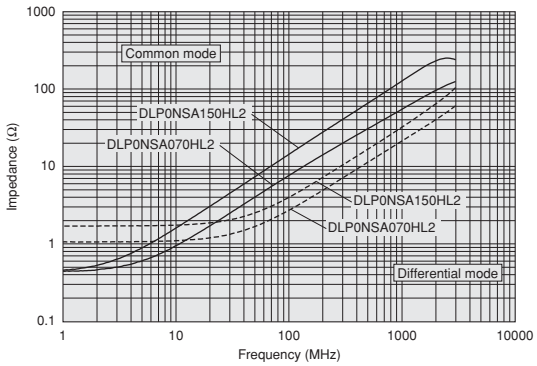
Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

### ■ Impedance-Frequency Characteristics

#### DLP0NSC/DLP0NSN Series




#### DLP0NSA Series

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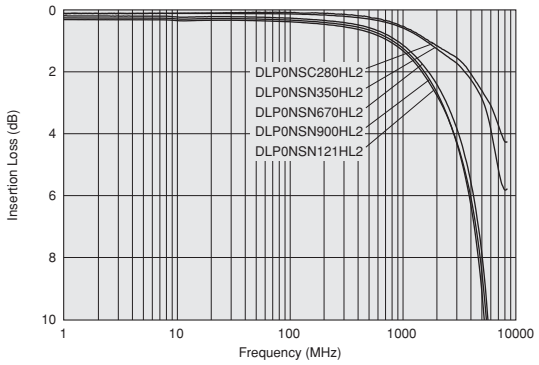
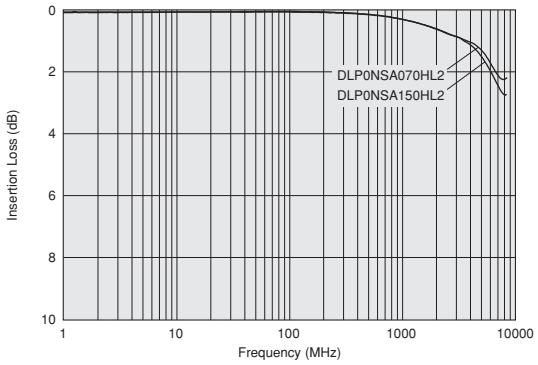
## ■ Differential Mode Transmission Characteristics (Typ.)

### DLP0NSC/DLP0NSN Series




### DLP0NSA Series

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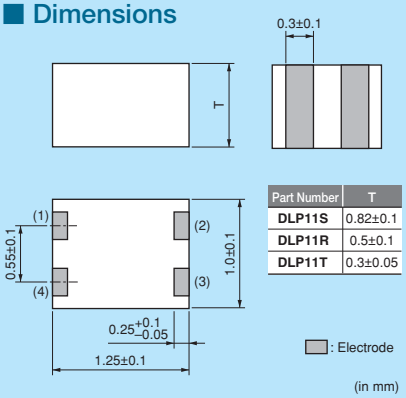
# DLP11S/DLP11R/DLP11T Series 0504/1210 (inch/mm)

Reflow OK

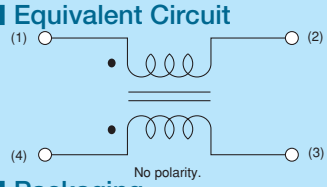
## 8GHz cut-off frequency (for HDMI/USB3.0) is available.

### ■ Dimensions




| Part Number | T |
|---|---|
| DLP11S | 0.82±0.1 |
| DLP11R | 0.5±0.1 |
| DLP11T | 0.3±0.05 |

### ■ Equivalent Circuit




No polarity.

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 3000 (DLP11S) |
| | | 4000 (DLP11RN/RB) |
| | | 5000 (DLP11T) |
| B | Bulk(Bag) | 500 |

Refer to pages from p.205 to p.209 for mounting information.

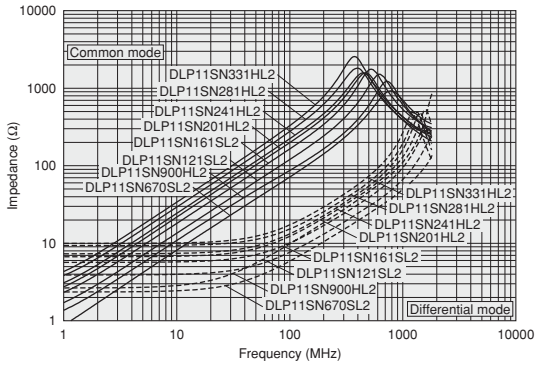
### ■ Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLP11SN670SL2□ | 67ohm ±20% | 180mA | 5Vdc | 100M ohm | 12.5Vdc | 1.3ohm±25% | Kit HD |
| DLP11SN121SL2□ | 120ohm ±20% | 140mA | 5Vdc | 100M ohm | 12.5Vdc | 2.0ohm±25% | Kit HD |
| DLP11SN161SL2□ | 160ohm ±20% | 120mA | 5Vdc | 100M ohm | 12.5Vdc | 2.7ohm±25% | Kit HD |
| DLP11SN900HL2□ | 90ohm ±20% | 150mA | 5Vdc | 100M ohm | 12.5Vdc | 1.5ohm±25% | Kit HD Imp. Match |
| DLP11SN201HL2□ | 200ohm ±20% | 110mA | 5Vdc | 100M ohm | 12.5Vdc | 3.1ohm±25% | Kit HD Imp. Match |
| DLP11SN241HL2□ | 240ohm ±20% | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 3.5ohm±25% | Kit HD Imp. Match |
| DLP11SN281HL2□ | 280ohm ±20% | 90mA | 5Vdc | 100M ohm | 12.5Vdc | 4.2ohm±25% | Kit HD Imp. Match |
| DLP11SN331HL2□ | 330ohm ±20% | 80mA | 5Vdc | 100M ohm | 12.5Vdc | 4.9ohm±25% | Kit HD Imp. Match |
| DLP11SA350HL2□ | 35ohm ±20% | 170mA | 5Vdc | 100M ohm | 12.5Vdc | 0.9ohm±25% | Kit UD Imp. Match |
| DLP11SA670HL2□ | 67ohm ±20% | 150mA | 5Vdc | 100M ohm | 12.5Vdc | 1.2ohm±25% | Kit UD Imp. Match |
| DLP11SA900HL2□ | 90ohm ±20% | 150mA | 5Vdc | 100M ohm | 12.5Vdc | 1.4ohm±25% | Kit UD Imp. Match |

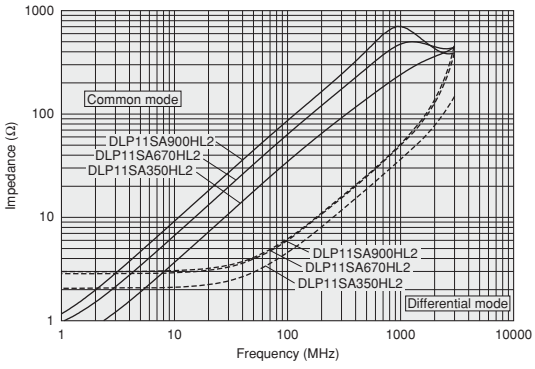
Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

### ■ Impedance-Frequency Characteristics

#### DLP11SN Series




#### DLP11SA Series

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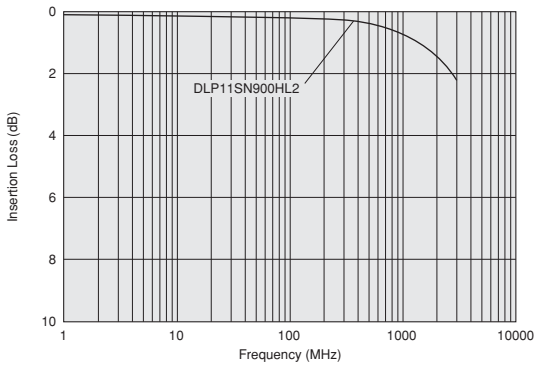
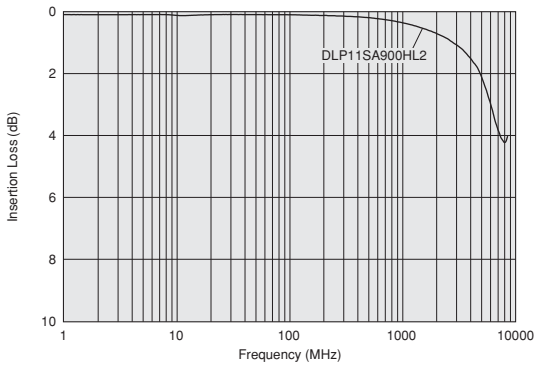
## ■ Differential Mode Transmission Characteristics (Typ.)

### DLP11SN Series




### DLP11SA Series




## ■ Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLP11RN450UL2□ | 45ohm ±25% | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 0.8ohm±25% | Kit HD Impedance Match |
| DLP11RB150UL2□ | 15ohm ±5ohm | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 0.8ohm±25% | Kit UD Impedance Match |
| DLP11RB400UL2□ | 40ohm ±10ohm | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 1.3ohm±25% | Kit UD Impedance Match |

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

Differential mode to common mode conversion characteristic (Scd21) at 2.5GHz

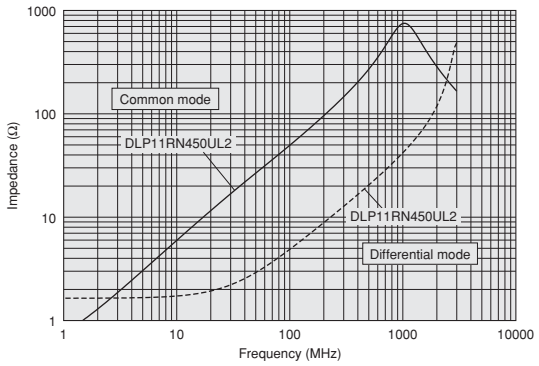
DLP11RB: -40dB

Impedance Characteristics between signal lines Z0 (TDR at 50ps)

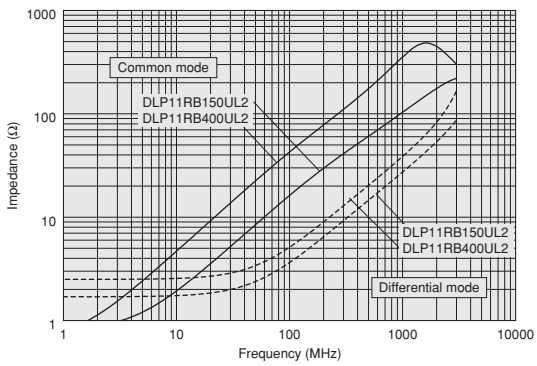
DLP11RB: 90ohm±15ohm

## ■ Impedance-Frequency Characteristics

### DLP11RN Series

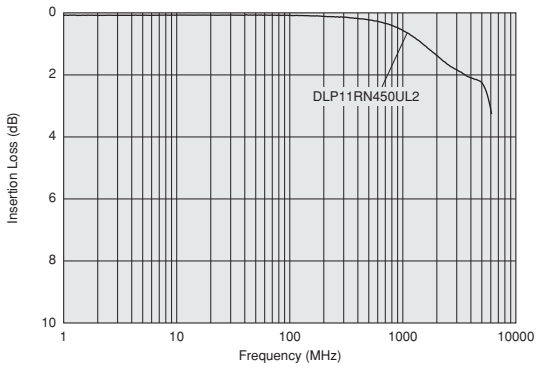



### DLP11RB Series

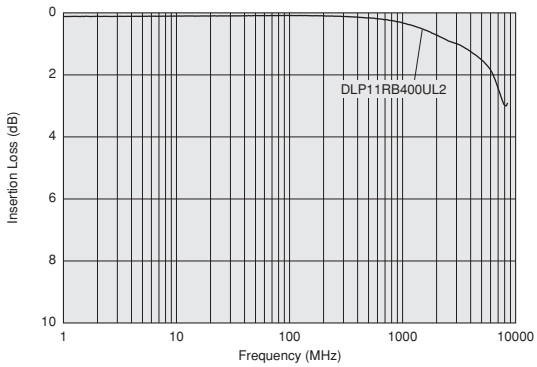



## ■ Differential Mode Transmission Characteristics (Typ.)

### DLP11RN Series




### DLP11RB Series

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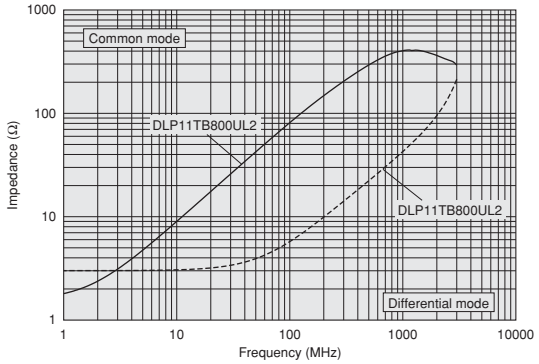
## ■ Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLP11TB800UL2□ | 80ohm ±25% | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 1.5ohm±25% | Kit UD |

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines
Differential mode to common mode conversion characteristic (Scd21) at 2.5GHz
DLP11TB: -40dB
Impedance Characteristics between signal lines Z0 (TDR at 50ps)
DLP11TB: 90ohm±15ohm

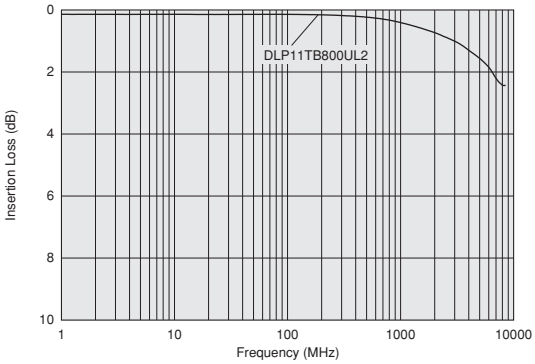
## ■ Impedance-Frequency Characteristics

### DLP11TB Series




## ■ Differential Mode Transmission Characteristics (Typ.)

### DLP11TB Series

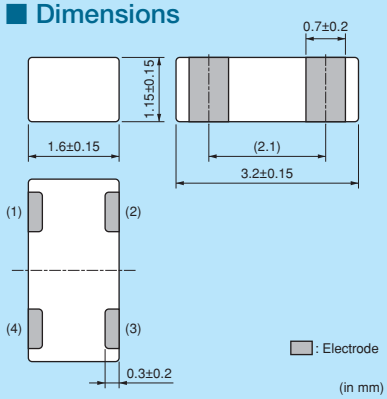


# DLP31S Series 1206/3216 (inch/mm)

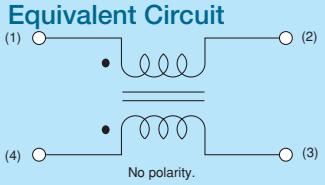
Reflow OK

## 1206 size film type chip common mode choke coil.

### Dimensions




### Equivalent Circuit




### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 3000 |
| B | Bulk(Bag) | 500 |

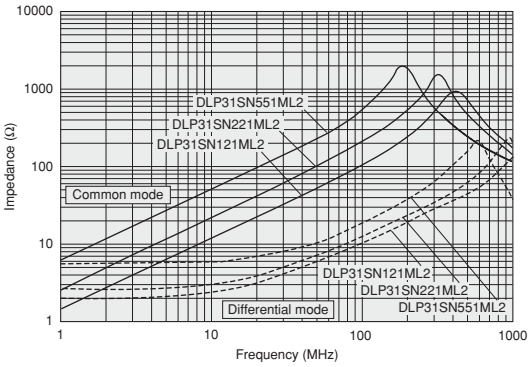
Refer to pages from p.205 to p.209 for mounting information.

### Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLP31SN121ML2□ | 120ohm ±20% | 100mA | 16Vdc | 100M ohm | 40Vdc | 2.0ohm max. | HD |
| DLP31SN221ML2□ | 220ohm ±20% | 100mA | 16Vdc | 100M ohm | 40Vdc | 2.5ohm max. | HD |
| DLP31SN551ML2□ | 550ohm ±20% | 100mA | 16Vdc | 100M ohm | 40Vdc | 3.6ohm max. | HD |

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

### Impedance-Frequency Characteristics



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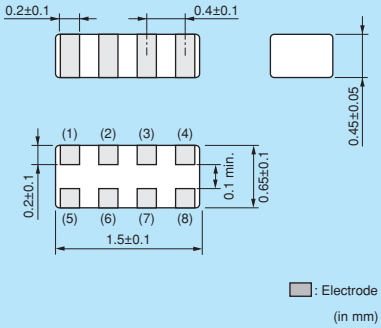
# DLP1ND Series 05025/1506 (inch/mm)

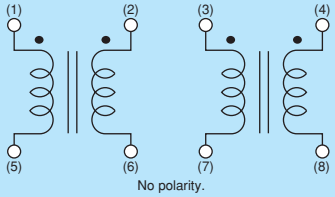
Reflow OK

## 2 circuits in 05025 size, adapt to HDMI line.

### Dimensions




### Equivalent Circuit




### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 5000 |
| B | Bulk(Bag) | 500 |

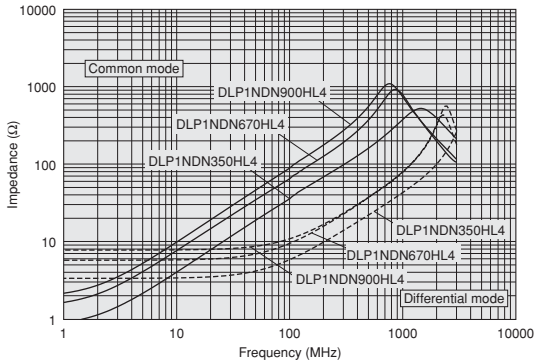
Refer to pages from p.205 to p.209 for mounting information.

### Rated Value (□: packaging code)

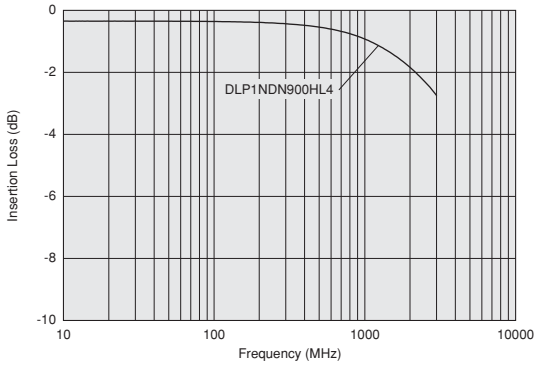
| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLP1NDN350HL4□ | 35ohm ±20% | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 1.8ohm±25% | Kit HD Imp Match |
| DLP1NDN670HL4□ | 67ohm ±20% | 80mA | 5Vdc | 100M ohm | 12.5Vdc | 2.9ohm±25% | Kit HD Imp Match |
| DLP1NDN900HL4□ | 90ohm ±20% | 60mA | 5Vdc | 100M ohm | 12.5Vdc | 3.7ohm±25% | Kit HD Imp Match |

Operating Temperature Range: -40°C to +85°C Number of Circuit: 2 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

### Impedance-Frequency Characteristics




### Differential Mode Transmission Characteristics (Typ.)



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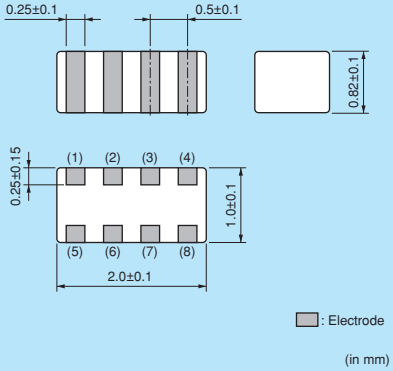
# DLP2AD Series 0804/2010 (inch/mm)

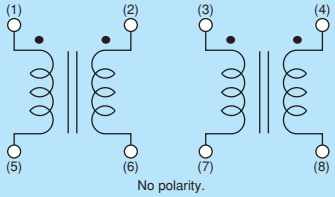
Reflow OK

## 2 circuit built-in, 0804 size, HDMI adapted type available, cut-off frequency 6GHz max.

### Dimensions




### Equivalent Circuit




### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 3000 |
| B | Bulk(Bag) | 500 |

Refer to pages from p.205 to p.209 for mounting information.

### Rated Value (□: packaging code)

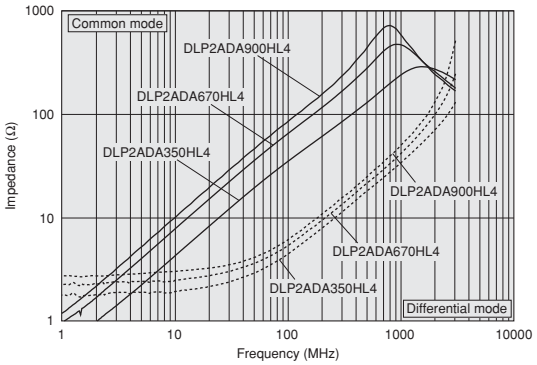
| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLP2ADA350HL4□ | 35ohm ±20% | 150mA | 5Vdc | 100M ohm | 12.5Vdc | 0.8ohm±25% | Kit UD Impedance Match |
| DLP2ADA670HL4□ | 67ohm ±20% | 130mA | 5Vdc | 100M ohm | 12.5Vdc | 1.0ohm±25% | Kit UD Impedance Match |
| DLP2ADA900HL4□ | 90ohm ±20% | 120mA | 5Vdc | 100M ohm | 12.5Vdc | 1.4ohm±25% | Kit UD Impedance Match |
| DLP2ADN670HL4□ | 67ohm ±20% | 140mA | 5Vdc | 100M ohm | 12.5Vdc | 1.3ohm±25% | Kit HD Impedance Match |
| DLP2ADN900HL4□ | 90ohm ±20% | 130mA | 5Vdc | 100M ohm | 12.5Vdc | 1.7ohm±25% | Kit HD Impedance Match |
| DLP2ADN121HL4□ | 120ohm ±20% | 120mA | 5Vdc | 100M ohm | 12.5Vdc | 2.0ohm±25% | Kit HD Impedance Match |
| DLP2ADN161HL4□ | 160ohm ±20% | 100mA | 5Vdc | 100M ohm | 12.5Vdc | 2.5ohm±25% | Kit HD Impedance Match |
| DLP2ADN201HL4□ | 200ohm ±20% | 90mA | 5Vdc | 100M ohm | 12.5Vdc | 3.2ohm±25% | Kit HD Impedance Match |
| DLP2ADN241HL4□ | 240ohm ±20% | 80mA | 5Vdc | 100M ohm | 12.5Vdc | 3.8ohm±25% | Kit HD Impedance Match |
| DLP2ADN281HL4□ | 280ohm ±20% | 80mA | 5Vdc | 100M ohm | 12.5Vdc | 4.6ohm±25% | Kit HD Impedance Match |

Operating Temperature Range: -40°C to +85°C Number of Circuit: 2

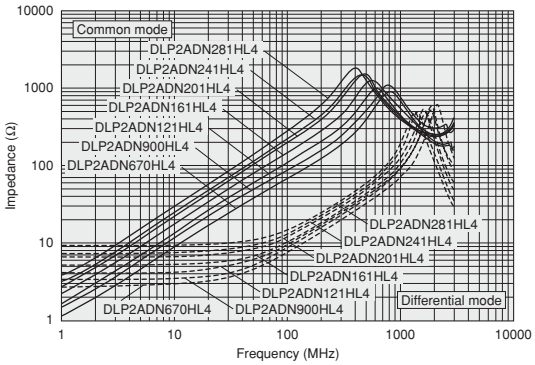
HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

### Impedance-Frequency Characteristics

#### DLP2ADA Series




#### DLP2ADN Series




Continued on the following page.

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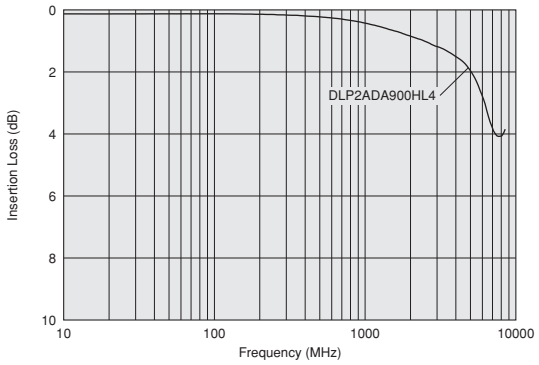
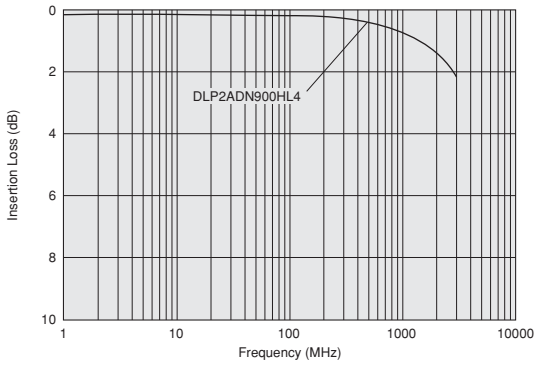
## ■ Differential Mode Transmission Characteristics (Typ.)

### DLP2ADA Series




### DLP2ADN Series

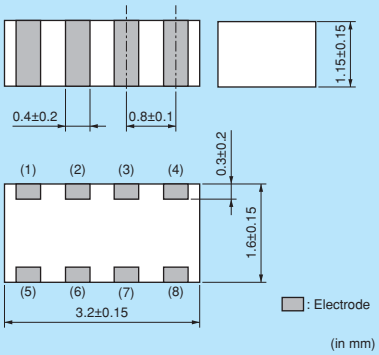


# DLP31D Series 1206/3216 (inch/mm)

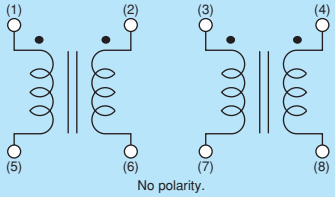
Reflow OK

## 2 circuit built-in, 1206 size, meet IEEE1394, USB, LVDS.

### Dimensions




### Equivalent Circuit




### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 3000 |
| B | Bulk(Bag) | 500 |

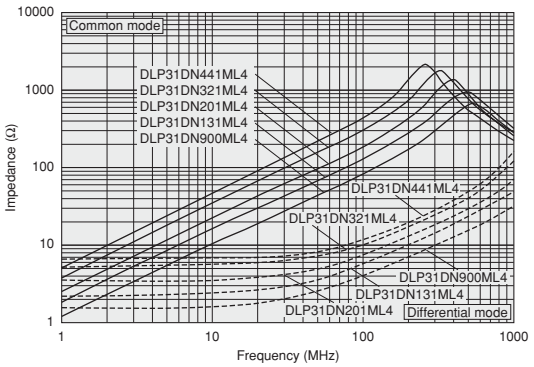
Refer to pages from p.205 to p.209 for mounting information.

### Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLP31DN900ML4□ | 90ohm ±20% | 160mA | 10Vdc | 100M ohm | 25Vdc | 1.1ohm max. | HD |
| DLP31DN131ML4□ | 130ohm ±20% | 120mA | 10Vdc | 100M ohm | 25Vdc | 1.1ohm max. | HD |
| DLP31DN201ML4□ | 200ohm ±20% | 100mA | 10Vdc | 100M ohm | 25Vdc | 2.2ohm max. | HD |
| DLP31DN321ML4□ | 320ohm ±20% | 80mA | 10Vdc | 100M ohm | 25Vdc | 3.5ohm max. | HD |
| DLP31DN441ML4□ | 440ohm ±20% | 70mA | 10Vdc | 100M ohm | 25Vdc | 4.3ohm max. | HD |

Operating Temperature Range: -40°C to +85°C Number of Circuit: 2 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

### Impedance-Frequency Characteristics



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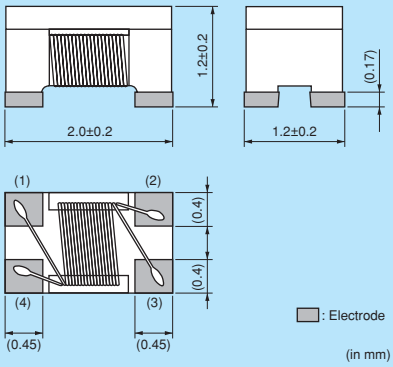
# DLW21S Series 0805/2012 (inch/mm)

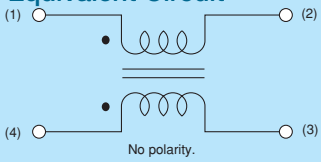
Reflow OK

## Wire-wound common choke, HDMI available type prepared.

### Dimensions




### Equivalent Circuit




### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 2000 |
| B | Bulk(Bag) | 500 |

Refer to pages from p.205 to p.209 for mounting information.

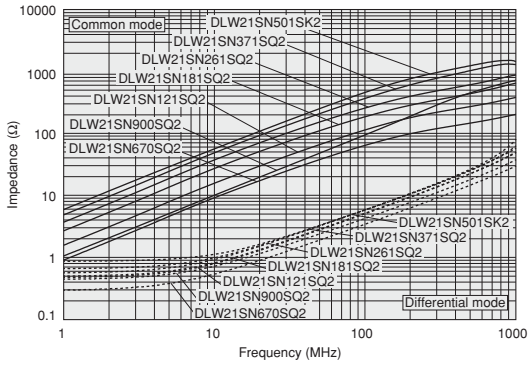
### Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLW21SN670SQ2□ | 67ohm ±25% | 400mA | 50Vdc | 10M ohm | 125Vdc | 0.25ohm max. | Kit HD |
| DLW21SN900SQ2□ | 90ohm ±25% | 330mA | 50Vdc | 10M ohm | 125Vdc | 0.35ohm max. | Kit HD |
| DLW21SN121SQ2□ | 120ohm ±25% | 370mA | 50Vdc | 10M ohm | 125Vdc | 0.30ohm max. | Kit HD |
| DLW21SN181SQ2□ | 180ohm ±25% | 330mA | 50Vdc | 10M ohm | 125Vdc | 0.35ohm max. | Kit HD |
| DLW21SN261SQ2□ | 260ohm ±25% | 300mA | 50Vdc | 10M ohm | 125Vdc | 0.40ohm max. | Kit HD |
| DLW21SN371SQ2□ | 370ohm ±25% | 280mA | 50Vdc | 10M ohm | 125Vdc | 0.45ohm max. | Kit HD |
| DLW21SN501SK2□ | 500ohm ±25% | 250mA | 50Vdc | 10M ohm | 125Vdc | 0.5ohm max. | Kit HD |

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

### Impedance-Frequency Characteristics

#### DLW21SN_SQ2/SK2 Series




### Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLW21SN670HQ2□ | 67ohm ±25% | 320mA | 20Vdc | 10M ohm | 50Vdc | 0.31ohm max. | Kit UD Impedance Match |
| DLW21SN900HQ2□ | 90ohm ±25% | 280mA | 20Vdc | 10M ohm | 50Vdc | 0.41ohm max. | Kit UD Impedance Match |
| DLW21SN121HQ2□ | 120ohm ±25% | 280mA | 20Vdc | 10M ohm | 50Vdc | 0.41ohm max. | Kit UD Impedance Match |
| DLW21SR670HQ2□ | 67ohm ±25% | 400mA | 20Vdc | 10M ohm | 50Vdc | 0.25ohm max. | Kit UD Impedance Match |

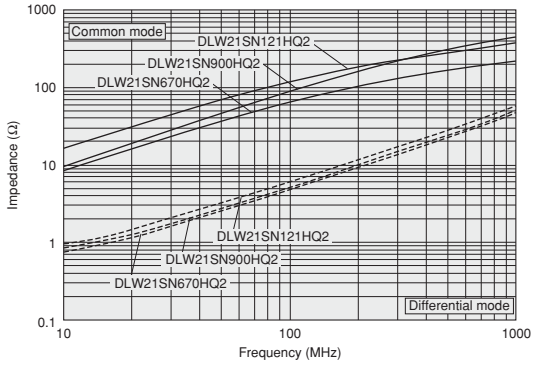
Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

DLW21SR670HQ2 is designed to correct line impedance when ESD protection device is also used.

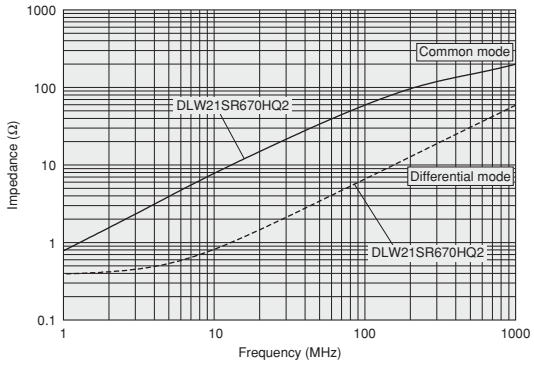
Continued on the following page.

## ■ Impedance-Frequency Characteristics

### DLW21SN_HQ2 Series

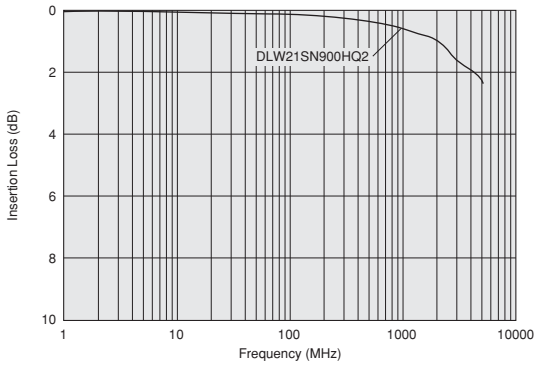



### DLW21SR_HQ2 Series




## ■ Differential Mode Transmission Characteristics (Typ.)

### DLW21SN_HQ2 Series



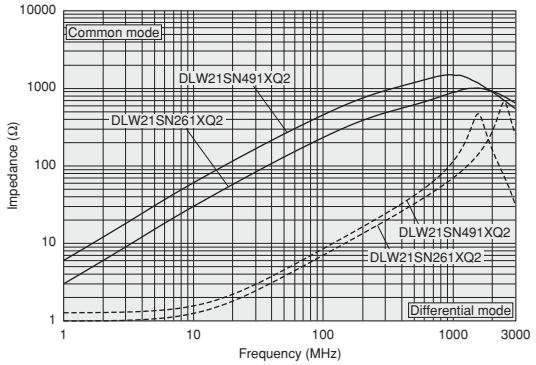

## ■ Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLW21SN181XQ2□ | 180ohm ±25% | 240mA | 20Vdc | 10M ohm | 50Vdc | 0.39ohm max. | New Kit HD |
| DLW21SN261XQ2□ | 260ohm ±25% | 220mA | 20Vdc | 10M ohm | 50Vdc | 0.59ohm max. | New Kit HD |
| DLW21SN491XQ2□ | 490ohm ±25% | 190mA | 20Vdc | 10M ohm | 50Vdc | 0.77ohm max. | New Kit HD |

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

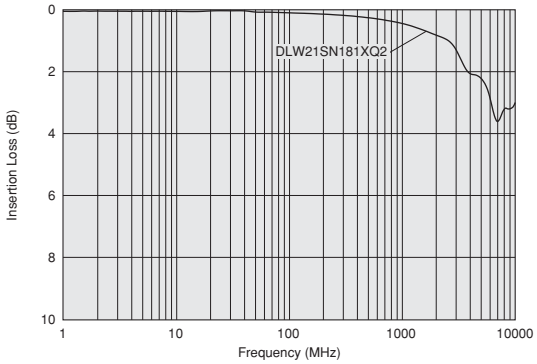
## ■ Impedance-Frequency Characteristics

### DLW21SN_XQ2 Series




## ■ Differential Mode Transmission Characteristics (Typ.)

### DLW21SN_XQ2 Series

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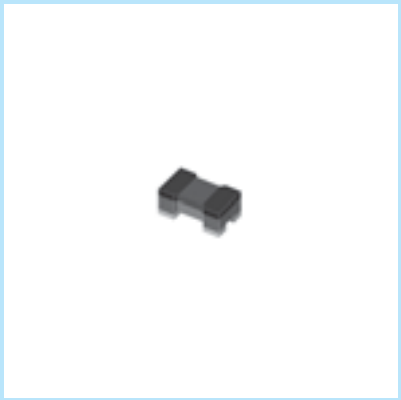
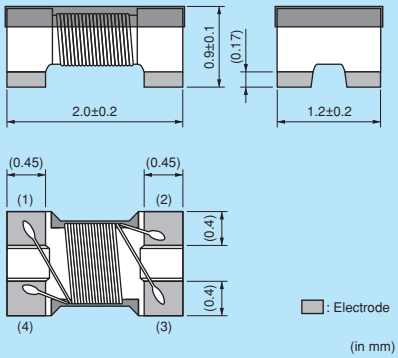
# DLW21H Series 0805/2012 (inch/mm)

Reflow OK

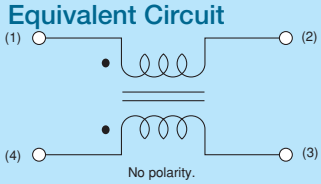
## Low profile wire-wound common choke coil, HDMI available type prepared.



### Dimensions




### Equivalent Circuit




### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 3000 |
| B | Bulk(Bag) | 500 |

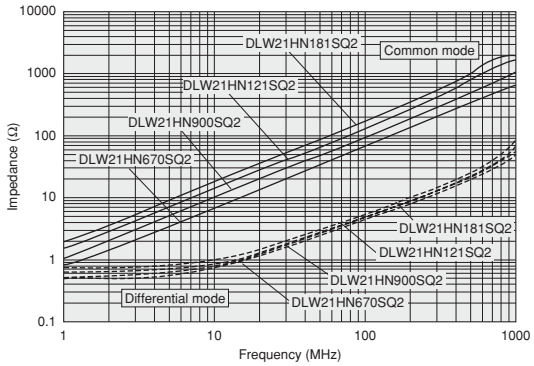
Refer to pages from p.205 to p.209 for mounting information.

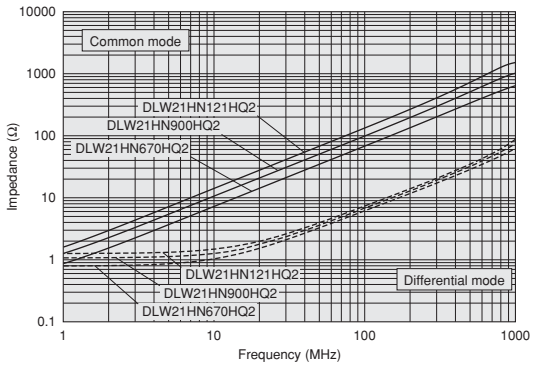
### Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLW21HN670SQ2□ | 67ohm ±25% | 330mA | 50Vdc | 10M ohm | 125Vdc | 0.35ohm max. | Kit HD |
| DLW21HN900SQ2□ | 90ohm ±25% | 330mA | 50Vdc | 10M ohm | 125Vdc | 0.35ohm max. | Kit HD |
| DLW21HN121SQ2□ | 120ohm ±25% | 280mA | 50Vdc | 10M ohm | 125Vdc | 0.45ohm max. | Kit HD |
| DLW21HN181SQ2□ | 180ohm ±25% | 250mA | 50Vdc | 10M ohm | 125Vdc | 0.50ohm max. | Kit HD |
| DLW21HN670HQ2□ | 67ohm ±25% | 240mA | 20Vdc | 10M ohm | 50Vdc | 0.49ohm max. | Kit UD Imp Match |
| DLW21HN900HQ2□ | 90ohm ±25% | 220mA | 20Vdc | 10M ohm | 50Vdc | 0.59ohm max. | Kit UD Imp Match |
| DLW21HN121HQ2□ | 120ohm ±25% | 200mA | 20Vdc | 10M ohm | 50Vdc | 0.68ohm max. | Kit UD Imp Match |

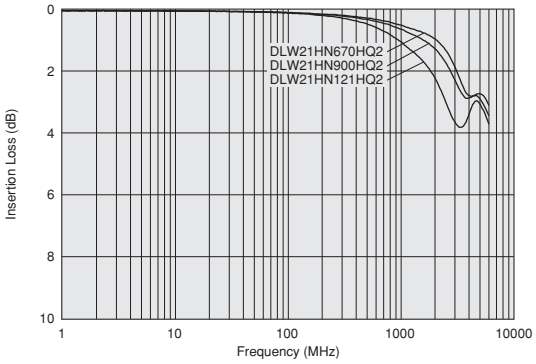
Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

### Impedance-Frequency Characteristics




### Differential Mode Transmission Characteristics (Typ.)

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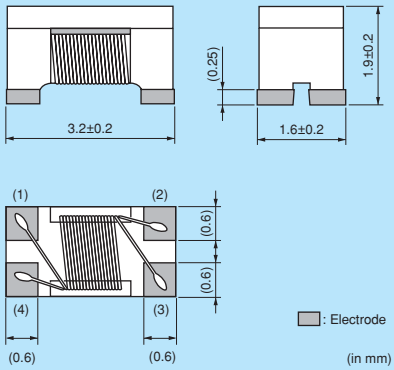
# DLW31S Series 1206/3216 (inch/mm)

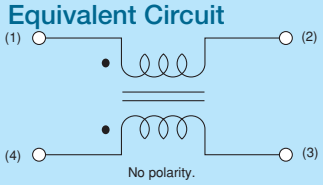
Reflow OK

## 1206 size wire-wound common mode choke coil.

### Dimensions




### Equivalent Circuit




### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 2000 |
| B | Bulk(Bag) | 500 |

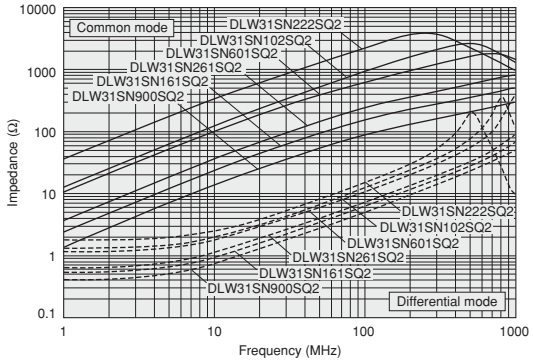
Refer to pages from p.205 to p.209 for mounting information.

### Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 100MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | |
|---|---|---|---|---|---|---|---|
| DLW31SN900SQ2□ | 90ohm ±25% | 370mA | 50Vdc | 10M ohm | 125Vdc | 0.3ohm max. | HD |
| DLW31SN161SQ2□ | 160ohm ±25% | 340mA | 50Vdc | 10M ohm | 125Vdc | 0.4ohm max. | HD |
| DLW31SN261SQ2□ | 260ohm ±25% | 310mA | 50Vdc | 10M ohm | 125Vdc | 0.5ohm max. | HD |
| DLW31SN601SQ2□ | 600ohm ±25% | 260mA | 50Vdc | 10M ohm | 125Vdc | 0.8ohm max. | HD |
| DLW31SN102SQ2□ | 1000ohm ±25% | 230mA | 50Vdc | 10M ohm | 125Vdc | 1.0ohm max. | HD |
| DLW31SN222SQ2□ | 2200ohm ±25% | 200mA | 50Vdc | 10M ohm | 125Vdc | 1.2ohm max. | HD |

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

### Impedance-Frequency Characteristics



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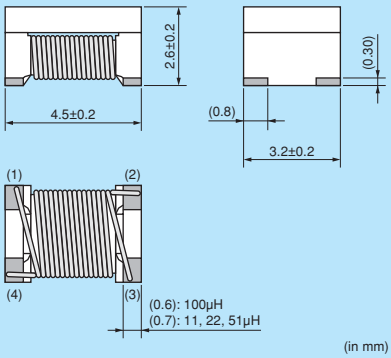
# DLW43S Series 1812/4532 (inch/mm)

Reflow OK

## 1812 size wire-wound common choke, Automotive Type.

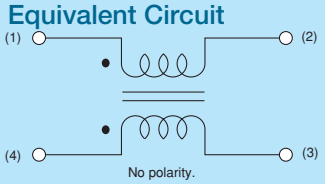
### DLW43S_XK

### ■ Dimensions




(in mm)

### ■ Equivalent Circuit

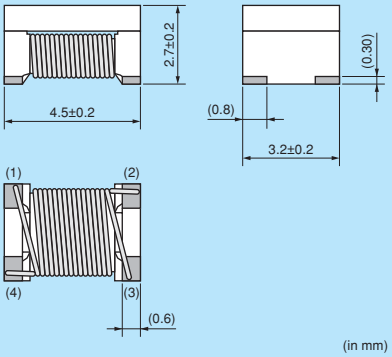



### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 500 |
| K | 330mm Reel Embossed Tape | 2500 |
| B | Bulk(Bag) | 100 |

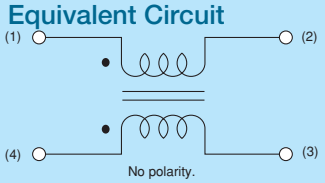
### DLW43S_XP

### ■ Dimensions




(in mm)

### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 500 |
| K | 330mm Reel Embossed Tape | 2500 |
| B | Bulk(Bag) | 100 |

Refer to pages from p.205 to p.209 for mounting information.

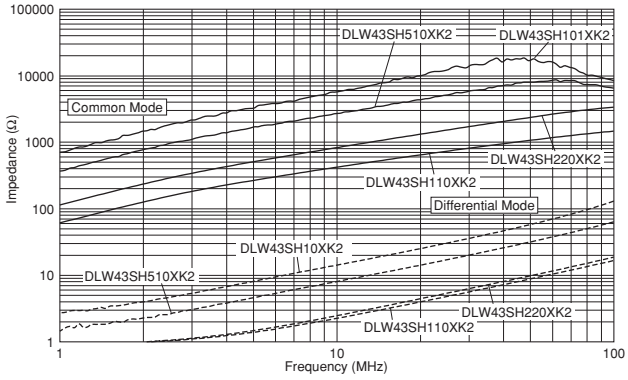
## ■ Rated Value (□: packaging code)

| Part Number | Common Mode Inductance | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | Operating Temperature Range |
|---|---|---|---|---|---|---|---|
| DLW43SH110XK2□ | 11µH -30%/+50% (at 0.1MHz) | 360mA | 50Vdc | 10M ohm | 125Vdc | 0.5ohm max. | -40°C to +125°C |
| DLW43SH220XK2□ | 22µH -30%/+50% (at 0.1MHz) | 310mA | 50Vdc | 10M ohm | 125Vdc | 0.6ohm max. | -40°C to +125°C |
| DLW43SH510XK2□ | 51µH -30%/+50% (at 1MHz) | 230mA | 50Vdc | 10M ohm | 125Vdc | 1.0ohm max. | -40°C to +125°C |
| DLW43SH101XK2□ | 100µH -30%/+50% (at 1MHz) | 200mA | 50Vdc | 10M ohm | 125Vdc | 2.0ohm max. | -40°C to +125°C |
| DLW43SH101XP2□ | 100µH -30%/+80% (at 0.1MHz) | 170mA | 50Vdc | 10M ohm | 125Vdc | 2.0ohm max. | -40°C to +125°C |

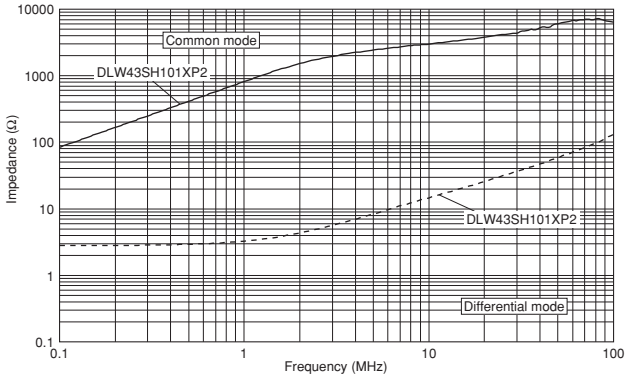
Number of Circuit: 1

## ■ Impedance-Frequency Characteristics

### DLW43S_XK Series




### DLW43S_XP Series

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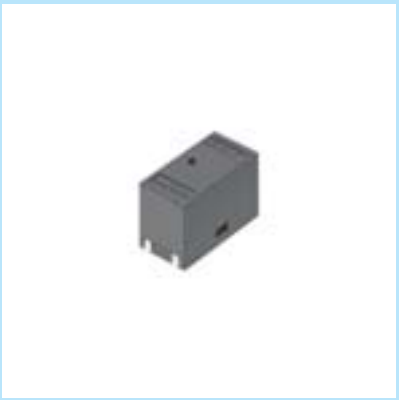
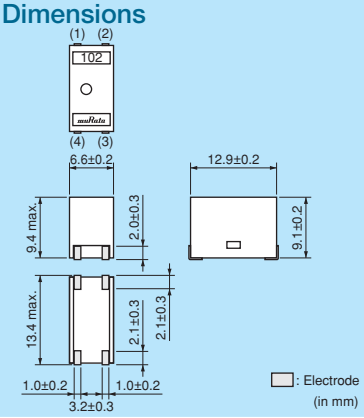
# PLT10H Series (12.9x6.6mm)

Hi Power Reflow OK

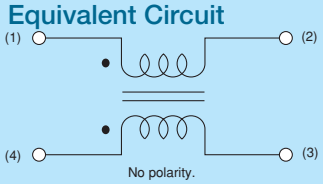
## Automotive application available, up to 18A.



### ■ Dimensions




### ■ Equivalent Circuit




### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 125 |
| K | 330mm Reel Embossed Tape | 500 |
| B | Bulk(Bag) | 50 |

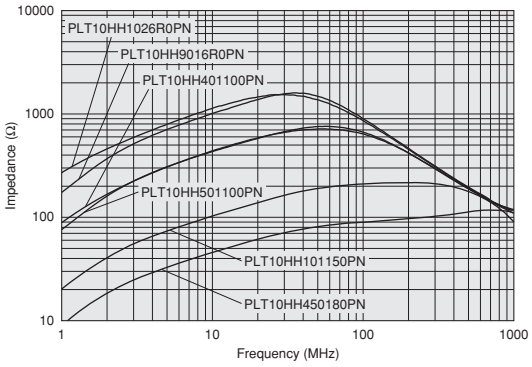
Refer to pages from p.210 to p.211 for mounting information.

### ■ Rated Value (□: packaging code)

| Part Number | Common Mode Impedance (at 10MHz/20°C) | Rated Current | Rated Voltage | Insulation Resistance (min.) | Withstand Voltage | DC Resistance | Inductance | |
|---|---|---|---|---|---|---|---|---|
| PLT10HH450180PN□ | 45ohm (Typ.) | 18A | 300Vdc | 10M ohm | 750Vdc | 1.3m ohm±0.5m ohm | 0.8μH min. | Kit ≧10A |
| PLT10HH101150PN□ | 100ohm (Typ.) | 15A | 300Vdc | 10M ohm | 750Vdc | 1.8m ohm±0.5m ohm | 2.0μH min. | Kit ≧10A |
| PLT10HH401100PN□ | 400ohm (Typ.) | 10A | 100Vdc | 10M ohm | 250Vdc | 3.6m ohm±0.5m ohm | 6μH min. | Kit ≧10A |
| PLT10HH501100PN□ | 500ohm (Typ.) | 10A | 100Vdc | 10M ohm | 250Vdc | 3.6m ohm±0.5m ohm | 9μH min. | Kit ≧10A |
| PLT10HH9016R0PN□ | 900ohm (Typ.) | 6A | 100Vdc | 10M ohm | 250Vdc | 8.0m ohm±0.5m ohm | 14μH min. | Kit ≧3A |
| PLT10HH1026R0PN□ | 1000ohm (Typ.) | 6A | 100Vdc | 10M ohm | 250Vdc | 8.0m ohm±0.5m ohm | 20μH min. | Kit ≧3A |

Operating Temperature Range (Self-temperature rise is included): -55°C to +105°C (PLT10HH 501100/1026R0 PN), -55°C to +125°C (PLT10HH 450180/101150/401100/9016R0 PN) Number of Circuit: 1

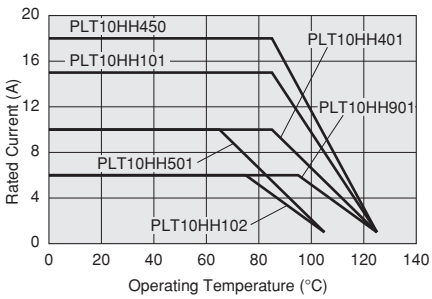
### ■ Impedance-Frequency Characteristics




### ■ Notice (Rating)

In operating temperature exceeding +65°C, derating of current is necessary for PLT10H series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current

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muRata

## ⚠Caution

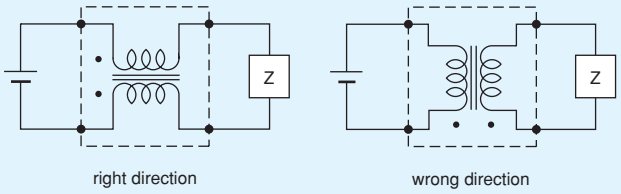
### ● Rating

Do not use products beyond the rated current and rated voltage as this may create excessive heat and deteriorate the insulation resistance. Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure our product.

### ● Soldering and Mounting

1. Self-heating
   Please provide special attention when mounting chip common mode choke coils DLW5 series in close proximity to other products that radiate heat.
   The heat generated by other products may deteriorate the insulation resistance and cause excessive heat in this component.

2. Mounting Direction
   Mount Chip Common Mode Choke Coils in right direction. Wrong direction, which is 90 degrees rotated from right direction, causes not only open or short circuit but also flames or other serious trouble.




right direction　　wrong direction

## Notice

### ● Storage and Operating Conditions

<Operating Environment>
Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
Do not use products in the environment close to the organic solvent.
<Storage and Handling Requirements>
1. Storage Period
   DLM11G series should be used within 6 months, the other series should be used within 12 months. Solderability should be checked if this period is exceeded.
2. Storage Conditions
   (1) Storage temperature: -10 to +40˚C
   Relative humidity: 15 to 85%
   Avoid sudden changes in temperature and humidity.
   (2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

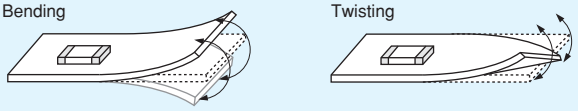
### ● Notice (Soldering and Mounting)

1. Cleaning
   Failure and degradation of a product are caused by the cleaning method. When you clean in conditions that are not in mounting information, please contact Murata engineering.
2. Soldering
   Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Other
   Noise suppression levels resulting from Murata's EMI suppression filters EMIFIL® may vary, depending on the circuits and ICs used, type of noise, mounting pattern, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

### ● Handling

1. Resin Coating (Except for DLW Series.)
   Using resin for coating/molding products may affect the products performance.
   So please pay careful attention in selecting resin.
   Prior to use, please make the reliability evaluation with the product mounted in your application set.
2. Resin Coating (DLW Series)
   The impedance value may change due to high cure-stress of resin to be used for coating/molding products. An open circuit issue may occur by mechanical stress caused by the resin, amount/cured shape of resin, or operating condition etc. Some resin contains some impurities or chloride possible to generate chlorine by hydrolysis under some operating condition may cause corrosion of wire of coil, leading to open circuit.
   So, please pay your careful attention in selecting resin in case of coating/molding the products with the resin.
   Prior to use the coating resin, please make sure no reliability issue is observed by evaluating products mounted on your board.
3. Caution for Use (DLW Series)
   When you hold products with a tweezer, please hold by the sides. Sharp materials, such as a pair of tweezers, should not touch the winding portion to prevent breaking the wire. Mechanical shock should not be applied to the products mounted on the board to prevent breaking the core.
4. Brushing
   When you clean the neighborhood of products such as connector pins, bristles of cleaning brush shall not be touched to the winding portion of this product to prevent the breaking of wire.
5. Handling of a Substrate
   After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate. Excessive mechanical stress may cause cracking in the Product.

Bending　　Twisting



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• This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

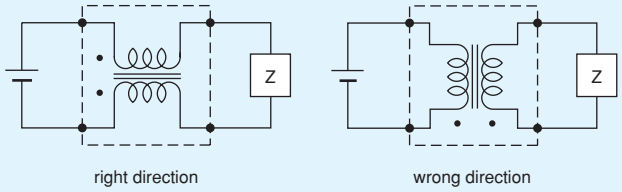
## ⚠Caution

### ● Rating

1. Do not use products beyond the rated current and rated voltage as this may create excessive heat and deteriorate the insulation resistance.
2. Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure our product.

### ● Soldering and Mounting

1. Self-heating
   Please provide special attention when mounting chip common mode choke coils in close proximity to other products that radiate heat.
   The heat generated by other products may deteriorate the insulation resistance and cause excessive heat in this component.
2. Mounting Direction
   Mount Chip Common Mode Choke Coils in right direction. Wrong direction, which is 90 degrees rotated from right direction, causes not only open or short circuit but also flames or other serious trouble.




right direction　　wrong direction

## Notice

### ● Storage and Operating Conditions

<Operating Environment>
Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
Do not use products in the environment close to the organic solvent.
<Storage and Handling Requirements>

1. Storage Period
   PLT10H series should be used within 12 months. Solderability should be checked if this period is exceeded.
2. Storage Conditions
   (1) Storage temperature: -10 to +40˚C
   Relative humidity: 15 to 85%
   Avoid sudden changes in temperature and humidity.
   (2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

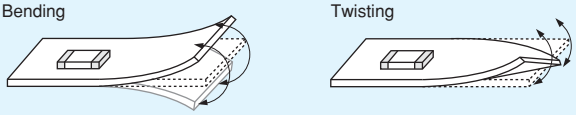
### ● Notice (Soldering and Mounting)

1. Cleaning
   Failure and degradation of a product are caused by the cleaning method. When you clean in conditions that are not in mounting information, please contact Murata engineering.
2. Soldering
   Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Other
   Noise suppression levels resulting from Murata's EMI suppression filters EMIFIL® may vary, depending on the circuits and ICs used, type of noise, mounting pattern, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

### ● Handling

1. Handling of a Substrate
   After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate.
   Excessive mechanical stress may cause cracking in the Product.

Bending　　Twisting



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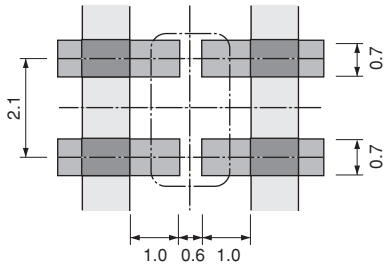
## 1. Standard Land Pattern Dimensions

Land Pattern + Solder Resist
Land Pattern
Solder Resist
(in mm)

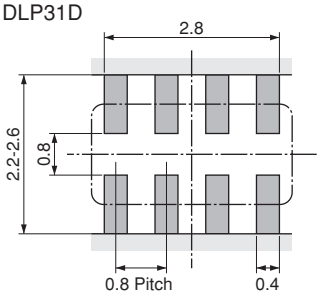
**DLM11S**
**DLM11G**
**DLP0QS**
**DLP0NS**
**DLP11S**
**DLP11R**
**DLP11T**
**DLP1ND**
**DLP2AD**
**DLP31S**
**DLP31D**
**DLW21S**
**DLW21H**
**DLW31SN**
**DLW43S**
**DLW5A**
**DLW5B**

### ●Reflow and Flow

DLP31S

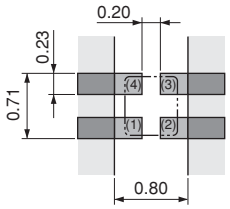



DLP31D

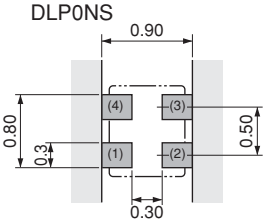



### ●Reflow Soldering

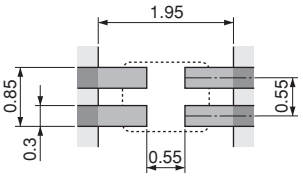
DLP0QS



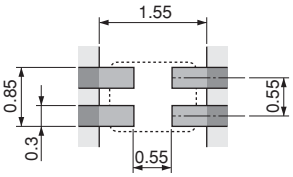

DLP0NS



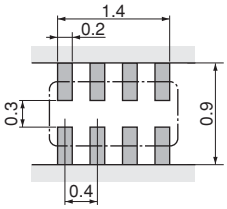

DLP11S/DLM11S



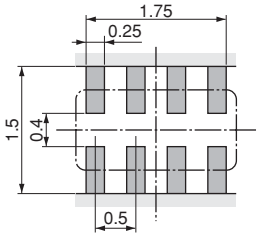

DLP11R/11T



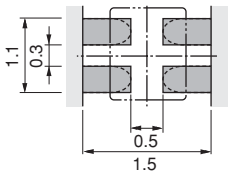

DLP1ND



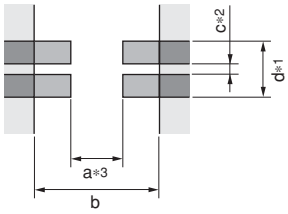

DLP2AD



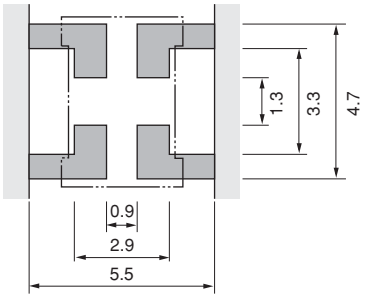

DLM11G




DLW21S/21H/31SN/43S




DLW5A/5B (Except for DLW5AT_MQ2)




| Series | a | b | c | d |
|---|---|---|---|---|
| **DLW21S/H** | 0.8 | 2.6 | 0.4 | 1.2 |
| **DLW31SN** | 1.6 | 3.7 | 0.4 | 1.6 |
| **DLW43SH110/220/510** | 3.0 | 5.9 | 1.6 | 3.4 |
| **DLW43SH101** | 3.2 | 5.9 | 1.6 | 3.4 |

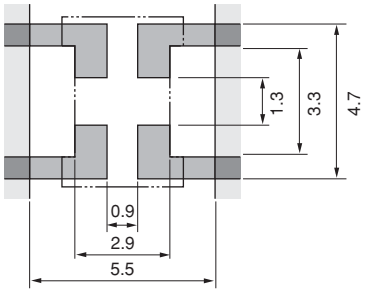
*1: If the pattern is made with wider than 1.2mm (DLW21) / 1.6mm (DLW31S) it may result in components turning around, because melting speed is different. In the worst case, short circuit between lines may occur.
*2: If the pattern is made with less than specified dimensions, in the worst case, short circuit between lines may occur due to spread of soldering paste or mount placing accuracy.
*3: If the pattern is made with wider than 0.8mm (DLW21) / 1.6mm (DLW31SN), the bending strength will be reduced.
Do not use gild pattern; excess soldering heat may dissolve metal of a copper wire.

Land Pattern + Solder Resist
Land Pattern
Solder Resist
(in mm)

**DLW5AT_MQ2**

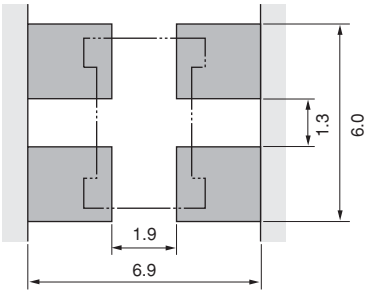
●Reflow Soldering Chip Mounting Side

DLW5AT_MQ2




●Flow Soldering Chip Mounting Side

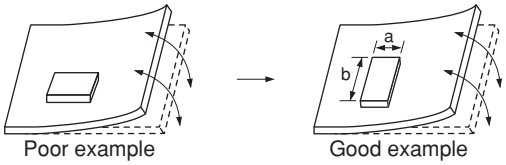
DLW5AT_MQ2




● PCB Warping

PCB should be designed so that products are not subjected to the mechanical stress caused by warping the board.

Products should be located in the sideways direction (Length: a<b) to the mechanical stress.



## 2. Solder Paste Printing and Adhesive Application

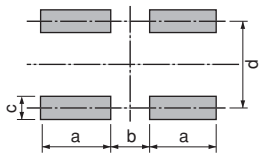
When reflow soldering the chip common mode choke coils, the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will be prone to damage by mechanical and thermal stress from the PCB and may crack.
Standard land dimensions should be used for resist and copper foil patterns.

When flow soldering the chip common mode choke coils, apply the adhesive in accordance with the following conditions.
If too much adhesive is applied, then it may overflow into the land or termination areas and yield poor solderability. In contrast, if insufficient adhesive is applied, or if the adhesive is not sufficiently hardened, then the chip may become detached during flow soldering process.

(in mm)

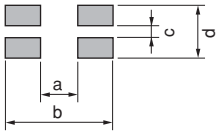
| Series | Solder Paste Printing | Adhesive Application |
|---|---|---|
| **DLP**<br>**DLW**<br>**DLM** | ●Guideline of solder paste thickness:<br>80-100μm: DLP0QS<br>100-150μm: DLW21S/21H/31S, DLP0NS/11S/11R/11T/1ND/2AD/DLM11S/11G<br>150μm: DLW43S<br>150-200μm: DLP31D/31S, DLW5A/5B<br>*Solderability is subject to reflow conditions and thermal conductivity. Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product. | ■ DLP31S/DLP31D/DLW5AT_MQ2<br>Apply 0.3mg of bonding agent at each chip. |

DLP0QS/0NS/11S/11R/11T/31S/DLM11S/11G



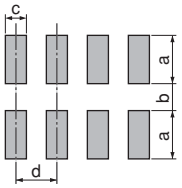

| Series | a | b | c | d |
|---|---|---|---|---|
| **DLP0QS** | 0.3 | 0.2 | 0.23 | 0.48 |
| **DLP0NS** | 0.3 | 0.3 | 0.3 | 0.5 |
| **DLM11S/DLP11S** | 0.7 | 0.55 | 0.3 | 0.55 |
| **DLP11R/T** | 0.5 | 0.55 | 0.3 | 0.55 |
| **DLP31S** | 1.0 | 0.6 | 0.7 | 2.1 |
| **DLM11G** | 0.5 | 0.5 | 0.4 | 0.7 |

DLW21S/21H/31S



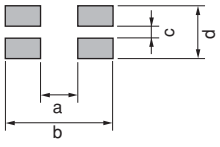

| Series | a | b | c | d |
|---|---|---|---|---|
| **DLW21S/H** | 0.8 | 2.6 | 0.5 | 1.2 |
| **DLW31S** | 1.6 | 3.7 | 0.4 | 1.6 |

DLP1ND/2AD/31D



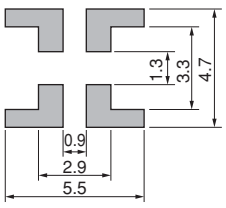

| Series | a | b | c | d |
|---|---|---|---|---|
| **DLP1ND** | 0.3 | 0.3 | 0.2 | 0.4 |
| **DLP2AD** | 0.55 | 0.4 | 0.25 | 0.5 |
| **DLP31D** | 1.0 | 0.8 | 0.4 | 0.8 |

DLW43S

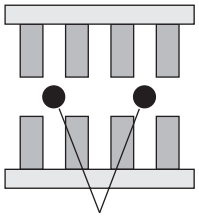



| Series | a | b | c | d |
|---|---|---|---|---|
| **DLW43S** | 3.0 (110/220/510) | 5.9 | 1.6 | 3.4 |
| | 3.2 (101) | | | |

DLW5A/5B

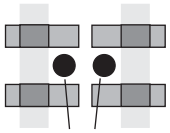



DLP31D



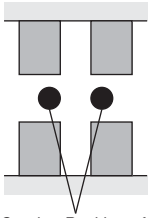
Coating Position of Bonding Agent

DLP31S



Coating Position of Bonding Agent

DLW5AT_MQ2



Coating Position of Bonding Agent

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• This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

## 3. Standard Soldering Conditions

(1) Soldering Methods

Use flow and reflow soldering methods only.
Use standard soldering conditions when soldering chip common mode choke coils.
In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

Solder: Use Sn-3.0Ag-0.5Cu solder. Use of Sn-Zn based solder will deteriorate performance of products.
If using DLP/DLM series with Sn-Zn based solder, please contact Murata in advance.

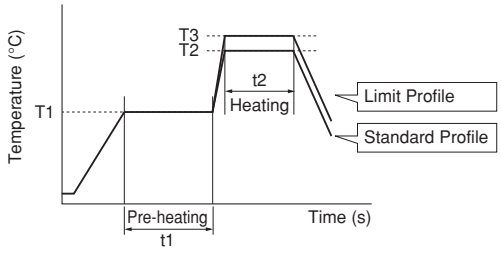
Flux:

- Use Rosin-based flux.
  In case of DLW21/31 series, use Rosin-based flux with converting chlorine content of 0.06 to 0.1wt%.
  In case of using RA type solder, products should be cleaned completely with no residual flux.
- Do not use strong acidic flux (with chlorine content exceeding 0.20wt%)
- Do not use water-soluble flux.

For additional mounting methods, please contact Murata.

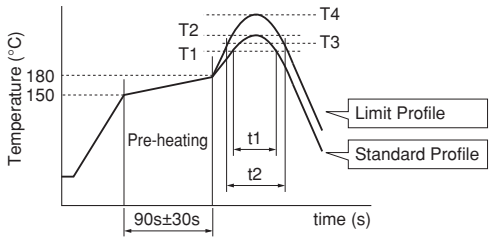
(2) Soldering Profile

●Flow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)




| Series | Pre-heating | | Standard Profile | | | Limit Profile | | |
|---|---|---|---|---|---|---|---|---|
| | | | Heating | | Cycle of Flow | Heating | | Cycle of Flow |
| | Temp. (T1) | Time. (t1) | Temp. (T2) | Time. (t2) | | Temp. (T3) | Time. (t2) | |
| **DLW5AT_MQ2 DLP31D/31S** | 150°C | 60s min. | 250°C | 4 to 6s | 2 times max. | 265±3°C | 5s max. | 2 times max. |

●Reflow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)




| Series | Standard Profile | | | | Limit Profile | | | |
|---|---|---|---|---|---|---|---|---|
| | Heating | | Peak Temperature (T2) | Cycle of Reflow | Heating | | Peak Temperature (T4) | Cycle of Reflow |
| | Temp. (T1) | Time. (t1) | | | Temp. (T3) | Time. (t2) | | |
| **DLM/DLP DLW21/31** | 220°C min. | 30 to 60s | 245±3°C | 2 times max. | 230°C min. | 60s max. | 260°C/10s | 2 times max. |
| **DLW43S** | 220°C min. | 30 to 60s | 245±3°C | 2 times max. | 240°C min. | 30s max. | 260°C/10s | 2 times max. |
| **DLW5A/5B** | 220°C min. | 30 to 60s | 250±3°C | 2 times max. | 230°C min. | 60s max. | 260°C/10s | 2 times max. |

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• This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

(3) Reworking with Solder Iron

The following conditions must be strictly followed when using a soldering iron.

Pre-heating: 150°C 60s min.

Soldering iron power output / Tip diameter:

30W max. / ø3mm max.

Temperature of soldering iron tip / Soldering time / Times:

350°C max. / 3-4s / 2 times*1

*1 DLP0QS, DLP0NS, DLP11S, DLP11T, DLP1ND, DLP2AD: 380°C max. / 3-4s / 2 times
DLW43S: 350°C max. / 3s / 2 times

Do not allow the tip of the soldering iron to directly contact the chip.

For additional methods of reworking with a soldering iron, please contact Murata engineering.

## 4. Cleaning

Following conditions should be observed when cleaning chip EMI filter.

(1) Cleaning Temperature: 60°C max. (40°C max. for alcohol type cleaner)

(2) Ultrasonic

Output: 20W/liter max.

Duration: 5 minutes max.

Frequency: 28 to 40kHz

(3) Cleaning agent

The following list of cleaning agents have been tested on the individual components. Evaluation of final assembly should be completed prior to production.

Do not clean DLW (Except for DLW21H) series.

Before cleaning, please contact Murata engineering.

(a) Alcohol cleaning agent

Isopropyl alcohol (IPA)

(b) Aqueous cleaning agent

Pine Alpha ST-100S

(4) Ensure that flux residue is completely removed.

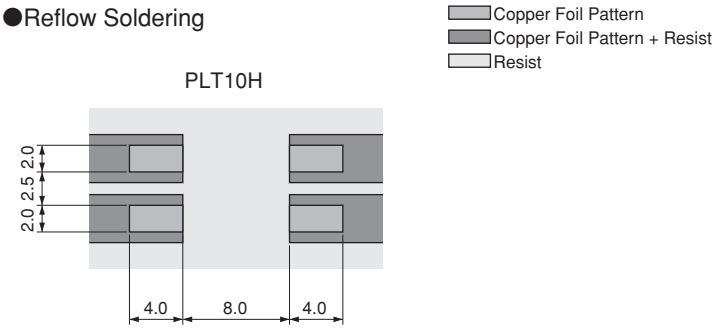
Component should be thoroughly dried after aqueous agent has been removed with deionized water.

## 1. Standard Land Pattern Dimensions

(in mm)

**PLT10H**

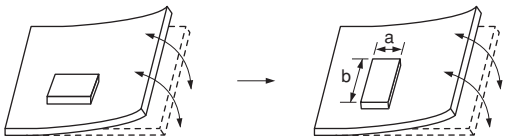
●Reflow Soldering




● PCB Warping

PCB should be designed so that products are not subjected to the mechanical stress caused by warping the board.

Products should be located in the sideways direction (Length: a<b) to the mechanical stress.




Poor example　　Good example

## 2. Solder Paste Printing and Adhesive Application

When reflow soldering the chip common mode choke coils, the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will be prone to damage by mechanical and thermal stress from the PCB and may crack.
Standard land dimensions should be used for resist and copper foil patterns.

When flow soldering the chip common mode choke coils, apply the adhesive in accordance with the following conditions.
If too much adhesive is applied, then it may overflow into the land or termination areas and yield poor solderability. In contrast, if insufficient adhesive is applied, or if the adhesive is not sufficiently hardened, then the chip may become detached during flow soldering process.

| Series | Solder Paste Printing |
|---|---|
| **PLT10H** | ●Guideline of solder paste thickness:<br>150-200μm: PLT10H<br>For the solder paste printing pattern, use standard land dimensions.<br><br>*Solderability is subject to reflow conditions and thermal conductivity. Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product. |

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## 3. Standard Soldering Conditions

(1) Soldering Methods

Use reflow soldering methods only.
Use standard soldering conditions when soldering chip common mode choke coils.
In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

Solder: Use Sn-3.0Ag-0.5Cu solder. Use of Sn-Zn based solder will deteriorate performance of products.

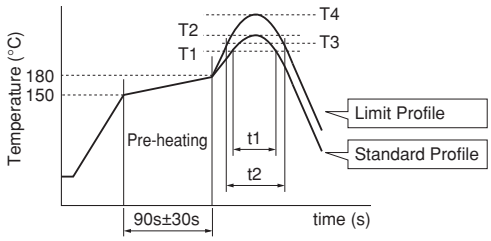
Flux:

- Use Rosin-based flux.
- Do not use strong acidic flux (with chlorine content exceeding 0.20wt%)
- Do not use water-soluble flux.

For additional mounting methods, please contact Murata.

(2) Soldering Profile

●Reflow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)




| Series | Standard Profile | | | | Limit Profile | | | |
|---|---|---|---|---|---|---|---|---|
| | Heating | | Peak Temperature (T2) | Cycle of Reflow | Heating | | Peak Temperature (T4) | Cycle of Reflow |
| | Temp. (T1) | Time. (t1) | | | Temp. (T3) | Time. (t2) | | |
| **PLT10H** | 220°C min. | 30 to 60s | 250±3°C | 2 times max. | 230°C min. | 60s max. | 260°C/10s | 2 times max. |

(3) Reworking with Solder Iron

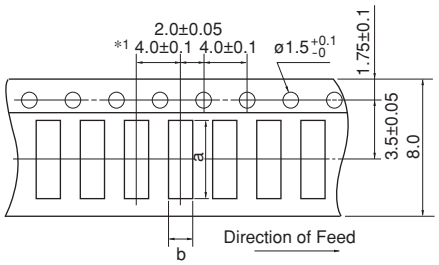
The following conditions must be strictly followed when using a soldering iron.
Pre-heating: 150°C 60s min.
Soldering iron power output / Tip diameter:
80W max. / ø3mm max.
Temperature of soldering iron tip / Soldering time / Times:
400°C max. / 5s / 2 times

Do not allow the tip of the soldering iron to directly contact the chip.
For additional methods of reworking with a soldering iron, please contact Murata engineering.

## 4. Cleaning

Do not clean after soldering. If cleaning, please contact us.

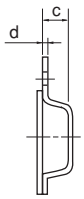
## ■ Minimum Quantity and Dimensions of 8mm Width Paper / Embossed Tape




*1 DLM11G/DLP0QS: 2.0±0.05
DLP0NS: 2.0±0.1

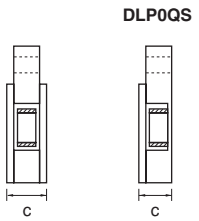
Dimension of the cavity of embossed tape is measured at the bottom side.

<Embossed>




c: Depth of Cavity
(Embossed Tape)

<Paper>

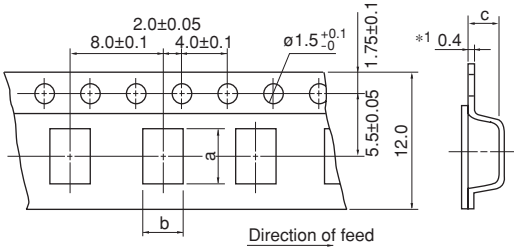



c: Total Thickness of Tape
(Paper Tape)

| Part Number | Dimensions | | | | Minimum Qty. (pcs.) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | ø180mm Reel | | ø330mm Reel | | Bulk |
| | a | b | c | d | Paper Tape | Embossed Tape | Paper Tape | Embossed Tape | |
| DLM11G | 1.45 | 1.2 | 0.8 max. | - | 10000 | - | - | - | 1000 |
| DLM11S | 1.4 | 1.15 | 0.65 | 0.25 | - | 4000 | - | - | 500 |
| DLP0QS | 0.73 | 0.6 | 0.55 max. | - | 15000 | - | - | - | 500 |
| DLP0NS | 0.95 | 0.75 | 0.55 | 0.25 | - | 10000 | - | - | 500 |
| DLP11S | 1.4 | 1.2 | 0.98 | 0.25 | - | 3000 | - | - | 500 |
| DLP11R | 1.4 | 1.15 | 0.7 | 0.25 | - | 4000 | - | - | 500 |
| DLP11T | 1.35 | 1.1 | 0.45 | 0.25 | - | 5000 | - | - | 500 |
| DLP1ND | 1.7 | 0.84 | 0.57 | 0.25 | - | 5000 | - | - | 500 |
| DLP2AD | 2.2 | 1.2 | 0.98 | 0.25 | - | 3000 | - | - | 500 |
| DLP31D/31S | 3.5 | 1.9 | 1.3 | 0.25 | - | 3000 | - | - | 500 |
| DLW21S | 2.25 | 1.45 | 1.4 | 0.3 | - | 2000 | - | - | 500 |
| DLW21H | 2.3 | 1.55 | 1.1 | 0.25 | - | 3000 | - | - | 500 |
| DLW31S | 3.6 | 2.0 | 2.1 | 0.3 | - | 2000 | - | - | 500 |

(in mm)

## ■ Minimum Quantity and Dimensions of 12mm Width Embossed Tape




*1 DLW43/DLW5AT: 0.3 c: Depth of Cavity

Dimension of the cavity is measured at the bottom side.

| Part Number | Dimensions | | | Minimum Qty. (pcs.) | | |
|---|---|---|---|---|---|---|
| | a | b | c | ø180mm Reel | ø330mm Reel | Bulk |
| DLW43SH_XK | 4.9 | 3.6 | 2.7 | 500 | 2500 | 100 |
| DLW43SH_XP | 4.9 | 3.6 | 2.9 | 500 | 2500 | 100 |
| DLW5AH | 5.4 | 4.1 | 4.4 | 400 | 1500 | 100 |
| DLW5AT | 5.4 | 4.1 | 2.7 | 700 | 2500 | 100 |
| DLW5BS | 5.5 | 5.4 | 4.7 | 400 | 1500 | 100 |
| DLW5BT | 5.5 | 5.5 | 2.7 | 700 | 2500 | 100 |

(in mm)

"Minimum Quantity" means the number of units of each delivery or order. The quantity should be an integral multiple of the "Minimum Quantity."

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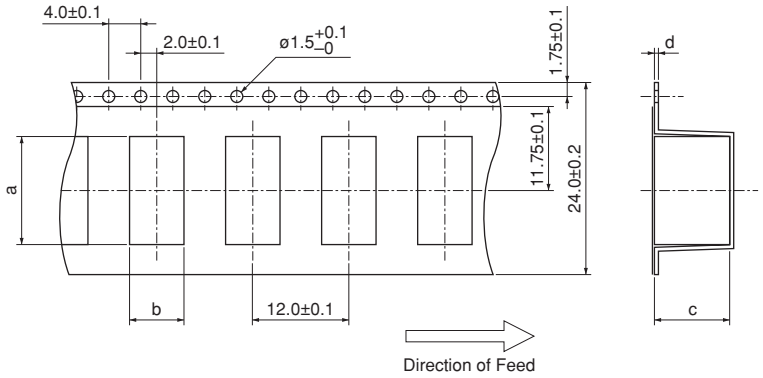
## ■ Minimum Quantity and Dimensions of 24mm Width Embossed Tape




Dimension of the cavity is measured at the bottom side.

| Part Number | Dimensions | | | | Minimum Qty. (pcs.) | | |
|---|---|---|---|---|---|---|---|
| | a | b | c | d | ø180mm Reel | ø330mm Reel | Bulk |
| **PLT10H** | 13.5 | 6.8 | 9.4 | 0.5 | 125 | 500 | 50 |

(in mm)

●EKEMDL21AQ-KIT (Chip Common Mode Choke Coils)

| No. | Part Number | Quantity (pcs.) | Common Mode Impedance (at 100MHz, 20 degrees C) | Rated Voltage (Vdc) | Rated Current (mA) |
|---|---|---|---|---|---|
| 1 | DLW21HN670SQ2 | 10 | 67Ω±25% | 50 | 330 |
| 2 | DLW21HN900SQ2 | 10 | 90Ω±25% | 50 | 330 |
| 3 | DLW21HN121SQ2 | 10 | 120Ω±25% | 50 | 280 |
| 4 | DLW21HN181SQ2 | 10 | 180Ω±25% | 50 | 250 |
| 5 | DLW21HN670HQ2 | 10 | 67Ω±25% | 20 | 240 |
| 6 | DLW21HN900HQ2 | 10 | 90Ω±25% | 20 | 220 |
| 7 | DLW21HN121HQ2 | 10 | 120Ω±25% | 20 | 200 |
| 8 | DLW21SN501SK2 | 10 | 500Ω±25% | 50 | 250 |
| 9 | DLW21SN670SQ2 | 10 | 67Ω±25% | 50 | 400 |
| 10 | DLW21SN900SQ2 | 10 | 90Ω±25% | 50 | 330 |
| 11 | DLW21SN121SQ2 | 10 | 120Ω±25% | 50 | 370 |
| 12 | DLW21SN181SQ2 | 10 | 180Ω±25% | 50 | 330 |
| 13 | DLW21SN261SQ2 | 10 | 260Ω±25% | 50 | 300 |
| 14 | DLW21SN371SQ2 | 10 | 370Ω±25% | 50 | 280 |
| 15 | DLW21SN670HQ2 | 10 | 67Ω±25% | 20 | 320 |
| 16 | DLW21SN900HQ2 | 10 | 90Ω±25% | 20 | 280 |
| 17 | DLW21SN121HQ2 | 10 | 120Ω±25% | 20 | 280 |
| 18 | DLW21SR670HQ2 | 10 | 67Ω±25% | 20 | 400 |
| 19 | DLW21SN181XQ2 | 10 | 180Ω±25% | 20 | 240 |
| 20 | DLW21SN261XQ2 | 10 | 260Ω±25% | 20 | 220 |
| 21 | DLW21SN491XQ2 | 10 | 490Ω±25% | 20 | 190 |
| 22 | DLP0NSC280HL2 | 10 | 28Ω±20% | 5 | 100 |
| 23 | DLP0NSN350HL2 | 10 | 35Ω±10Ω | 5 | 100 |
| 24 | DLP0NSN670HL2 | 10 | 67Ω±20% | 5 | 110 |
| 25 | DLP0NSN900HL2 | 10 | 90Ω±20% | 5 | 100 |
| 26 | DLP0NSN121HL2 | 10 | 120Ω±20% | 5 | 90 |
| 27 | DLP0NSA070HL2 | 10 | 7Ω±2Ω | 5 | 100 |
| 28 | DLP0NSA150HL2 | 10 | 15Ω±5Ω | 5 | 100 |
| 29 | DLP0QSN600HL2 | 10 | 60Ω±25% | 5 | 50 |
| 30 | DLP0QSA070HL2 | 10 | 7Ω±2Ω | 5 | 100 |
| 31 | DLP0QSA150HL2 | 10 | 15Ω±5Ω | 5 | 100 |
| 32 | DLP0QSA350HL2 | 10 | 35Ω±10Ω | 5 | 100 |
| 33 | DLP1NDN350HL4 | 10 | 35Ω±20% | 5 | 100 |
| 34 | DLP1NDN670HL4 | 10 | 67Ω±20% | 5 | 80 |
| 35 | DLP1NDN900HL4 | 10 | 90Ω±20% | 5 | 60 |
| 36 | DLP11SA350HL2 | 10 | 35Ω±20% | 5 | 170 |
| 37 | DLP11SA670HL2 | 10 | 67Ω±20% | 5 | 150 |
| 38 | DLP11SA900HL2 | 10 | 90Ω±20% | 5 | 150 |
| 39 | DLP11SN670SL2 | 10 | 67Ω±20% | 5 | 180 |
| 40 | DLP11SN121SL2 | 10 | 120Ω±20% | 5 | 140 |
| 41 | DLP11SN161SL2 | 10 | 160Ω±20% | 5 | 120 |
| 42 | DLP11SN900HL2 | 10 | 90Ω±20% | 5 | 150 |
| 43 | DLP11SN201HL2 | 10 | 200Ω±20% | 5 | 110 |
| 44 | DLP11SN241HL2 | 10 | 240Ω±20% | 5 | 100 |
| 45 | DLP11SN281HL2 | 10 | 280Ω±20% | 5 | 90 |
| 46 | DLP11SN331HL2 | 10 | 330Ω±20% | 5 | 80 |
| 47 | DLP11RB150UL2 | 10 | 15Ω±5Ω | 5 | 100 |
| 48 | DLP11RB400UL2 | 10 | 40Ω±10Ω | 5 | 100 |
| 49 | DLP11RN450UL2 | 10 | 45Ω±25% | 5 | 100 |
| 50 | DLP11TB800UL2 | 10 | 80Ω±25% | 5 | 100 |
| 51 | DLP2ADA350HL4 | 10 | 35Ω±20% | 5 | 150 |
| 52 | DLP2ADA670HL4 | 10 | 67Ω±20% | 5 | 130 |
| 53 | DLP2ADA900HL4 | 10 | 90Ω±20% | 5 | 120 |
| 54 | DLP2ADN670HL4 | 10 | 67Ω±20% | 5 | 140 |
| 55 | DLP2ADN900HL4 | 10 | 90Ω±20% | 5 | 130 |

Continued on the following page.

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Continued from the preceding page.

| No. | Part Number | Quantity (pcs.) | Common Mode Impedance (at 100MHz, 20 degrees C) | Rated Voltage (Vdc) | Rated Current (mA) |
|---|---|---|---|---|---|
| 56 | DLP2ADN121HL4 | 10 | 120Ω±20% | 5 | 120 |
| 57 | DLP2ADN161HL4 | 10 | 160Ω±20% | 5 | 100 |
| 58 | DLP2ADN201HL4 | 10 | 200Ω±20% | 5 | 90 |
| 59 | DLP2ADN241HL4 | 10 | 240Ω±20% | 5 | 80 |
| 60 | DLP2ADN281HL4 | 10 | 280Ω±20% | 5 | 80 |
| 61 | DLM11SN450HY2 | 10 | 45Ω±25% | 5 | 100 |
| 62 | DLM11SN900HY2 | 10 | 90Ω±25% | 5 | 100 |

## ●EKEMDCC5AF-KIT (Chip Common Mode Choke Coils for DC Power Lines / SMD Block Type EMIFIL® for Power Lines)

| No. | Part Number | Quantity (pcs.) | Common Mode Impedance (at 100MHz, 20 degrees C) | Rated Voltage (Vdc) | Rated Current (mA) |
|---|---|---|---|---|---|
| 1 | DLW5AHN402SQ2 | 5 | 4000Ω (Typ.) | 50 | 200 |
| 2 | DLW5ATN111SQ2 | 5 | 110Ω (Typ.) | 50 | 5000 |
| 3 | DLW5ATN401SQ2 | 5 | 400Ω (Typ.) | 50 | 2000 |
| 4 | DLW5ATN501SQ2 | 5 | 500Ω (Typ.) | 50 | 1500 |
| 5 | DLW5ATN851SQ2 | 5 | 850Ω (Typ.) | 50 | 1500 |
| 6 | DLW5ATN272SQ2 | 5 | 2700Ω (Typ.) | 50 | 1000 |
| 7 | DLW5BSM501TQ2 | 5 | 500Ω (Typ.) | 50 | 1000 |
| 8 | DLW5BSM601TQ2 | 5 | 600Ω (Typ.) | 50 | 1400 |
| 9 | DLW5BSM801TQ2 | 5 | 800Ω (Typ.) | 50 | 2000 |
| 10 | DLW5BSM191SQ2 | 5 | 190Ω (Typ.) | 50 | 5000 |
| 11 | DLW5BSM351SQ2 | 5 | 350Ω (Typ.) | 50 | 2000 |
| 12 | DLW5BSM102SQ2 | 5 | 1000Ω (Typ.) | 50 | 1500 |
| 13 | DLW5BSM152SQ2 | 5 | 1500Ω (Typ.) | 50 | 1000 |
| 14 | DLW5BSM302SQ2 | 5 | 3000Ω (Typ.) | 50 | 500 |
| 15 | DLW5BTM101SQ2 | 5 | 100Ω (Typ.) | 50 | 6000 |
| 16 | DLW5BTM251SQ2 | 5 | 250Ω (Typ.) | 50 | 5000 |
| 17 | DLW5BTM501SQ2 | 5 | 500Ω (Typ.) | 50 | 4000 |
| 18 | DLW5BTM102SQ2 | 5 | 1000Ω (Typ.) | 50 | 2000 |
| 19 | DLW5BTM142SQ2 | 5 | 1400Ω (Typ.) | 50 | 1500 |

## ●EKEMDL5AAC-KIT (Chip Common Mode Choke Coils for DC Power Lines / SMD Block Type EMIFIL® for Power Lines / 105 degree C available Type)

| No. | Part Number | Quantity (pcs.) | Common Mode Impedance (at 100MHz, 20 degrees C) | Rated Voltage (Vdc) | Rated Current (mA) |
|---|---|---|---|---|---|
| 1 | DLW5ATN500MQ2 | 5 | 50Ω (Typ.) | 50 | 6000 |
| 2 | DLW5ATN151MQ2 | 5 | 150Ω (Typ.) | 50 | 5000 |
| 3 | DLW5ATN331MQ2 | 5 | 330Ω (Typ.) | 50 | 4000 |
| 4 | DLW5ATN501MQ2 | 5 | 500Ω (Typ.) | 50 | 2500 |
| 5 | DLW5ATN112MQ2 | 5 | 1100Ω (Typ.) | 50 | 2000 |
| 6 | DLW5ATN111TQ2 | 5 | 110Ω (Typ.) | 50 | 5000 |
| 7 | DLW5ATN231TQ2 | 5 | 230Ω (Typ.) | 50 | 4000 |
| 8 | DLW5ATN401TQ2 | 5 | 400Ω (Typ.) | 50 | 2500 |
| 9 | DLW5ATN501TQ2 | 5 | 500Ω (Typ.) | 50 | 2000 |
| 10 | DLW5BTM101TQ2 | 5 | 100Ω (Typ.) | 50 | 6000 |
| 11 | DLW5BTM251TQ2 | 5 | 250Ω (Typ.) | 50 | 5000 |
| 12 | DLW5BTM501TQ2 | 5 | 500Ω (Typ.) | 50 | 4000 |
| 13 | DLW5BTM102TQ2 | 5 | 1000Ω (Typ.) | 50 | 2500 |
| 14 | DLW5BTM142TQ2 | 5 | 1400Ω (Typ.) | 50 | 2000 |
| 15 | DLW5BSM501TQ2 | 5 | 500Ω (Typ.) | 50 | 1000 |
| 16 | DLW5BSM601TQ2 | 5 | 600Ω (Typ.) | 50 | 1400 |
| 17 | DLW5BSM801TQ2 | 5 | 800Ω (Typ.) | 50 | 2000 |

●EKEPBLCKAD-KIT

| No. | Part Number | Quantity (pcs.) | Common Mode Impedance (at 10MHz, 20 degrees C) | Rated Voltage (Vdc) | Rated Current (A) |
|---|---|---|---|---|---|
| 1 | PLT10HH450180PN | 2 | 45Ω (Typ.) | 300 | 18 |
| 2 | PLT10HH101150PN | 2 | 100Ω (Typ.) | 300 | 15 |
| 3 | PLT10HH401100PN | 2 | 400Ω (Typ.) | 100 | 10 |
| 4 | PLT10HH501100PN | 2 | 500Ω (Typ.) | 100 | 10 |
| 5 | PLT10HH9016R0PN | 2 | 900Ω (Typ.) | 100 | 6 |
| 6 | PLT10HH1026R0PN | 2 | 1000Ω (Typ.) | 100 | 6 |

| No. | Part Number | Quantity (pcs.) | Insertion Loss | Rated Voltage (Vdc) | Rated Current (A) |
|---|---|---|---|---|---|
| 7 | BNX002-01 | 1 | 1MHz to 1GHz : 40dB min. | 50 | 10 |
| 8 | BNX003-01 | 1 | 5MHz to 1GHz : 40dB min. | 150 | 10 |
| 9 | BNX005-01 | 1 | 1MHz to 1GHz : 40dB min. | 50 | 15 |
| 10 | BNX012-01 | 1 | 1MHz to 1GHz : 40dB min. | 50 | 15 |
| 11 | BNX016-01 | 1 | 100kHz to 1GHz : 40dB min. | 25 | 15 |
| 12 | BNX022-01 | 2 | 1MHz to 1GHz : 35dB min. | 50 | 10 |
| 13 | BNX023-01 | 2 | 1MHz to 1GHz : 35dB min. | 100 | 15 |
| 14 | BNX024H01 | 2 | 100kHz to 1GHz : 35dB min. | 50 | 15 |
| 15 | BNX025H01 | 2 | 50kHz to 1GHz : 35dB min. | 25 | 15 |

# BNX

## Block Type EMIFIL®





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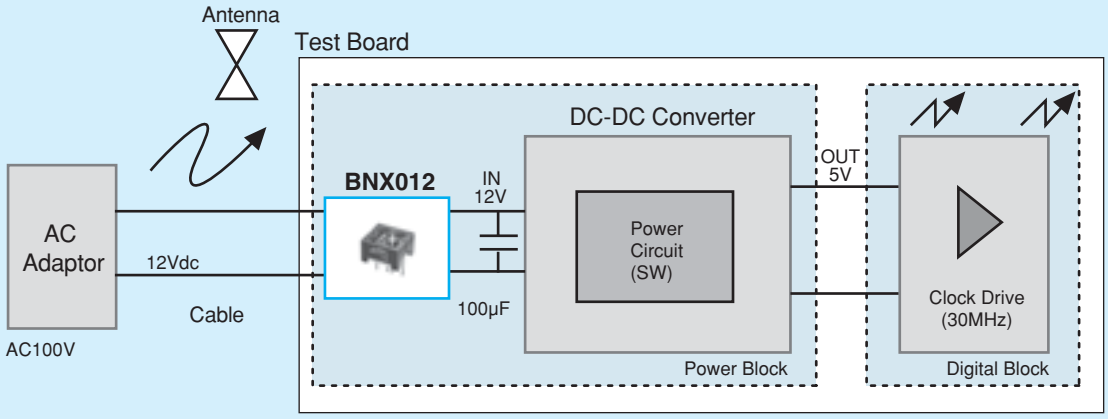
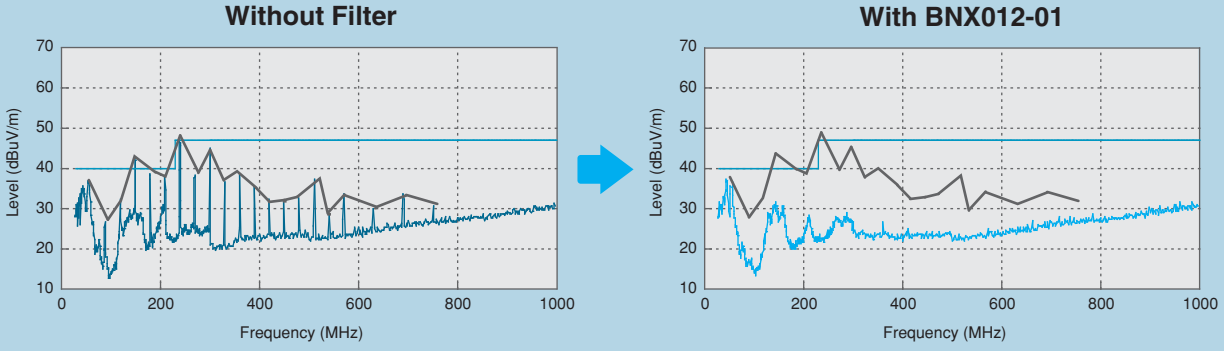
| Type | Part Number | Thickness (mm) | Rated Voltage | Effective Frequency Range | Rated Current | Kit ≥3A Flow ReFlow |
|---|---|---|---|---|---|---|
| SMD Type for Power Lines p221 | **BNX022-01** | 3.1 | 50Vdc | 1MHz to 1GHz:35dB min. | 10A | Kit ≥3A ReFlow |
| | **BNX023-01** | 3.1 | 100Vdc | 1MHz to 1GHz:35dB min. | 15A | Kit ≥3A ReFlow |
| | **BNX024H01** | 3.5 | 50Vdc | 100kHz to 1GHz:35dB min. | 15A | Kit ≥3A ReFlow |
| | **BNX025H01** | 3.5 | 25Vdc | 50kHz to 1GHz:35dB min. | 15A | Kit ≥3A ReFlow |
| Lead Type for Power Lines p223 | **BNX002-01** | 18.0 | 50Vdc | 1MHz to 1GHz:40dB min. | 10A | Kit ≥3A Flow |
| | **BNX003-01** | 18.0 | 150Vdc | 5MHz to 1GHz:40dB min. | 10A | Kit ≥3A Flow |
| | **BNX005-01** | 18.5 | 50Vdc | 1MHz to 1GHz:40dB min. | 15A | Kit ≥3A Flow |
| Lead Type Low Profile for Power Lines p224 | **BNX012-01** | 8.0 | 50Vdc | 1MHz to 1GHz:40dB min. | 15A | Kit ≥3A Flow |
| | **BNX016-01** | 8.0 | 25Vdc | 100kHz to 1GHz:40dB min. | 15A | Kit ≥3A Flow |

## Suppression of Radiation Noise from Power Line Cable




### ■Test Result

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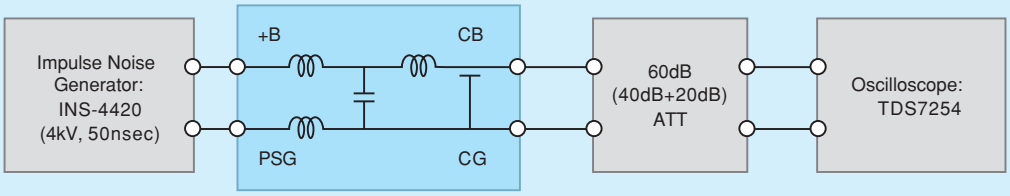
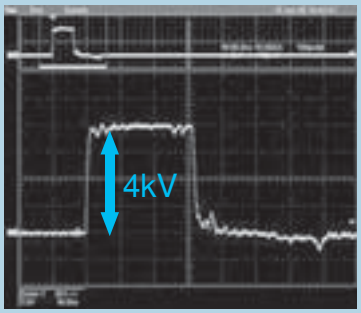
## Impulse Noise Countermeasure



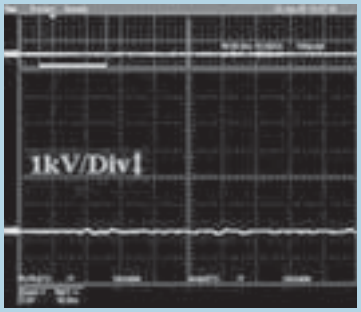

**BNX**

■Without Filter

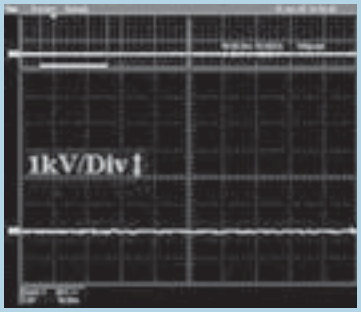



Applied Impulse Voltage: 4kV/50nS
Y-AXIS: 1kV/div

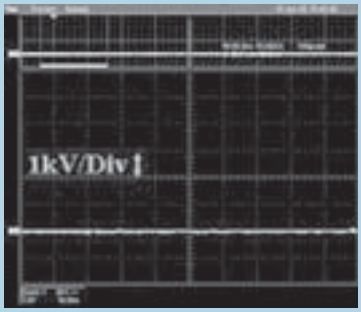
■With Filter




BNX002-01

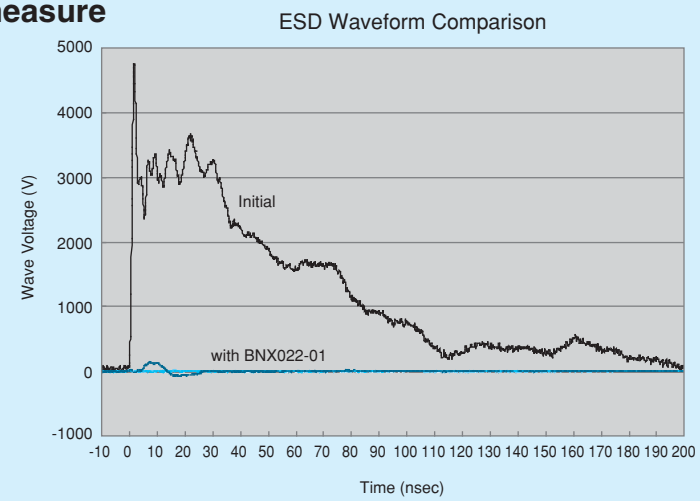



BNX012-01

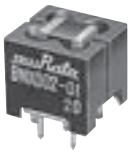



BNX022-01

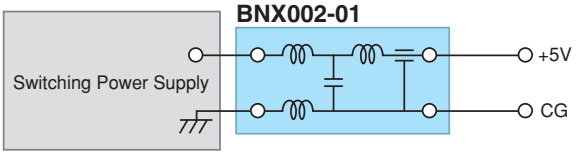
## ESD Countermeasure

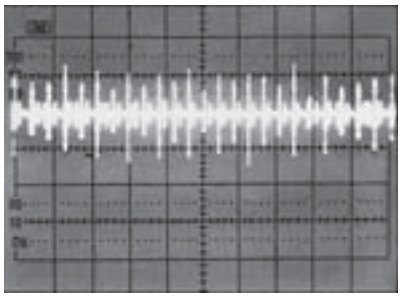
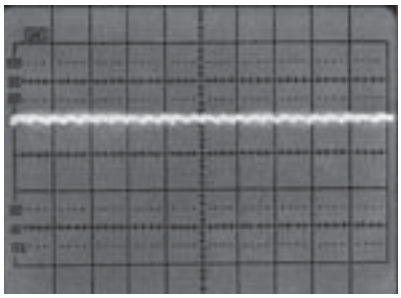


## Suppression of Ripple Noise of DC Side in the Switching Power Supply

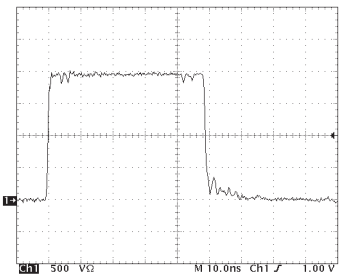
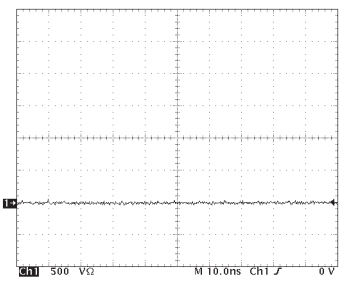


Test Circuit




| Type of Filter | EMI Suppression Effect / Description |
|---|---|
| Without Filter | +5.0V→ 50μs/div 0.2V/div  There is high frequency noise of 0.5V maximum. |
| When **BNX002-01** is used | +5.0V→ 50μs/div 0.2V/div  BNX002-01 can suppress most of the noise. |

## Example of Impulse Noise Suppression

| Type of Filter | EMI Suppression Effect |
|---|---|
| Without Filter |  Impulse Noise 2000V/50ns<br>Y-axis: 500V/div<br>X-axis: 10ns/sec |
| When **BNX002** is used |  Y-axis: 500V/div<br>X-axis: 10ns/sec |

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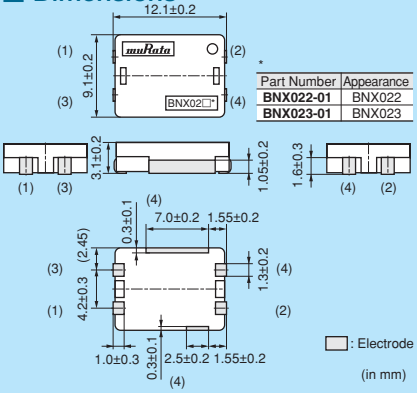
# BNX02□ Series

Hi Power Reflow OK

## SMD package of block type EMIFIL®.

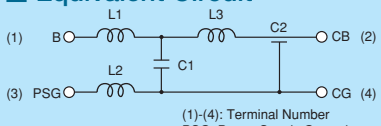
### BNX022/BNX023

#### ■ Dimensions




| Part Number | Appearance |
|---|---|
| BNX022-01 | BNX022 |
| BNX023-01 | BNX023 |

#### ■ Equivalent Circuit



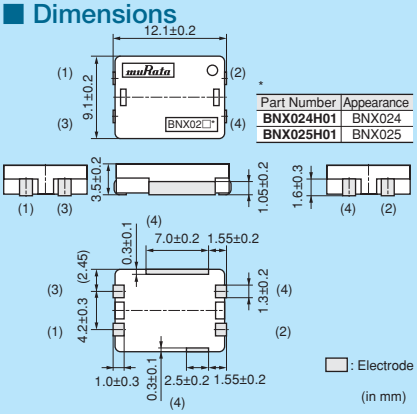

(1)-(4): Terminal Number
PSG: Power Supply Ground
CG: Circuit Ground
CB: Circuit+B

#### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 400 |
| K | 330mm Reel Embossed Tape | 1500 |
| B | Bulk(Bag) | 100 |

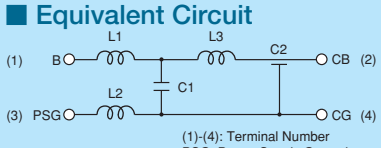
### BNX024H/BNX025H

#### ■ Dimensions




| Part Number | Appearance |
|---|---|
| BNX024H01 | BNX024 |
| BNX025H01 | BNX025 |

#### ■ Equivalent Circuit




(1)-(4): Terminal Number
PSG: Power Supply Ground
CG: Circuit Ground
CB: Circuit+B

#### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| L | 180mm Reel Embossed Tape | 400 |
| K | 330mm Reel Embossed Tape | 1500 |
| B | Bulk(Bag) | 100 |

Refer to pages from p.227 to p.228 for mounting information.

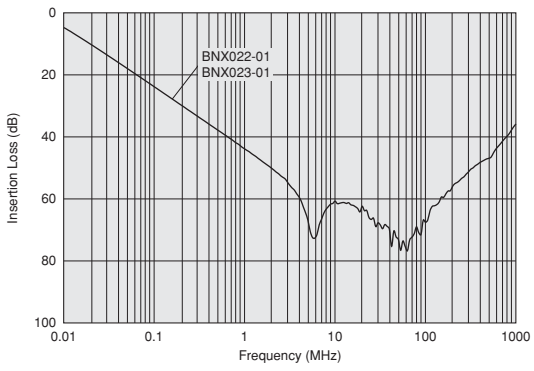
### ■ Rated Value (□: packaging code)

| Part Number | Rated Voltage | Withstand Voltage | Rated Current | Insulation Resistance (min.) | Insertion Loss (Line impedance=50 ohm) | |
|---|---|---|---|---|---|---|
| BNX022-01□ | 50Vdc | 125Vdc | 10A | 500M ohm | 1MHz to 1GHz:35dB min. | Kit ≧3A |
| BNX023-01□ | 100Vdc | 250Vdc | 15A | 500M ohm | 1MHz to 1GHz:35dB min. | Kit ≧3A |
| BNX024H01□ | 50Vdc | 125Vdc | 15A | 100M ohm | 100kHz to 1GHz:35dB min. | Kit ≧3A |
| BNX025H01□ | 25Vdc | 62.5Vdc | 15A | 50M ohm | 50kHz to 1GHz:35dB min. | Kit ≧3A |

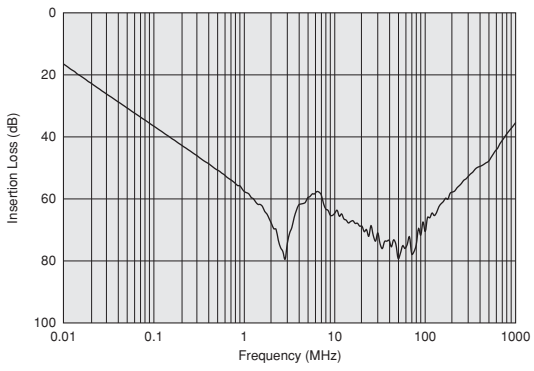
Operating Temperature Range: -40°C to +125°C (BNX022/BNX023), -55°C to +125°C (BNX024H/BNX025H)

### ■ Insertion Loss Characteristics

**BNX022/023**




**BNX024H01**




Continued on the following page.

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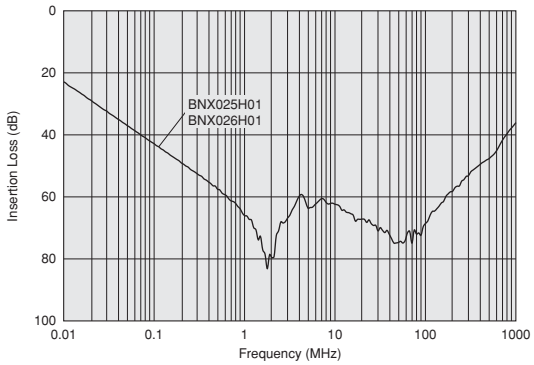
## ■ Insertion Loss Characteristics

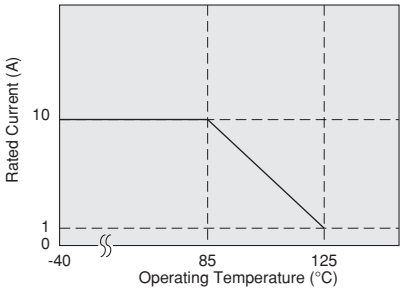
### BNX025H01




## ■ Notice (Rating)

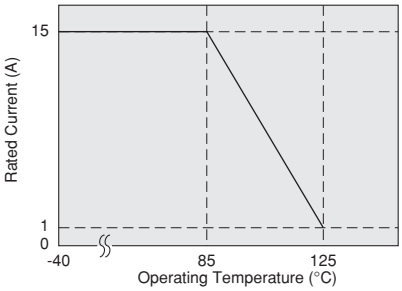
In operating temperature exceeding +85°C, derating of current is necessary for BNX022 series. Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current



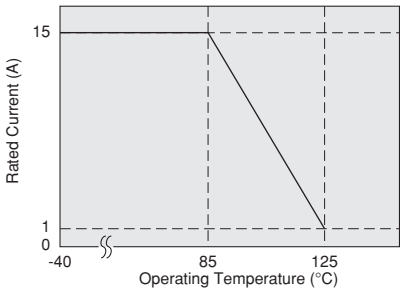

In operating temperature exceeding +85°C, derating of current is necessary for BNX023 series. Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current




In operating temperature exceeding +85°C, derating of current is necessary for BNX024H/025H series. Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current




⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
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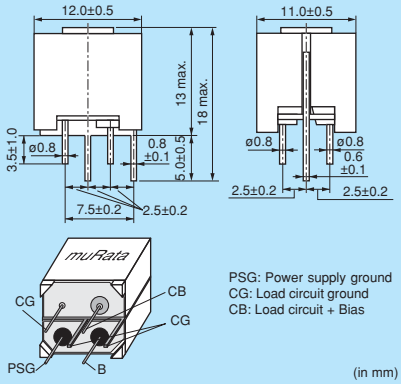
# BNX00□ Series

Hi Power Flow OK

## Large insertion loss from several hundred kHz to several GHz.

### BNX002/BNX003

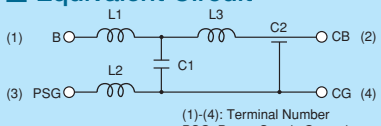
#### Dimensions




PSG: Power supply ground
CG: Load circuit ground
CB: Load circuit + Bias

(in mm)

#### Equivalent Circuit



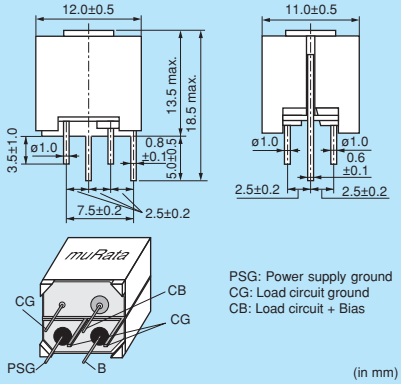

(1)-(4): Terminal Number
PSG: Power Supply Ground
CG: Circuit Ground
CB: Circuit+B

#### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| - | Box | 100 |

### BNX005

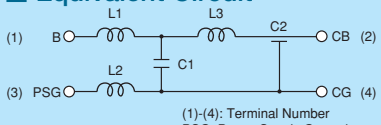
#### Dimensions




PSG: Power supply ground
CG: Load circuit ground
CB: Load circuit + Bias

(in mm)

#### Equivalent Circuit




(1)-(4): Terminal Number
PSG: Power Supply Ground
CG: Circuit Ground
CB: Circuit+B

#### Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| - | Box | 100 |

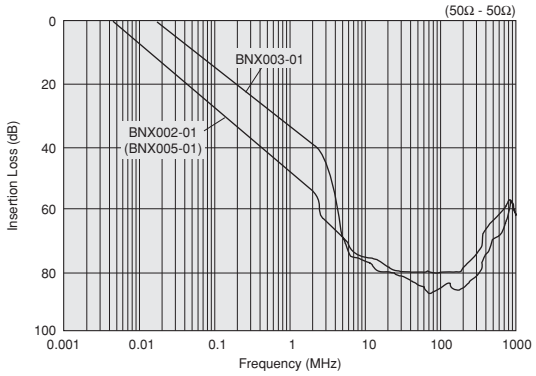
Refer to pages from p.229 to p.230 for mounting information.

## Rated Value

| Part Number | Rated Voltage | Withstand Voltage | Rated Current | Insulation Resistance (min.) | Insertion Loss (Line impedance=50 ohm) | |
|---|---|---|---|---|---|---|
| **BNX002-01** | 50Vdc | 125Vdc | 10A | 100M ohm | 1MHz to 1GHz:40dB min. | Kit ≧3A |
| **BNX003-01** | 150Vdc | 375Vdc | 10A | 100M ohm | 5MHz to 1GHz:40dB min. | Kit ≧3A |
| **BNX005-01** | 50Vdc | 125Vdc | 15A | 100M ohm | 1MHz to 1GHz:40dB min. | Kit ≧3A |

Operating Temperature Range: -30°C to +85°C

## Insertion Loss Characteristics



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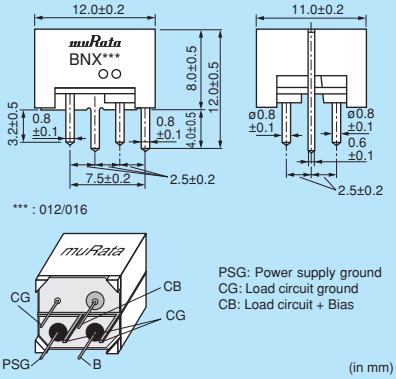
# BNX01□ Series

Hi Power Flow OK

## Low profile version of BNX series.

### ■ Dimensions



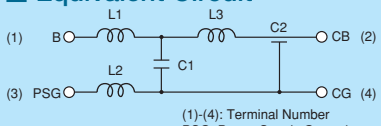

*** : 012/016




PSG: Power supply ground
CG: Load circuit ground
CB: Load circuit + Bias

(in mm)

### ■ Equivalent Circuit




(1)-(4): Terminal Number
PSG: Power Supply Ground
CG: Circuit Ground
CB: Circuit+B

### ■ Packaging

| Code | Packaging | Minimum Quantity |
|---|---|---|
| - | Box | 150 |

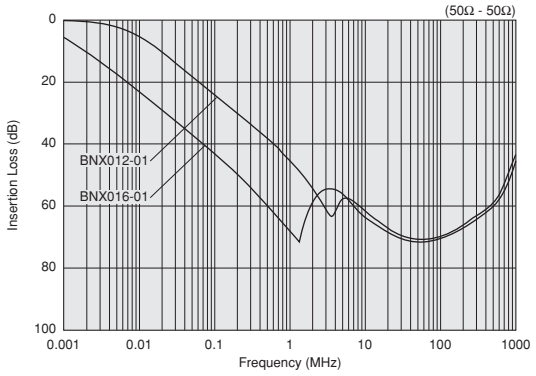
Refer to pages from p.229 to p.230 for mounting information.

### ■ Rated Value

| Part Number | Rated Voltage | Withstand Voltage | Rated Current | Insulation Resistance (min.) | Insertion Loss (Line impedance=50 ohm) | |
|---|---|---|---|---|---|---|
| **BNX012-01** | 50Vdc | 125Vdc | 15A | 500M ohm | 1MHz to 1GHz:40dB min. | Kit ≧3A |
| **BNX016-01** | 25Vdc | 62.5Vdc | 15A | 50M ohm | 100kHz to 1GHz:40dB min. | Kit ≧3A |

Operating Temperature Range: -40°C to +125°C

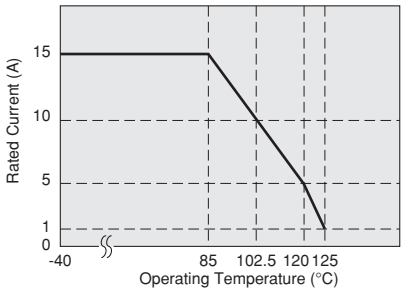
### ■ Insertion Loss Characteristics




### ■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BNX01□ series. Please apply the derating curve shown in chart according to the operating temperature.

Derating of Rated Current




● Connecting ± power line

In case of using ± power line, please connect to each terminal as shown.

| Power Supply (BNX Input) | BNX | | Circuit (BNX Output) |
|---|---|---|---|
| Power Supply +Bias | B | CB | Load Circuit +Bias |
| Power Supply Ground | PSG | CG | Load Circuit Ground |
| Power Supply -Bias | B | CB | Load Circuit -Bias |
| Power Supply Ground | PSG | CG | Load Circuit Ground |



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## ⚠Caution

### ● Rating

Do not use products beyond the rated current and rated voltage as this may create excessive heat and deteriorate the insulation resistance.

## Notice

### ● Storage and Operating Conditions

<Operating Environment>
Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
Do not use products in the environment close to the organic solvent.
<Storage and Handling Requirements>
1. Storage Period
   BNX series should be used within 12 months. Solderability should be checked if this period is exceeded.
2. Storage Conditions
   (1) Storage temperature: -10 to +40°C
   Relative humidity: 15 to 85%
   Avoid sudden changes in temperature and humidity.
   (2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

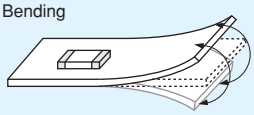
### ● Notice (Soldering and Mounting)

1. Cleaning
   Do not clean BNX series (SMD Type).
   Before cleaning, please contact Murata engineering.
2. Soldering
   Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Other
   Noise suppression levels resulting from Murata's EMI suppression filters EMIFIL® may vary, depending on the circuits and ICs used, type of noise, mounting pattern, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

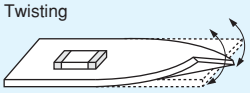
### ● Handling

1. Resin Coating
   Using resin for coating/molding products may affect the products performance.
   So please pay careful attention in selecting resin.
   Prior to use, please make the reliability evaluation with the product mounted in your application set.
2. Handling of a Substrate (for BNX02□)
   After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate.
   Excessive mechanical stress may cause cracking in the Product.

Bending



Twisting





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## ⚠Caution

### ● Rating

Do not use products beyond the rated current and rated voltage as this may create excessive heat and deteriorate the insulation resistance.

## Notice

### ● Storage and Operating Conditions

<Operating Environment>

1. Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
2. Do not use products near water, oil or organic solvents.

<Storage and Handling Requirements>

1. Storage Period
   BNX Series should be used within 12 months. Solderability should be checked if this period is exceeded.
2. Storage Conditions
   (1) Storage temperature: -10 to +40°C
   Relative humidity: 15 to 85%
   Avoid sudden changes in temperature and humidity.
   (2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

### ● Notice (Soldering and Mounting)

1. Cleaning
   Failure and degradation of a product are caused by the cleaning method. When you clean in conditions that are not in mounting information, please contact Murata engineering.
2. Soldering
   Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Other
   Noise suppression levels resulting from Murata's EMI suppression filters "EMIFIL" may vary, depending on the circuits and ICs used, type of noise, mounting pattern, lead wire length, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

### ● Notice (Appearance)

Although some part of the product surface seems to be white in some cases, do not care because it is the result of waxing process for humidity resistance improvement. This wax does not make bad affection to mechanical or electrical performance, reliability of the product.

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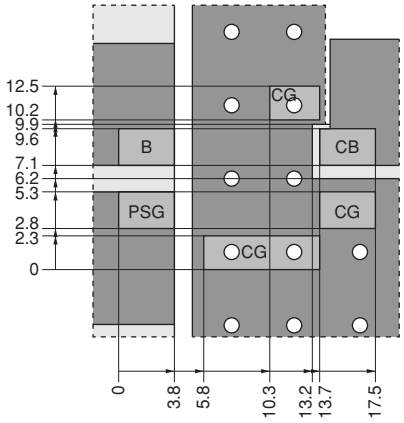
## 1. Standard Land Pattern Dimensions

Land Pattern + Solder Resist
Land Pattern
Solder Resist
Through Hole
(in mm)

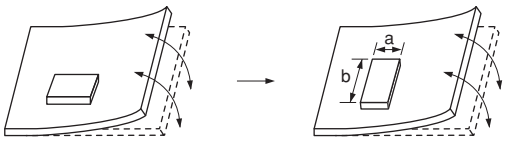
**BNX022**
**BNX023**
**BNX024**
**BNX025**




(1) A double-sided print board (or multilayer board) as shown in the left figure is designed, and please apply a soldering Cu electrode with a product electrode to a "Land Pattern", apply resist to a "Land Pattern + Solder Resist" at Cu electrode.
(2) This product is designed to meet large current. Please design PCB pattern which is connected to this product not to become too hot by applied large current.
(3) Please drop CG on a ground electrode on the back layer (the same also in a multilayer case) by the through hole. And a surface to ground electrode layer may also take a large area as much as possible.
(4) It is recommended to use a double-sided printed circuit board with BNX mounting on one side and the ground pattern on the other in order to maximize filtering performance, multiple feed through holes are required to maximize the BNX's connection to ground.
(5) The ground pattern should be designed to be as large as possible to achieve maximum filtering performance.

● PCB Warping (for BNX02□)
PCB should be designed so that products are not subjected to the mechanical stress caused by warping the board.

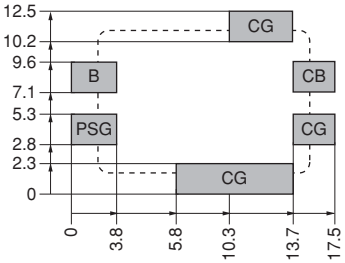
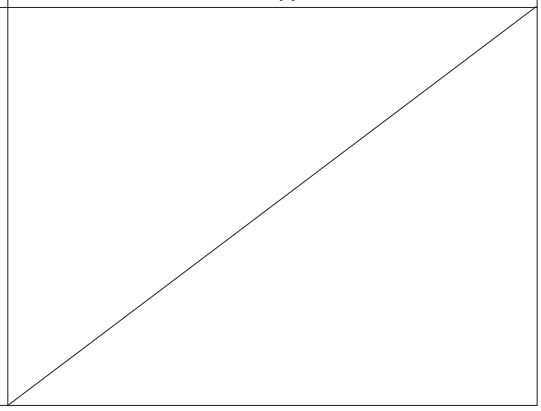
Products should be located in the sideways direction (Length: a<b) to the mechanical stress.




Poor example　　Good example

## 2. Solder Paste Printing and Adhesive Application

When reflow soldering the block type EMIFIL®, the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will be prone to damage by mechanical and thermal stress from the PCB and may crack.
Standard land dimensions should be used for resist and copper foil patterns.

| Series | Solder Paste Printing | Adhesive Application |
|---|---|---|
| **BNX022**<br>**BNX023**<br>**BNX024**<br>**BNX025** | ●Guideline of solder paste thickness:<br>150-200μm<br>  |  |



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## 3. Standard Soldering Conditions

(1) Soldering Methods

Use reflow soldering methods only.
Use standard soldering conditions when soldering block type EMIFIL® SMD type.
In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

Solder: Use Sn-3.0Ag-0.5Cu solder. Use of Sn-Zn based solder will deteriorate performance of products.

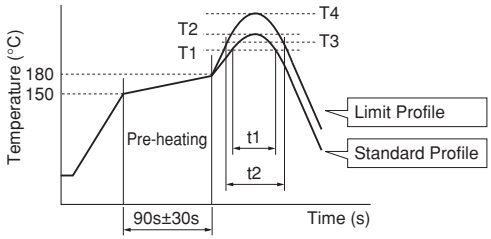
Flux:

- Use Rosin-based flux.
  In case of using RA type solder, products should be cleaned completely with no residual flux.
- Do not use strong acidic flux (with chlorine content exceeding 0.20wt%)
- Do not use water-soluble flux.

For additional mounting methods, please contact Murata.

(2) Soldering Profile

●Reflow Soldering Profile
(Sn-3.0Ag-0.5Cu solder)




| Series | Standard Profile | | | | Limit Profile | | | |
|---|---|---|---|---|---|---|---|---|
| | Heating | | Peak Temperature (T2) | Cycle of Reflow | Heating | | Peak Temperature (T4) | Cycle of Reflow |
| | Temp. (T1) | Time. (t1) | | | Temp. (T3) | Time. (t2) | | |
| **BNX022/023/024/025** | 220°C min. | 30 to 60s | 250±3°C | 2 times max. | 230°C min. | 60s max. | 260°C/10s | 2 times max. |

(3) Reworking with Solder Iron

The following conditions must be strictly followed when using a soldering iron.
Pre-heating: 150°C 60s min.
Soldering iron power output: 100W max.
Temperature of soldering iron tip / Soldering time / Times:
450°C max. / 5s max. / 2 time

Do not allow the tip of the soldering iron to directly contact the chip.
For additional methods of reworking with a soldering iron, please contact Murata engineering.

## 4. Cleaning

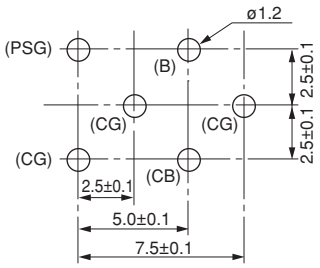
Do not clean BNX022/023/024/025 series. In case of cleaning, please contact Murata engineering.

## 1. Mounting Hole

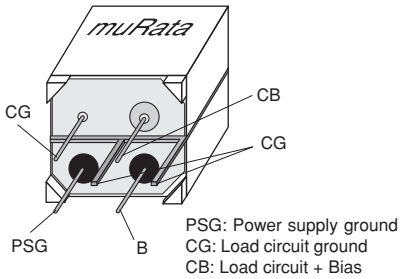
■ Mounting holes should be designed as specified below.

**BNX00□/01□**

Component Side




Terminal Layout (Bottom figure)




## 2. Using the Block Type EMIFIL® (Lead Type) Effectively

(1) How to use effectively

This product effectively prevents undesired radiation and external noise from going out / entering the circuit by grounding the high frequency components which cause noise problems. Therefore, grounding conditions may affect the performance of the filter and attention should be paid to the following for effective use.

(a) Design maximized grounding area in the P.C. board, and grounding pattern for all the grounding terminals of the product to be connected. (Please follow the specified recommendations.)

(b) Minimize the distance between ground of the P.C. board and the ground plate of the product. (Recommend using the through hole connection between grounding area both of component side and bottom side.)

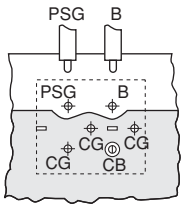
(c) Insert the terminals into the holes on P.C. board completely.

(d) Don't connect PSG terminal with CG terminal directly. (See the item 1. Terminal Layout)

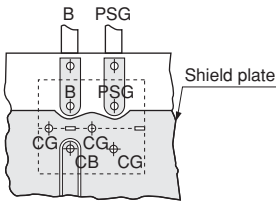
P. C. Board Patterns

Use a bilateral P.C. board. Insert the BNX into the P.C.board until the root of the terminal is secured, then solder.

(1) Component Side View




(2) Bottom View




Copper foil pattern

(2) Self-heating

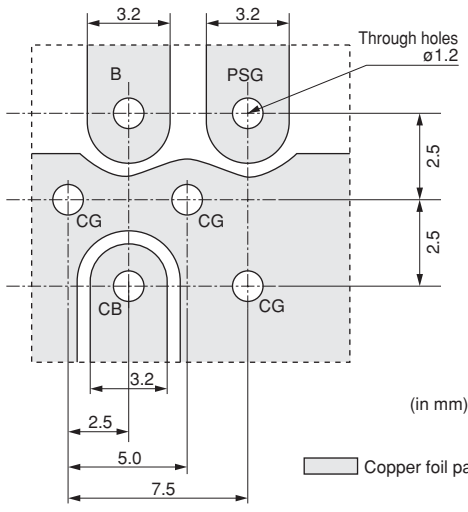
Though this product has a large rated current, localized selfheating may be caused depending on soldering conditions. To avoid this, attention should be paid to the following:

(a) Use P.C. board with our recommendation on hole diameter / land pattern dimensions, mentioned in the right hand drawing, especially for 4 terminals which pass current.

(b) Solder the terminals to the P.C. board with soldercover area at least 90%. Otherwise, excess self-heating at connection between terminals and P.C. board may lead to smoke and / or fire of the product even when operating at rated current.

(c) After installing this product in your product, please make sure the self-heating is within the rated current recommended.

Recommended Land Pattern




Copper foil pattern

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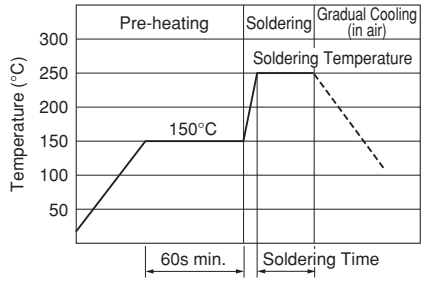
## 3. Soldering

(1) Use Sn-3.0Ag-0.5Cu solder.
(2) Use Rosin-based flux. Do not use strong acidic flux with halide content exceeding 0.2wt% (chlorine conversion value).
(3) Products and the leads should not be subjected to any mechanical stress during the soldering process, or while subjected to the equivalent high temperatures.
(4) Standard flow soldering profile

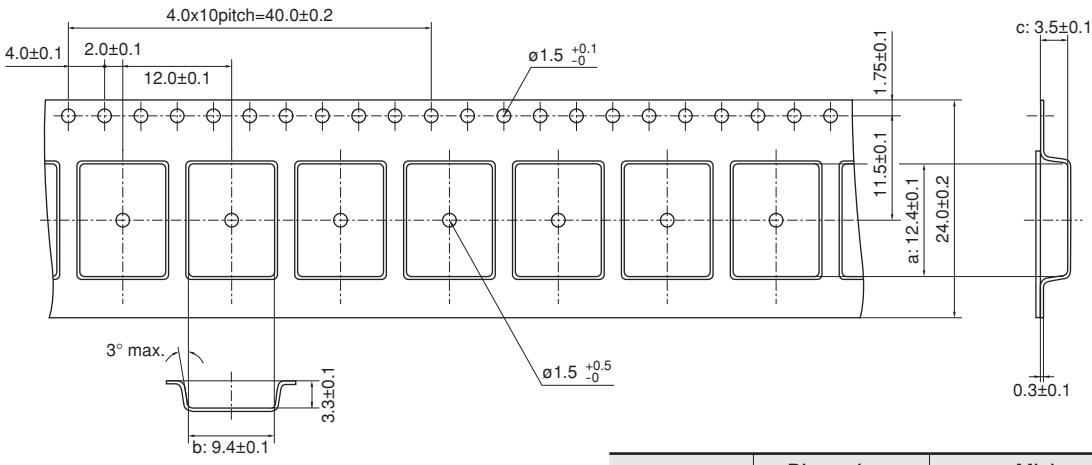



| Solder | Soldering Temperature | Soldering Time |
|---|---|---|
| Sn-3.0Ag-0.5Cu solder | 250 to 260°C | 4 to 6s |

## 4. Cleaning

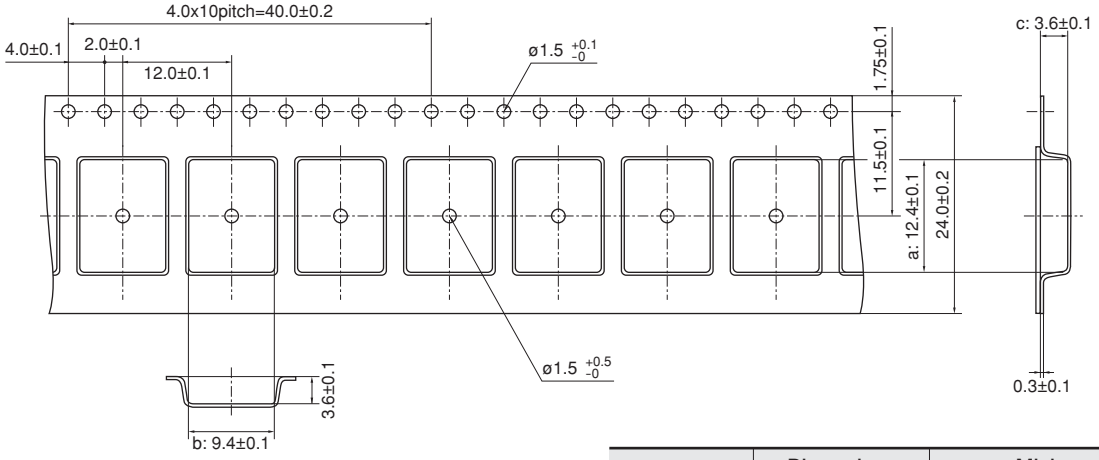
Clean the block Type EMIFIL®(Lead Type) in the following conditions.
(1) Cleaning temperature should be limited to 60°C max. (40°C max for alcohol type cleaner).
(2) Ultrasonic cleaning should comply with the following conditions, avoiding the resonance phenomenon at the mounted products and P.C.B.
Power: 20W/liter max.
Frequency: 28 to 40kHz
Time: 5 min. max.
(3) Cleaner
(a) Alcohol type cleaner
Isopropyl alcohol (IPA)
(b) Aqueous agent
Pine Alpha ST-100S
(4) There should be no residual flux or residual cleaner left after cleaning.
In the case of using aqueous agent, products should be dried completely after rinsing with de-ionized water in order to remove the cleaner.
(5) The surface of products may become dirty after cleaning, but there is no deterioration on mechanical, electrical characteristics and reliability.
(6) Other cleaning: Please contact us.

## ■ Minimum Quantity and Dimensions of 24mm Width Embossed Tape




Dimension of the cavity is measured at the bottom side.

| Part Number | Dimensions | | | Minimum Qty. (pcs.) | | |
|---|---|---|---|---|---|---|
| | a | b | c | ø180mm Reel | ø330mm Reel | Bulk |
| BNX022/023 | 12.4 | 9.4 | 3.5 | 400 | 1500 | 100 |




Dimension of the cavity is measured at the bottom side.

| Part Number | Dimensions | | | Minimum Qty. (pcs.) | | |
|---|---|---|---|---|---|---|
| | a | b | c | ø180mm reel | ø330mm reel | Bulk |
| BNX024/025 | 12.4 | 9.4 | 3.6 | 400 | 1500 | 100 |

(in mm)

"Minimum Quantity" means the number of units of each delivery or order. The quantity should be an integral multiple of the "Minimum Quantity."

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# BNX Block Type EMIFIL® Design Kits

●EKEPBLCKAD-KIT

| No. | Part Number | Quantity (pcs.) | Common Mode Impedance (at 10MHz, 20 degrees C) | Rated Voltage (Vdc) | Rated Current (A) |
|---|---|---|---|---|---|
| 1 | **PLT10HH450180PN** | 2 | 45Ω (Typ.) | 300 | 18 |
| 2 | **PLT10HH101150PN** | 2 | 100Ω (Typ.) | 300 | 15 |
| 3 | **PLT10HH401100PN** | 2 | 400Ω (Typ.) | 100 | 10 |
| 4 | **PLT10HH501100PN** | 2 | 500Ω (Typ.) | 100 | 10 |
| 5 | **PLT10HH9016R0PN** | 2 | 900Ω (Typ.) | 100 | 6 |
| 6 | **PLT10HH1026R0PN** | 2 | 1000Ω (Typ.) | 100 | 6 |

| No. | Part Number | Quantity (pcs.) | Insertion Loss | Rated Voltage (Vdc) | Rated Current (A) |
|---|---|---|---|---|---|
| 7 | **BNX002-01** | 1 | 1MHz to 1GHz : 40dB min. | 50 | 10 |
| 8 | **BNX003-01** | 1 | 5MHz to 1GHz : 40dB min. | 150 | 10 |
| 9 | **BNX005-01** | 1 | 1MHz to 1GHz : 40dB min. | 50 | 15 |
| 10 | **BNX012-01** | 1 | 1MHz to 1GHz : 40dB min. | 50 | 15 |
| 11 | **BNX016-01** | 1 | 100kHz to 1GHz : 40dB min. | 25 | 15 |
| 12 | **BNX022-01** | 2 | 1MHz to 1GHz : 35dB min. | 50 | 10 |
| 13 | **BNX023-01** | 2 | 1MHz to 1GHz : 35dB min. | 100 | 15 |
| 14 | **BNX024H01** | 2 | 100kHz to 1GHz : 35dB min. | 50 | 15 |
| 15 | **BNX025H01** | 2 | 50kHz to 1GHz : 35dB min. | 25 | 15 |

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# EA

## Microwave Absorber





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(Part Number)

| EA | 1026 | A | 160 | M | 200 | 200 |
|---|---|---|---|---|---|---|
| ❶ | ❷ | ❸ | ❹ | ❺ | ❻ | ❼ |

❶Product ID

| Product ID | |
|---|---|
| EA | Microwave Absorber |

❷Sheet Type

| Code | Sheet Type |
|---|---|
| 10□□ | Iron carbonyl type (UL certified type/Halogen Free type) |
| 2070 | Metal Flake Powder (Halogen Free type) |
| 2100 | Metal Flake Powder (UL certified type) |
| 3008 | Magnetic material (UL certified type/Halogen Free type) |

❸Adhesive Tape Type

| Code | Adhesive Tape Type |
|---|---|
| A | Standard tape type (Halogen Free type) |
| B | Thin Adhesive tape type (Halogen Free type) |
| L | No tape type |
| U | UL certified type (Halogen Free type) |

❹Sheet Thickness

Expressed by 3 digits including the second decimal place in mm.

Ex.)

| Code | Sheet Thickness |
|---|---|
| 020 | 0.20mm |

❺Unit of Dimension

One capital letter expresses Unit of Dimension (❻) and Dimensions Length (❼).

| Code | Unit of Dimension |
|---|---|
| M | in mm (Standard) |
| C | in cm (Standard) |

Standard shape is a rectangle.
Please contact us for other shapes.

❻Dimension (Length)

Expressed by 3 digits including the first decimal place.

❼Dimension (Width)

Expressed by 3 digits including the first decimal place.

Ex.)

| Code | Dimension (Length × Width) |
|---|---|
| M300150 | 30.0×15.0 mm |
| C150100 | 15.0×10.0 cm |

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# EA10 Series

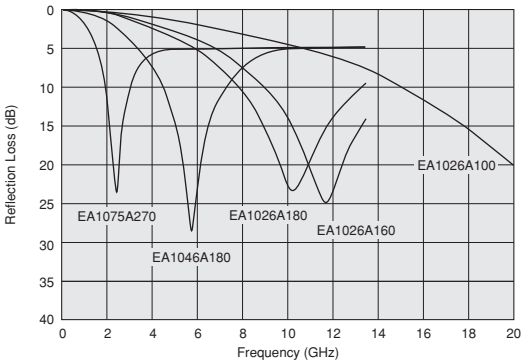
## ■ Packaging

When inquiring, please contact us with size code,
refering to "Part Numbering."

## ■ Rated Value

| Part Number | Applicable Frequency (Typ.) | Thickness (Typ.) | Flame Class | Halogen | Operating Temperature Range |
|---|---|---|---|---|---|
| **EA1026A100** | 20.0GHz | 1.0mm | UL94V-0 | Halogen Free | -40°C to +80°C |
| **EA1026A160** | 11.5GHz | 1.6mm | UL94V-0 | Halogen Free | -40°C to +80°C |
| **EA1026A180** | 10.0GHz | 1.8mm | UL94V-0 | Halogen Free | -40°C to +80°C |
| **EA1046A180** | 5.8GHz | 1.8mm | UL94V-0 | Halogen Free | -40°C to +80°C |
| **EA1075A270** | 2.5GHz | 2.7mm | UL94V-0 | Halogen Free | -40°C to +80°C |

## ■ Reflection Loss (Typ.)



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# EA20/EA21 Series



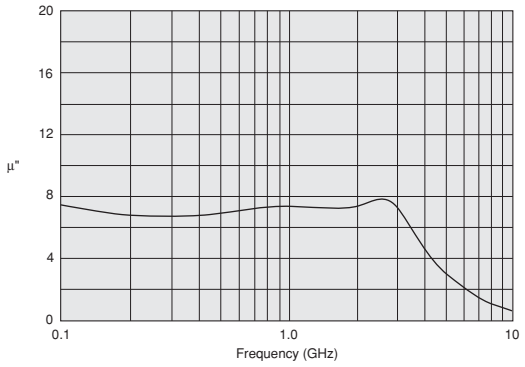
## ■ Packaging

When inquiring, please contact us with size code, refering to "Part Numbering."

## ■ Rated Value

| Part Number | Applicable Frequency (Typ.) | Thickness (Typ.) | Flame Class | Halogen | Operating Temperature Range |
|---|---|---|---|---|---|
| **EA2070A020** | 0.1 to 3.0GHz | 0.20mm | - | Halogen Free | -40°C to +120°C |
| **EA2070A050** | 0.1 to 3.0GHz | 0.50mm | - | Halogen Free | -40°C to +120°C |
| **EA2070A100** | 0.1 to 3.0GHz | 1.00mm | - | Halogen Free | -40°C to +120°C |
| **EA2070B005** | 0.1 to 3.0GHz | 0.05mm | - | Halogen Free | -40°C to +120°C |
| **EA2070B010** | 0.1 to 3.0GHz | 0.10mm | - | Halogen Free | -40°C to +120°C |
| **EA2070B013** | 0.1 to 3.0GHz | 0.13mm | - | Halogen Free | -40°C to +120°C |
| **EA2070B020** | 0.1 to 3.0GHz | 0.20mm | - | Halogen Free | -40°C to +120°C |
| **EA2070B050** | 0.1 to 3.0GHz | 0.50mm | - | Halogen Free | -40°C to +120°C |
| **EA2100A020** | 0.1 to 3.0GHz | 0.20mm | UL94V-0 | - | -40°C to +120°C |
| **EA2100A050** | 0.1 to 3.0GHz | 0.50mm | UL94V-0 | - | -40°C to +120°C |
| **EA2100A100** | 0.1 to 3.0GHz | 1.00mm | UL94V-0 | - | -40°C to +120°C |
| **EA2100B020** | 0.1 to 3.0GHz | 0.20mm | UL94V-0 | - | -40°C to +120°C |
| **EA2100B050** | 0.1 to 3.0GHz | 0.50mm | UL94V-0 | - | -40°C to +120°C |
| **EA2100B100** | 0.1 to 3.0GHz | 1.00mm | UL94V-0 | - | -40°C to +120°C |

## ■ Magnetic Permeability-Reluctance

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# EA30 Series

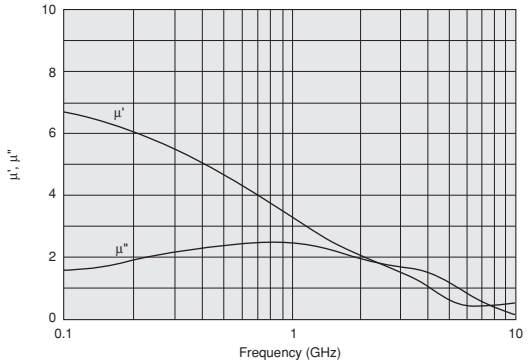
## ■ Packaging

When inquiring, please contact us with size code,
refering to "Part Numbering."

## ■ Rated Value

| Part Number | Applicable Frequency (Typ.) | Thickness (Typ.) | Flame Class | Halogen | Operating Temperature Range |
|---|---|---|---|---|---|
| **EA3008U025** | 0.1 to 3.0GHz | 0.25mm | UL94V-0 | Halogen Free | -40°C to +120°C |
| **EA3008U035** | 0.1 to 3.0GHz | 0.35mm | UL94V-0 | Halogen Free | -40°C to +120°C |
| **EA3008U050** | 0.1 to 3.0GHz | 0.50mm | UL94V-0 | Halogen Free | -40°C to +120°C |
| **EA3008U100** | 0.1 to 3.0GHz | 1.00mm | UL94V-0 | Halogen Free | -40°C to +120°C |
| **EA3008U250** | 0.1 to 3.0GHz | 2.50mm | UL94V-0 | Halogen Free | -40°C to +120°C |

## ■ Magnetic Permeability-Reluctance



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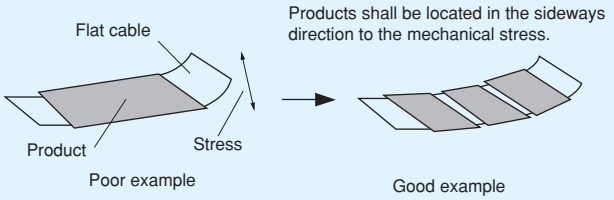
## Notice

### ● Storage and Operating Conditions

1. Adhesive Tape Stress
   This product is designed to use adhesive tape to hold itself to the object.
   And please avoid causing mechanical stress by bending or variation of the object.




2. Cleaning
   Avoid cleaning this product.
3. Handling of the Product
   Adhesive tape must be clean to maintain the quality of adhesion.
   Please wipe off any dirt, dust and any kind of oil from the surface of the object before use.
4. Storage Conditions
(1) Storage period
   Products that were inspected by Murata over 6 months ago should be examined and used. This can be confirmed by the inspection No. marked on the container.
   Adhesiveness should be checked if this period is exceeded.
(2) Storage conditions
   · Products should be stored in the warehouse in the following conditions:
      Temperature: -10 to +40˚C
      Humidity: 30 to 70% relative humidity
      No rapid change of temperature or humidity
   · Products should be stored in the warehouse without heat shock condition, vibration, direct sunlight and so on.

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# Product Guide by Size

| Which Size? inch (mm) | Inductor Type | Capacitor Type: Simple Capacitor | Capacitor Type: LC(RC) Combined | Capacitor Type: T Circuit Filter Feed Through Type | Common Mode Choke Coils | Block Type L×W×T(mm) |
|---|---|---|---|---|---|---|
| 01005 (0402) | BLM02AX p24<br>BLM02BX p26 | | | | | |
| 0201 (0603) | BLM03AG p32<br>BLM03AX p30<br>BLM03B p34<br>BLM03E p87<br>BLM03P p27<br>BLM03H p85 | | | | | 12×11×max13 p223<br>BNX002-01<br>BNX003-01<br>Lead |
| 025020 (0605) | | | | | DLP0QS p186 | |
| 03025 (0806) | | | | | DLP0NS p187 | |
| 0402 (1005) | BLM15AG p42<br>BLM15AX p40<br>BLM15B p44<br>BLM15HD p88<br>BLM15P p36<br>BLM15HB p88<br>BLM15E p90<br>BLM15GG p91<br>BLM15HG p88<br>BLM15GA p91 | NFM15CC p134<br>NFM15PC p123 | NFL15ST p140 | | | |
| 05025 (1506) | | | | | DLP1ND p193 | 12×11×max13.5 p223<br>BNX005-01<br>Lead |
| 0504 (1210) | | | | | DLM11G p184<br>DLM11S p185<br>DLP11S/11R/11T [p189 p190 p191] | |
| 0603 (1608) | BLM18A p56<br>BLM18E p96<br>BLM18T p62<br>BLM18HE p92<br>BLM18B p58<br>BLM18HG p92<br>BLM18R p63<br>BLM18HD p92<br>BLM18P p50<br>BLM18HB p92<br>BLM18K p52<br>BLM18HK p92<br>BLM18S p54<br>BLM18G p98 | NFM18CC p135<br>NFM18PS p125<br>NFM18PC p126 | NFL18ST [p141 p142]<br>NFL18SP p143 | | | |
| Array | | | NFA18SL [p145 p146]<br>NFA18SD p147 | | | 12×11×max8.5 p224<br>BNX012-01<br>BNX016-01<br>Lead |
| 0804 (2010) Array | BLA2AA p80<br>BLA2AB p80 | | | | DLP2AD p194 | |
| 0805 (2012) | BLM21A p68<br>BLM21R p73<br>BLM21B p70<br>BLM21P p66 | NFM21CC p136<br>NFM21PS p128<br>NFM21PC p129 | NFL21SP p144<br>NFR21GD p152 | | DLW21S p197<br>DLW21H p199 | |
| Array | | | NFA21SL [p148 p149] | | | |
| 1205 (3212) | | NFM3DCC p137<br>NFM3DPC p130 | | | | |
| 1206 (3216) | BLM31P p75 | NFM31PC p131<br>NFM31KC p132 | NFW31SP p150 | NFE31PT p121 | DLP31S p192<br>DLW31S p200 | 9.1×12.1×max3.3 p221<br>BNX022-01<br>BNX023-01<br>SMD |
| Array | BLA31A p83<br>BLA31B p83 | | NFA31CC p139<br>NFA31GD p153 | | DLP31D p196 | |
| 1210 (3225) | BLE32P p79 | | | | | |
| 1806 (4516) | BLM41P p77 | NFM41CC p138<br>NFM41PC p133 | | | | |
| 1812 (4532) | | | | | DLW43S p201 | 9.1×12.1×max3.7 p221<br>BNX024H01<br>BNX025H01<br>SMD |
| 2014 (5036) | | | | | DLW5AH p177<br>DLW5AT [p179 p181] | |
| 2020 (5050) | | | | | DLW5BS p177<br>DLW5BT [p179 p181] | |
| 2606 (6816) | | | | NFE61PT p122 | | |

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# Part Number Quick Reference



# Alphabetic Product Name Index



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Please refer to catalogs below for ferrite cores, Microwave Absorber and leaded EMIFIL®.

## Ferrite Core, Microwave Absorber

### Ferrite Corefor EMI Suppression Microwave Absorber

Contents
- Thin Type Sandwich Core <FSSA>
- Core for Flat Cables <FSRC>
- Beads Core <FSRH>
- Ring Core <FSRB>
- Microwave Absorber <EA>

This Catalog is PDF version only. Please refer to following URL.
http://www.murata.com/products/catalog/pdf/o63e.pdf


## Lead Type EMIFIL®

### EMI Suppression Filters (Lead Type EMIFIL®)

Contents
- Ferrite Beads Inductors <BL01/02/03>
- Disc Type EMIFIL®<DS□6/DS□9>
- EMIGUARD®(EMIFIL® with Varistor Function) <VF□3/VF□6/VF□9>
- Common Mode Choke Coils <PLT>

# EMICON-FUN!

Please check Murata's newsletter!
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http://www.murata.com/products/emicon_fun/

EMICON-FUN! disseminated widely from basics (principles, characteristics, mounting, etc.) of capacitors, EMI suppression filters and inductors to information can practically be used.
Updated information is also distributed via the mail magazine.

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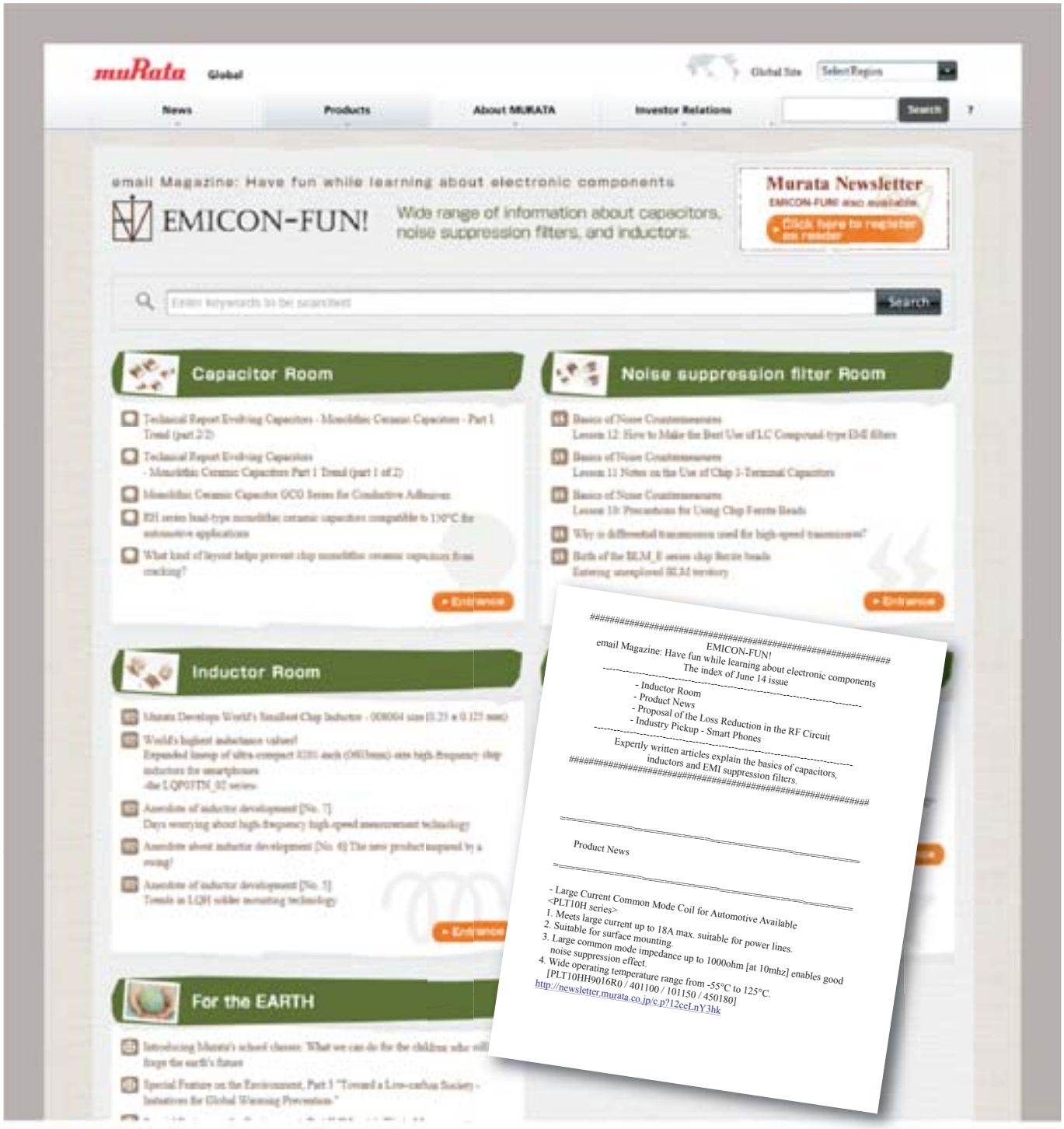


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Cat. No. C31E-26

# Global Locations

For details please visit www.murata.com

## ⚠Note

**1 Export Control**

*For customers outside Japan:*

No Murata products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.

*For customers in Japan:*

For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.

**2** Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.

1. *Aircraft equipment*
2. *Aerospace equipment*
3. *Undersea equipment*
4. *Power plant equipment*
5. *Medical equipment*
6. *Transportation equipment (vehicles, trains, ships, etc.)*
7. *Traffic signal equipment*
8. *Disaster prevention / crime prevention equipment*
9. *Data-processing equipment*
10. *Application of similar complexity and/or reliability requirements to the applications listed above*

**3** Product specifications in this catalog are as of March 2014. They are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product engineers.

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**5** This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

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**7** No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.

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INNOVATOR IN ELECTRONICS

# Mouser Electronics

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