

# DC Line Filters



## Vol. 12



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## SH Series

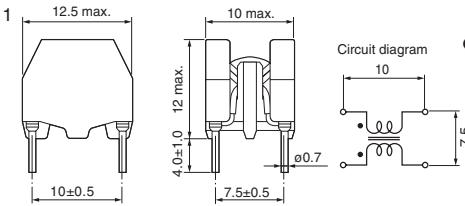
[RoHS Compliant]



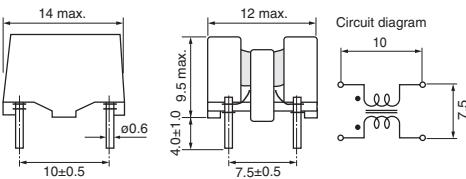
Model	Rated voltage DC (V)	Rated current (A)	Inductance (μH) min.	DC resistance (mΩ/Line) max.	Operating temperature range (°C)	Shape and dimensions
<b>SH-101</b>	150	3.0	0.35	16	-25~+80	
<b>SH-102</b>	150	3.0	1.5	26	-25~+80	
<b>SH-201</b>	150	3.0	0.5	16	-25~+80	
<b>SH-202</b>	150	3.0	1.5	20	-25~+80	
<b>SH-301</b>	150	3.0	3.2	22	-25~+80	
<b>SH-302</b>	150	3.0	7.5	26	-25~+80	
<b>SH-211</b>	150	3.0	0.5	18	-25~+80	
<b>SH-212</b>	150	3.0	1.5	23	-25~+80	
<b>SH-311</b>	150	3.0	3.2	25	-25~+80	Fig. 1
<b>SH-312</b>	150	3.0	7.5	30	-25~+80	
<b>SH-121</b>	50	3.0	0.35	11	-25~+80	
<b>SH-122</b>	50	3.0	1.5	20	-25~+80	
<b>SH-321</b>	50	3.0	3.5	14	-25~+80	Fig. 3
<b>SH-322</b>	50	3.0	7.5	20	-25~+80	
<b>SH-132</b>	50	2.4	2.6	51	-25~+60	
<b>SH-432</b>	50	2.4	30.0	51	-25~+60	Fig. 4
for 3 lines <b>SH-S132</b>	50	1.0	1.7	81	-25~+80	Fig. 5

## Shape and Dimensions/Circuit Diagram

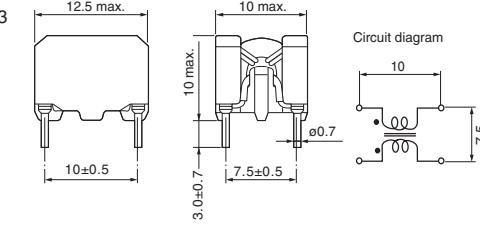
●Fig. 1



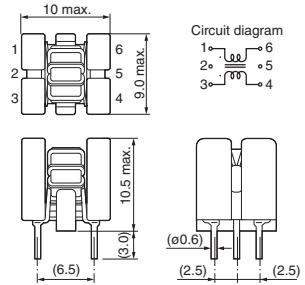
●Fig. 2



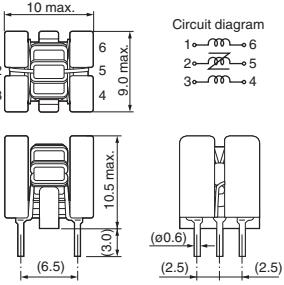
●Fig. 3



●Fig. 4



●Fig.5

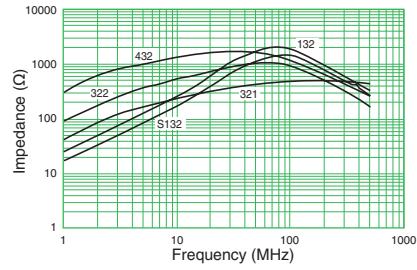
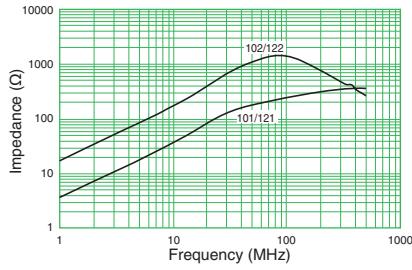
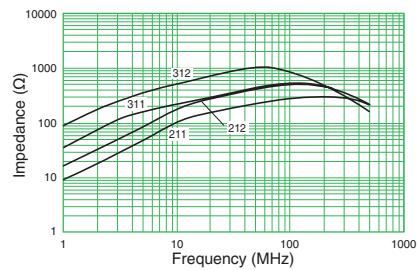
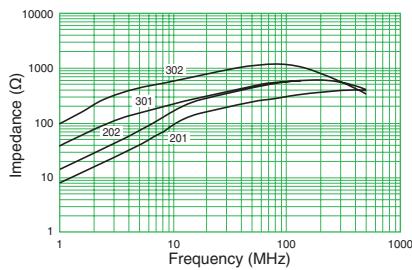


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## Impedance vs. Frequency



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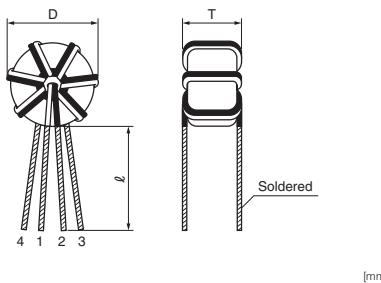
## SHO Series

[RoHS Compliant]

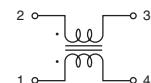


Model	Rated voltage DC (V)	Rated current (A)	Inductance ( $\mu$ H) min.	DC resistance (m $\Omega$ /Line) max.	Operating temperature range (°C)	Dimensions(mm)		
						D	T	$\ell$
SHO-101	50	4.0	2.0	15.5	-25~+70	11Max.	7.5Max.	10±3
SHO-102	50	4.0	0.6	10.0	-25~+70	11Max.	7.5Max.	10±3
SHO-301	50	4.0	12.0	15.5	-25~+70	11Max.	7.5Max.	10±3
SHO-302	50	4.0	3.9	10.0	-25~+70	11Max.	7.5Max.	10±3
SHO-303	50	5.0	6.0	8.0	-25~+75	11Max.	8Max.	10±3
SHO-402	50	0.8	99.0	120.0	-25~+80	7.5Max.	5Max.	4±2
SHO-501	50	0.8	17.5	105.0	-25~+80	6.2Max.	3.4Max.	4±2

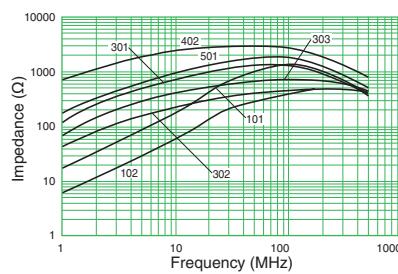
## Shape and Dimensions



## Circuit Diagram



## Impedance vs. Frequency



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# SBT-03W Series

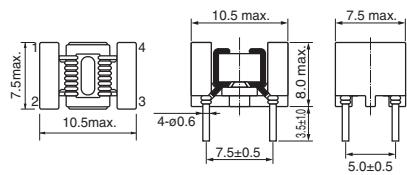
[RoHS Compliant]



Model	Rated voltage DC (V)	Rated current (A)	Inductance (100kHz, 1mA) (μH) min.	DC resistance (mΩ) max.	Operating temperature range (°C)	Wire size (mm²)	Packaging
<b>SBT-0308W</b>	50	3.0	6.75	20	-25~+85	0.4	
<b>SBT-0310W</b>	50	2.5	7.7	30	-25~+80	0.35	
<b>SBT-0315W</b>	50	2.0	11.9	45	-25~+75	0.3	Bulk (100 pcs.)

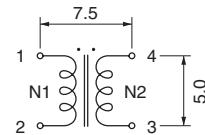
• Withstanding voltage: 200VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (100VDC, between lines)

## Shape and Dimensions



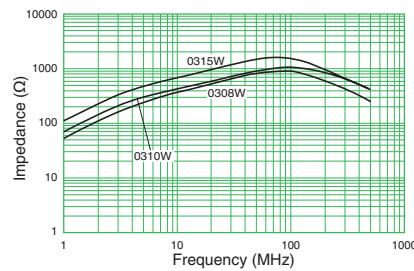
[mm]

## Circuit Diagram



[mm]

## Impedance vs. Frequency



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# SBT-01W Series

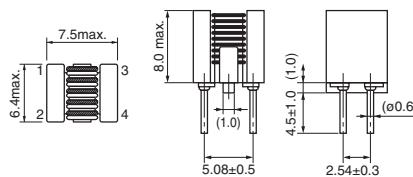
[RoHS Compliant]



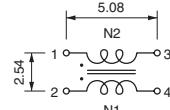
Model	Rated voltage DC (V)	Rated current (mA)	Inductance (1kHz, 70mA) (μH)	DC resistance (mΩ) max.	Operating temperature range (°C)	Packaging
<b>SBT-0115W</b>	50	500	$\geq 5$	30	-25~+70	
<b>SBT-0140W</b>	50	500	$40 \pm 35\%$	40	-25~+70	
<b>SBT-0160W</b>	50	500	$60 \pm 35\%$	45	-25~+70	
<b>SBT-0180W</b>	50	500	$80 \pm 35\%$	55	-25~+70	Bulk (100 pcs.)

• Withstanding voltage: 200VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (100VDC, between lines)

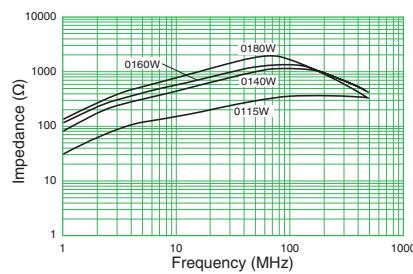
## Shape and Dimensions



## Circuit Diagram



## Impedance vs. Frequency



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# Toroidal Cores with Wound Cables

[RoHS Compliant]

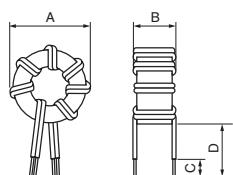


Model	Core	Dimensions (mm)				No. of turns	Wire	Winding status	Frequency range (MHz)
		A	B	C	D				
<b>ESD-H-12E</b>	ESD-R-12C	16	20	5	25	7	UL1007 AWG26 (ø0.4)	Bi-filar winding	~300
<b>ESD-H-14U</b>	ESD-R-14A	17.5	7	5	15	10	UL1609 AWG26 (ø0.4)	Bi-filar winding	~100
<b>ESD-H-14NU</b>	ESD-R-14C2	17.5	7	5	15	10	UL1609 AWG26 (ø0.4)	Bi-filar winding	~300

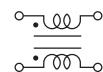
• Recommended soldering conditions: 350±10°C, 2 to 3 sec. • Rated current:1A • Rated Voltage: 125V

## Shape and Dimensions

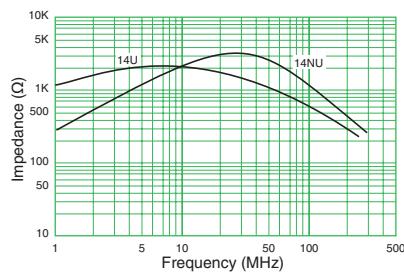
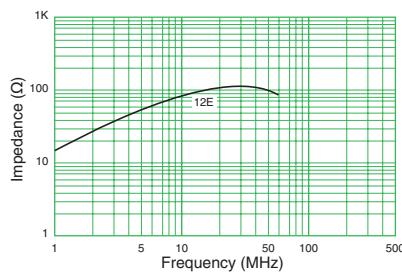
●ESD-H Series



## Circuit Diagram



## Impedance vs. Frequency

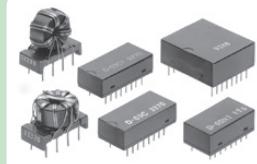


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# DIP Noise Filters

## D-03C, 03C1, 05N1, 07C1, 08C2, 08C2A

[RoHS Compliant]

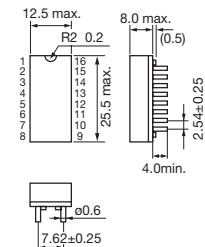


Model	Circuit diagram	Number of terminals/Circuits	Rated voltage DC (V)	Rated current DC (mA/Line)	DC resistance (mΩ/Line) max.	Operating temperature range (°C)	
D-03C		4 cores	16P/2 circuits x 4 Common mode	50	150	75	-20~+70
D-03C1					100	150	-20~+70
D-05N1		8 cores	16P/8 circuits Normal mode	50	100	10	-20~+70
D-07C1		1 core	16P/8 circuits Common mode	50	300	100	-20~+70
D-08C2		1 core	8P/4 circuits Common mode	50	2300	25	-20~+70
D-08C2A		1 core	8P/4 circuits Common mode	50	500	70	-25~+65

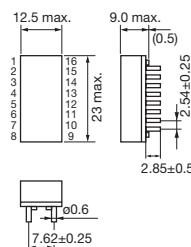
• Withstanding voltage: 200VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (100VDC, between lines)

### Shape and Dimensions

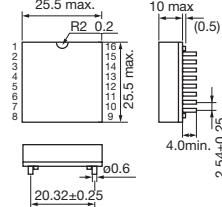
●D-03C, 03C1



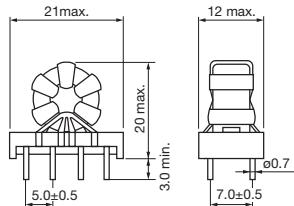
●D-05N1



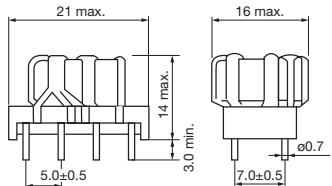
●D-07C1



●D-08C2



●D-08C2A

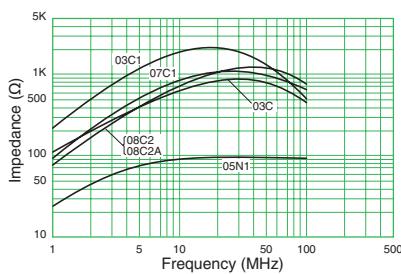


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## Impedance vs. Frequency



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# DIP Noise Filters

## D-16C

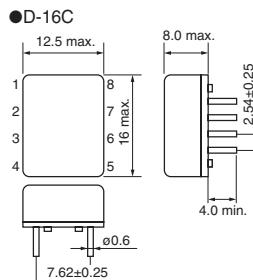
[RoHS Compliant]



Model	Circuit diagram	Number of terminals/Circuits	Rated voltage DC (V)	Rated current DC (mA/Line)	DC resistance (mΩ/Line) max.	Operating temperature range (°C)
<b>D-16C</b>		8P/4 circuits Common mode	50	100	50	-20~+70

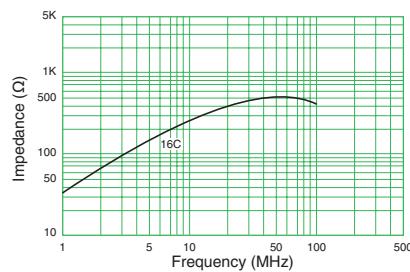
• Withstanding voltage: 200VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (100VDC, between lines)

### Shape and Dimensions



[mm]

### Impedance vs. Frequency

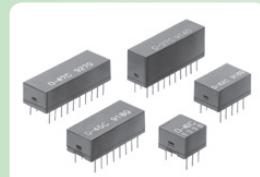


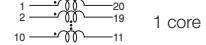
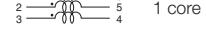
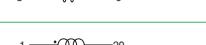
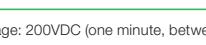
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# DIP Noise Filters

## D-37C, 40C, 42C, 45C, 47C

[RoHS Compliant]

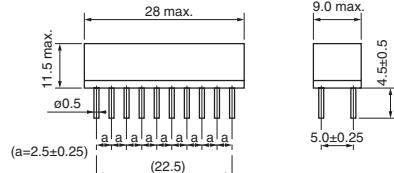


Model	Circuit diagram	Number of terminals/Circuits	Rated voltage DC (V)	Rated current DC (mA/Line)	DC resistance (mΩ/Line) max.	Operating temperature range (°C)	
D-37C		1 core	20P/10 circuits Common mode	50	300	200	-20~+70
D-40C		1 core	6P/3 circuits Common mode	50	300	200	-20~+70
D-42C		1 core	10P/5 circuits Common mode	50	300	200	-20~+70
D-45C		1 core	16P/8 circuits Common mode	50	300	150	-20~+70
D-47C		1 core	20P/10 circuits Common mode	50	300	200	-20~+70

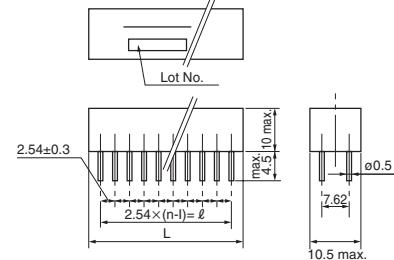
• Withstanding voltage: 200VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (100VDC, between lines)

### Shape and Dimensions

●D-37C



●D-40C,42C,45C,47C,



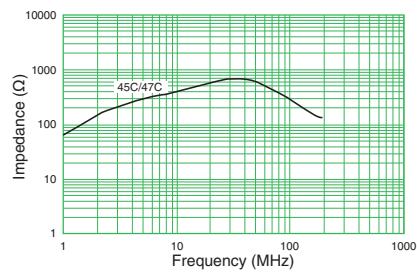
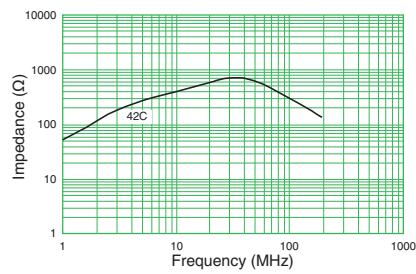
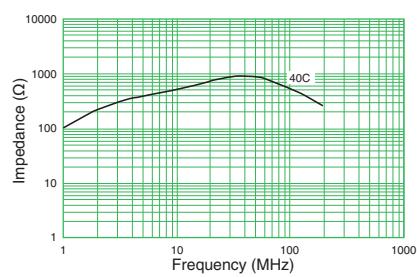
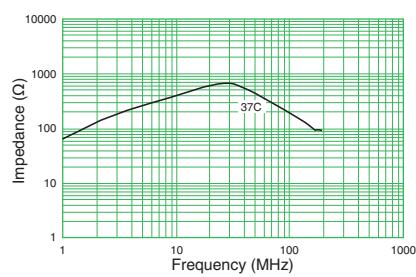
Model	Number of Circuits	$l$	L
D-40C	3	5.08	12.7 max.
D-42C	5	10.16	18 max.
D-45C	8	17.78	25 max.
D-47C	10	22.86	28 max.

[mm]



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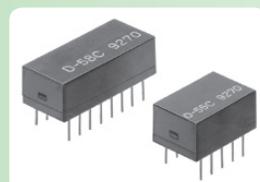


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# DIP Noise Filters

## D-55C, 58C

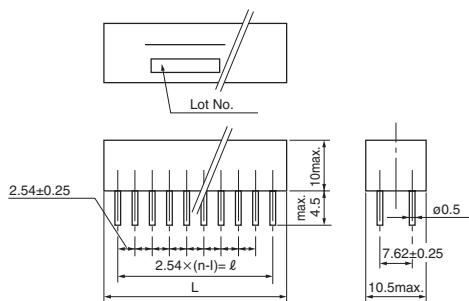
[RoHS Compliant]



Model	Circuit diagram	Number of terminals/Circuits	Rated voltage DC (V)	Rated current DC (mA/Line)	DC resistance (mΩ/Line) max.	Operating temperature range (°C)	
<b>D-55C</b>		1 core	10P/5 circuits Common mode	50	300	200	-20~+70
<b>D-58C</b>		1 core	16P/8 circuits Common mode	50	300	200	-20~+70

• Withstanding voltage: 200VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (100VDC, between lines)

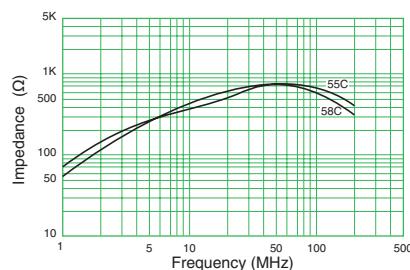
### Shape and Dimensions



Model	Number of Circuits	$\ell$	L
<b>D-55C</b>	5	10.16	18 max.
<b>D-58C</b>	8	17.78	25 max.

[mm]

### Impedance vs. Frequency



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# Noise Filters for Telephone Sets

## ST-101, 201, 202, 202S

[RoHS Compliant]

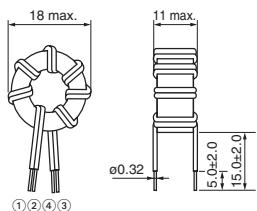


Model	Frequency range (MHz)	Impedance (kΩ) min.	Rated voltage DC (V)	Rated current (mA)	DC resistance (mΩ/Line) max.	Operating temperature range (°C)	Remarks
ST-101	0.5~7	3 (at 0.5 MHz)	50	200	180	-20~+75	AM band
ST-201	7~40	1.5 (at 7 MHz)	50	200	100	-20~+75	FM band
ST-202	7~100	0.6 (at 100 MHz)	50	1000	40	-20~+75	FM band
ST-202S	7~100	0.6 (at 100 MHz)	50	1000	35	-20~+75	FM band

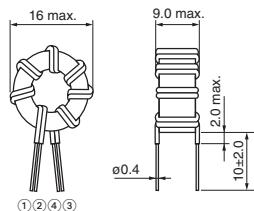
- Withstanding voltage: 500VDC (one minute, between lines)
- Insulation resistance: more than 10MΩ (250VDC, between lines)
- Recommended soldering conditions: 350±10°C, 2 to 3 sec.

### Shape and Dimensions/Circuit Diagram

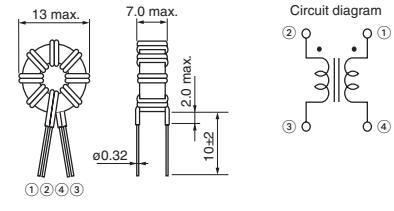
●ST-101, 201



●ST-202

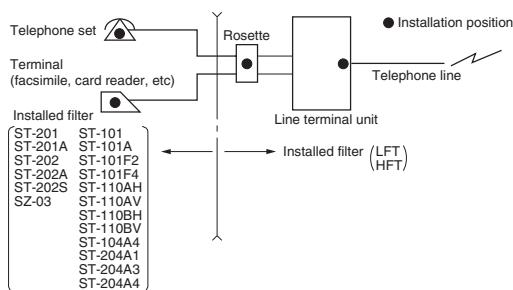


●ST-202S



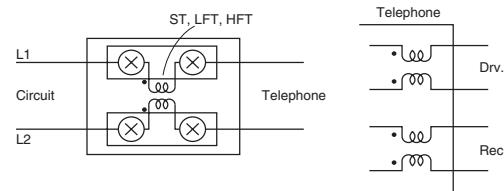
[mm]

### Installation Examples

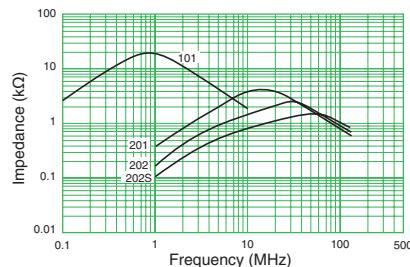


### Design Examples

① Installation at rosette or circuit input/output      ② Insertion in Driver/Receive circuit in telephone



### Impedance vs. Frequency



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# Noise Filters for Telephone Sets

## ST-101A, 201A, 202A

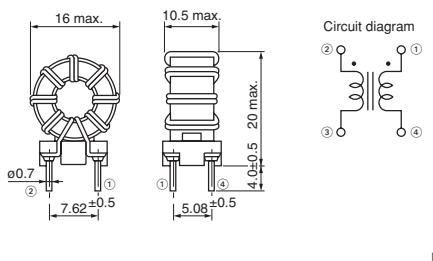
[RoHS Compliant]



Model	Frequency range (MHz)	Impedance (kΩ) min.	Rated voltage DC (V)	Rated current (mA)	DC resistance (mΩ/Line) max.	Operating temperature range (°C)	Remarks
ST-101A	0.5~7	3 (at 0.5 MHz)	50	200	250	-20~+65	AM band
ST-201A	7~40	1.5 (at 7 MHz)	50	200	150	-20~+65	FM band
ST-202A	7~100	0.6 (at 100 MHz)	50	1000	50	-20~+65	FM band

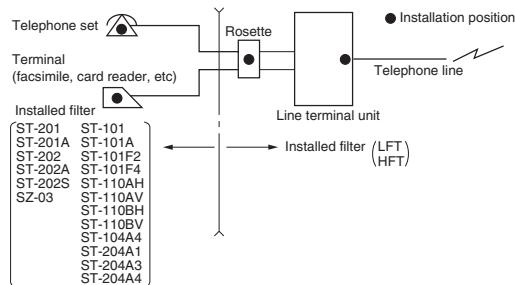
• Withstanding voltage: 500VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (100VDC, between lines)

### Shape and Dimensions/Circuit Diagram

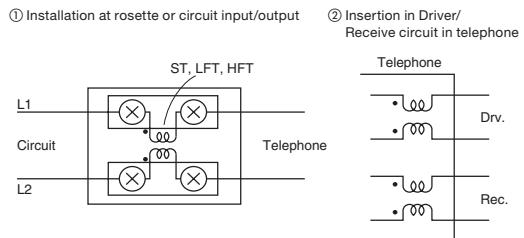


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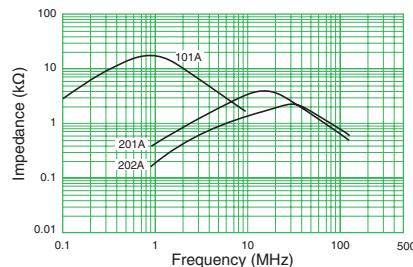
### Installation Examples



### Design Examples



### Impedance vs. Frequency



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# Noise Filters for Telephone Sets

## ST-110AV, 110AH, 110BV, 110BH

[RoHS Compliant]

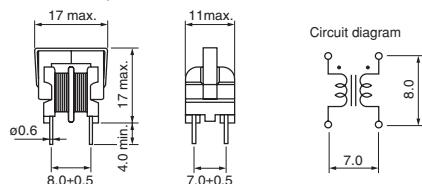


Model	Frequency range (MHz)	Impedance (kΩ) min.	Rated voltage DC (V)	Rated current (mA)	DC resistance (Ω/Line) max.	Operatings temperature range (°C)	Remarks
ST-110AV	0.5~7	27 (at 0.5 MHz)	50	300	3	-20~+75	AM band
ST-110AH	0.5~7	27 (at 0.5 MHz)	50	300	3	-20~+75	AM band
ST-110BV	0.5~7	150 (Resonant)	50	150	7.5	-20~+75	AM band
ST-110BH	0.5~7	150 (Resonant)	50	150	7.5	-20~+75	AM band

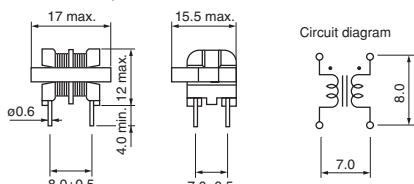
• Withstanding voltage: 500VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (250VDC, between lines)

### Shape and Dimensions/Circuit Diagram

#### ●ST-110AV, ST-110BV

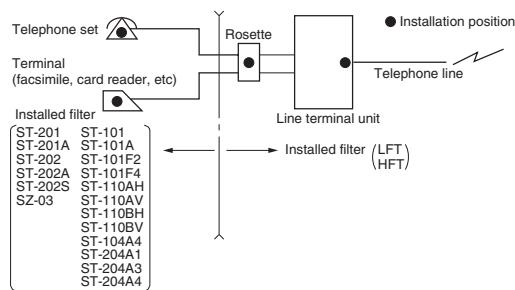


#### ●ST-110AH, ST-110BH



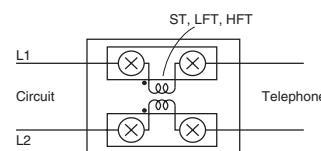
[mm]

### Installation Examples

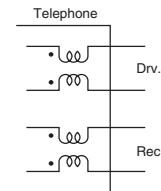


### Design Examples

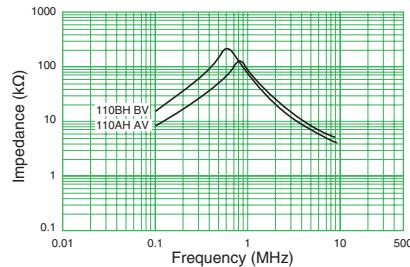
#### ① Installation at rosette or circuit input/output



#### ② Insertion in Driver/Receive circuit in telephone



### Impedance vs. Frequency



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# Noise Filters for Telephone Sets

## ST-101F2, 101F4

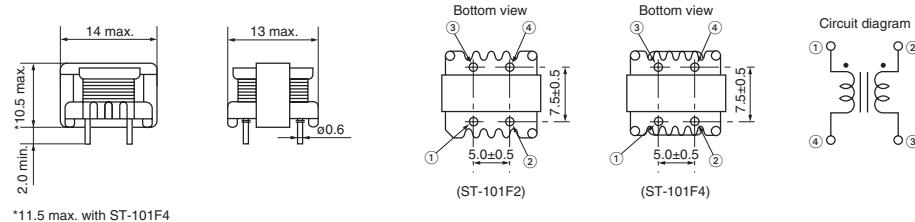
[RoHS Compliant]



Model	Frequency range (MHz)	Impedance (kΩ) min.	Rated voltage DC (V)	Rated current (mA)	DC resistance (Ω/Line) max.	Operatings temperature range (°C)	Remarks
ST-101F2	0.5~7	40 (at 600 kHz)	50	200	2.7	-20~+75	AM band
ST-101F4	0.5~7	60 (at 600 kHz)	50	200	3.5	-20~+75	AM band

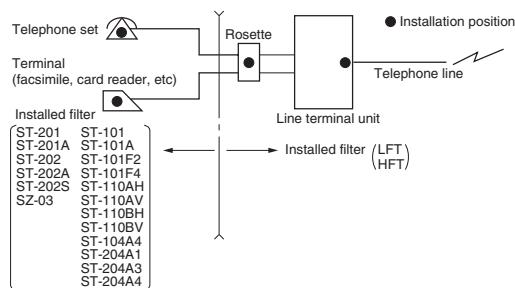
• Withstanding voltage: 500VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (250VDC between lines)

### Shape and Dimensions/Circuit Diagram

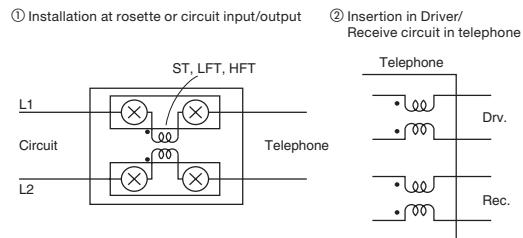


[mm]

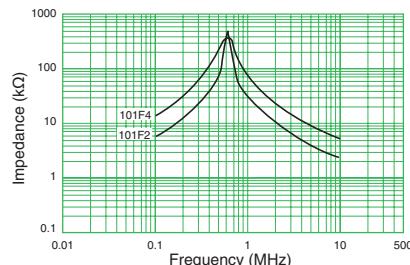
### Installation Examples



### Design Examples



### Impedance vs. Frequency



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# Noise Filters for Telephone Sets

## ST-104A4, 204A Series

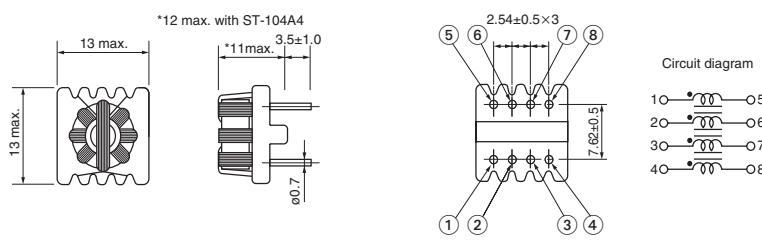
[RoHS Compliant]



Model	Frequency range (MHz)	Impedance (kΩ) min.	Rated voltage DC (V)	Rated current (mA)	DC resistance (Ω/Line) max.	Operatings temperature range (°C)	Remarks
ST-104A4	0.5~7	3.0 (at 0.5 MHz)	50	500	0.36	-20~+75	AM band
ST-204A1	7~100	0.25 (at 10 MHz)	50	500	0.10	-20~+75	FM band
ST-204A3	7~40	1.0 (at 7 MHz)	50	500	0.17	-20~+75	FM band
ST-204A4	7~40	0.6 (at 7 MHz) REF	50	500	0.12	-20~+75	FM band

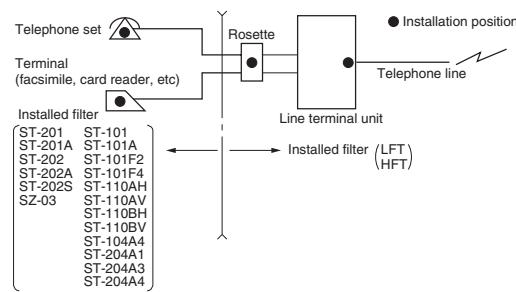
• Withstanding voltage: 500VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (250VDC, between lines)

### Shape and Dimensions/Circuit Diagram



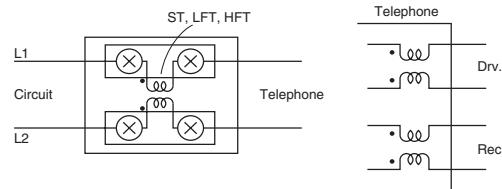
[mm]

### Installation Examples

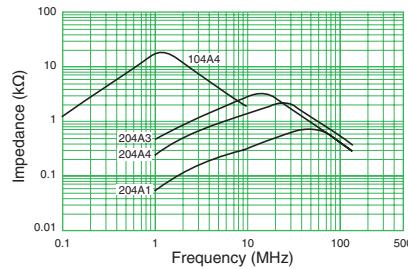


### Design Examples

① Installation at rosette or circuit input/output      ② Insertion in Driver/Receive circuit in telephone



### Impedance vs. Frequency



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## SBT Series

[RoHS Compliant]



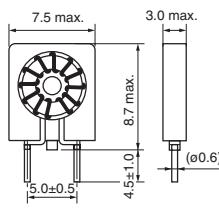
- Tape and Reel Dimensions (see page 28)

Model	Rated voltage DC (V)	Rated current (mA)	Inductance (1kHz, 70mA) (μH)	DC resistance (mΩ) max.	Operating temperature range (°C)	Packaging
SBT-0208□	50	500	8±50%	20	-25~+70	
SBT-0210□	50	500	10±50%	20	-25~+70	
SBT-0240□	50	500	40±35%	34	-25~+70	
SBT-0260□	50	500	60±35%	50	-25~+70	Bulk (100pcs.)

- □Taping (2000 pcs./ reel x 6), □Flat taping (1000pcs./ box x 10)

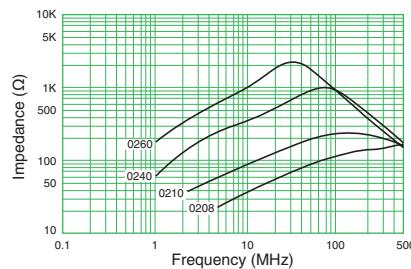
## Shape and Dimensions

●SBT-02□□



[mm]

## Impedance vs. Frequency



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# SNT Series

[RoHS Compliant]



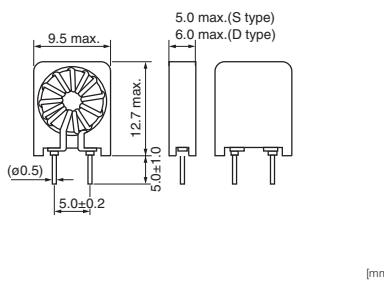
- Tape and Reel Dimensions (see page 28)

Model	Rated current*	Inductance ( $\mu$ H) min.	DC resistance (m $\Omega$ ) max.	Operating temperature range ( $^{\circ}$ C)	Packaging
SNT-S10□	3.0	1.5	25	-20~+60	
SNT-S20□	1.5	6	35	-20~+60	
SNT-S30□	0.5	13	95	-20~+60	
SNT-D10□	3.0	2.5	25	-20~+60	
SNT-D20□	1.5	10	45	-20~+60	
SNT-D30□	0.5	20	98	-20~+60	

\*The rated current is for the wire and it is different from the inductance guaranteeing values.

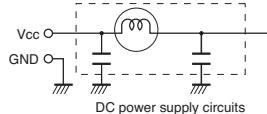
• □Taping (1000 pcs./ reel) • □Flat taping (SNT-S type: 1000 pcs./ reel), (SNT-D type: 500 pcs./ reel)

## Shape and Dimensions

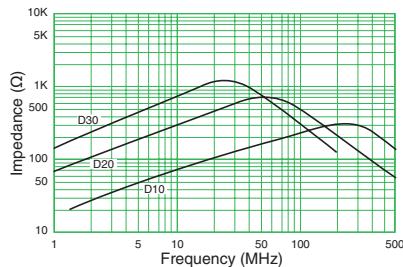
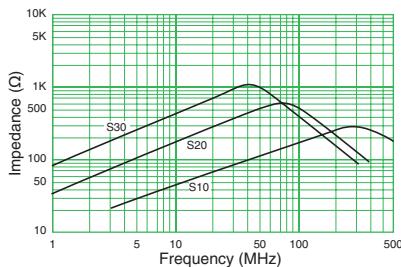


## Design Examples

- For noise suppression in the secondary low-voltage power supply circuit



## Impedance vs. Frequency



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# Bead Inductors (Lead Type)

[RoHS Compliant]

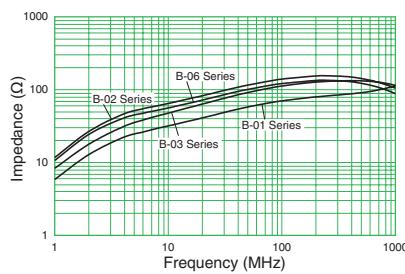


Model	Rated current DC (A)	Impedance (Ω)	Operating temperature range (°C)
<b>B-01-Series</b>		2 (at 1 MHz)	
<b>B-02-Series</b>		4 (at 1 MHz)	
<b>B-03-Series</b>		5 (at 1 MHz)	
<b>B-06-Series</b>	5	40 (at 10 MHz)	-20~+70

Note: Rated current values are not guaranteed by impedance levels; these values are permissible levels when the lead wire temperature rise is 20°C.

Model	Shape	Packaging
<b>B-01-R</b>	Single-bead, radial-lead	Bulk type (100 pcs./bag)
<b>B-01-RT</b>	Single-bead, radial-lead	Tape type (2000 pcs./reel)
<b>B-01-RTF</b>	Single-bead, radial-lead	Tape type (2000 pcs./box)
<b>B-01-RS</b>	Single-bead, radial-lead	Bulk type (100 pcs./bag)
<b>B-01-RTS</b>	Single-bead, radial-lead	Tape type (2000 pcs./reel)
<b>B-01-RTSF</b>	Single-bead, radial-lead	Tape type (2000 pcs./box)
<b>B-01-A</b>	Single-bead, axial-lead	Bulk type (100 pcs./bag)
<b>B-01-A1</b>	Single-bead, axial-lead	Bulk type (250 pcs./bag)
<b>B-01-A2</b>	Single-bead, axial-lead	Bulk type (250 pcs./bag)
<b>B-01-AT</b>	Single-bead, axial-lead	Tape type (5000 pcs./reel)
<b>B-01-ATF</b>	Single-bead, axial-lead	Tape type (1500 pcs./box)
<b>B-01-AT1F</b>	Single-bead, axial-lead	Tape type (2000 pcs./box)
<b>B-02-R</b>	Double-bead, radial-lead	Bulk type (100 pcs./bag)
<b>B-02-RT</b>	Double-bead, radial-lead	Tape type (2000 pcs./reel)
<b>B-02-RTF</b>	Double-bead, radial-lead	Tape type (1500 pcs./box)
<b>B-03-R</b>	Double-bead, radial-lead	Bulk type (100 pcs./bag)
<b>B-03-RT</b>	Double-bead, radial-lead	Tape type (2000 pcs./reel)
<b>B-06-R-25</b>	Double-bead, radial-lead	Bulk type (100 pcs./bag)
<b>B-06-RTF-25</b>	Double-bead, radial-lead	Tape type (1500 pcs./reel)
<b>B-06-R-50</b>	Double-bead, radial-lead	Bulk type (100 pcs./bag)
<b>B-06-RTF-50</b>	Double-bead, radial-lead	Tape type (1500 pcs./box)

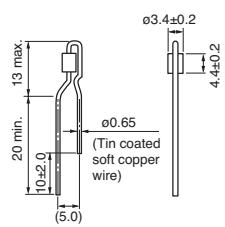
## Impedance Characteristics



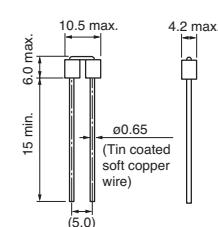
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## Shape and Dimensions

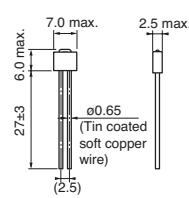
## ●B-01-R Series



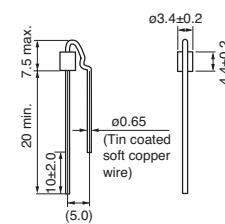
## ●B-02-R Series



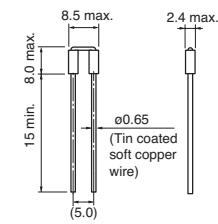
## ●B-06-R-25 Series



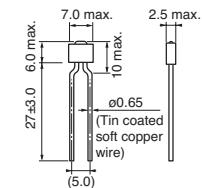
## ●B-01-RS Series



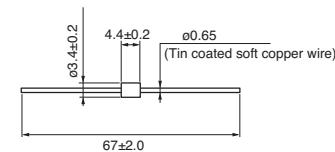
## ●B-03-R Series



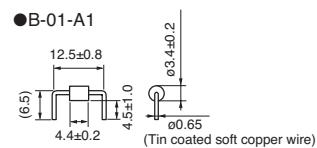
## ●B-06-R-50 Series



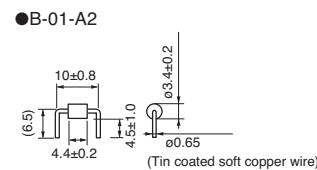
## ●B-01-A Series



## ●B-01-A1



## ●B-01-A2



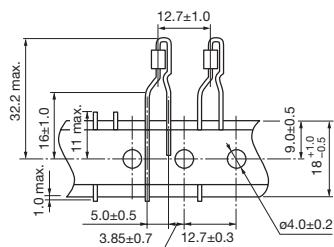
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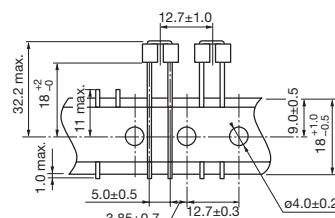
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## Tape and Reel Dimensions

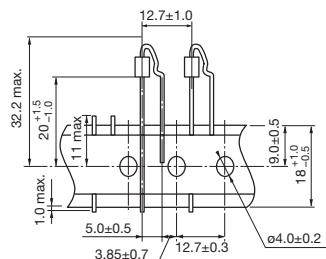
## ●B-01-RT • RTF



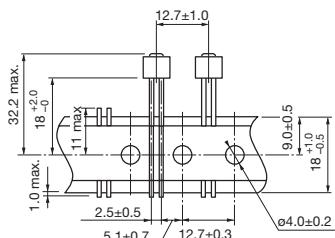
## ●B-02-RT • RTF/B-03-RT



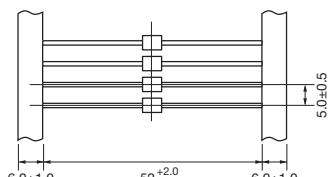
## ●B-01-RTS • RTSF



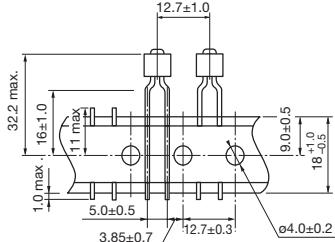
## ●B-06-RTF-25



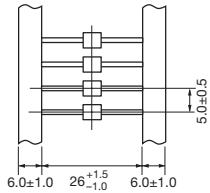
## ●B-01-AT • ATF



## ●B-06-RTF-50



## ●B-01-AT1F



[mm]



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# Bead Inductors (Winding Type)

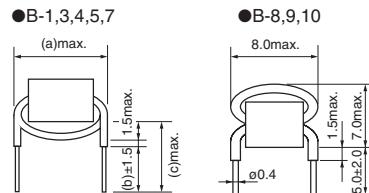
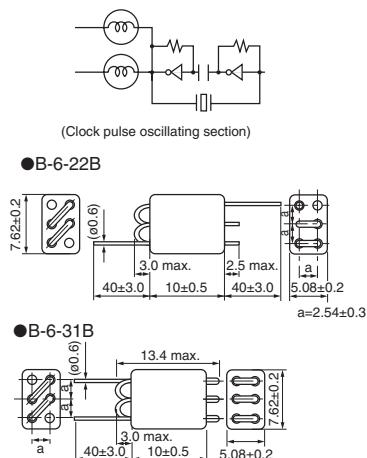
[RoHS Compliant]



Model	Rated current DC(A)	Core	Wire	No. of turns
<b>B-1</b>	1.5	B-20F-28	Teflon wire (ø0.26 : single) / Color: White	2T
<b>B-3</b>	3.5	B-20L-48B	Teflon wire (ø0.51 : single) / Color: Red	2T
<b>B-4</b>	1.5	B-20L-44	Teflon wire (ø0.26 : single) / Color: White	2T
<b>B-5</b>	1.5	B-20L-44	Teflon wire (ø0.26 : single) / Color: White	3T
<b>B-7</b>	2.5	B-20F-28	Teflon wire (ø0.32 : single) / Color: Green	2T
<b>B-8</b>	2.5	B-20L-48B	Teflon wire (ø0.4 : single) / Color: Blue	2T
<b>B-9</b>	2.5	B-20L-48B	Teflon wire (ø0.4 : single) / Color: Yellow	3T
<b>B-10</b>	2.5	B-20L-48B	Teflon wire (ø0.4 : single) / Color: Black	4T
<b>B-6-22B</b>	2.0	—	Soft copper wire (ø0.6)	—
<b>B-6-31B</b>	2.0	—	Soft copper wire (ø0.6)	—

Note: Rated current values are not guaranteed by impedance levels; these values are permissible levels when the lead wire temperature rise is 20°C.

## Shape and Dimensions



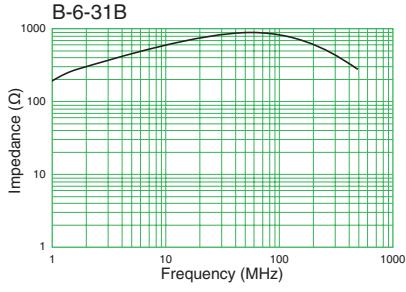
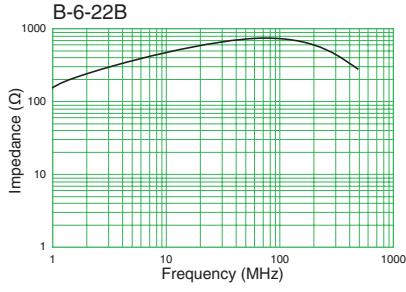
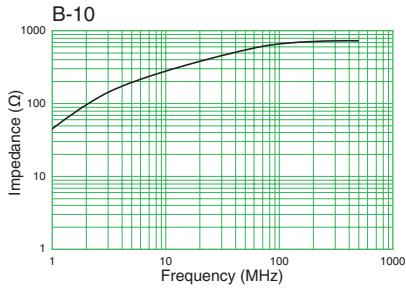
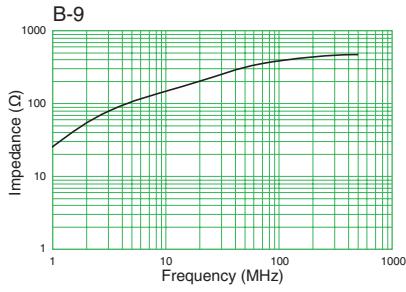
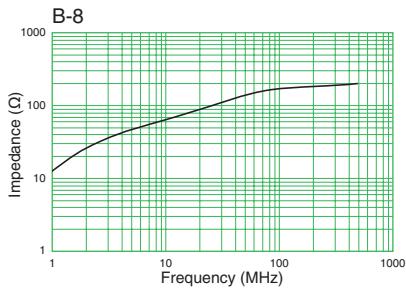
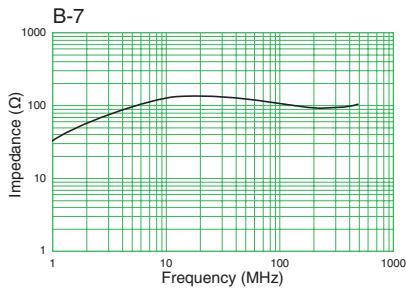
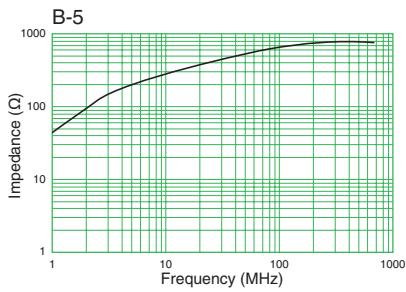
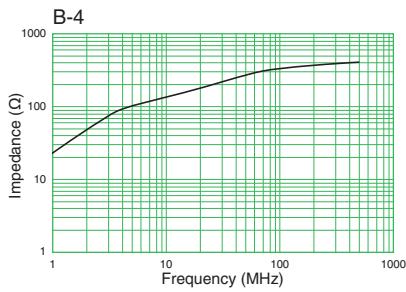
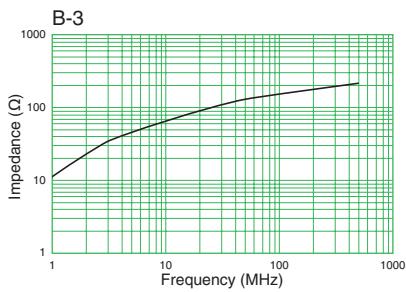
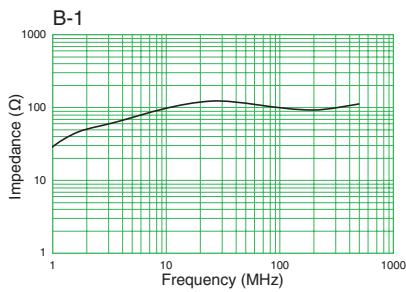
Model	(a)	(b)	(c)
<b>B-1</b>	5.5	5	9
<b>B-3</b>	9	5	10
<b>B-4</b>	10.5	5	9
<b>B-5</b>	11	5	9
<b>B-7</b>	6	5	9

[mm]



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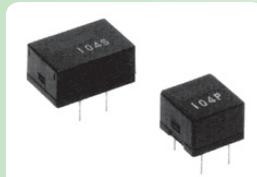
## Impedance vs. Frequency



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## DFD Series

[RoHS Compliant]

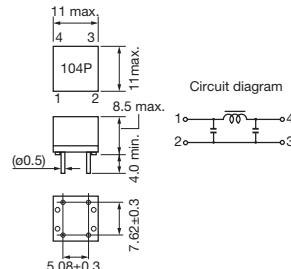


Model	Rated voltage DC (V)	Rated current DC (A)	DC resistance (mΩ) max.	Operating temperature range (°C)
<b>DFD-104P</b>	50	2.0	100	-25~+85
<b>DFD-104S</b>	50	2.0	100	-25~+85

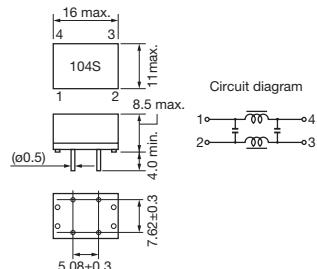
• Withstanding voltage: 125VDC, 5 sec. between terminal 1 and 2   • Insulation resistance: more than 500MΩ (100VDC, one minute)

## Shape and Dimensions/Circuit Diagram

## ●DFD-104P

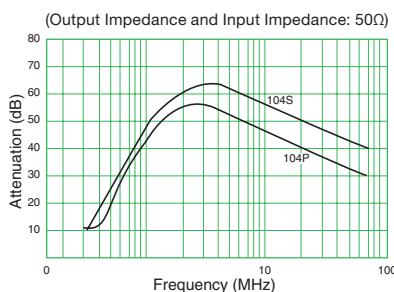


## ●DFD-104S



[mm]

## Attenuation Characteristics

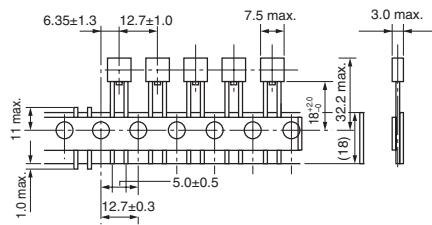


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## Tape and Reel Dimensions

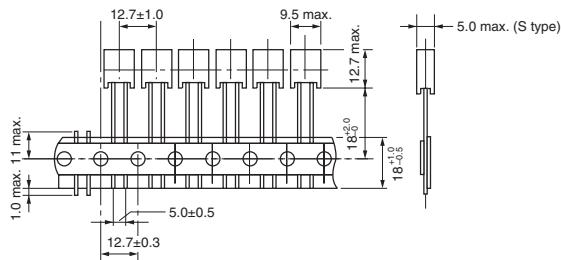
## SBT Series

## Tape and Reel Dimensions



## SNT Series

## Tape and Reel Dimensions



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# SBS9080 Series

[RoHS Compliant]

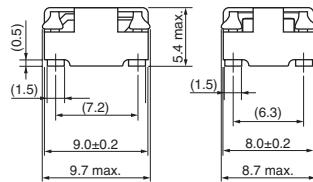
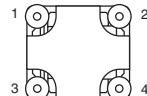


• Tape and Reel Dimensions (see page 36) • Precautions (see page 35)

Model	Rated voltage DC (V)	Rated current DC (A)	Inductance (at 100kHz) (μH) min.	DC resistance (mΩ/Line) max.	Operating temperature range (°C)
<b>SBS9080-509T</b>	50	5.0	0.9	15	-25~+50
<b>SBS9080-524T</b>	50	5.0	2.4	15	-25~+50

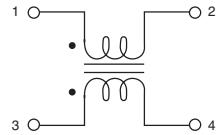
• Withstanding voltage: 125V DC for one minute between lines • Insulation resistance: More than 10MΩ (100V DC, between lines)

## Shape and Dimensions

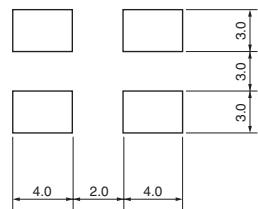


[mm]

## Circuit Diagram

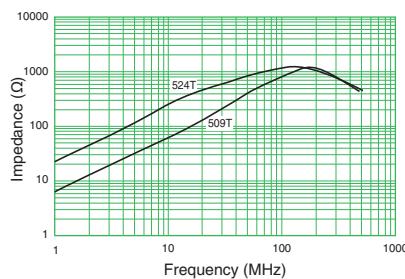


## Recommended Land Pattern



[mm]

## Impedance vs. Frequency



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## SBP Series

[RoHS Compliant]

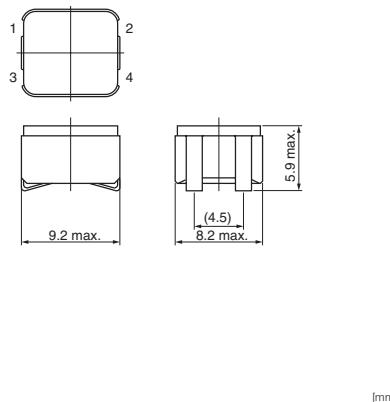


- Tape and Reel Dimensions (see page 36)
- Precautions (see page 35)

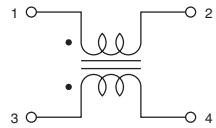
Model	Rated voltage DC (V)	Rated current DC (A)	Impedance (at 100MHz) (Ω) min.	DC resistance (mΩ/Line) max.	Operating temperature range (°C)
SBP-5001T	50	5.0	500	7	-25~+70

- Withstanding voltage: 200V DC for one minute between lines
- Insulation resistance: More than 10MΩ (100V DC, between lines)

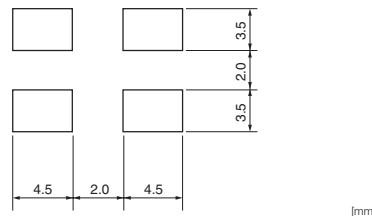
## Shape and Dimensions



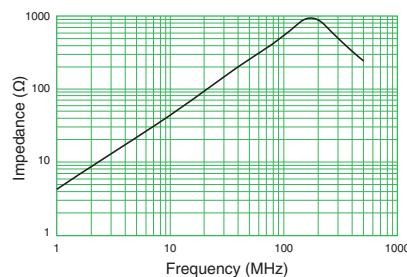
## Circuit Diagram



## Recommended Land Pattern



## Impedance vs. Frequency



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## DCM Series

[RoHS Compliant]



- Tape and Reel Dimensions (see page 36)
- Precautions (see page 35)

Model	Rated voltage (V)	Rated current (A)	L(μH) min	Rdc(mΩ) max	Type
<b>DCM5-01</b>	50	0.2	2540	3180	EE5
<b>DCM5-02</b>	50	0.5	520	510	EE5
<b>DCM5-03</b>	50	1.0	210	180	EE5
<b>DCM5-04</b>	50	2.0	30	30	EE5

• Inductance measurement condition : f = 10KHZ 0.1V   ※• Insulation resistance : more than 100MΩ(250V DC, 1min, between lines)

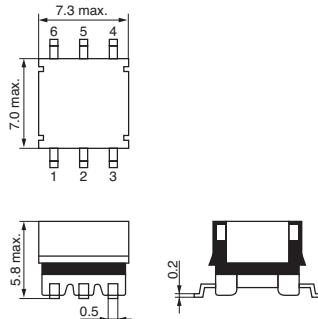
• Operating temperature range(°C) : -20 to 110 (includes the selftemp. rise.)

**Look** : By number-of-turns adjustment, to products other than the above-mentioned characteristic is also possible, please consult.

• Common mode winding with section bobbin.   ※• Withstanding voltage : 250V DC for one minute between lines.

## Shape and Dimensions

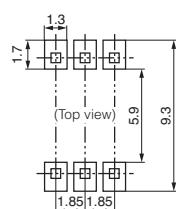
## ●DCM5 Series



[mm]

## Recommended Land Pattern

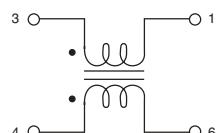
## ●DCM5 Series



[mm]

## Circuit Diagram

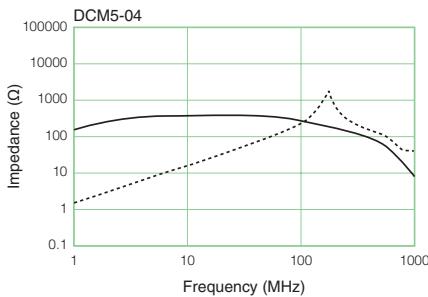
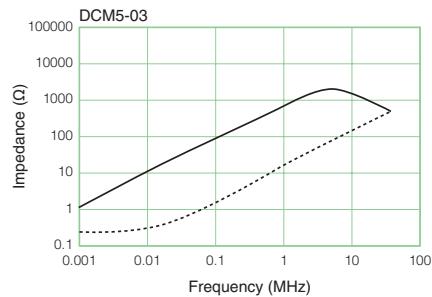
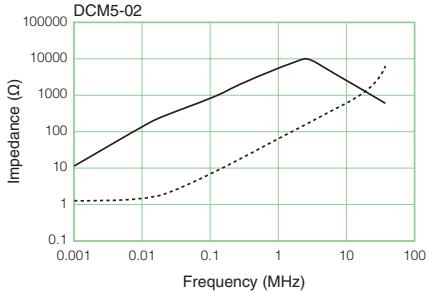
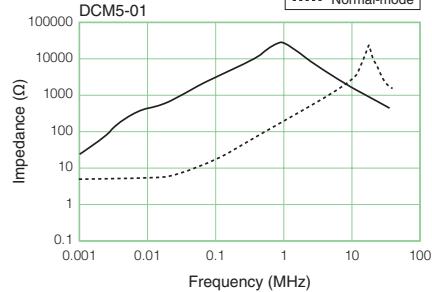
## ●DCM5 Series



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## Impedance vs. Frequency

— Common-mode  
- - - Normal-mode



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# EMC Chip Filters

## M-500CT/M-600T Series

### [RoHS Compliant]



• Tape and Reel Dimensions (see page 36-38) • Precautions (see page 35)

#### M-500CT Series

Model	Rated voltage DC (V)	Rated current DC (A)	Impedance (Ω) min.	DC resistance (mΩ) max.	Operating temperature range (°C)
<b>M-521CT</b>	50	1.0	700 (at 10 MHz)	100	-25~+85
<b>M-522CT</b>	50	1.0	200 (at 20 MHz)	100	-25~+85
<b>M-523CT</b>	50	1.5	200 (at 20 MHz)	65	-25~+85
<b>M-524CT</b>	80	0.5	700 (at 10 MHz)	100	-25~+85
<b>M-532CT</b>	50	0.5	450 (at 100 MHz)	90	-25~+85
<b>M-538CT</b>	50	0.1	800 (at 100 MHz)	220	-25~+70
<b>M-542CT</b>	50	0.5	200 (at 10 MHz)	120	-20~+75
<b>M-543CT</b>	50	1.0	700 (at 10 MHz)	100	-25~+85

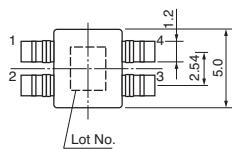
#### M-600T Series

Model	Rated voltage DC (V)	Rated current DC (A)	Impedance (Ω) min.	DC resistance (mΩ) max.	Operating temperature range (°C)
<b>M-608T</b>	50	0.1	300 (at 100 MHz)	80	-20~+80
<b>M-614T</b>	50	0.1	1000 (at 50 MHz)	120	-20~+80
<b>M-620T</b>	50	0.1	1000 (at 30 MHz)	160	-20~+80

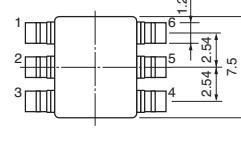
• Insulation resistance: more than 10MΩ (100V DC, between lines)

#### Shape and Dimensions

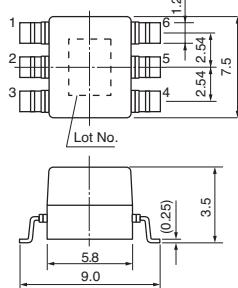
●M-521CT, M-522CT, M-523CT, M-524CT



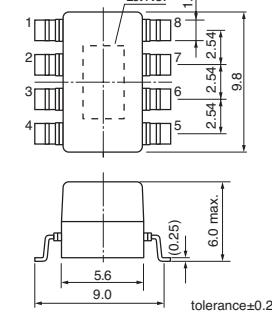
●M-532CT



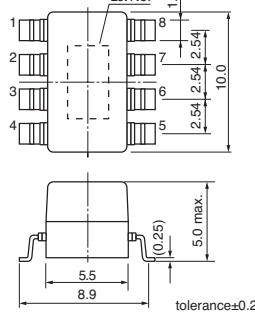
●M-538CT



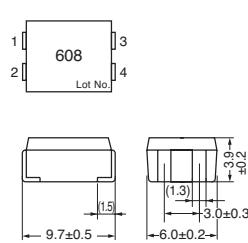
●M-542CT



●M-543CT



●M-608T, M-614T, M-620T



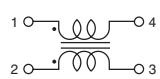
[mm]



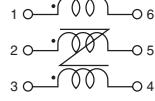
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## Circuit Diagram

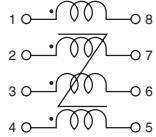
●M-521CT, M-522CT, M-523CT, M-524CT



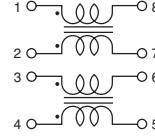
●M-532CT, M-538CT



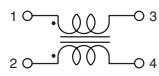
●M-542CT



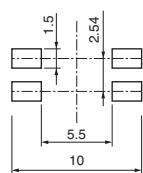
●M-543CT



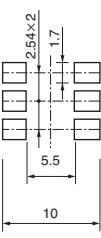
●M-608T, M-614T, M-620T



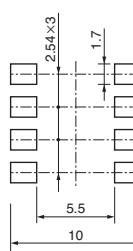
## Recommended Land Pattern

●M-521CT, M-522CT  
M-523CT, M-524CT

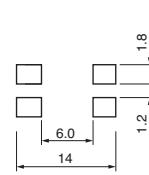
●M-538CT, M-532CT



●M-542CT, M-543CT

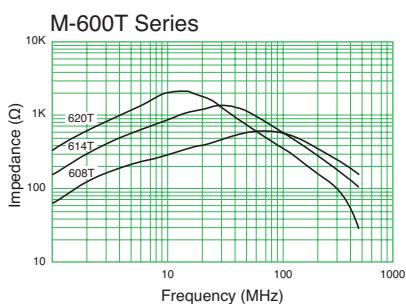
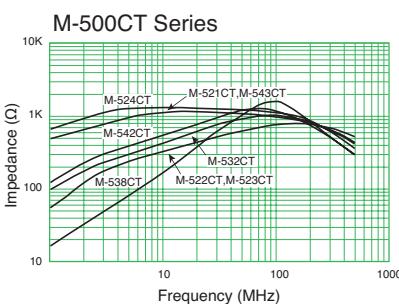


●M-608T, M-614T, M-620T



[mm]

## Impedance vs. Frequency



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## Precautions

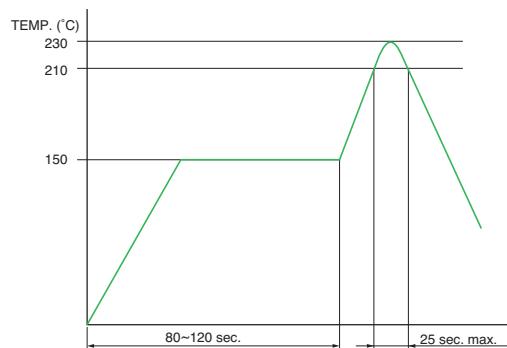
## Shelf Life

Use within 6 months. If the product is used after a storage period of 6 months or longer, confirm its solderability before use.

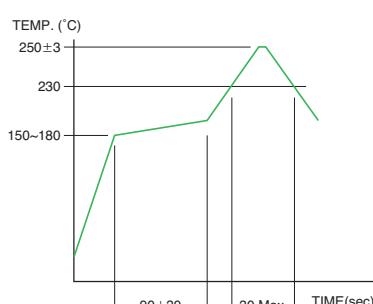
## Recommended Soldering Conditions

- Soldering irons:  
Tip temperature:  $350 \pm 5^\circ\text{C}$   
Duration of heat: approx. 4 seconds
- Flow soldering: not suitable
- Reflow soldering: Refer to the following temperature profile.
- Standard thickness of cream Solder =  $150\mu\text{m} \sim 200\mu\text{m}$ .  
Recommended reflow profile shown below are data obtained from reflow equipment used at TOKIN. The Solderability may differ greatly depending on reflow equipment type, reflow condition, land pattern area and the amount of cream Solder. Please check the Solderability thoroughly before actual reflow operation.

## Reflow Profile 1 (for SBP-5001T)



## Reflow Profile 2 (for lead-free type)

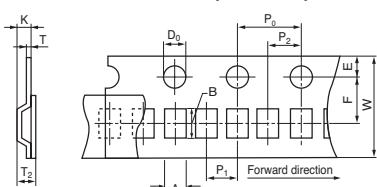


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## Tape and Reel Dimensions

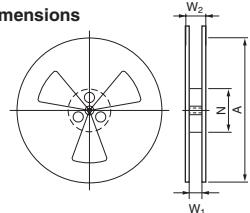
## SBS9080 (1000pcs./reel)

## Dimensions of indented square hole plastic tape



[mm]											
A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1,-0	0.6≥	7.2≥	7.0≥
9.5	10.3	16	7.5	1.75	12	2.0	4.0	1.5	0.6	7.2	7.0

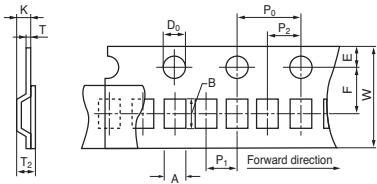
## Reel dimensions



[mm]			
A	N	W <sub>1</sub>	W <sub>2</sub>
330	100	17.5	25

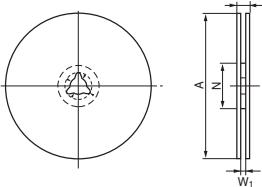
## SBP-5001T (1000pcs./reel)

## Dimensions of indented square hole plastic tape



[mm]											
A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1,-0	0.4≥	5.7≥	5.8≥
9.0	9.0	16	7.5	1.75	12	2.0	4.0	1.5	0.4	5.7	5.8

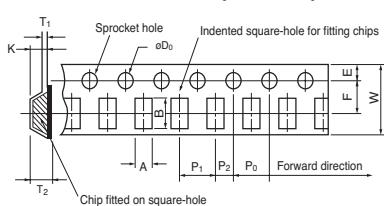
## Reel dimensions



[mm]			
A	N	W <sub>1</sub>	W <sub>2</sub>
330	79	16	25

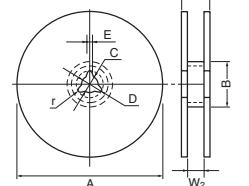
## M-521CT/M-522CT/M-523CT/M-524CT (conforms to EIAJ RC-1009) (1500pcs./reel)

## Dimensions of indented square hole plastic tape



[mm]											
A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1,-0	max.	max.	max.
5.3	9.5	16	7.5	1.75	8.0	2.0	4.0	1.5	0.6	6.5	6.4

## Reel dimensions



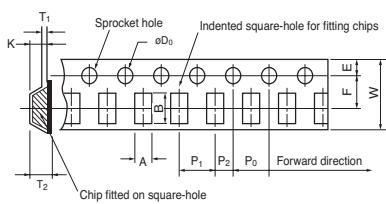
[mm]						
A	B	C	D	E	r	W <sub>1</sub>
±3.0	±2.0	±0.2	±0.8	±0.5	—	max. +6,-0
330	79	13	21	2.0	1.0	25



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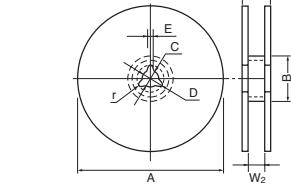
## M-532CT (conforms to EIAJ RC-1009) (1000pcs./reel)

## Dimensions of indented square hole plastic tape



[mm]											
A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1, -0	max.	max. max.
7.9	9.4	16.0	7.5	1.75	12.0	2.0	4.0	1.5	0.6	6.9	6.8

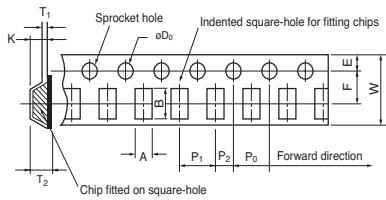
## Reel dimensions



[mm]							
A	B	C	D	E	r	W <sub>1</sub>	W <sub>2</sub>
±3.0	±2.0	±0.2	±0.8	±0.5	—	max.	+6, -0
330	80	13.0	21.0	2.0	1.0	25.0	16.0

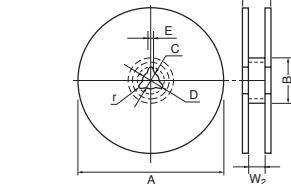
## M-538CT (conforms to EIAJ RC-1009) (1500pcs./reel)

## Dimensions of indented square hole plastic tape



[mm]											
A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1, -0	max.	max. max.
7.9	9.4	16.0	7.5	1.75	12.0	2.0	4.0	1.5	0.6	4.6	4.5

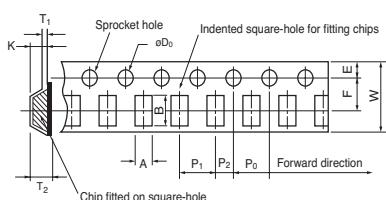
## Reel dimensions



[mm]							
A	B	C	D	E	r	W <sub>1</sub>	W <sub>2</sub>
±3.0	±2.0	±0.2	±0.8	±0.5	—	max.	+6, -0
330	80	13.0	21.0	2.0	1.0	25.0	16.0

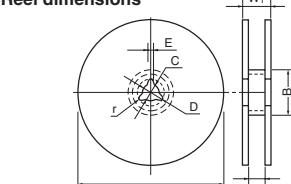
## M-542CT (conforms to EIAJ RC-1009) (1000pcs./reel)

## Dimensions of indented square hole plastic tape



[mm]											
A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1, -0	max.	max. max.
9.5	10.5	16.0	7.5	1.75	12.0	2.0	4.0	1.5	0.6	7.2	7.0

## Reel dimensions



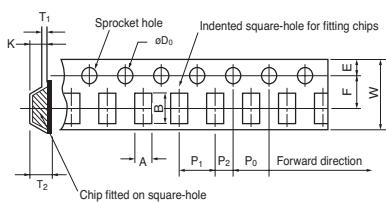
[mm]							
A	B	C	D	E	r	W <sub>1</sub>	W <sub>2</sub>
±3.0	±2.0	±0.2	±0.8	±0.5	—	max.	+6, -0
330	100	13.0	21.0	2.0	1.0	25.0	17.5±0.5



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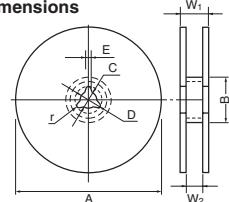
## M-608T/M-614T/M-620T (conforms to EIAJ RC-1009) (1500pcs./reel)

## Dimensions of indented square hole plastic tape



[mm]											K
A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1, -0	max.	max. max.
6.4	10.2	16.0	7.5	1.75	8.0	2.0	4.0	1.5	0.6	6.5	6.4

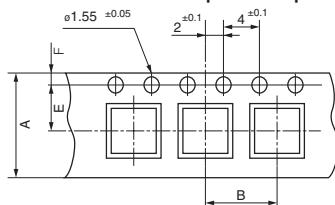
## Reel dimensions



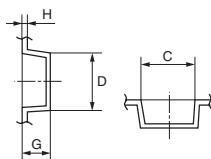
[mm]							
A	B	C	D	E	r	W <sub>1</sub>	W <sub>2</sub>
±3.0	±2.0	±0.2	±0.8	±0.5	—	max.	+6, -0
330	79	13.0	21.0	2.0	1.0	25.0	16.0

## DCM5 Series (2000pcs. /reel)

## Dimensions of indented square hole plastic tape



Model	A	B	C	D	E	F	G	H
DCM5 Series	16±0.3	8	6.3	8.3	7.5	1.75	5.2	0.38±0.05



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## Precautions



- The names of the products and the specifications in this catalog are subject to change without notice for the sake of improvement. The manufacturer also reserves the right to discontinue any of these products. At the time of delivery, please ask for specifications sheets to check the contents in order to use the products properly and safely.
- Descriptions in this catalog regarding product characteristics and quality are based solely on discrete components. When using these components, be sure to check the specifications with the component in question mounted on the products.
- The manufacturer's warranty will not cover any disadvantage or damage caused by improper use of the products that deviates from the characteristics, specifications, or conditions for use described in this catalog.
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- Please be advised that the manufacturer accepts no responsibility for any infraction by users of the manufacturer's products on third party patents or industrial copyrights. The manufacturer is responsible only when such infractions are attributable to the structural design of the product and its manufacturing process.
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