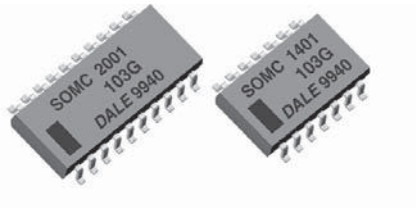
# Thick Film Resistor Networks, Dual-In-Line, Medium Body, Small Outline, Molded DIP, Surface Mount




## FEATURES

- Isolated, bussed and dual terminator schematics available
- 14, 16, or 20 terminal package
- Molded case construction
- Thick film resistive elements
- Reflow solderable
- Compatible with automatic surface mounting equipment
- Reduces total assembly costs
- For wave flow soldering contact factory
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb Available

e1 RoHS* Available

**Note**

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | CIRCUIT | POWER RATING ELEMENT $P_{70\,°C}$ W | POWER RATING PACKAGE $P_{70\,°C}$ W | TOLERANCE (3) ± % | RESISTANCE RANGE Ω | MAXIMUM WORKING VOLTAGE (2) $V_{DC}$ | TEMPERATURE COEFFICIENT (1) ± ppm/°C |
|---|---|---|---|---|---|---|---|
| SOMC14 | 01 | 0.08 | 1.05 | 1, 2, 5 | 10 to 1M | 50 | 100 |
| | 03 | 0.16 | 1.125 | 1, 2, 5 | 10 to 1M | 50 | 100 |
| | 05 | 0.08 | 1.05 | 1, 2, 5 | 10 to 1M | 50 | 100 |
| SOMC16 | 01 | 0.08 | 1.20 | 1, 2, 5 | 10 to 1M | 50 | 100 |
| | 03 | 0.16 | 1.28 | 1, 2, 5 | 10 to 1M | 50 | 100 |
| | 05 | 0.08 | 1.20 | 1, 2, 5 | 10 to 1M | 50 | 100 |
| SOMC20 | 01 | 0.08 | 1.52 | 1, 2, 5 | 10 to 1M | 50 | 100 |
| | 03 | 0.16 | 1.60 | 1, 2, 5 | 10 to 1M | 50 | 100 |
| | 05 | 0.08 | 1.52 | 1, 2, 5 | 10 to 1M | 50 | 100 |

**Notes**

- DSCC has created series of drawings to support the need for a surface mount gull wing resistor network product. Vishay Dale is listed as a resource on this drawing as follows:

| DSCC DRAWING NUMBER | VISHAY DALE MODEL | CIRCUIT | POWER RATING ELEMENT $P_{70\,°C}$ W | POWER RATING PACKAGE $P_{70\,°C}$ W | RESISTANCE RANGE Ω | TOLERANCE ± % | TEMPERATURE COEFFICIENT (0 °C to 70 °C) ± ppm/°C | MAXIMUM WORKING VOLTAGE (2) $V_{DC}$ |
|---|---|---|---|---|---|---|---|---|
| 87012 | SOMC1601..16<br>SOMC1603..17<br>SOMC1605..48 | 01 (B)<br>03 (A)<br>05 (J) | 0.08<br>0.16<br>0.08 | 1.20 | 10 to 2.2M | 1, 2, 5 | 100, 300 | 50 |
| 87013 | SOMC1401..6<br>SOMC1403..13<br>SOMC1405..22 | 01 (B)<br>03 (A)<br>05 (J) | 0.08<br>0.16<br>0.08 | 1.00 | 10 to 2.2M | 1, 2, 5 | 100, 300 | 50 |

These drawings can be viewed at: www.landandmaritime.dla.mil/Programs/MilSpec/ListDwgs.aspx?DocTYPE=DSCCdwg.

- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material
- Jumper: 0 Ω-resistor on request (100 mΩ)
- Packaging: According to EIA; see appropriate catalog or web page

(1) Temperature range: -55 °C to +125 °C

(2) Continuous working voltage shall be $\sqrt{P \times R}$ or maximum working voltage, whichever is less

(3) ± 2 % standard, ± 1 % and ± 5 % available

## TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | 01 CIRCUIT | 03 CIRCUIT | 05 CIRCUIT |
|---|---|---|---|---|
| Rated dissipation at 70 °C per element | W | 0.08 | 0.16 | 0.08 |
| Limiting element voltage (1) | $V_{DC}$ | 50 | | |
| Voltage coefficient | ppm/V | < 50 | | |
| Insulation voltage (1 min) | $V_{DC/AC}$ peak | 200 | | |
| Category temperature range | °C | -55 / +150 | | |
| Insulation resistance | Ω | $> 10^{10}$ | | |
| TC tracking (-55 °C to +125 °C) | ppm/°C | 50 | | |

**Note**

(1) Rated voltage: $\sqrt{P \times R}$



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## GLOBAL PART NUMBER INFORMATION

**New Global Part Numbering: SOMC16011K00GDC (preferred part numbering format)**

| S | O | M | C | 1 | 6 | 0 | 1 | 1 | K | 0 | 0 | G | D | C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| GLOBAL MODEL | PIN COUNT | SCHEMATIC | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING | SPECIAL |
|---|---|---|---|---|---|---|
| **SOMC** | **14**<br>**16**<br>**20** | **01** = bussed<br>**03** = isolated<br>**00** = special | **R** = Ω<br>**K** = kΩ<br>**M** = MΩ<br>**10R0** = 10 Ω<br>**680K** = 680 kΩ<br>**1M00** = 1.0 MΩ<br>**0000** = 0 Ω jumper | **F** = ± 1 %<br>**G** = ± 2 %<br>**J** = ± 5 %<br>**S** = special<br>**Z** = 0 Ω jumper | **EJ** = lead (Pb)-free, tube<br>**EA** = lead (Pb)-free, tape and reel<br>**DC** = tin / lead, tube<br>**RZ** = tin / lead, tape and reel | Blank = standard (dash number) (up to 3 digits) from **1 to 999** as applicable |

**Historical Part Number Example: SOMC1601102G (will continue to be accepted)**

| SOMC | 16 | 01 | 102 | G | D02 |
|---|---|---|---|---|---|
| HISTORICAL MODEL | PIN COUNT | SCHEMATIC | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

**New Global Part Numbering: SOMC2005500BGRZ (preferred part numbering format)**

| S | O | M | C | 2 | 0 | 0 | 5 | 5 | 0 | 0 | B | G | R | Z | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| GLOBAL MODEL | PIN COUNT | SCHEMATIC | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING | SPECIAL |
|---|---|---|---|---|---|---|
| **SOMC** | **14**<br>**16**<br>**20** | **05** = dual terminator | 3 digit impedance code, followed by alpha modifier (see Impedance table) | **F** = ± 1 %<br>**G** = ± 2 %<br>**J** = ± 5 % | **EJ** = lead (Pb)-free, tube<br>**EA** = lead (Pb)-free, tape and reel<br>**DC** = tin / lead, tube<br>**RZ** = tin / lead, tape and reel | Blank = standard (dash number) up to 3 digits from **1 to 999** as applicable |

**Historical Part Number Example: SOMC2005820131G (will continue to be accepted)**

| SOMC | 20 | 05 | 820 | 131 | G | R61 |
|---|---|---|---|---|---|---|
| HISTORICAL MODEL | PIN COUNT | SCHEMATIC | RESISTANCE VALUE 1 | RESISTANCE VALUE 2 | TOLERANCE CODE | PACKAGING |

**Note**

- For additional information on packaging, refer to the Surface Mount Network Packaging document (www.vishay.com/doc?31540)


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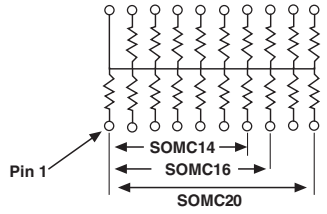
## CIRCUIT APPLICATIONS

**01 Schematic**

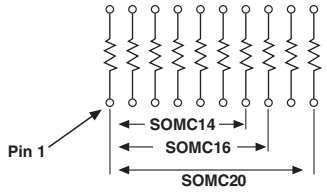



13, 15, or 19 resistors with one pin common

The SOMCxx01 circuit provides a choice of 13, 15, or 19 nominally equal resistors, each connected between a common lead (14, 16, or 20) and a discrete PC board pin. Commonly used in the following applications:

- MOS/ROM pull-up/pull-down
- Open collector pull-up
- "Wired OR" pull-up
- Power driven pull-up
- TTL input pull-down
- Digital pulse squaring
- TTL unused gate pull-up
- High speed parallels pull-up

**03 Schematic**

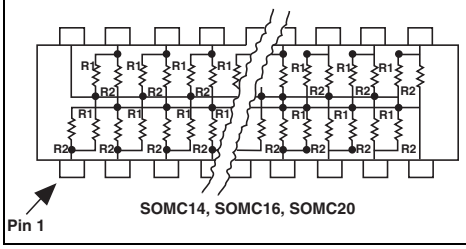



7, 8, or 10 isolated resistors

The SOMCxx03 circuit provides a choice of 7, 8, or 10 nominally equal resistors with each resistor isolated from all others and wired directly across. Commonly used in the following applications:

- "Wired OR" pull-up
- Power driven pull-up
- Powergate pull-up
- Line termination
- Long-line Impedance balancing
- LED current limiting
- ECL output pull-down
- TTL input pull-down

**05 Schematic**

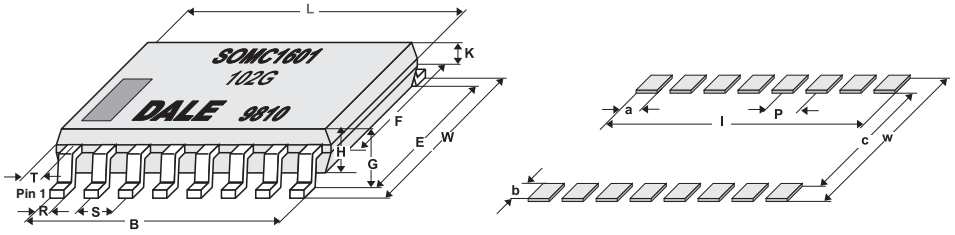



TTL dual-line terminator; pulse squaring, 12, 14, or 18 pairs of resistors
($R_1$ resistors are common to leads 14, 16, or 20)
($R_2$ resistors are common to leads 7, 8, or 10)

The SOMCxx05 circuit contains 12, 14, or 18 pairs of resistors. Each pair is connected between ground and a common line. The junctions of these resistor pairs are connected to the input leads.

The 05 circuits are designed for TTL dual-line termination and pulse squaring.

## DIMENSIONS




**SOLDER PAD DIMENSIONS** in millimeters

| | a | b | c | l | p | w |
|---|---|---|---|---|---|---|
| **WAVE** | 0.64 | 1.91 | 5.34 | 9.53 | 1.27 | 9.15 |
| **REFLOW** | 0.64 | 1.91 | 5.34 | 9.53 | 1.27 | 9.15 |

**Notes**

- The dimension shown are for a 16 pin part. For parts with different pin numbers use the same pitch and add or subtract pads as required
- Maximum solder reflow temperature +255 °C

**DIMENSIONS** in millimeters

| PIN NO# | L | W | B | E | F | G | H | K | R | S | T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **14** | 9.91 | 7.62 | 7.62 | 6.20 | 5.59 | 2.16 | 2.03 | 0.914 | 0.457 | 1.27 | 1.14 |
| **16** | 11.18 | 7.62 | 8.89 | 6.20 | 5.59 | 2.16 | 2.03 | 0.914 | 0.457 | 1.27 | 1.14 |
| **20** | 13.72 | 7.62 | 11.43 | 6.20 | 5.59 | 2.16 | 2.03 | 0.914 | 0.457 | 1.27 | 1.14 |
| **Tol.** | ± 0.254 | ± 0.381 | ± 0.254 | ± 0.381 | ± 0.127 | ± 0.127 | ± 0.127 | | ± 0.076 | ± 0.254 | |

## MARKING INFORMATION

1 % parts have 4 digits while 2 % and 5 % parts have 3 digits.



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| IMPEDANCE CODES | | | | | |
|---|---|---|---|---|---|
| CODE | $R_1$ (Ω) | $R_2$ (Ω) | CODE | $R_1$ (Ω) | $R_2$ (Ω) |
| 500B | 82 | 130 | 141A | 270 | 270 |
| 750B | 120 | 200 | 181A | 330 | 390 |
| 800C | 130 | 210 | 191A | 330 | 470 |
| 990A | 160 | 260 | 221B | 330 | 680 |
| 101C | 180 | 240 | 281B | 560 | 560 |
| 111C | 180 | 270 | 381B | 560 | 1.2K |
| 121B | 180 | 390 | 501C | 620 | 2.7K |
| 121C | 220 | 270 | 102A | 1.5K | 3.3K |
| 131A | 220 | 330 | 202B | 3K | 6.2K |

**Note**

- For additional impedance codes, refer to the Dual Terminator Impedance Code Table document (www.vishay.com/doc?31530)

| PERFORMANCE | | |
|---|---|---|
| TEST | CONDITIONS OF TEST | TEST RESULTS (TYPICAL TEST LOTS) |
| Power conditioning | MIL-STD-202 | ± 0.5 % |
| Load life at 70 °C | MIL-STD-202 | ± 0.5 % |
| Short time overload | MIL-STD-202 | ± 0.25 % |
| Thermal shock | MIL-STD-202 | ± 0.5 % |
| Moisture resistance | MIL-STD-202 | ± 0.5 % |
| Resistance to soldering heat | MIL-STD-202 | ± 0.25 % |
| Low temperature operation | MIL-STD-202 | ± 0.25 % |
| Vibration | MIL-STD-202 | ± 0.25 % |
| Shock | MIL-STD-202 | ± 0.25 % |
| Terminal strength | MIL-STD-202 | ± 0.25 % |

| MECHANICAL SPECIFICATIONS | |
|---|---|
| Marking | Model number, schematic number, value tolerance, pin 1 indicator, date code |
| Marking resistance to solvents | Permanency testing per MIL-STD-202, method 215 |
| Maximum solder reflow temperature | +255 °C |
| Solderability | Per MIL-STD-202, method 208E |
| Terminals | Copper alloy. Solder dipped terminal |
| Body | Molded epoxy |


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