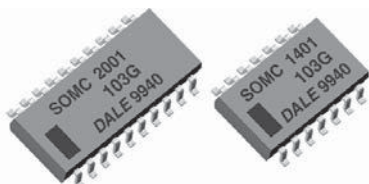


# Thick Film Resistor Networks, Dual-In-Line, Medium Body, Small Outline, Molded DIP, Surface Mount



## 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](http://www.vishay.com/doc?99912)



Available


**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 $P_{70^{\circ}\text{C}}$ W | POWER RATING PACKAGE $P_{70^{\circ}\text{C}}$ W | TOLERANCE $\pm \%$ (3) | RESISTANCE RANGE $\Omega$ | MAXIMUM WORKING VOLTAGE (2) $V_{DC}$ | TEMPERATURE COEFFICIENT (1) $\pm \text{ppm}/^{\circ}\text{C}$ |
|--------------|---------|-------------------------------------------------|-------------------------------------------------|------------------------|---------------------------|--------------------------------------|---------------------------------------------------------------|
| 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 $P_{70^{\circ}\text{C}}$ W | POWER RATING PACKAGE $P_{70^{\circ}\text{C}}$ W | RESISTANCE RANGE $\Omega$ | TOLERANCE $\pm \%$ | TEMPERATURE COEFFICIENT (0 $^{\circ}\text{C}$ to 70 $^{\circ}\text{C}$ ) $\pm \text{ppm}/^{\circ}\text{C}$ | MAXIMUM WORKING VOLTAGE (2) $V_{DC}$ |
|---------------------|-------------------|---------|-------------------------------------------------|-------------------------------------------------|---------------------------|--------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 87012               | SOMC1601..16      | 01 (B)  | 0.08                                            | 1.20                                            | 10 to 2.2M                | 1, 2, 5            | 100, 300                                                                                                   | 50                                   |
|                     | SOMC1603..17      | 03 (A)  | 0.16                                            |                                                 |                           |                    |                                                                                                            |                                      |
|                     | SOMC1605..48      | 05 (J)  | 0.08                                            |                                                 |                           |                    |                                                                                                            |                                      |
| 87013               | SOMC1401..6       | 01 (B)  | 0.08                                            | 1.00                                            | 10 to 2.2M                | 1, 2, 5            | 100, 300                                                                                                   | 50                                   |
|                     | SOMC1403..13      | 03 (A)  | 0.16                                            |                                                 |                           |                    |                                                                                                            |                                      |
|                     | SOMC1405..22      | 05 (J)  | 0.08                                            |                                                 |                           |                    |                                                                                                            |                                      |

These drawings can be viewed at: [www.landandmaritime.dla.mil/Programs/MilSpec/ListDwgs.aspx?DocType=DSCCdwg](http://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  $\Omega$ -resistor on request (100 m $\Omega$ )
- Packaging: According to EIA; see appropriate catalog or web page

(1) Temperature range: -55  $^{\circ}\text{C}$  to +125  $^{\circ}\text{C}$

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

(3)  $\pm 2 \%$  standard,  $\pm 1 \%$  and  $\pm 5 \%$  available

## TECHNICAL SPECIFICATIONS

| PARAMETER                                                        | UNIT                    | 01 CIRCUIT  | 03 CIRCUIT | 05 CIRCUIT |
|------------------------------------------------------------------|-------------------------|-------------|------------|------------|
| Rated dissipation at 70 $^{\circ}\text{C}$ 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                                       | $^{\circ}\text{C}$      | -55 / +150  |            |            |
| Insulation resistance                                            | $\Omega$                | > $10^{10}$ |            |            |
| TC tracking (-55 $^{\circ}\text{C}$ to +125 $^{\circ}\text{C}$ ) | ppm/ $^{\circ}\text{C}$ | 50          |            |            |

## Note

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

**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 = $\Omega$<br>K = $k\Omega$<br>M = $M\Omega$<br>10R0 = 10 $\Omega$<br>680K = 680 $k\Omega$<br>1M00 = 1.0 $M\Omega$<br>0000 = 0 $\Omega$ jumper | F = $\pm 1\%$<br>G = $\pm 2\%$<br>J = $\pm 5\%$<br>S = special<br>Z = 0 $\Omega$ jumper | EJ = lead (Pb)-free, tube<br>EA = lead (Pb)-free, tape and reel<br><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 = $\pm 1\%$<br>G = $\pm 2\%$<br>J = $\pm 5\%$ | EJ = lead (Pb)-free, tube<br>EA = lead (Pb)-free, tape and reel<br><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)**

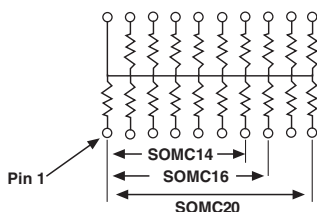
|                  |           |           |                    |                    |                |           |
|------------------|-----------|-----------|--------------------|--------------------|----------------|-----------|
| SOMC             | 20        | 05        | 820                | 131                | 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](http://www.vishay.com/doc?31540))

## CIRCUIT APPLICATIONS

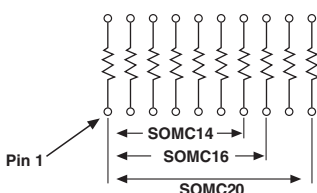
### 01 Schematic



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

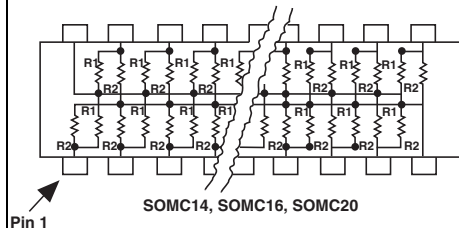
### 03 Schematic



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:

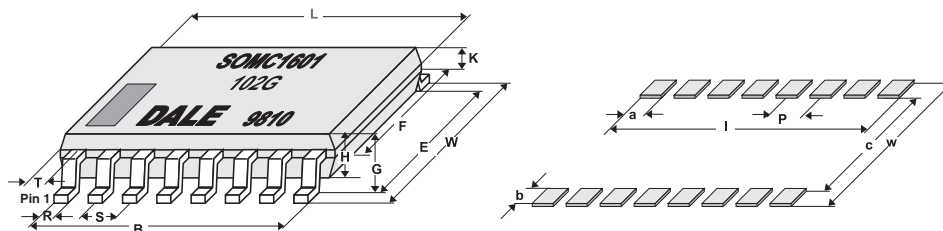
- "Wired OR" pull-up
- Power driven pull-up
- Powergate pull-up
- Line termination
- Long-line Impedance balancing
- LED current limiting
- ECL output pull-down
- TTL input pull-down

### 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.

**IMPEDANCE CODES**

| CODE | R <sub>1</sub> (Ω) | R <sub>2</sub> (Ω) | CODE | R <sub>1</sub> (Ω) | R <sub>2</sub> (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](http://www.vishay.com/doc?31530))

**PERFORMANCE**

| TEST                         | CONDITIONS OF TEST | TEST RESULTS<br>(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                                                                |



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.