



## Features

- RoHS compliant\* versions available (see How to Order "Termination" option)
- Low profile provides compatibility with DIPs
- Compatible with automatic insertion equipment
- Superior package integrity

- Now available with improved tolerance to  $\pm 0.5\%$

## 4300R Series - Thick Film Molded SIPs

### Product Characteristics

Resistance Range ..... 10 ohms to 10 megohms  
 Maximum Operating Voltage ..... 100 V  
 Temperature Coefficient of Resistance  
   50  $\Omega$  to 2.2 megohms .....  $\pm 100$  ppm/ $^{\circ}$ C  
   below 50  $\Omega$  .....  $\pm 250$  ppm/ $^{\circ}$ C  
   above 2.2 megohms .....  $\pm 250$  ppm/ $^{\circ}$ C  
 TCR Tracking ..... 50 ppm/ $^{\circ}$ C  
   maximum; equal values  
 Resistor Tolerance ..... See circuits  
 Operating Temperature  
   ..... -55  $^{\circ}$ C to +125  $^{\circ}$ C  
 Power Rating ..... Derate to zero  
   power from +70  $^{\circ}$ C to +125  $^{\circ}$ C  
 Insulation Resistance  
   ..... 10,000 megohms minimum  
 Dielectric Withstanding Voltage  
   ..... 200 VRMS  
 Lead Solderability ..... Meet requirements  
   of MIL-STD-202 Method 208

### Environmental Characteristics

TESTS PER MIL-STD-202 .....  $\Delta R$  MAX.  
 Short Time Overload .....  $\pm 0.25\%$   
 Load Life .....  $\pm 1.00\%$   
 Moisture Resistance .....  $\pm 0.50\%$   
 Resistance to Soldering Heat  
   .....  $\pm 0.25\%$   
 Terminal Strength .....  $\pm 0.25\%$   
 Thermal Shock .....  $\pm 0.25\%$

### Physical Characteristics

Flammability ..... Conforms to UL94V-0  
 Lead Frame Material  
   ..... Copper, solder coated  
 Body Material ..... Novolac epoxy

### How To Order

**43 06 R - 101 - 222**

Model \_\_\_\_\_  
 (43 = Molded SIP)  
 Number of Pins \_\_\_\_\_  
 Physical Configuration  
 (R = Thick Film Low Profile)  
 Electrical Configuration \_\_\_\_\_  
   • 101 = Bussed  
   • 102 = Isolated  
   • 104 = Dual Terminator  
 Resistance Code \_\_\_\_\_  
   • First 2 digits are significant  
   • Third digit represents the  
     number of zeros to follow.  
 Resistance Tolerance \_\_\_\_\_  
   • Blank =  $\pm 2\%$  (see "Resistance Tolerance"  
     on next page for resistance range)  
   • F =  $\pm 1\%$  (100 ohms - 1 megohm)  
   • D =  $\pm 0.5\%$  (100 ohms - 1 megohm)  
 Terminations \_\_\_\_\_  
   • All electrical configurations EXCEPT 104:  
     LF = Tin-plated (RoHS compliant version)  
   • ONLY electrical configuration 104:  
     L = Tin-plated (RoHS compliant version)  
   • Blank = Tin/Lead-plated

Consult factory for other available options.

### Package Power Temp. Derating Curve



### Package Power Rating at 70 $^{\circ}$ C

4306R ..... 0.75 watts  
 4308R ..... 1.00 watts  
 4309R ..... 1.13 watts  
 4310R ..... 1.25 watts  
 4311R ..... 1.38 watts

### Typical Part Marking

Represents total content. Layout may vary. Marking may be truncated on shorter versions due to size constraints.



For Standard Values Used in  
 Capacitors, Inductors, and Resistors,  
[click here.](#)

### Product Dimensions



Governing dimensions are in metric. Dimensions in parentheses are inches and are approximate.

\*Terminal centerline to centerline measurements made at point of emergence of the lead from the body.

For information on specific applications,  
download Bourns' application notes:

- [DRAM Applications](#)
- [Dual Terminator Resistor Networks](#)
- [R/2R Ladder Networks](#)
- [SCSI Applications](#)

## 4300R Series - Thick Film Molded SIPs

**BOURNS®**

### Isolated Resistors (102 Circuit)

Model 4306R-102-RC (6 Pin)  
Model 4308R-102-RC (8 Pin)  
Model 4310R-102-RC (10 Pin)



These models incorporate 3, 4 or 5 isolated thick-film resistors of equal value, each connected between two pins.

### Resistance Tolerance

10 ohms to 49 ohms..... $\pm 1$  ohm  
50 ohms to 5 megohms..... $\pm 2\%$ \*  
Above 5 megohms..... $\pm 5\%$

### Power Rating per Resistor

At 70 °C ..... 0.30 watt

### Power Temperature Derating Curve



### Bussed Resistors (101 Circuit)

Model 4306R-101-RC (6 Pin)  
Model 4308R-101-RC (8 Pin)  
Model 4309R-101-RC (9 Pin)  
Model 4310R-101-RC (10 Pin)  
Model 4311R-101-RC (11 Pin)



These models incorporate 5, 7, 8, 9 or 10 thick-film resistors of equal value, each connected between a separate pin.

### Resistance Tolerance

10 ohms to 49 ohms..... $\pm 1$  ohm  
50 ohms to 5 megohms..... $\pm 2\%$ \*  
Above 5 megohms..... $\pm 5\%$

### Power Rating per Resistor

At 70 °C ..... 0.20 watt

### Power Temperature Derating Curve



### Dual Terminator (104 Circuit)

Model 4306R-104-R1/R2  
Model 4308R-104-R1/R2 (shown)  
Model 4309R-104-R1/R2  
Model 4310R-104-R1/R2  
Model 4311R-104-R1/R2



4308R-104 (shown above) is an 8-pin configuration and terminates 6 lines. Pins 1 and 8 are common for ground and power, respectively. Twelve thick-film resistors are paired in series between the common lines (pins 1 and 8).

### Resistance Tolerance

Below 100 ohms..... $\pm 2$  ohms  
100 ohms to 5 megohms..... $\pm 2\%$ \*  
Above 5 megohms..... $\pm 5\%$

### Power Rating per Resistor

At 70 °C ..... 0.20 watt

### Power Temperature Derating Curve



### Popular Resistance Values (101, 102 Circuits)\*\*

| Ohms | Code | Ohms  | Code | Ohms   | Code | Ohms    | Code | Ohms      | Code |
|------|------|-------|------|--------|------|---------|------|-----------|------|
| 10   | 100  | 180   | 181  | 1,800  | 182  | 15,000  | 153  | 120,000   | 124  |
| 22   | 220  | 220   | 221  | 2,000  | 202  | 18,000  | 183  | 150,000   | 154  |
| 27   | 270  | 270   | 271  | 2,200  | 222  | 20,000  | 203  | 180,000   | 184  |
| 33   | 330  | 330   | 331  | 2,700  | 272  | 22,000  | 223  | 220,000   | 224  |
| 39   | 390  | 390   | 391  | 3,300  | 332  | 27,000  | 273  | 270,000   | 274  |
| 47   | 470  | 470   | 471  | 3,900  | 392  | 33,000  | 333  | 330,000   | 334  |
| 56   | 560  | 560   | 561  | 4,700  | 472  | 39,000  | 393  | 390,000   | 394  |
| 68   | 680  | 680   | 681  | 5,600  | 562  | 47,000  | 473  | 470,000   | 474  |
| 82   | 820  | 820   | 821  | 6,800  | 682  | 56,000  | 563  | 560,000   | 564  |
| 100  | 101  | 1,000 | 102  | 8,200  | 822  | 68,000  | 683  | 680,000   | 684  |
| 120  | 121  | 1,200 | 122  | 10,000 | 103  | 82,000  | 823  | 820,000   | 824  |
| 150  | 151  | 1,500 | 152  | 12,000 | 123  | 100,000 | 104  | 1,000,000 | 105  |

\* Add "F" after resistance code for  $\pm 1\%$  tolerance available from 100  $\Omega$  through 1M  $\Omega$ , or add "D" after resistance code for  $\pm 0.5\%$  tolerance available from 100  $\Omega$  through 1M  $\Omega$ .

Part number suffix examples: -103 = 10K  $\Omega$ ,  $\pm 2\%$ ; -103F = 10K  $\Omega$ ,  $\pm 1\%$ ; -103D = 10K  $\Omega$ ,  $\pm 0.5\%$

\*\* Non-standard values available, within resistance range.

### Popular Resistance Values (104 Circuit)\*\*

| Resistance     |                |                |                |
|----------------|----------------|----------------|----------------|
| Ohms           |                | Code           |                |
| R <sub>1</sub> | R <sub>2</sub> | R <sub>1</sub> | R <sub>2</sub> |
| 160            | 240            | 161            | 241            |
| 180            | 390            | 181            | 391            |
| 220            | 270            | 221            | 271            |
| 220            | 330            | 221            | 331            |
| 330            | 390            | 331            | 391            |
| 330            | 470            | 331            | 471            |
| 3,000          | 6,200          | 302            | 622            |

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Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.

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