



THE DATASHEET OF
4309R-101-472LF





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 Ω to 2.2 megohms ± 100 ppm/ $^{\circ}$ C
 below 50 Ω ± 250 ppm/ $^{\circ}$ C
 above 2.2 megohms ± 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 ΔR 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

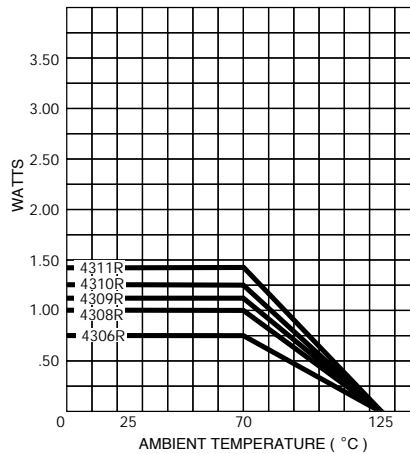
Flammability Conforms to UL94V-0
 Lead Frame Material
 Copper, solder coated
 Body Material Novolac epoxy

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

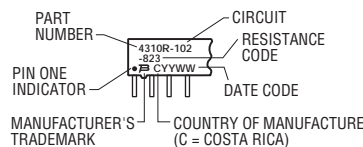


Package Power Rating at 70 $^{\circ}$ C

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.



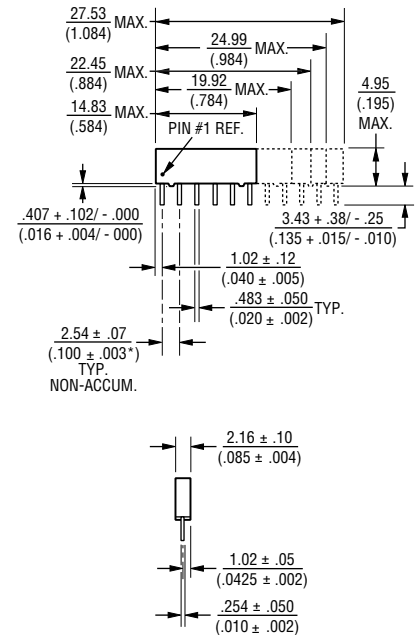
For Standard Values Used in Capacitors, Inductors, and Resistors, [click here](#).



WARNING Cancer and Reproductive Harm
www.P65Warnings.ca.gov

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.
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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 ±1 ohm
 50 ohms to 5 megohms ±2 %*
 Above 5 megohms ±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 ±1 ohm
 50 ohms to 5 megohms ±2 %*
 Above 5 megohms ±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 ±2 ohms
 100 ohms to 5 megohms ±2 %*
 Above 5 megohms ±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 ±1 % tolerance available from 100 Ω through 1M Ω, or add "D" after resistance code for ±0.5 % tolerance available from 100 Ω through 1M Ω.
 Part number suffix examples: -103 = 10K Ω, ±2 %; -103F = 10K Ω, ±1 %; -103D = 10K Ω, ±0.5 %

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

Popular Resistance Values (104 Circuit)**

| Resistance | | | |
|----------------|----------------|----------------|----------------|
| Ohms | | Code | |
| R ₁ | R ₂ | R ₁ | R ₂ |
| 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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