

Features

- RoHS compliant* versions available (see How to Order "Termination" option)
- Medium profile offers increased power handling
- Compatible with automatic insertion equipment
- Superior package integrity

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

4300M 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
 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

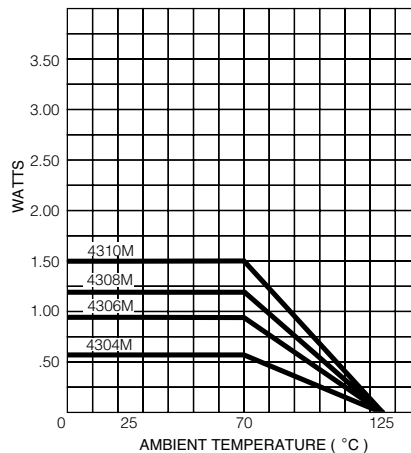
How To Order

43 06 M - 101 - 222

Model _____
 (43 = Molded SIP)
 Number of Pins _____
 Physical Configuration
 (M = Thick Film Medium 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

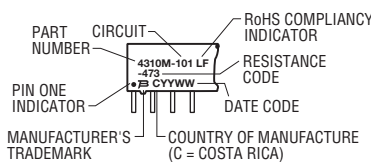


Package Power Rating at 70 $^{\circ}$ C

4304M..... 0.60 watts
 4306M..... 0.90 watts
 4308M..... 1.20 watts
 4310M..... 1.50 watts

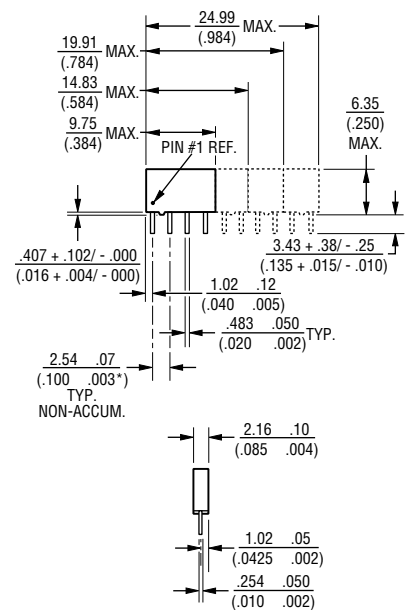
Typical Part Marking

Represents total content. Layout may vary.



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.

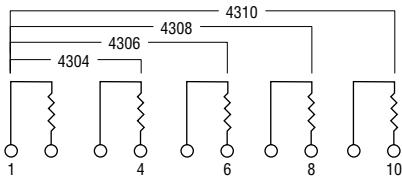
For information on specific applications, download Bourns' application notes:

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

4300M Series - Thick Film Molded SIPs **BOURNS®**

Isolated Resistors (102 Circuit)

- Model 4304M-102-RC (4 Pin)
- Model 4306M-102-RC (6 Pin)
- Model 4308M-102-RC (8 Pin)
- Model 4310M-102-RC (10 Pin)



These models incorporate 2, 3, 4 or 5 isolated thick-film resistors of equal value, each connected between two pins.

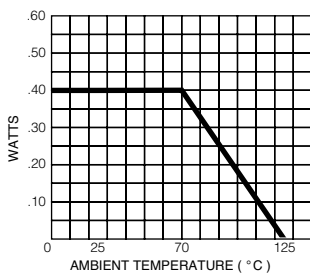
Resistance Tolerance

- 10 ohms to 49 ohms..... ±1 ohm
- 50 ohms to 5 megohms..... ±2 %*
- Above 5 megohms..... ±5 %

Power Rating per Resistor

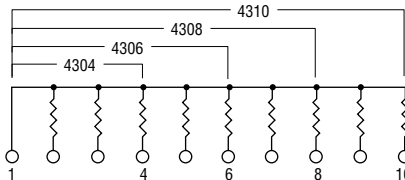
At 70 °C 0.40 watt

Power Temperature Derating Curve



Bussed Resistors (101 Circuit)

- Model 4304M-101-RC (4 Pin)
- Model 4306M-101-RC (6 Pin)
- Model 4308M-101-RC (8 Pin)
- Model 4310M-101-RC (10 Pin)



These models incorporate 3, 5, 7, or 9 thick-film resistors of equal value, each connected between a common bus (pin 1) and a separate pin.

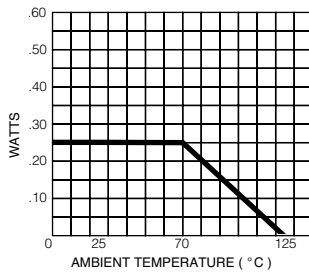
Resistance Tolerance

- 10 ohms to 49 ohms..... ±1 ohm
- 50 ohms to 5 megohms..... ±2 %*
- Above 5 megohms..... ±5 %

Power Rating per Resistor

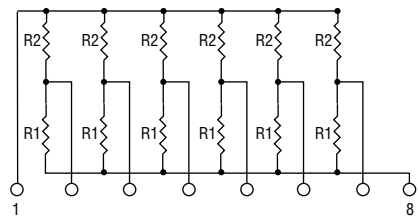
At 70 °C 0.25 watt

Power Temperature Derating Curve



Dual Terminator (104 Circuit)

- Model 4304M-104-R1/R2
- Model 4306M-104-R1/R2
- Model 4308M-104-R1/R2 (shown)
- Model 4310M-104-R1/R2



4308M-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).

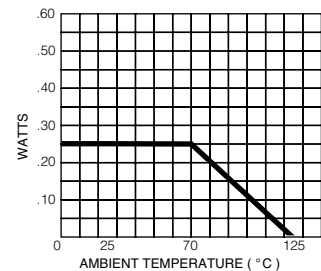
Resistance Tolerance

- Below 100 ohms ±2 ohms
- 100 ohms to 5 megohms..... ±2 %*
- Above 5 megohms..... ±5 %

Power Rating per Resistor

At 70 °C 0.25 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 |