

BOURNS®

Features

- Standard E.I.A. package compatible with automatic placement equipment
- Tape and reel packaging standard
- Marking on contrasting background for permanent identification
- Compliant leads to reduce solder joint fatiguing

- Standard electrical schematics: isolated, bussed, dual terminator
- Custom circuits are available

4800P Series - Thick Film Surface Mounted Medium Body

Product Characteristics

Resistance Range10 ohms to 2.2 megohms
 Maximum Operating Voltage50V
 Temperature Coefficient of Resistance
 50Ω and above±100ppm/°C
 below 50Ω±250ppm/°C
 TCR Tracking
50ppm/°C max.; equal values
 100ppm/°C 50W and above
 Operating Temperature
-55°C to +125°C
 Insulation Resistance
10,000 megohms min.
 Dielectric Withstanding Voltage
200 VRMS
 Lead Solderability
Meet requirements of MIL-STD-202
 Method 208

Environmental Characteristics

TESTS PER MIL-STD-202ΔR MAX.
 Short Time Overload±0.25%
 Load Life±1.00%
 Moisture Resistance±0.50%
 Resistance to Soldering Heat±0.25%
 Thermal Shock±0.25%

Physical Characteristics

FlammabilityConforms to UL94V-0
 Lead Frame Material
Copper, solder coated
 Body MaterialNovolac epoxy

How To Order

48 16 P - 1 - 103

Model
 (48 = SOM Pkg)

Number of Pins

Electrical Configuration

- 1 or 4 = Isolated*
- 2 = Bussed*
- 3 = Dual Terminator*

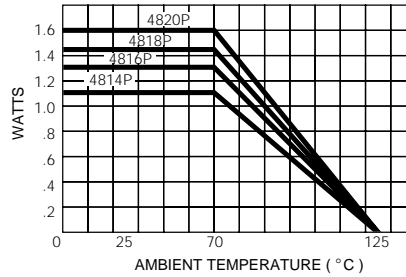
Resistance Code

- First 2 digits are significant
- Third digit represents the number of zeros to follow.

*For tube packaging, use T01, T02, T03 or T04.

Consult factory for other available options.

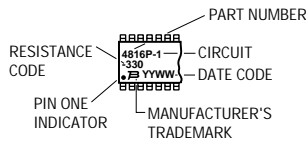
Package Power Temp. Derating Curve



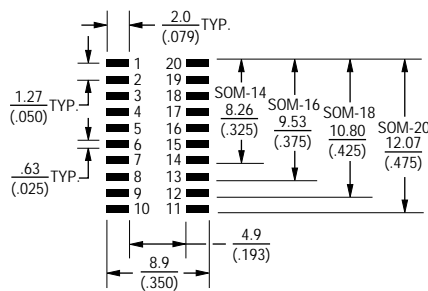
Package Power Rating at 70°C

| | |
|-------|------------|
| 4814P | 1.12 watts |
| 4816P | 1.28 watts |
| 4818P | 1.44 watts |
| 4820P | 1.60 watts |

Typical Part Marking

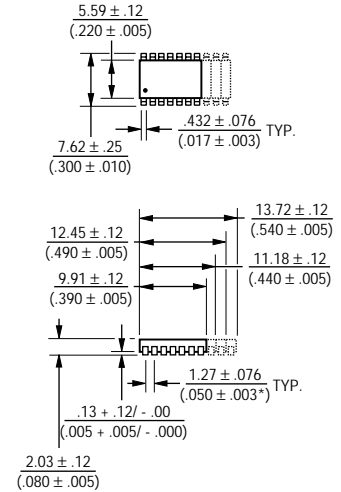


Recommended Land Pattern



NOTE: Land pattern dimensions are based on design rules established by the Institute for Interconnecting and Packaging Electronic Circuits in IPC-SM-782.

Product Dimensions



Lead coplanarity .102mm (.004 inch) max. at mounting surface.

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.

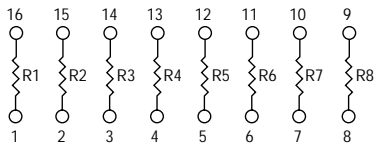
For information on specific applications,
download Bourns' application notes:

- DRAM Applications
- Dual Terminator Resistor Networks
- R/2R Ladder Networks
- SCSI Applications

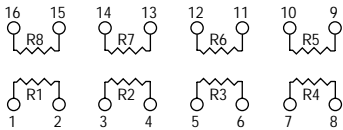
4800P Series - Thick Film Surface Mounted Medium Body **BOURNS®**

Isolated Resistors (1 And 4 Circuits)

- Model 4814P-1
- Model 4816P-1 (Shown)
- Model 4818P-1
- Model 4820P-1



- Model 4816P-4 (Shown)
- Model 4820P-4



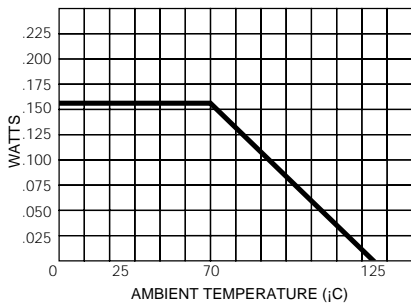
Resistance Tolerance

10 ohms to 49 ohms±1 ohm
50 ohms to 2.2 megohms.....±2%*

Power Rating per Resistor

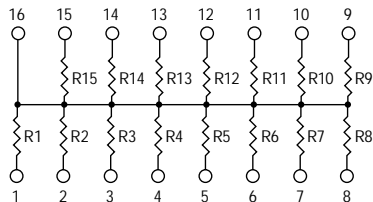
1 Circuit at 70°C0.160 watt
4 Circuit at 70°C0.160 watt

Resistor Power Temp. Derating Curve



Bussed Resistors (2 Circuit)

- Model 4814P-2
- Model 4816P-2 (Shown)
- Model 4818P-2
- Model 4820P-2



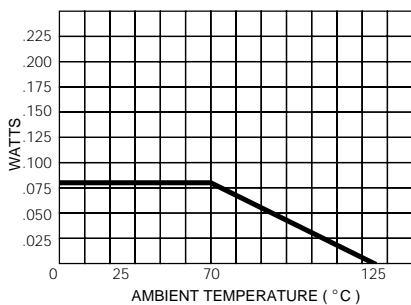
Resistance Tolerance

10 ohms to 49 ohms±1 ohm
50 ohms to 2.2 megohms±2%*

Power Rating per Resistor

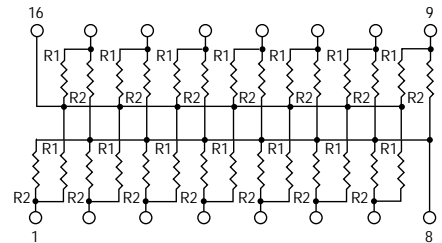
2 Circuit at 70°C0.080 watt

Resistor Power Temp. Derating Curve



Dual Terminator (3 Circuit)

- Model 4814P-3
- Model 4816P-3 (Shown)
- Model 4818P-3
- Model 4820P-3



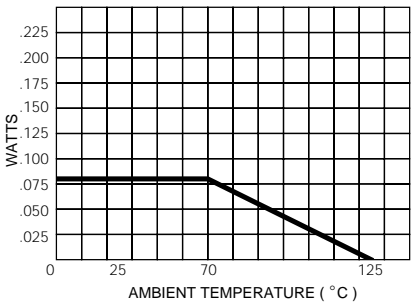
Resistance Tolerance

Below 100 ohms±2 ohms
100 ohms to 2.2 megohms±2%*

Power Rating per Resistor

3 Circuit at 70°C0.080 watt

Resistor Power Temp. Derating Curve



Popular Resistance Values (1, 4, And 2 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 |

* ±1% TOLERANCE IS AVAILABLE BY ADDING SUFFIX CODE "F" AFTER THE RESISTANCE CODE.

**NON-STANDARD VALUES AVAILABLE, WITHIN RESISTANCE RANGE.

Popular Resistance Values (3 Circuit)**

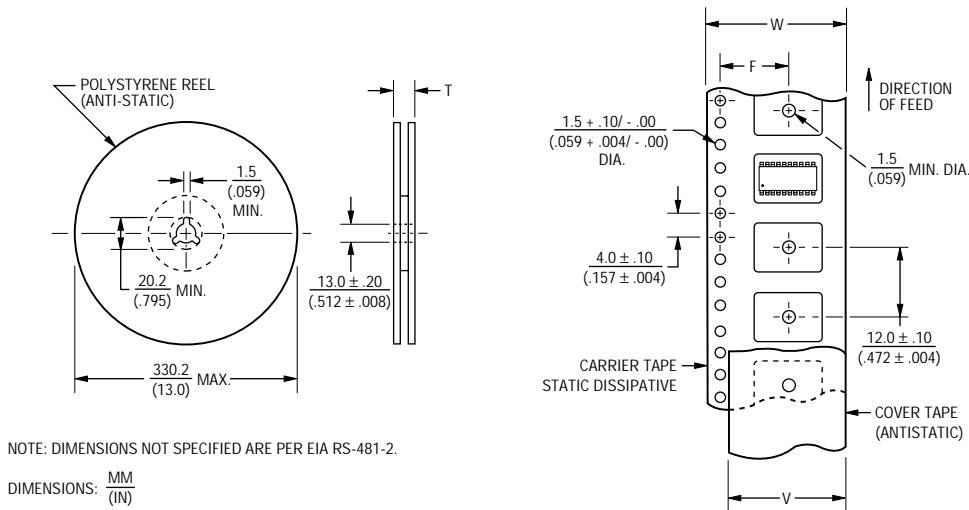
| Resistance | | | |
|----------------|----------------|----------------|----------------|
| (Ohms) | | Code | |
| R ₁ | R ₂ | R ₁ | R ₂ |
| 160 | 240 | 161 | 241 |
| 180 | 390 | 181 | 391 |
| 220 | 270 | 221 | 271 |
| 220 | 330 | 221 | 331 |
| 330 | 390 | 331 | 391 |
| 330 | 470 | 331 | 471 |
| 3,000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

Surface Mounted Ordering Guide



| Electrical Configuration | *Circuit Codes | | Examples |
|--------------------------|----------------|-------|---|
| | Tape & Reel | Tubes | |
| Isolated | 1 | T01 | 4816P-1-101 Isolated Circuit in Tape & Reel Package |
| Bussed | 2 | T02 | |
| Dual Terminated | 3 | T03 | 4816P-T01-101 Isolated Circuit in Slide Tube Package |
| Adj. Isolated | 4 | T04 | |

*4816P-X-RC: To specify package type, replace "X" with appropriate "Circuit Code".



| Model | Standard Quantity Per Reel | Carrier Tape Width (W) | Cover Tape Width (V) | Reel Width (T) | Pocket Center (F) |
|----------------------------------|----------------------------|---------------------------------|-----------------------|------------------------|---------------------------------|
| 4416P | 1,500 | $24.0 \pm .30$ (.945 ± .012) | 21.0 (.827) NOM. | 30.4 (1.197) MAX. | $11.5 \pm .10$ (.453 ± .004) |
| 4420P | 1,500 | | | | |
| 4814P 4816P 4818P 4820P | 2,000 | | | | |
| 4908P 4914P 4916P | 2,500 | 12mm 12mm 16mm | Contact Factory | Contact Factory | 8mm 8mm 8mm |

Leader Length = 500 min. } Empty Component Pockets
Trailer Length = 500mm min. } Sealed with Cover Tape