



**THE DATASHEET OF**  
**4116R-001-220**





**BOURNS®**

## Features

- RoHS compliant\* versions available (see How to Order "Termination" option)
- Compatible with automatic insertion equipment
- Superior package integrity
- Now available with improved tolerance to  $\pm 0.5\%$

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

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

## 4100R Series - Thick Film Molded DIPs

### Product Characteristics

Resistance Range ..... 10 ohms to 10 megohms  
 Maximum Operating Voltage ..... 100 V  
 Temperature Coefficient of Resistance  
 50  $\Omega$  to 2.2 M $\Omega$  .....  $\pm 100$  ppm/ $^{\circ}$ C  
 below 50  $\Omega$  .....  $\pm 250$  ppm/ $^{\circ}$ C  
 above 2.2 M $\Omega$  .....  $\pm 250$  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  
 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

**41 14 R - 1 - 152**

Model \_\_\_\_\_  
 (41 = Molded DIP)  
 Number of Pins \_\_\_\_\_  
 Physical Configuration \_\_\_\_\_  
 (R = Thick Film Low Profile)  
 Electrical Configuration \_\_\_\_\_  
 • 1 = Isolated  
 • 2 = Bussed  
 • 3 = 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 \_\_\_\_\_  
 • LF = 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 °C

4108R ..... 1.69 watts  
 4114R ..... 2.00 watts  
 4116R ..... 2.25 watts  
 4118R ..... 2.50 watts  
 4120R ..... 2.80 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.

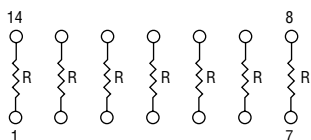
\*Terminal centerline to centerline measurements made at point of emergence of the lead from the body.

# 4100R Series - Thick Film Molded DIPs

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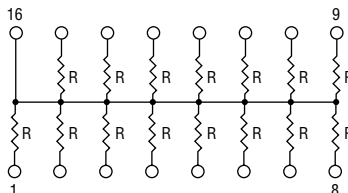
## Isolated Resistors (1 Circuit)

- Model 4108R-1-RC  
(4 Isolated Resistors)
- Model 4114R-1-RC  
(7 Isolated Resistors)
- Model 4116R-1-RC  
(8 Isolated Resistors)
- Model 4118R-1-RC  
(9 Isolated Resistors)
- Model 4120R-1-RC  
(10 Isolated Resistors)



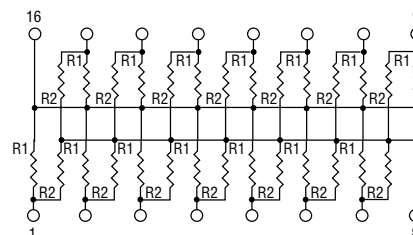
## Bussed Resistors (2 Circuit)

- Model 4108R-2-RC  
(7 Resistors, Pin 8 Common)
- Model 4114R-2-RC  
(13 Resistors, Pin 14 Common)
- Model 4116R-2-RC  
(15 Resistors, Pin 16 Common)
- Model 4118R-2-RC  
(17 Resistors, Pin 18 Common)
- Model 4120R-2-RC  
(19 Resistors, Pin 20 Common)



## Dual Resistors (3 Circuit)

- Model 4108R-3-R1/R2
- Model 4114R-3-R1/R2
- Model 4116R-3-R1/R2 (shown)
- Model 4118R-3-R1/R2
- Model 4120R-3-R1/R2



## 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 ..... 0.250 watt

## Power Temperature Derating Curve



## 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 ..... 0.125 watt

## Power Temperature Derating Curve



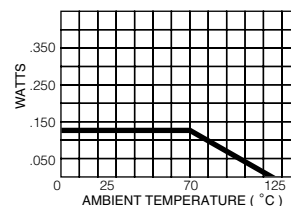
## Resistance Tolerance

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

## Power Rating per Resistor

At 70 °C ..... 0.125 watt

## Power Temperature Derating Curve



## Popular Resistance Values (1, 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  |

## Popular Resistance Values (3 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            |

\* 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.

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- [View 4116R-001-220 on WIN SOURCE](#)
- [Bourns Inc. Information](#)

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