



THE DATASHEET OF
4116R-1-393LF





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

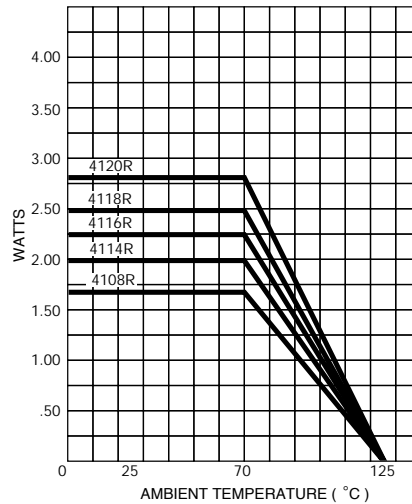
Flammability Conforms to UL94V-0
 Lead Frame Material Copper, solder coated
 Body Material Novolac epoxy

How To Order

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

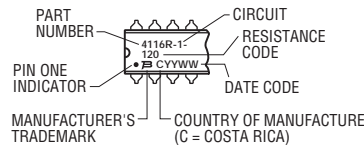


Package Power Rating at 70 $^{\circ}$ C

| | |
|-------|------------|
| 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](#).

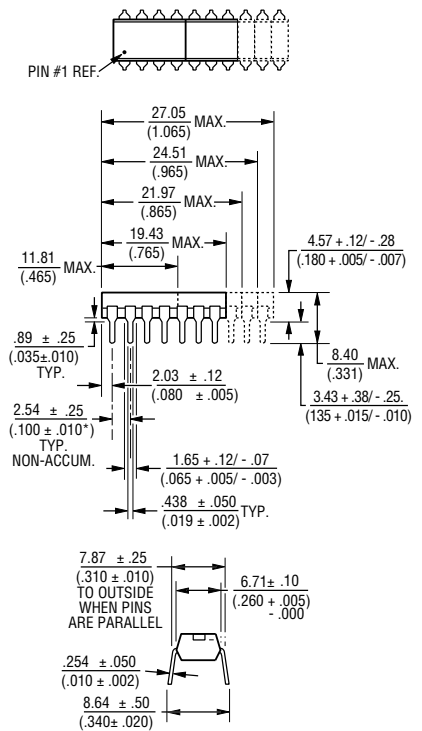


WARNING Cancer and Reproductive Harm

www.P65Warnings.ca.gov

*RoHS Directive 2015/863, Mar 31, 2015 and Annex. Specifications are subject to change without notice. Users should verify actual device performance in their specific applications. The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf

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 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 |

* 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.

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