

BOURNS®

Features

- RoHS compliant*
- Values from 0.02 to 9.10 ohms
- Tolerance of 1 % or 5 %
- Five package sizes available
- Tape and reel packaging

CRL Series - Low Value Chip Resistors

Electrical Characteristics

Characteristic	Model CRL0603	Model CRL0805	Model CRL1206	Model CRL2010	Model CRL2512
Power Rating @ 70 °C	0.100 watt	0.125 watt	0.250 watt	0.50 watt	1.00 watt
Operating Temperature Range	-55 to +125 °C				
Derated to Zero Load at	+125 °C				
Maximum Working Voltage	$(PR)^{1/2}$	$(PR)^{1/2}$	$(PR)^{1/2}$	$(PR)^{1/2}$	$(PR)^{1/2}$
Resistance Range E24 Values: See Value Table:	 0.10 to 9.10 Ω N/A	 0.10 to 9.10 Ω 0.05 to 0.09 Ω	 0.10 to 9.10 Ω 0.02 to 0.09 Ω	 0.10 to 9.10 Ω 0.02 to 0.09 Ω	 0.10 to 9.10 Ω 0.02 to 0.09 Ω
Temperature Coefficient 0.05 Ω to 9.10 Ω 0.03 Ω to 0.04 Ω 0.01 Ω to 0.02 Ω	 ±200 PPM/°C ±400 PPM/°C ±600 PPM/°C				

Value Table

Value (Ω)	CRL0603 1 %	CRL0603 5 %	CRL0805 1 %	CRL0805 5 %	CRL1206 1 %	CRL1206 5 %	CRL2010 1 %	CRL2010 5 %	CRL2512 1 %	CRL2512 5 %
0.02	Not Available	Not Available	Not Available	Not Available	A	A	P	P	P	P
0.03	Not Available	Not Available	Not Available	Not Available	A	A	P	P	P	P
0.04	Not Available	Not Available	Not Available	Not Available	A	A	P	P	P	P
0.05	Not Available	Not Available	A	A	A	A	P	P	P	P
0.06	Not Available	Not Available	A	A	A	A	A	A	A	A
0.07	Not Available	Not Available	A	A	A	A	A	A	A	A
0.08	Not Available	Not Available	A	A	A	A	A	A	A	A
0.09	Not Available	Not Available	A	A	A	A	A	A	A	A

P = Popular Value
A = Available Value (may have greater minimum order quantity)

Environmental Characteristics

Description	Method	Limit
Short Time Overload	2.5 x $(PR)^{1/2}$ for 5 seconds. (IEC 115-1 4.13)	1 % Tolerance: ΔR ≤ ±(1 % + 0.001 Ω) 5 % Tolerance: ΔR ≤ ±(2 % + 0.001 Ω)
Load Life	$(PR)^{1/2}$ for 1000 hours; 1.5 hours on; 0.5 hours off. (IEC 115-1 4.25.1)	1 % Tolerance: ΔR ≤ ±(1 % + 0.001 Ω) 5 % Tolerance: ΔR ≤ ±(2 % + 0.001 Ω)
Resistance to Soldering Heat	260 °C for 10 seconds. (IEC 115-1 4.18)	1 % Tolerance: ΔR ≤ ±(0.5 % + 0.001 Ω) 5 % Tolerance: ΔR ≤ ±(1 % + 0.001 Ω)
Thermal Shock	5 cycles from -55 °C to +125 °C, 30 minutes at temperature. (IEC 115-1 4.19)	1 % Tolerance: ΔR ≤ ±(0.5 % + 0.001 Ω) 5 % Tolerance: ΔR ≤ ±(1 % + 0.001 Ω)

*RoHS Directive 2002/95/EC Jan 27, 2003 including Annex.
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

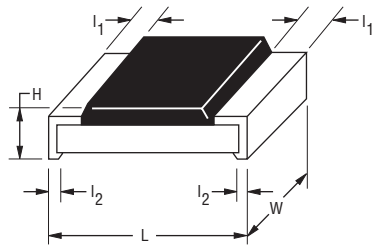
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Chip Dimensions

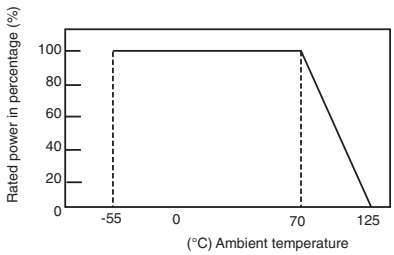
Dimension	Model CRL0603	Model CRL0805	Model CRL1206	Model CRL2010	Model CRL2512
L	1.60 ± 0.10 (0.063 ± 0.004)	2.00 ± 0.15 (0.079 ± 0.006)	3.20 ± 0.15 (0.126 ± 0.006)	5.00 ± 0.20 (0.197 ± 0.008)	6.30 ± 0.20 (0.248 ± 0.008)
W	0.80 ± 0.10 (0.031 ± 0.004)	1.25 ± 0.10 (0.049 ± 0.004)	1.60 ± 0.15 (0.063 ± 0.006)	2.50 ± 0.20 (0.098 ± 0.008)	3.10 ± 0.20 (0.122 ± 0.008)
H	0.45 ± 0.10 (0.018 ± 0.004)	0.50 ± 0.10 (0.020 ± 0.004)	0.60 ± 0.10 (0.024 ± 0.004)	0.60 ± 0.10 (0.024 ± 0.004)	0.60 ± 0.10 (0.024 ± 0.004)
I_1	0.30 ± 0.20 (0.012 ± 0.008)	0.40 ± 0.20 (0.016 ± 0.008)	0.50 ± 0.25 (0.020 ± 0.010)	0.60 ± 0.25 (0.024 ± 0.010)	0.60 ± 0.25 (0.024 ± 0.010)
I_2	0.30 ± 0.20 (0.012 ± 0.008)	0.40 ± 0.20 (0.016 ± 0.008)	0.50 ± 0.25 (0.020 ± 0.010)	0.60 ± 0.25 (0.024 ± 0.010)	0.60 ± 0.20 (0.024 ± 0.008)

Dimensional Drawing



DIMENSIONS: MM / (INCHES)

Derating Curve



How to Order

CRL 0603 - F W - R090 E LF

Model
(CRL = Chip Resistor Low Value)

Size
- 0603
- 0805
- 1206
- 2010
- 2512

Resistance Tolerance
F = ±1 %
J = ±5 %

TCR (PPM/°C)
W = ±200 (0.05 to 9.10 Ω)
V = ±400 (0.03 to 0.04 Ω)
U = ±600 (0.01 Ω to 0.02 Ω)

Resistance Value (1 % or 5 %)
- R stands for decimal point. Three significant digits: (R090 = 0.09 Ω; 9R10 = 9.10 Ω)

Packaging
- CRL0603, CRL0805, CRL1206: E = Paper Tape, Plastic Reel, 5,000 pcs.
- CRL2010, CRL2512: E = Embossed Plastic Tape, Plastic Reel, 4,000 pcs.

Termination
LF = Tin-plated (RoHS compliant)

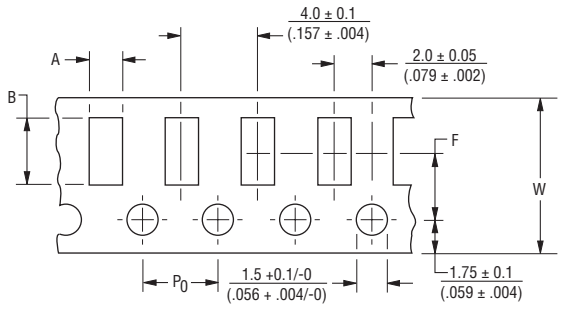
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Packaging Dimensions - Tape

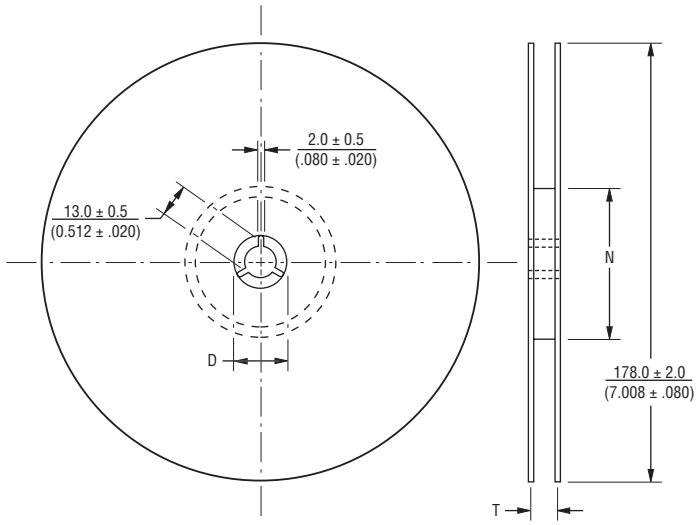
Dimension	Model CRL0603	Model CRL0805	Model CRL1206	Model CRL2010	Model CRL2512
A	1.10 ± 0.10 (0.043 ± 0.004)	1.65 +0.20 / -0.10 (0.065 +0.008 / -.004)	1.95 +0.10 / -0.05 (0.077 +0.004 / -.002)	2.80 ± 0.20 (0.110 ± 0.008)	3.50 ± 0.20 (0.138 ± 0.008)
B	1.90 ± 0.10 (0.075 ± 0.004)	2.40 +0.20 / -0.10 (0.094 +0.008 / -.004)	3.50 ± 0.10 (0.138 ± 0.004)	5.50 ± 0.20 (0.217 ± 0.008)	6.70 ± 0.20 (0.264 ± 0.008)
W	8.00 ± 0.20 (0.315 ± 0.008)	8.00 ± 0.20 (0.315 ± 0.008)	8.00 ± 0.20 (0.315 ± 0.008)	12.0 ± 0.30 (0.472 ± 0.012)	12.00 ± 0.30 (0.472 ± 0.012)
F	3.50 ± 0.05 (0.138 ± 0.002)	3.50 ± 0.05 (0.138 ± 0.002)	3.50 ± 0.05 (0.138 ± 0.002)	5.50 ± 0.05 (0.217 ± 0.002)	5.50 ± 0.05 (0.217 ± 0.002)
P_0	4.00 ± 0.10 (0.157 ± 0.004)	4.00 ± 0.10 (0.157 ± 0.004)	4.00 ± 0.10 (0.157 ± 0.004)	4.00 ± 0.10 (0.157 ± 0.004)	4.00 ± 0.10 (0.157 ± 0.004)

Packaging Dimensions - Reel

Dimension	Model CRL0603	Model CRL0805	Model CRL1206	Model CRL2010	Model CRL2512
N	80.00 ± 1.00 (3.150 ± 0.040)	80.00 ± 1.00 (3.150 ± 0.040)	80.00 ± 1.00 (3.150 ± 0.040)	80.00 ± 0.20 (3.150 ± 0.008)	80.00 ± 0.20 (3.150 ± 0.008)
D	20.50 (0.807)	20.50 (0.807)	20.50 (0.807)	20.00 (0.787) MIN.	20.00 (0.787) MIN.
T	10.00 ± 1.50 (0.394 ± 0.059)	10.00 ± 1.50 (0.394 ± 0.059)	10.00 ± 1.50 (0.394 ± 0.059)	16.70 (0.657) MAX.	16.70 (0.657) MAX.



DIMENSIONS: MM / (INCHES)



REV. 02/11

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