BOURNS®

CRH2512 Series

High Power Metal Alloy Resistor



*RoHS COMPLIANT

Features

- High power rating up to 5 watts
- Low TCR
- Low resistance from 0.5 mΩ to 30 mΩ
- RoHS compliant* and halogen free**

Applications

- Power supplies
- Industrial controllers
- Digital meters
- Current sensing
- Battery management systems

Sustainability

- Small size reduces material use
- High pallet density for lower CO_2
- Eco-logistics-friendly packing
- Energy-saving low-power design
- Corrosion-resistant for longevity
- ISO 14001, low-impact energy

Product Overview

The Bourns® CRH2512 Series offers reliable, low-ohmic current sensing performance in compact surface mount packages using metal alloy technology. Designed for high-power applications, these resistors provide power ratings up to 5 W, a low TCR of ±50 ppm/°C, and excellent long-term stability, making them well-suited for demanding industrial environments. The series is RoHS compliant without exemption, and supports operation across a wide temperature range from -55 °C to +170 °C.

With a resistance range from 0.5 mΩ to 30 mΩ, tolerance options of ±1 %, ±2 %, and ±5 %, and high current capability, the CRH2512 Series delivers a strong combination of precision, durability, and design flexibility. Ideal for applications such as battery management systems, current sensing, power supplies, industrial controllers, and digital meters, the CRH2512 Series also supports improved energy efficiency through its low resistance and low power loss design.

Electrical Characteristics (T_A) = 25 °C Unless Otherwise Noted)

Series	Power Rating	Terminal Temperature	Maximum Current		Resistance Range (mΩ)	TCR (ppm/°C)	Tolerance
			Work	Overload			
CRH2512	5 W	105 °C	100 A	200 A	0.5	±75	±1 % ±2 % ±5 %
		105 °C	70.71 A	141.42 A	1~3	±50	
		85 °C	35.35 A	70.71 A	4~30	±50	

Note:
Rated Current (A) is calculated as √(P / R) and must not exceed the maximum working current.

Environmental Characteristics

Operating Temperature ..... -55 °C to +170 °C
Storage Conditions
  Temperature..... +25 °C ±5 °C
  Humidity..... 60 % ±20 %
Moisture Sensitivity Level..... 1

Contact Information

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*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

**Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

Specifications are subject to change without notice. Users should verify actual device performance in their specific applications.

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How to Order

CRH 2512 - F Z - R001 E LF

Model
- CRH = Metal Alloy Chip Resistor

Size
- 2512 = 2512 (6332)

Resistance Tolerance
- F = ±1 %
- G = ±2 %
- J = ±5 %

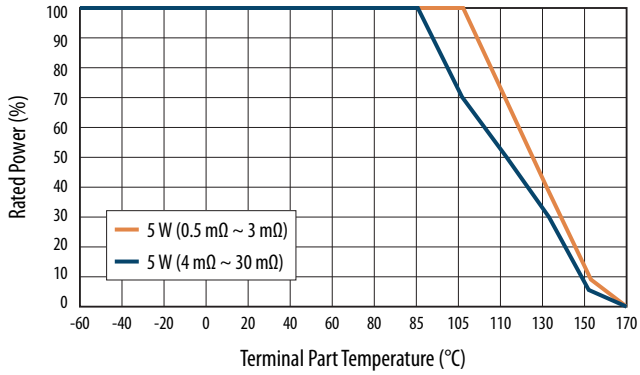
TCR (ppm/°C)
- Y = ±75
- Z = ±50

Resistance Value
- (See Resistance Value Table)
- 0.001 to 0.050 Ω: "R" represents decimal point in Ω
  (Example: R005 = 0.005 Ω)
- 0.0003 to 0.00075 Ω: "L" represents decimal point in mΩ
  (Example: L500 = 0.0005 Ω)

Packaging
- E = Embossed tape on 7-inch plastic reel
  4,000 pcs. per reel

Feature
- LF = Matte tin-plated
  (RoHS Compliant without Exemption)

Power Derating Curve



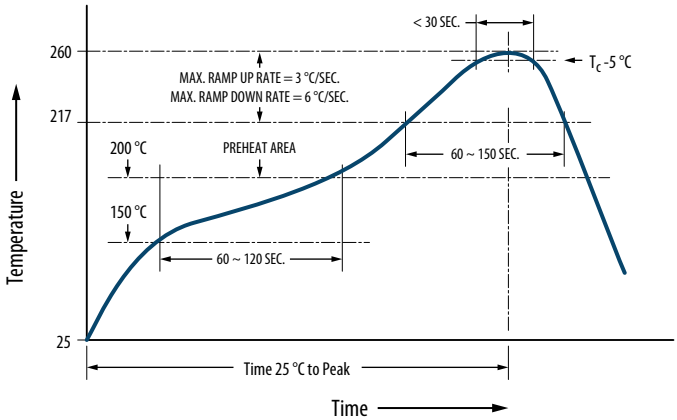
Typical Part Marking

4-digit marking to identify the resistance value.



Example: R001= 1 mΩ
1m50 = 1.5 mΩ

Soldering Profile



REFLOW TIMES: 3 TIMES MAX.

Profile Feature	Pb Free Assembly
Preheat - Temperature Min. (T_{smin}) - Temperature Max. (T_{smax}) - Time (t_s) from T_{smin} to T_{smax}	 150 °C 200 °C 60-120 seconds
Ramp-up Rate (T_L to T_p)	3 °C/second max.
Liquidus temperature (T_L)	217 °C
Time (t_L) maintained above T_L	60-150 seconds
Peak package body temperature (T_p)	260 °C
Time within 5 °C of Actual Peak Temperature t_p	<30 seconds
Ramp-Down Rate (T_p to T_L)	6 °C/second max.
Time 25 °C to Peak Temperature	8 minutes max.

Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

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Performance Characteristics

Test Items	Condition of Test	Reference Standard	Limit
Temperature Coefficient of Resistance	+25 °C to +150 °C	IEC 60115-1 Clause 4.8	Refer to TCR spec.
Short Time Overload	4X rated power for 5 seconds	IEC 60115-1 Clause 4.13	ΔR ≤ ±(1 % + 0.0005 Ω)
Endurance of Rated Terminal Part Temperature	1000 hours at rated Power* at 0.5 mΩ ~ 3 mΩ: +105 °C ±2 °C 4 mΩ~30 mΩ: +85 °C ± 2 °C 90 minutes "ON", 30 minutes "OFF"	IEC 60115-1, Clause 4.25.1	ΔR ≤ ±(1 % + 0.0005 Ω)
Resistance to Solder Heat	Above 217 °C for 60 to 150 seconds	MIL-STD-202, Method 210, condition K	ΔR ≤ ±(0.5 % + 0.0005 Ω)
Solderability	245 ±5 °C dipping time: 3 seconds	IEC 60115-1, Clause 4.17	>95 % coverage
Board Flex / Bending	2 mm deflection for 10 seconds	IEC 60115-1 / JIS C 5201-1, Clause 4.33	ΔR ≤ ±(1 % + 0.0005 Ω)
High Temperature Exposure	At 155 °C for 1000 hours At 170 °C for 1000 hours	IEC 60068-2-2	ΔR ≤ ±(1 % + 0.0005 Ω) ΔR ≤ ±(2 % + 0.0005 Ω)
Temperature Cycling	1000 cycles (-55 °C to +155 °C) measurement at 24 ±4 hours after test conclusion; 30 min. maximum dwell time at each temperature extreme	JESD22 Method JA-104	ΔR ≤ ± (1 % + 0.0005 Ω)
Biased Humidity	1,000 hours; 85 °C / 85 % RH, 10 % of operating power; measurement at 24 ±4 hours after test conclusion	MIL-STD-202 Method 103	ΔR ≤ ± (1 % + 0.0005 Ω)
Moisture Resistance	T=24 hours / cycle ,10 cycles unpowered Steps 7a & 7b not required	MIL-STD 202 Method 106	ΔR ≤ ± (1 % + 0.0005 Ω)
Dielectric Withstanding Voltage	Applied 500 VAC for 1 minute	JIS-C5201-1 4.7	No visual evidence of arcing, flashover, or physical damage
Core Body Strength	Central part pressurizing force: 5 N, 10 seconds	JIS-C5201-1 4.15	No evidence of physical damage
Terminal Strength	Pressurizing force 17.7 N for 60 seconds	AEC Q200-006	No evidence of physical damage

Resistance Value Codes

Code	R Value (Ω)	Code	R Value (Ω)	Code	R Value (Ω)	Code	R Value (Ω)	Code	R Value (Ω)	Code	R Value (Ω)
L500	0.0005	R002	0.002	R005	0.005	R009	0.009	R014	0.014	R020	0.02
L750	0.0008	R003	0.003	R006	0.006	R010	0.01	R015	0.015	R022	0.022
R001	0.001	3L50	0.0035	R007	0.007	R011	0.011	R016	0.016	R025	0.025
1L50	0.0015	R004	0.004	R008	0.008	R012	0.012	R018	0.018	R030	0.03

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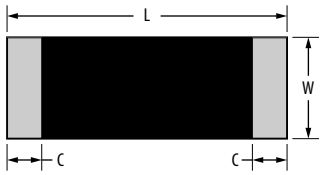
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Product Dimensions



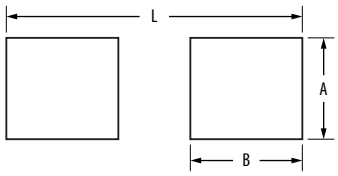


DIMENSIONS: MM / (INCHES)

Resistance Range (mΩ)	Dimensions				
	L	W	C	D	T
0.5	6.35 ± 0.254 (0.25 ± 0.01)	3.05 ± 0.254 (0.12 ± 0.01)	1.150 ± 0.254 (0.045 ± 0.01)	2.550 ± 0.254 (0.100 ± 0.01)	0.72 ± 0.254 (0.028 ± 0.01)
1				2.200 ± 0.254 (0.087 ± 0.01)	0.75 ± 0.254 (0.030 ± 0.01)
1.5				1.400 ± 0.254 (0.055 ± 0.01)	0.75 ± 0.254 (0.030 ± 0.01)
2~5				1.150 ± 0.254 (0.045 ± 0.01)	0.75 ± 0.254 (0.030 ± 0.01)
6~30				1.100 ± 0.254 (0.043 ± 0.01)	0.58 ± 0.254 (0.023 ± 0.01)

Recommended Solder Pad Layout

Resistance Range (mΩ)	Dimensions		
	A	B	L
0.5	3.68 (0.145)	3.425 (0.135)	7.75 (0.305)
1		3.225 (0.127)	
1.5		3.225 (0.127)	
2~30		2.60 (0.102)	



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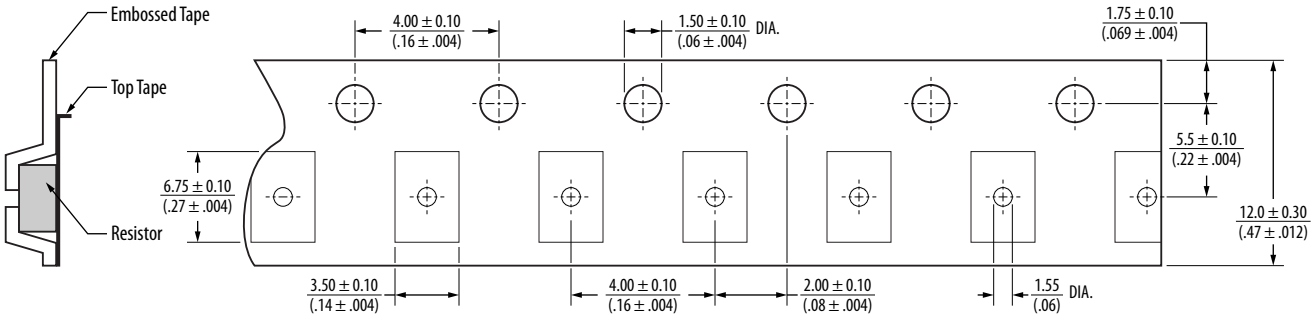
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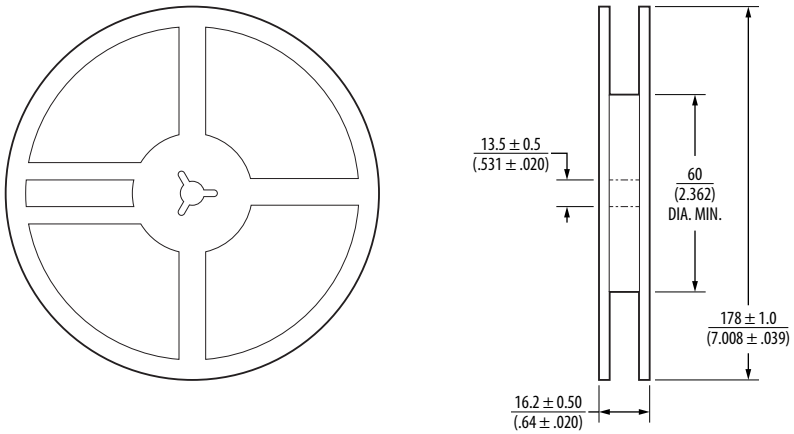


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Packaging Information

Specifications and tolerances comply with EIA RS-481A requirements.





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