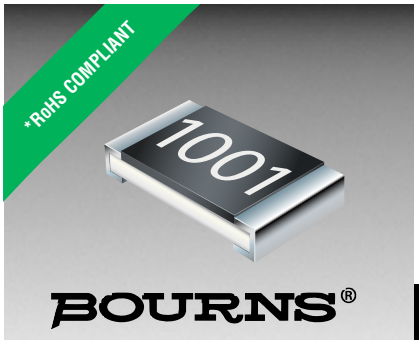


Features

- Anti-surge
- Wide resistance range
- RoHS compliant*

Applications

- Pulse power applications
- High voltage applications
- Consumer electronics
- Telecommunications
- Power supplies

CRS Series - High Power Anti-Surge Chip Resistor

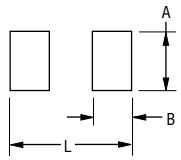
Electrical Characteristics

Characteristic	CRS0805	CRS1206	CRS2010	CRS2512
Power Rating @ 70°C	0.25 W	0.5 W	1 W	2 W
Operating Temperature Range	-55 °C to +155 °C			
Maximum Working Voltage	150 V	200 V	200 V	300 V
Maximum Overload Voltage	300 V	400 V	400 V	600 V
Resistance Range / Temperature Coefficient	1 to 9.9 ohms / ±200 PPM/°C 10 ohms to 1 megohm / ±100 PPM/°C			
Tolerance / Standard Resistance Values	1 % / E96 + E24 5 % / E24			

Performance Characteristics

Test	Conditions	Specification
Short Time Overload	2 times rated voltage or maximum overload voltage for 5 seconds.	ΔR ≤±(2 % + 0.1 Ω)
Solderability	245 ±5 °C for 3 ±0.5 seconds.	Over 95 % coverage
Resistance to Solder Heat	260 ±5 °C for 10 ± 1 seconds.	ΔR ≤±(1 % + 0.1 Ω)
Load Life Humidity	40 ±2 °C, 90 to 95 %. 1.5 hours ON, 0.5 hours OFF for 1000 hours at rated power.	ΔR ≤±(3 % + 0.1 Ω)
Load Life	70 °C. 1.5 hours ON, 0.5 hours OFF for 1000 hours at rated power.	ΔR ≤±(3 % + 0.1 Ω)
Temperature Cycle	-55 °C (30 min.), +25 °C (2~3 min.), +155 °C (30 min.), +25 °C (2~3 min.) for five cycles.	ΔR ≤±(1 % + 0.05 Ω)

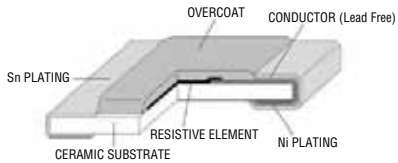
Recommended Solder Pad Layout



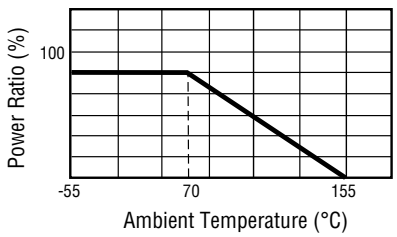
DIMENSIONS: MM / (INCHES)

Model	Dimension		
	A	B	L
CRS0805	1.30 (0.051)	1.15 (0.045)	3.50 (0.138)
CRS1206	1.80 (0.071)	1.30 (0.051)	4.70 (0.185)
CRS2010	3.00 (0.118)	1.50 (0.059)	6.80 (0.268)
CRS2512	3.70 (0.146)	2.45 (0.096)	7.60 (0.299)

Construction

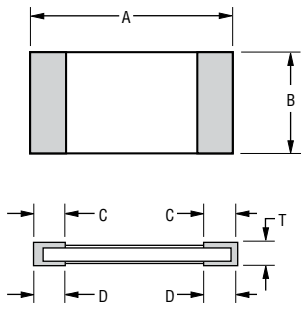


Derating Curve



Product Dimensions

Model	Dimension				
	A	B	C	D	T
CRS0805	2.00 ± 0.10 (0.079 ± 0.004)	1.25 ± 0.10 (0.049 ± 0.004)	0.40 ± 0.20 (0.016 ± 0.008)	0.40 ± 0.20 (0.016 ± 0.008)	0.50 ± 0.10 (0.020 ± 0.004)
CRS1206	3.10 ± 0.10 (0.122 ± 0.004)	1.60 ± 0.10 (0.063 ± 0.004)	0.50 ± 0.20 (0.020 ± 0.008)	0.50 ± 0.20 (0.020 ± 0.008)	0.55 ± 0.10 (0.022 ± 0.004)
CRS2010	5.00 ± 0.20 (0.197 ± 0.008)	2.50 ± 0.20 (0.098 ± 0.008)	0.60 ± 0.25 (0.024 ± 0.010)	0.60 ± 0.25 (0.024 ± 0.010)	0.55 ± 0.10 (0.022 ± 0.004)
CRS2512	6.40 ± 0.20 (0.252 ± 0.008)	3.20 ± 0.20 (0.126 ± 0.008)	0.60 ± 0.25 (0.024 ± 0.010)	1.80 ± 0.25 (0.071 ± 0.010)	0.60 ± 0.15 (0.024 ± 0.006)

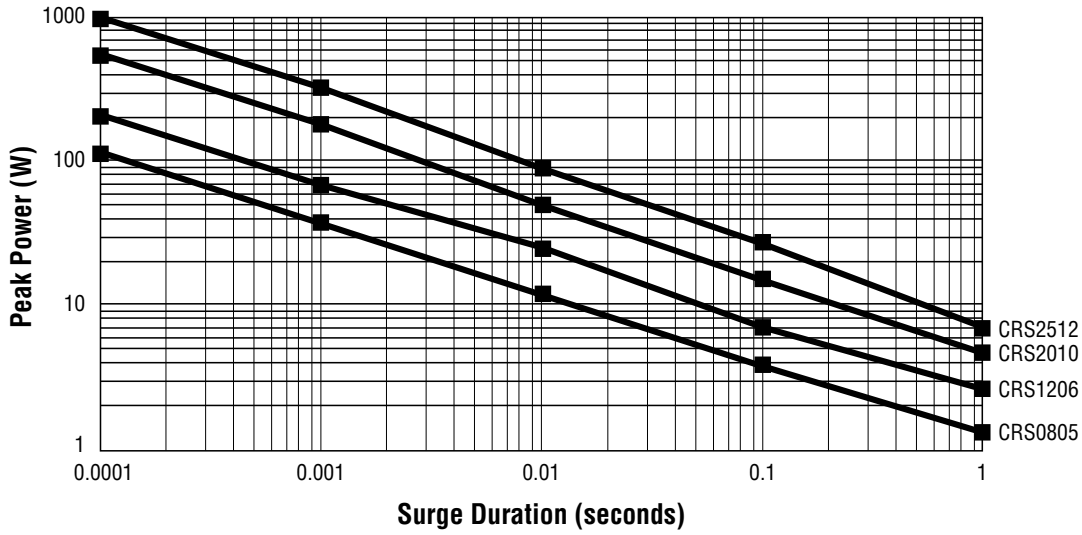


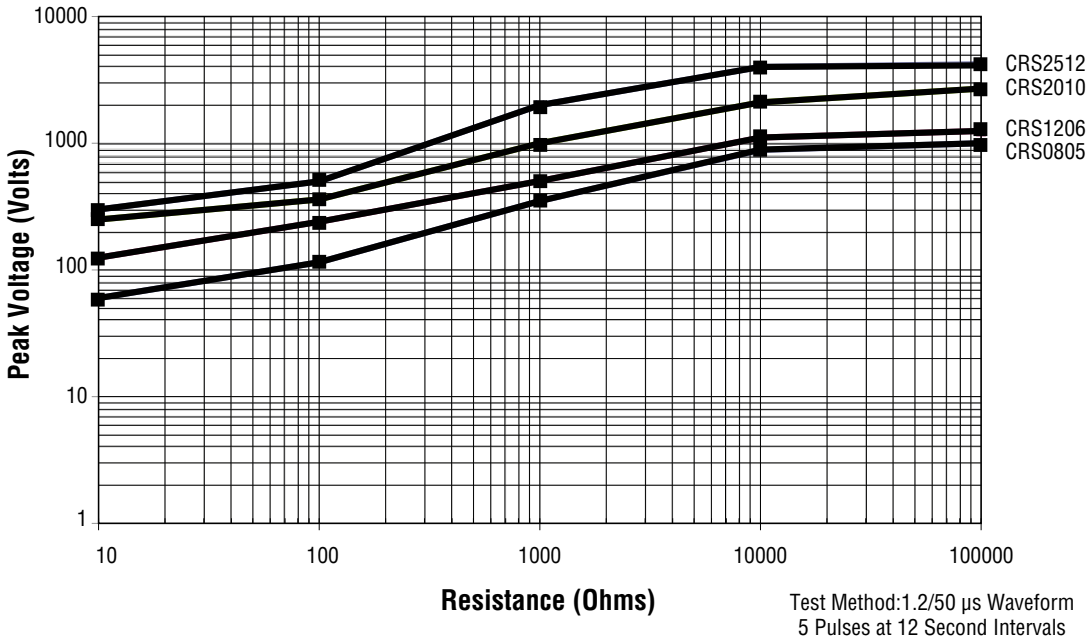
DIMENSIONS: MM / (INCHES)

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.

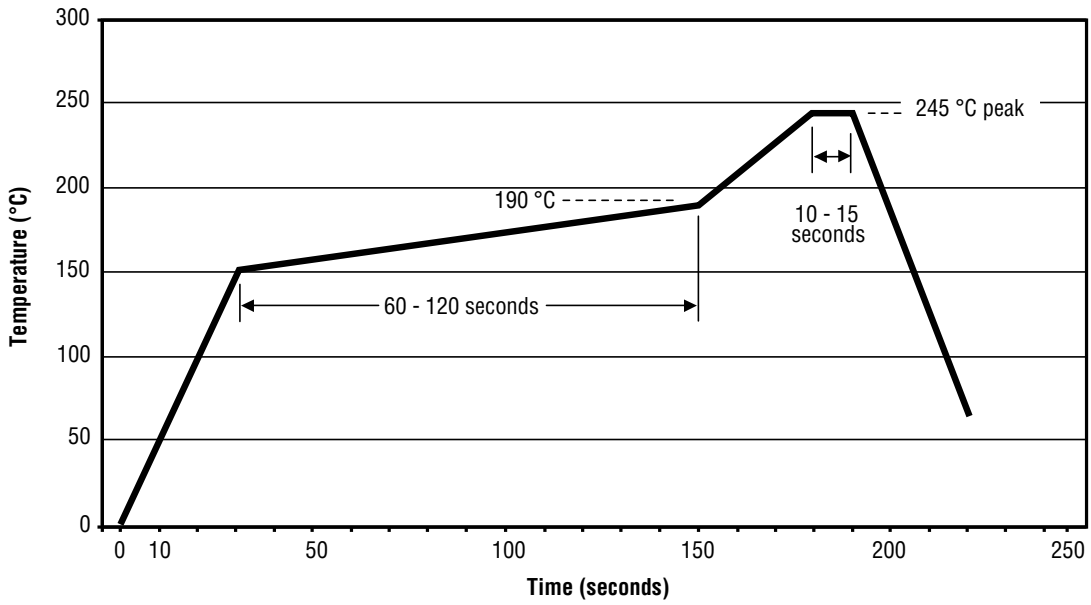
Surge Performance





Test Method:1.2/50 µs Waveform
5 Pulses at 12 Second Intervals

Soldering Profile



How to Order

CRS 2512 - F X - 24R3 E LF

Model
- CRS = Anti-Surge Chip Resistor

Size
- 0805
- 1206
- 2010
- 2512

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

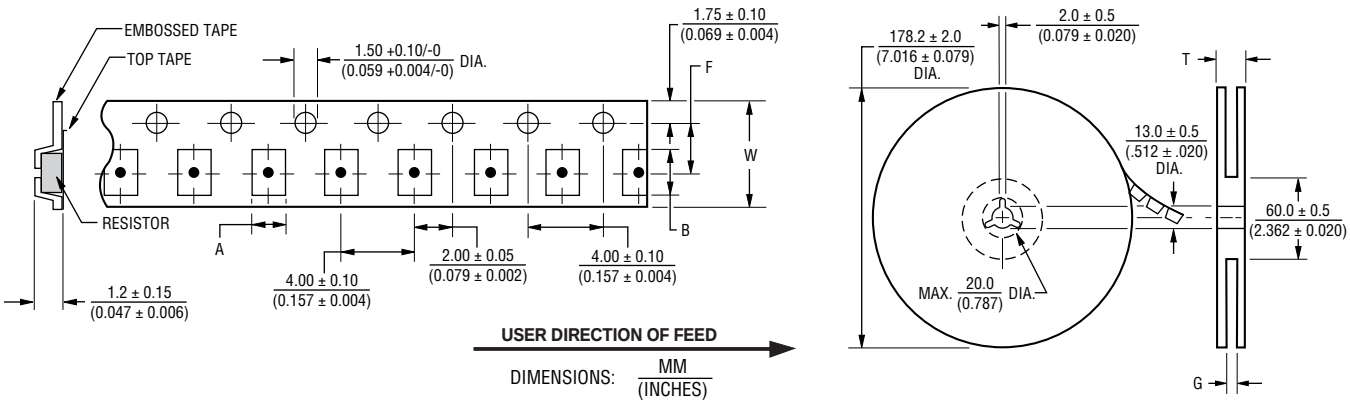
TCR
- X = ±100 PPM/°C
- W = ±200 PPM/°C

Resistance Value
- 1% Tolerance:
  - <100 ohms ..... "R" represents decimal point *(example: 24R3 = 24.3 ohms)*
  - ≥100 ohms..... First three digits are significant, fourth digit represents number of zeros to follow *(example: 8252 = 82.5K ohms)*
- 5% Tolerance:
  - <10 ohms ..... "R" represents decimal point *(example: 4R7 = 4.7 ohms)*
  - ≥10 ohms..... First two digits are significant, third digit represents number of zeros to follow *(example: 474 = 470K ohms)*

Packaging
- E = 5,000 pieces per 7-inch reel (CRS0805, CRS1206)
- 4,000 pieces per 7-inch reel (CRS2010, CRS2512)

Termination
- LF = Tin-plated (RoHS Compliant)

Packaging Dimensions (Conforms to EIA RS-481A)



Model	Dimension			
	A	B	F	W
CRS0805	1.65 ± 0.20 (0.065 ± 0.008)	2.40 ± 0.20 (0.094 ± 0.008)	3.50 ± 0.05 (0.138 ± 0.002)	8.00 ± 0.30 (0.315 ± 0.012)
CRS1206	2.00 ± 0.20 (0.079 ± 0.008)	3.60 ± 0.10 (0.142 ± 0.004)	3.50 ± 0.05 (0.138 ± 0.002)	8.00 ± 0.30 (0.315 ± 0.012)
CRS2010	2.80 ± 0.20 (0.110 ± 0.008)	5.50 ± 0.20 (0.217 ± 0.008)	5.50 ± 0.05 (0.217 ± 0.002)	12.00 ± 0.30 (0.472 ± 0.012)
CRS2512	3.50 ± 0.20 (0.138 ± 0.008)	6.70 ± 0.20 (0.264 ± 0.008)	5.50 ± 0.05 (0.217 ± 0.002)	12.00 ± 0.30 (0.472 ± 0.012)

Model	Pcs. per Reel	Dimension	
		G	T (MAX.)
CRS0805	5,000	10.00 ± 1.50 (0.394 ± 0.059)	20.00 (0.587)
CRS1206			
CRS2010	4,000	13.80 ± 1.50 (0.543 ± 0.059)	16.70 (0.657)
CRS2512			

BOURNS®

Asia-Pacific: Tel: +886-2 2562-4117 • Email: asiacus@bourns.com
EMEA: Tel: +36 88 885 877 • Email: eurocus@bourns.com
The Americas: Tel: +1-951 781-5500 • Email: americus@bourns.com
www.bourns.com

REV. 09/19

Legal Disclaimer Notice

BOURNS®

This legal disclaimer applies to purchasers and users of Bourns® products manufactured by or on behalf of Bourns, Inc. and its affiliates (collectively, "Bourns").

Unless otherwise expressly indicated in writing, Bourns® products and data sheets relating thereto are subject to change without notice. Users should check for and obtain the latest relevant information and verify that such information is current and complete before placing orders for Bourns® products.

The characteristics and parameters of a Bourns® product set forth in its data sheet are based on laboratory conditions, and statements regarding the suitability of products for certain types of applications are based on Bourns' knowledge of typical requirements in generic applications. The characteristics and parameters of a Bourns® product in a user application may vary from the data sheet characteristics and parameters due to (i) the combination of the Bourns® product with other components in the user's application, or (ii) the environment of the user application itself. The characteristics and parameters of a Bourns® product also can and do vary in different applications and actual performance may vary over time. Users should always verify the actual performance of the Bourns® product in their specific devices and applications, and make their own independent judgments regarding the amount of additional test margin to design into their device or application to compensate for differences between laboratory and real world conditions.

Unless Bourns has explicitly designated an individual Bourns® product as meeting the requirements of a particular industry standard (e.g., ISO/TS 16949) or a particular qualification (e.g., UL listed or recognized), Bourns is not responsible for any failure of an individual Bourns® product to meet the requirements of such industry standard or particular qualification. Users of Bourns® products are responsible for ensuring compliance with safety-related requirements and standards applicable to their devices or applications.

Bourns® products are not recommended, authorized or intended for use in nuclear, lifesaving, life-critical or life-sustaining applications, nor in any other applications where failure or malfunction may result in personal injury, death, or severe property or environmental damage. Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any Bourns® products in such unauthorized applications might not be safe and thus is at the user's sole risk. Life-critical applications include devices identified by the U.S. Food and Drug Administration as Class III devices and generally equivalent classifications outside of the United States.

Bourns expressly identifies those Bourns® standard products that are suitable for use in automotive applications on such products' data sheets in the section entitled "Applications." Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any other Bourns® standard products in an automotive application might not be safe and thus is not recommended, authorized or intended and is at the user's sole risk. If Bourns expressly identifies a sub-category of automotive application in the data sheet for its standard products (such as infotainment or lighting), such identification means that Bourns has reviewed its standard product and has determined that if such Bourns® standard product is considered for potential use in automotive applications, it should only be used in such sub-category of automotive applications. Any reference to Bourns® standard product in the data sheet as compliant with the AEC-Q standard or "automotive grade" does not by itself mean that Bourns has approved such product for use in an automotive application.

Bourns® standard products are not tested to comply with United States Federal Aviation Administration standards generally or any other generally equivalent governmental organization standard applicable to products designed or manufactured for use in aircraft or space applications. Bourns expressly identifies Bourns® standard products that are suitable for use in aircraft or space applications on such products' data sheets in the section entitled "Applications." Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any other Bourns® standard product in an aircraft or space application might not be safe and thus is not recommended, authorized or intended and is at the user's sole risk.

The use and level of testing applicable to Bourns® custom products shall be negotiated on a case-by-case basis by Bourns and the user for which such Bourns® custom products are specially designed. Absent a written agreement between Bourns and the user regarding the use and level of such testing, the above provisions applicable to Bourns® standard products shall also apply to such Bourns® custom products.

Users shall not sell, transfer, export or re-export any Bourns® products or technology for use in activities which involve the design, development, production, use or stockpiling of nuclear, chemical or biological weapons or missiles, nor shall they use Bourns® products or technology in any facility which engages in activities relating to such devices. The foregoing restrictions apply to all uses and applications that violate national or international prohibitions, including embargos or international regulations. Further, Bourns® products and Bourns technology and technical data may not under any circumstance be exported or re-exported to countries subject to international sanctions or embargoes. Bourns® products may not, without prior authorization from Bourns and/or the U.S. Government, be resold, transferred, or re-exported to any party not eligible to receive U.S. commodities, software, and technical data.

To the maximum extent permitted by applicable law, Bourns disclaims (i) any and all liability for special, punitive, consequential, incidental or indirect damages or lost revenues or lost profits, and (ii) any and all implied warranties, including implied warranties of fitness for particular purpose, non-infringement and merchantability.

For your convenience, copies of this Legal Disclaimer Notice with German, Spanish, Japanese, Traditional Chinese and Simplified Chinese bilingual versions are available at:

Web Page: http://www.bourns.com/legal/disclaimers-terms-and-policies

PDF: http://www.bourns.com/docs/Legal/disclaimer.pdf

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Bourns:

CRS2010-FW-4R99ELF CRS1206-FW-1R00ELF CRS1206-FX-4701ELF CRS0805-JX-102ELF CRS2010-FX-1001ELF CRS2512-FX-1002ELF CRS0805-JX-100ELF CRS1206-FX-1002ELF CRS2010-FX-10R0ELF CRS2010-FX-1004ELF CRS2512-FX-1004ELF CRS2512-FX-1000ELF CRS0805-FW-1R00ELF CRS2010-FX-47R0ELF CRS1206-FX-1000ELF CRS2010-JW-4R7ELF CRS1206-FX-1004ELF CRS2512-FW-1R00ELF CRS2010-FX-4701ELF CRS1206-JX-103ELF CRS2512-JX-102ELF CRS2010-FX-1000ELF CRS1206-FX-1001ELF CRS2512-FX-1001ELF CRS0805-FX-1000ELF CRS2512-FX-47R0ELF CRS0805-FX-1001ELF CRS2512-JW-4R7ELF CRS0805-JW-3R3ELF CRS2512-FW-3R30ELF CRS1206-FW-3R30ELF CRS0805-FX-1004ELF CRS2512-FX-10R0ELF CRS0805-FX-10R0ELF CRS1206-FX-33R0ELF CRS1206-FX-3003ELF CRS2512-JX-100ELF CRS0805-FX-1002ELF CRS1206-JX-101ELF CRS2010-JX-100ELF CRS1206-JX-100ELF CRS2010-FX-2402ELF CRS1206-FX-1180ELF CRS0805-FX-3302ELF CRS0805-FX-4701ELF CRS0805-FX-8201ELF CRS1206-FX-1623ELF CRS2512-FW-4R02ELF CRS2512-FX-27R0ELF CRS1206-FX-2491ELF CRS0805-FX-15R0ELF CRS0805-FX-75R0ELF CRS1206-FX-2202ELF CRS1206-FX-4702ELF CRS1206-FX-47R0ELF CRS1206-JW-3R0ELF CRS2010-FX-1002ELF CRS2512-FW-3R90ELF CRS2512-FX-5110ELF CRS2512-FX-7500ELF CRS2010JX332ELF CRS2512JX471ELF