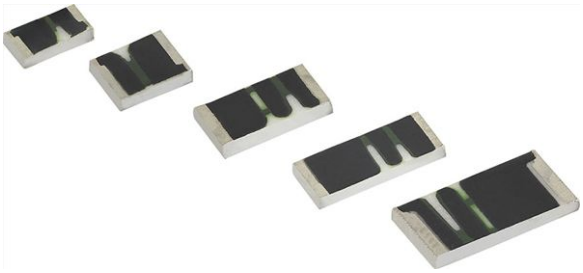
Thick Film Chip Resistors, High Voltage



FEATURES

- AEC-Q200 qualified
- High voltage up to 3000 V
- Automatic placement capability
- Tape and reel packaging available
- Termination style: 3-sided wraparound termination
- Internationally standardized sizes
- Termination material: solder-coated nickel barrier
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

LINKS TO ADDITIONAL RESOURCES

3D Models

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	CASE SIZE	POWER RATING $P_{70\,°C}$ W	MAXIMUM WORKING VOLTAGE (1) V	RESISTANCE RANGE (2) Ω	TOLERANCE ± %	TEMPERATURE COEFFICIENT (3) (-55 °C to +155 °C) ± ppm/°C
CRHA1206	1206	0.30	1500	2M to 100M	1, 2, 5, 10, 20	100
CRHA1210	1210	0.45	1750	4M to 100M	1, 2, 5, 10, 20	100
CRHA2010	2010	0.50	2000	6M to 100M	1, 2, 5, 10, 20	100
CRHA2510	2510	0.60	2500	10M to 500M	1, 2, 5, 10, 20	100
CRHA2512	2512	1.0	3000	10M to 500M	1, 2, 5, 10, 20	100

Notes

(1) Continuous working voltage shall be $\sqrt{P \times R}$ or maximum working voltage, whichever is less
(2) Resistance values are calibrated at 100 V_{DC}. Calibration at other voltages available upon request
(3) Reference only: not for all values specified. Consult factory for your size and value

GLOBAL PART NUMBER INFORMATION

Global Part Numbering: CRHA1206AF100MFKFB

C	R	H	A	1	2	0	6	A	F	1	0	0	M	F	K	F	B

GLOBAL MODEL	SIZE	TERMINAL STYLE	TERMINAL MATERIAL	RESISTANCE VALUE	TOLERANCE	TCR	SOLDER TERMINATION	PACKAGING
CRHA	**1206** **1210** **2010** **2510** **2512**	**A** = 3-sided	**F** = nickel barrier	**M** = MΩ **4M70** = 4.7 MΩ **10M0** = 10 MΩ	**F** = ± 1 % **G** = ± 2 % **J** = ± 5 % **K** = ± 10 % **M** = ± 20 %	**K** = 100 ppm **L** = 150 ppm **N** = 200 ppm **R** = 250 ppm **M** = 300 ppm **W** = 350 ppm **P** = 500 ppm	**E** = Sn100	**B** = bulk (250 pcs max.) **F** = T/R (full reel) **1** = T/R (1000 pcs) **5** = T/R (500 pcs) **T** = T/R (250 pcs min.)

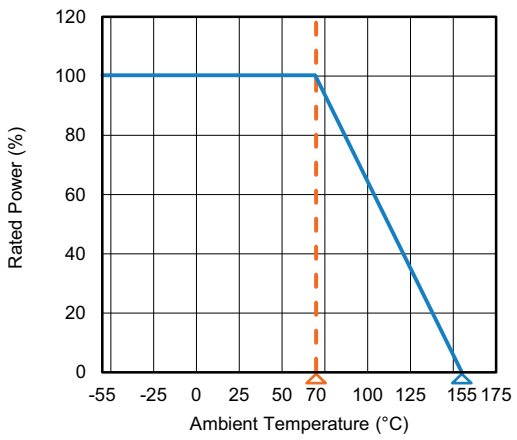
Note

- For additional information on packaging, refer to the Surface Mount Resistor Packaging document (www.vishay.com/doc?31543)

MECHANICAL SPECIFICATIONS	
Resistive element	Ruthenium oxide
Encapsulation	Glass
Substrate	96 % alumina
Termination	Nickel barrier (standard)
Solder finish	Pure tin

ENVIRONMENTAL SPECIFICATIONS	
Operating temperature	-55 °C to +155 °C
Life	Less than 1.0 % change when tested at full rated power
Short time overload	Less than 0.5 % ΔR

DERATING CURVE



Note

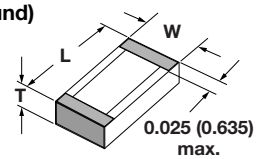
- Reference only: not for all values specified. Consult factory for your size and value

VOLTAGE COEFFICIENT OF RESISTANCE CHART

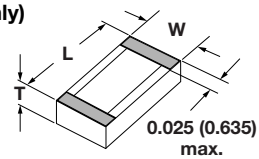
SIZE	VALUE (Ω)	VCR (ppm/V)
CRHA1206	2M to 100M	25
CRHA1210	4M to 100M	25
CRHA2010	6M to 100M	15
CRHA2510	10M to 99M	10
	100M to 500M	15
CRHA2512	10M to 500M	10

DIMENSIONS in inches (millimeters)

Termination Style A
(3-sided wraparound)



Termination Style B
(top conductor only)



MODEL	LENGTH (L) ± 0.006 (0.152)	WIDTH (W) ± 0.006 (0.152)	THICKNESS (T) ± 0.004 (0.102)
CRHA1206	0.125	0.063	0.025
CRHA1210	0.125	0.100	0.025
CRHA2010	0.200	0.100	0.025
CRHA2510	0.250	0.100	0.025
CRHA2512	0.250	0.126	0.025

PERFORMANCE		
TEST	**CONDITIONS OF TEST**	**TEST RESULTS (TYPICAL TEST LOTS)**
Thermal shock	-55 °C to +150 °C, 1000 cycles, 15 min at each extreme	± (1.0 % + 0.05 Ω)
High temperature exposure	2000 h at +125 °C	± (1.0 % + 0.05 Ω)
Bias humidity	+85 °C, 85 % RH, 10 % bias, 1000 h	± (1.0 % + 0.05 Ω) (1)
Mechanical shock	100 *g*'s for 6 ms, 5 pulses	± (0.5 % + 0.05 Ω)
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	± (0.5 % + 0.05 Ω)
Load life	1000 h at rated power, +70 °C, 1.5 h "ON", 0.5 h "OFF"	± (1.0 % + 0.05 Ω)
Resistance to solder heat	+260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± (1.0 % + 0.05 Ω)
Moisture resistance	MIL-STD-202, method 106, 0 % power, 7a and 7b not required	± (1.0 % + 0.05 Ω)

Note

(1) Due to the high values and small case size, it is recommended the 1206 case size parts be potted for electrical isolation from high humidity conditions

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay’s knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer’s technical experts. Product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.