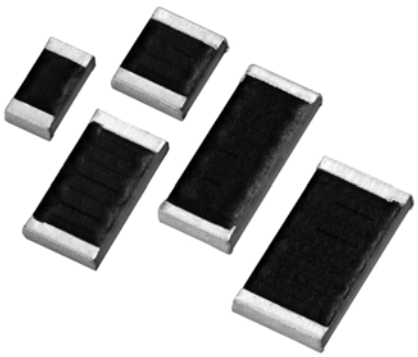
Thick Film Chip Resistors, Medium Voltage



FEATURES

Pb Available

RoHS* Available

HALOGEN FREE

- Voltages up to 1415 V
- Automatic placement capability
- Termination style: 3-sided wraparound termination or single termination flip chip available
- Tape and reel packaging available
- Suitable for solderable, epoxy bondable, or wire bondable applications
- Internationally standardized sizes, custom sizes available
- Termination material: solder-coated nickel barrier or solder coated non-magnetic terminations standard; gold, palladium silver, platinum gold, platinum silver or platinum palladium gold terminations available
- Multiple styles, termination materials and configurations, allow wide design flexibility
- Epoxy bondable or wire bondable non-magnetic terminations available
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Note

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details.

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	CASE SIZE	POWER RATING $P_{70\,°C}$ W	MAX. WORKING VOLTAGE (2) V	RESISTANCE RANGE (1) Ω	TOLERANCE ± %	TEMPERATURE COEFFICIENT (3) ± ppm/°C
CRMV1206	1206	0.30	550	150 to 15M	0.5, 1, 2, 5, 10, 20	100
CRMV1210	1210	0.35	650	300 to 20M	0.5, 1, 2, 5, 10, 20	100
CRMV2010	2010	0.50	895	500 to 40M	0.5, 1, 2, 5, 10, 20	100
CRMV2510	2510	0.80	1265	1K to 60M	0.5, 1, 2, 5, 10, 20	100
CRMV2512	2512	1.0	1415	1K to 75M	0.5, 1, 2, 5, 10, 20	100

Notes

- For non-standard sizes, lower values or higher power rating requirement, contact factory.

(1) Resistance values calibrated at 10 V_{DC}. Calibration at other voltages available upon request.

(2) Continuous working voltage shall be $\sqrt{P \times R}$ or Maximum Working Voltage, whichever is less.

(3) Reference only: Not for all values specified. Consult factory for your size and value.

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CRMV1206	CRMV1210	CRMV2010	CRMV2510	CRMV2512
Rated dissipation at 70 °C	W	0.30	0.35	0.50	0.80	1.0
Limiting element voltage	V≅	550	650	895	1265	1415
Insulation resistance	Ω	≥ 10^{11}	≥ 10^{11}	≥ 10^{11}	≥ 10^{11}	≥ 10^{11}
Category temperature range	°C	-55 to +155	-55 to +155	-55 to +155	-55 to +155	-55 to +155
Weight/1000 (typical)	g	12.2	19.6	32.2	39.8	49.7

VOLTAGE COEFFICIENT OF RESISTANCE

MODEL	VALUE (Ω)	VCR (ppm/V)	FURTHER INSTRUCTIONS
CRMV1206	150 to 15M		Consult factory
CRMV1210	300 to 20M		Consult factory
CRMV2010	500 to 40M		Consult factory
CRMV2510	1K to 60M		Consult factory
CRMV2512	1K to 75M		Consult factory

GLOBAL PART NUMBER INFORMATION

Global Part Numbering: CRMV1210AF1K00FLET (preferred part number format)

C	R	M	V	1	2	1	0	A	F	1	K	0	0	F	L	E	T

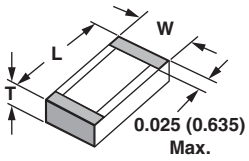
GLOBAL MODEL	SIZE	TERMINAL STYLE	TERMINAL MATERIAL	RESISTANCE VALUE	TOLERANCE	TCR	SOLDER TERMINATION	PACKAGING
CRMV	**1206** **1210** **2010** **2510** **2512**	**A** = 3-sided **B** = Top only	**F** = Nickel barrier **G** = Non-magnetic **A** = Palladium silver **B** = Palladium gold **C** = Gold **D** = Platinum silver **E** = Platinum palladium gold	**R** = Ω **K** = kΩ **M** = MΩ **110R** = 110 Ω **49K9** = 49.9 kΩ **10M0** = 10 MΩ	**D** = ± 0.5 % **F** = ± 1 % **G** = ± 2 % **J** = ± 5 % **K** = ± 10 % **M** = ± 20 %	**K** = 100 ppm **L** = 150 ppm	**E** = Sn100 **N** = No solder **T** = Sn90 / Pb10	**B** = Bulk **F** = T / R (full reel) **1** = T / R (1000 pcs) **5** = T / R (500 pcs) **T** = T / R (250 pcs min.) **W** = Waffle tray

Note

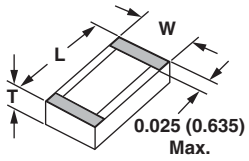
- For additional information on packaging, refer to the Surface Mount Resistor Packaging document (www.vishay.com/doc?31543).

DIMENSIONS in inches (millimeters)

TERMINATION STYLE A (3-SIDED WRAPAROUND)



TERMINATION STYLE B (TOP CONDUCTOR ONLY)



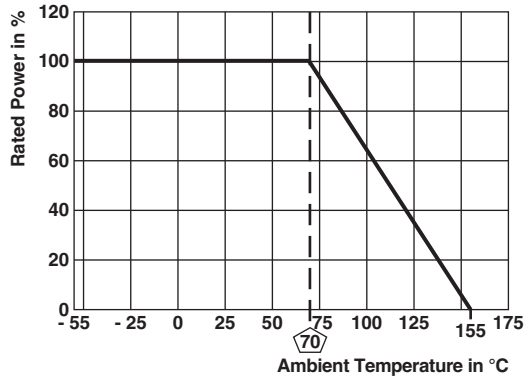
MODEL	LENGTH (1) (L)	WIDTH (1) (W)	THICKNESS (1) (T)
CRMV1206	0.125 ± 0.006 (3.18 ± 0.15)	0.063 ± 0.006 (1.60 ± 0.15)	0.025 ± 0.002 (0.64 ± 0.05)
CRMV1210	0.125 ± 0.006 (3.18 ± 0.15)	0.100 ± 0.006 (2.54 ± 0.15)	0.025 ± 0.002 (0.64 ± 0.05)
CRMV2010	0.200 ± 0.006 (5.08 ± 0.15)	0.100 ± 0.006 (2.54 ± 0.15)	0.025 ± 0.002 (0.64 ± 0.05)
CRMV2510	0.250 ± 0.006 (6.35 ± 0.15)	0.100 ± 0.006 (2.54 ± 0.15)	0.025 ± 0.002 (0.64 ± 0.05)
CRMV2512	0.250 ± 0.006 (6.35 ± 0.15)	0.126 ± 0.006 (3.20 ± 0.15)	0.025 ± 0.002 (0.64 ± 0.05)

Note

(1) All dimensions are before solder coating.

TYPE	TERMINATION MATERIAL	TERMINATION STYLE	TERMINATION STYLE / MATERIAL CODE	SOLDER TERMINATION CODE
Solderable	Nickel barrier	3-sided (wraparound)	AF	E or T
		Top only (flip chip)	BF	
Solderable	Non-magnetic	3-sided (wraparound)	AG	E or T
		Top only (flip chip)	BG	
Epoxy bondable / solderable	Platinum palladium gold	Top only (flip chip)	BE	N
Wire bondable / epoxy bondable	Gold	Top only (flip chip)	BC	N
Epoxy bondable	Palladium silver	Top only (flip chip)	BA	N
	Platinum gold		BB	
	Platinum silver		BD	

DERATING CURVE



MATERIAL SPECIFICATIONS

Resistive element	Ruthenium oxide
Encapsulation	Epoxy
Substrate	96 % alumina
Termination	Solder-coated nickel barrier or solder coated non-magnetic terminations standard. Gold, platinum silver, platinum palladium gold terminations available.
Solder finish	Pure tin or tin / lead solder alloys standard.

PERFORMANCE

TEST	CONDITIONS OF TEST	TEST RESULTS (TYPICAL TEST LOTS)
Life	MIL-STD-202, method 108 1000 h rated power at +70 °C	≤ ± 0.50 %
Short time overload	MIL-PRF-55342, paragraph 4.8.6	≤ ± 0.02 %
Thermal shock	MIL-STD-202, method 107 -55 °C to +150 °C	≤ ± 0.50 %
Low temperature operation	MIL-PRF-55342, paragraph 4.8.5	≤ ± 0.02 %
Resistance to bonding exposure	MIL-STD-202, methods 210	≤ ± 0.05 %
Moisture resistance	MIL-PRF-55342, paragraph 4.8.9	≤ ± 0.06 %
Solder mounting integrity	MIL-PRF-55342, paragraph 4.8.13 2 kg for 30 s	No evidence of mechanical damage
Solderability	MIL-STD-202, method 208	95 % coverage

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