Thick Film Chip Resistors, Industrial, High Power, Aluminum Nitride Substrate

Aluminum nitride
over 3 x more power - same size

FEATURES

- Thick film resistive element on an aluminum nitride (AlN) substrates
- Very high thermal conductivity in a small package size
- Termination: tin / lead wraparound termination over nickel barrier. Also available with lead (Pb)-free wraparound terminations.
- Capability to develop specific reliability programs designed to customer requirements
- Operating temperature range: -65 °C to +155 °C
- High frequency performance to 6 GHz
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb Available

e3

RoHS* Available

HALOGEN FREE

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

MATERIAL SPECIFICATIONS

Resistive element	Ruthenium oxide
Encapsulation	Epoxy
Substrate	Aluminum nitride
Termination	Solder-coated nickel barrier
Solder finish	Pure tin or tin / lead solder alloy

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	CASE SIZE	POWER RATING (1) (Standard Board Mount) $P_{25\,°C}$ W	POWER RATING (1) (Active Temperature Control) W	MAXIMUM WORKING VOLTAGE V	RESISTANCE RANGE Ω	TOLERANCE ± %	TEMPERATURE COEFFICIENT ± ppm/°C
RCP0505	0505	1.4	5.0	$\sqrt{P \times R}$	10 to 2K	1, 2, 5	150
RCP0603	0603	1.5	3.9	$\sqrt{P \times R}$	10 to 2K	1, 2, 5	150
RCP1206	1206	2.4	11	$\sqrt{P \times R}$	10 to 2K	1, 2, 5	150
RCP2512	2512	3.5	22	$\sqrt{P \times R}$	10 to 2K	1, 2, 5	150

Notes

- Consult factory for availability of additional case sizes

(1) The power rating depends on the maximum temperature of the resistive element. The temperature of the resistive element and adjacent materials will rise due to the power dissipation of the resistor. The majority of this heat/energy is dissipated by conduction through the substrate, terminations, solder joints, and printed circuit board. The maximum power rating in a particular application only applies if the temperature of the resistive element is maintained at or below 155 °C

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: RCP1206W100RGWB (preferred part numbering format)

R	C	P	1	2	0	6	W	1	0	0	R	G	W	B			

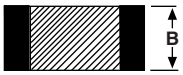
GLOBAL MODEL	BOTTOM TERM.	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING CODE	SPECIAL
RCP0505 **RCP0603** **RCP1206** **RCP2512**	**W** = wide **B** = traditional	R = Ω K = kΩ **10R0** = 10 Ω **1K30** = 1.3 kΩ	**F** = ± 1 % **G** = ± 2 % **J** = ± 5 %	**TP** = tin / lead, T/R (full reel) **S3** = tin / lead, T/R (1000 pieces) **WB** = tin / lead, tray **S2** = tin / lead, T/R (500 pieces) **S6** = tin / lead, T/R (300 pieces) **EA** = lead (Pb)-free, T/R (full reel) **EB** = lead (Pb)-free, T/R (1000 pieces) **ET** = lead (Pb)-free, tray **EC** = lead (Pb)-free, T/R (500 pieces) **ED** = lead (Pb)-free, T/R (300 pieces)	Blank = standard (dash number) (up to 3 digits) from **1 to 999** as applicable

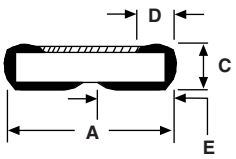
Note

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

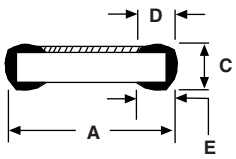
PERFORMANCE			
TEST		**CONDITIONS OF TEST**	**TEST RESULTS (TYPICAL TEST LOTS)**
Resistance to soldering heat		2 cycles; > 183 °C for 90 s to 120 s	≤ ± 0.20 %
Resistance temperature characteristic		-55 °C to +125 °C	≤ ± 120 ppm
Low temperature operation		-65 °C at rated voltage	≤ ± 0.02 %
Short time overload	RCP0505	3.1 W applied for 5 s	≤ ± 0.10 %
	RCP0603	4.4 W applied for 5 s	
	RCP1206	4.7 W applied for 5 s	
	RCP2512	7.7 W applied for 5 s	
High temperature exposure		+150 °C for 100 h	≤ ± 0.10 %
Moisture resistance		240 h at ≥ 80 % RH	≤ ± 0.15 %
Life		1000 h at +70 °C	≤ ± 0.10 %
Solderability		J-STD-202, test B	95 % coverage
Solder mounting integrity		Per MIL-PRF-55342:	No evidence of mechanical damage
	RCP0505	1 kg force applied	
	RCP0603	2 kg force applied	
	RCP1206	2 kg force applied	
	RCP2512	3 kg force applied	

DIMENSIONS in inches (millimeters)





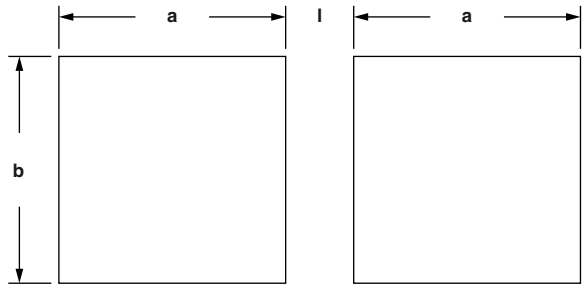
WIDE BOTTOM TERMINAL (W)



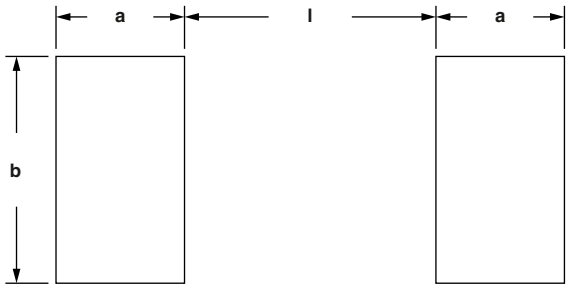
TRADITIONAL TERMINAL (B)

GLOBAL MODEL	A (LENGTH)	B (WIDTH)	C (HEIGHT)	D (TOP TERM)	E (BOTTOM TERM)
RCP0505W	0.055 ± 0.005 (1.40 ± 0.13)	0.050 ± 0.005 (1.27 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.010 ± 0.005 (0.25 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)
RCP0505B	0.055 ± 0.005 (1.40 ± 0.13)	0.050 ± 0.005 (1.27 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.010 ± 0.005 (0.25 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCP0603W	0.063 ± 0.005 (1.60 ± 0.13)	0.032 ± 0.005 (0.81 ± 0.13)	0.018 ± 0.005 (0.46 ± 0.13)	0.012 ± 0.005 (0.30 ± 0.13)	0.023 ± 0.005 (0.58 ± 0.13)
RCP0603B	0.063 ± 0.005 (1.60 ± 0.13)	0.032 ± 0.005 (0.81 ± 0.13)	0.018 ± 0.005 (0.46 ± 0.13)	0.012 ± 0.005 (0.30 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCP1206W	0.122 ± 0.005 (3.10 ± 0.13)	0.060 ± 0.005 (1.52 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)	0.048 ± 0.005 (1.22 ± 0.13)
RCP1206B	0.122 ± 0.005 (3.10 ± 0.13)	0.060 ± 0.005 (1.52 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCP2512W	0.250 ± 0.005 (6.35 ± 0.13)	0.124 ± 0.005 (3.15 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.113 ± 0.005 (2.87 ± 0.13)
RCP2512B	0.250 ± 0.005 (6.35 ± 0.13)	0.124 ± 0.005 (3.15 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)

RECOMMENDED SOLDER PAD DIMENSIONS in inches (millimeters)



WIDE BOTTOM TERMINAL (W)



TRADITIONAL TERMINAL (B)

GLOBAL MODEL	a (LENGTH)	b (WIDTH)	l (SPACING)
RCP0505W	0.040 (1.02)	0.055 (1.40)	0.015 (0.38)
RCP0505B	0.035 (0.89)	0.055 (1.40)	0.025 (0.64)
RCP0603W	0.043 (1.09)	0.037 (0.94)	0.018 (0.46)
RCP0603B	0.035 (0.89)	0.037 (0.94)	0.033 (0.84)
RCP1206W	0.068 (1.73)	0.066 (1.68)	0.018 (0.46)
RCP1206B	0.037 (0.94)	0.066 (1.68)	0.081 (2.06)
RCP2512W	0.133 (3.38)	0.129 (3.28)	0.024 (0.61)
RCP2512B	0.040 (1.02)	0.129 (3.28)	0.210 (5.33)

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