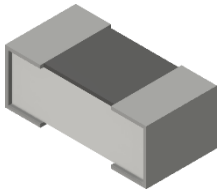
RMAN Series

Thick Film High Power Aluminum Nitride Substrate Chip Resistor

Stackpole Electronics, Inc.
Resistive Product Solutions

Features:

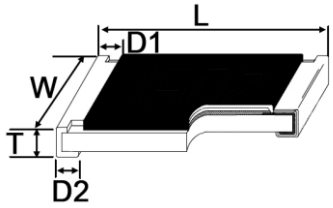
- Thick film technology on aluminum nitride substrate
- High power ratings
- High stability
- RoHS compliant, REACH compliant, and halogen free



Electrical Specifications

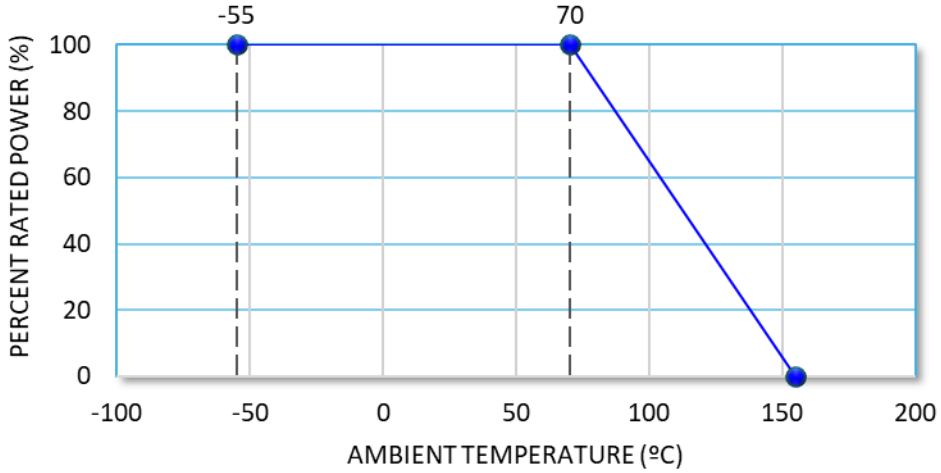
Type/Code	Power Rating (W) @ 70ºC	Max. Working Voltage (V)	TCR (ppm/ºC)	Ohmic Range (Ω) and Tolerance
				1%, 5%
RMAN1206	2.4	√(P*R)	± 150	10 - 2K
RMAN2512	3.5	√(P*R)	± 150	3 - 2K

Mechanical Specifications



Type/Code	L Body Length	W Body Width	T Body Height	D1 Top Termination	D2 Bottom Termination	Unit
RMAN1206	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	inches mm
RMAN2512	0.250 ± 0.005 6.35 ± 0.13	0.124 ± 0.005 3.15 ± 0.13	0.020 ± 0.005 0.51 ± 0.13	0.024 ± 0.010 0.60 ± 0.25	0.106 ± 0.004 2.70 ± 0.10	inches mm

Power Derating Curve:

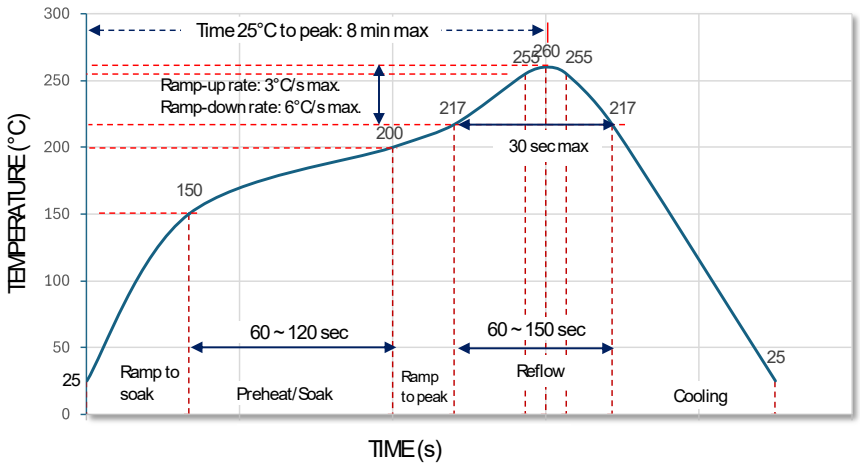


Performance Characteristics

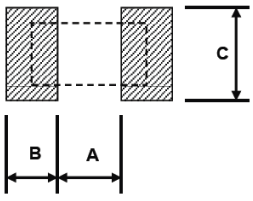
Test	Test Specifications	Typical	Test Method
Temperature Coefficient of Resistance (TCR)	As per specification	± 120 ppm/ºC	JIS-C-5201-1 4.8, IEC-60115-1 4.8 At 25°C /-55°C and 25°C/+125°C, 25°C is the reference temperature
Short Time Overload	± 0.5%	± 0.1%	1206: 4.7 W applied for 5 seconds 2512: 7.7 W applied for 5 seconds
Endurance	± 0.5%	± 0.2%	JIS-C-5201-1 4.25, IEC-60115-1 4.25.1 70 ± 2°C, RCWV for 1000 hours with 1.5 hours "ON" and 0.5 hour "OFF"
High Temperature Exposure	± 0.5%	± 0.1%	MIL-STD-202 Method 108 +150°C for 100 hours
Solderability	95% min. coverage	95% min. coverage	JIS-C-5201-1 4.17, IEC-60115-1 4.17 245 ± 5°C for 3 seconds
Terminal Strength	No evidence of mechanical damage	No evidence of mechanical damage	1206: 2 kg force applied 2512: 3 kg force applied
Moisture Resistance	± 0.5%	± 0.15%	≥ 80% R.H., 240 hours
Resistance to Soldering Heat	± 0.5%	± 0.2%	MIL-STD-202 Method 210 260 ± 5°C for 10 seconds

Operating temperature range is -55 to +155°C

Recommended Resistor Reflow Profile

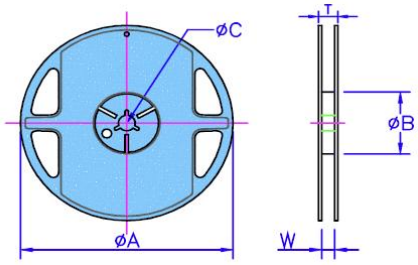


Recommended Pad Layout



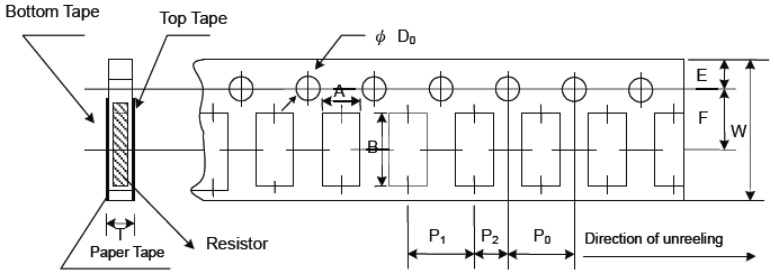
Type/Code	A	B	C	Unit
RMAN1206	0.018 0.46	0.068 1.73	0.066 1.68	inches mm
RMAN2512	0.024 0.61	0.134 3.40	0.130 3.30	inches mm

Reel Specifications



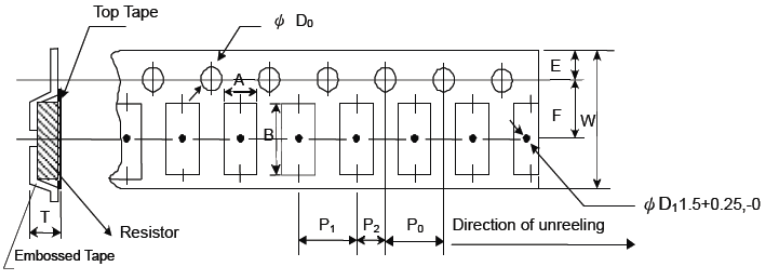
Type/Code	Packaging Quantity		Tape Width	Reel Diameter	A	B	C	W	T	Unit
RMAN1206	Paper Tape	5000 pc	8 mm	7 inches	7.028 ± 0.059 178.50 ± 1.50	2.362 +0.039/-0 60.00 +1.00/-0	0.512 ± 0.008 13.00 ± 0.20	0.354 ± 0.020 9.00 ± 0.50	0.492 ± 0.020 12.50 ± 0.50	inches mm
RMAN2512	Plastic Tape	4000 pc	12 mm	7 inches	7.028 ± 0.059 178.50 ± 1.50	2.362 +0.039/-0 60.00 +1.00/-0	0.512 ± 0.020 13.00 ± 0.50	0.512 ± 0.020 13.00 ± 0.50	0.610 ± 0.020 15.50 ± 0.50	inches mm

Packaging Specifications - Paper Tape



Type/Code	A	B	W	E	F	Unit
RMAN1206	0.075 ± 0.004 1.90 ± 0.10	0.138 ± 0.008 3.50 ± 0.20	0.315 ± 0.008 8.00 ± 0.20	0.069 ± 0.004 1.75 ± 0.10	0.138 ± 0.002 3.50 ± 0.05	inches mm
	P0	P1	P2	D0	T	
	0.157 ± 0.004 4.00 ± 0.10	0.157 ± 0.002 4.00 ± 0.05	0.079 ± 0.002 2.00 ± 0.05	0.059 +0.039/-0 1.50 +1.00/-0	0.033 ± 0.004 0.85 ± 0.10	inches mm

Packaging Specifications - Plastic Tape



Type/Code	A	B	W	E	F	Unit
RMAN2512	0.138 ± 0.004 3.50 ± 0.10	0.264 ± 0.004 6.70 ± 0.10	0.472 ± 0.012 12.00 ± 0.30	0.069 ± 0.004 1.75 ± 0.10	0.217 ± 0.002 5.50 ± 0.05	inches mm
	P0	P1	P2	D0	T	
	0.157 ± 0.004 4.00 ± 0.10	0.157 ± 0.004 4.00 ± 0.10	0.079 ± 0.002 2.00 ± 0.05	0.059 +0.039/-0 1.50 +1.00/-0	0.047 +0 1.20 +0	inches mm

Part Marking Instructions
Part is unmarked.

RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union's directive regarding "Restrictions on Hazardous Substances" (RoHS 3). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament as amended by Directive (EU) 2015/863/EU as regards the list of restricted substances.

RoHS Compliance Status

Standard Product Series	Description	Package / Termination Type	Standard Series RoHS Compliant	Lead-Free Termination Composition	Lead-Free Mfg. Effective Date (Std Product Series)	Lead-Free Effective Date Code (YY/WW)
RMAN	Thick Film High Power Aluminum Nitride Substrate Chip Resistor	SMD	YES(1)	100% Matte Sn over Ni	Always	Always

Note (1): RoHS compliant by means of exemption 7c-I.

"Conflict Metals" Commitment

We at Stackpole Electronics, Inc. are joined with our industry in opposing the use of metals mined in the "conflict region" of the eastern Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

Compliance to "REACH"

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, "The Registration, Evaluation, Authorization and Restriction of Chemicals", otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

Environmental Policy

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

How to Order

R	M	A	N	1	2	0	6	F	T	1	0	R	0

Product Series
Code
RMAN

Size	
Size	W
1206	2.4
2512	3.5

Tolerance		
Code	Tol	Value
F	1%	E96, E24
J	5%	E24

Packaging			
Code	Description	Size	Quantity
T	Paper Tape	1206	5000
	Plastic Tape	2512	4000

Resistance Value
Four characters with the multiplier used as the decimal holder.
3 ohm = 3R00 10 ohm = 10R0 2 Kohm = 2K00