Thick Film Chip Resistor

Suntan®

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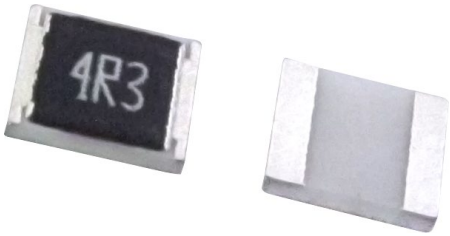


APPLICATION

Entertainment: Stereo, TV tuners, Tape recorder

Appliance: Air conditioner, Refrigerator

Computer & relative products : Main board, PDA

Communication equipment: Cell phone, Fax machine

Power equipment: Power supply, II illumination equipment

Measuring instrument: Electric meter, Navigation equipment

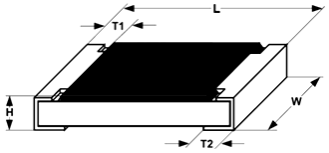
FEATURES

Small size and light weight

Reliability, high quality

Dimension

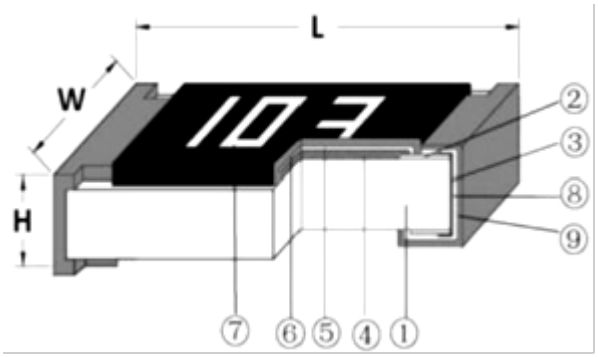
Dimension



(unit):mm

(Type)	L	W	H	T1	T2
1210	3.10±0.10	2.50±0.15	0.55±0.10	0.45±0.15	0.50±0.20
1218	3.10±0.10	4.60±0.10	0.55±0.10	0.45±0.20	0.40±0.20
1812	4.50±0.20	3.10±0.20	0.55±0.10	0.55±0.20	0.70±0.20
2010	5.00±0.10	2.50±0.15	0.55±0.10	0.45±0.15	0.50±0.20
2512	6.35±0.10	3.10±0.15	0.55±0.10	0.60±0.20	0.90±0.20

Construction



NO.	construction	Major material
1	Ceramic substrate	Al_2O_3
2	Conductive layer（Top）	Ag
3	Side conductive layer	Nicr
4	Resistive layer	RuO_2+glass
5	Inner protective layer	Glass
6	Outer Protective layer	Epoxy
7	Marking	Epoxy
8	Ni plating layer	Ni
9	Sn plating layer	Matte Tin
10	Conductive layer（Back）	Ag

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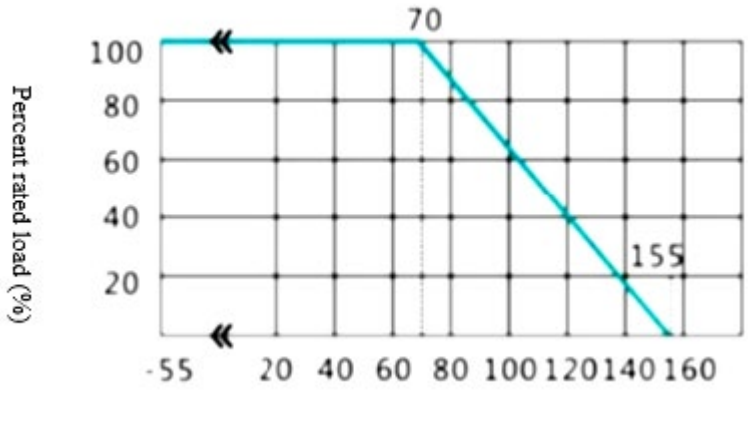
Derating Curve

Temperature usage rang	-55℃~+155℃
Describe	If the ambient temperature exceeds 70℃ to 155℃，the power can be revised according to the curve in the following figure.
Power Attenuation curve	

Electrical characteristics

Type	1210	1218	1812	2010	2512
Rated power	1/2W	1W	3/4W	3/4W	1W
Max Working Voltage	200V	200V	200V	200V	200V
Max Overload Voltage	400V	500V	400V	400V	400V
Dielectric Withstanding Voltage	500V	500V	500V	500V	500V
Resistance Value of Jumper ±1%	<30mΩ	<30mΩ	<30mΩ	<30mΩ	<30mΩ
Resistance Value of Jumper ±5%	<50mΩ	<50mΩ	<50mΩ	<50mΩ	<50mΩ
Rated Current of Jumper	2A	6A	2A	2A	2A
Max Current of Jumper	10A	10A	10A	10A	10A

Remark: The rated voltage is calculated by the following formula

E= $\sqrt{RP}$

E：Rated Voltage (V)

P：Rated Power (W)

R：Resistance (ohm)

In case the value calculated by the formula exceed the maximum working voltage as above table 8, the maximum working voltage shall be regarded as rated voltage.

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Standard Electrical Specifications

Type	(Power Rating at 70℃)	Max. RCWV	Max. Overload Voltage	T.C.R. (PPM℃)	Resistance Range
1210	1/2W	200V	400V	± 200	1Ω~10Ω
					10MΩ~22MΩ
				± 100	10Ω~10MΩ
1218	1W	200V	500V	± 200	1Ω~10Ω
				± 100	10Ω~1MΩ
1812	3/4W	200V	400V	± 200	1Ω~10Ω
				± 100	10Ω~10MΩ
2010	3/4W	200V	400V	± 200	1Ω~10Ω
					10MΩ~22MΩ
				± 100	10Ω~10MΩ
2512	1W	200V	400V	± 200	1Ω~10Ω
					10MΩ~22MΩ
				± 100	10Ω~10MΩ

Performance Specifications

Item	Test Methods	Test Conditions	Specification
Temperature Coefficient	JIS C 5201 4.8 IEC60115-1-4.8	TCR= (R-R_0) / (t-t_0) R_0 $\times 10^6$ (ppm) R_0: Resistance at room temperature R : Resistance at 125℃ or -55℃, t_0: room temperature t : test temperature 125℃ or -55℃	As SPEC
Short-time overload	JIS C 5201 4.13 IEC60115-1-4.13	Applied 2.5 times of rated voltage for 5 seconds. Measure the variation of resistance.	0.5%、1%：±(1.0%+0.05Ω) 5%：±(2.0%+0.05Ω)
Solderability	JIS C 5201 4.17 IEC60115-1-4.17	Dip the terminal in a flux and then dip into a soldering bath at 245±5℃ for 3±0.5sec.	> 95% coverage
Resist to soldering heat	JIS C 5201 4.18 IEC 60115-1-4.18	Dip the terminal in a flux and then dip into a soldering bath at 260±5℃ for 10±0.5sec. Measure the variation of resistance.	± (1.00% +0.05Ω)
Insulation resistance	JIS C 5201 4.6 IEC60115-1-4.6	Applied the dielectric withstanding voltage on the center of body for 60±5seconds. Then measure insulation resistance.	>10GΩ

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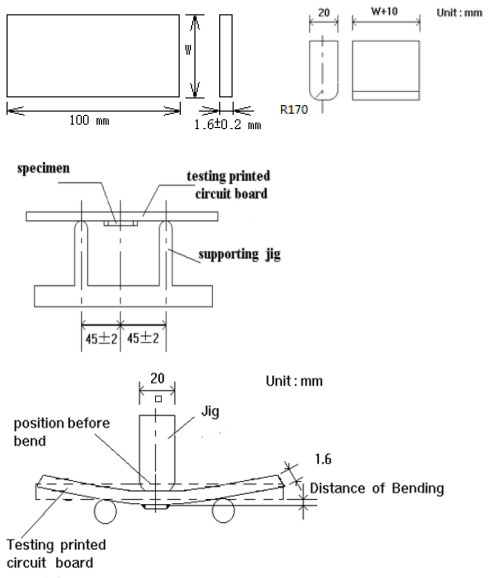
Performance Specifications

Item	Test Methods	Test Conditions	Specification
Dielectric withstanding voltage	JIS C 5201 4.7 IEC60115-1-4.7	Applied the dielectric withstanding voltage on the center of body for60±5seconds.	No evidence of flashover, mechanical damage arcing or insulation breakdown
Terminal bending	JIS C 5201 4.33 IEC60115-1-4.33	Specimen shall be mounted on test board, then bend the board and maintained for 20±1s. the distance of bending is 5+0.2/0 mm for resistors which size no larger than 1206 or 2+0.2/0 mm which size larger than 1206. Measure the variation of resistance. (test board) (jig) 	± (1.00% +0.05Ω)
Rapid temperature changes	JIS C 5201 4.19 IEC60115-1-4.19	Put specimen in a chamber which temperature can be T1: -55±3℃; T2: 155±3℃/125±3℃, 30min, repeated 300 cycles. Measure the variation of resistance.	0.5%、1%: ±(1.0%+0.05Ω) 5%: ±(2.0%+0.05Ω)
Humidity	JIS C 5201 4.24 IEC60115-1-4.24	Put the specimen in a chamber at 40±2℃ temperature and 90~95% relative humidity, then applied rated voltage for1.5H and rested for 0.5H repeatedly till total test time is $1000^{+48}/_{-0}$ H. Measure the variation of resistance.	0.5%、1%: ±(1.0%+0.05Ω) 5%: ±(2.0%+0.05Ω)

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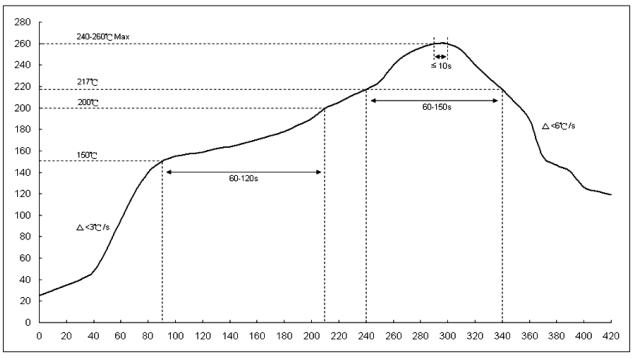
Performance Specifications

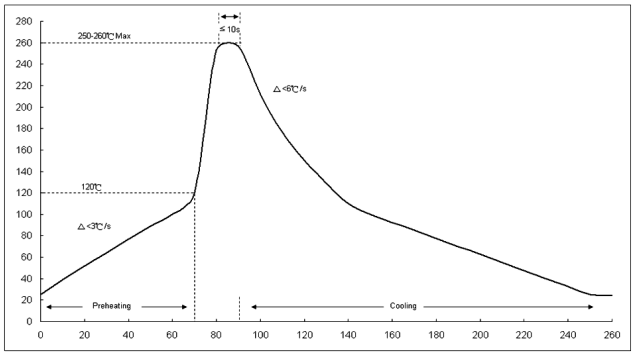
Item	Test Methods	Test Conditions	Specification
Load life	JIS C 5201 4.25.1 IEC 60115-1-4.25.1	Put the specimen in a chamber at 70±2°C temperature, ON TIME:1.5H, OFF TIME:0.5H, and applied rated voltage for 1000 $^{+24}/_{-0}$H. Measure the variation of resistance.	0.5%、1%：±(1.0%+0.05Ω) 5%：±(2.0%+0.05Ω)
Moisture resistance	MIL-STD-202 METHOD 106	25°C~65°C, 90~100%RH, 2.5H; 65°C 90~100%RH, 3H; 65°C~25°C 80~100%RH, 2.5H, 10 cycles, Measurement at 24±4 hours after test conclusion.	0.5%、1%：±(1.0%+0.05Ω) 5%：±(2.0%+0.05Ω)

Soldering

Recommend reflow soldering profile



Recommend wave soldering profile



Hand soldering temperature

The iron temperature is 350±10°C, hand soldering time less than 3S. Avoid solder iron tip direct touch the components body

Note: Specifications are subject to change without notice. For more detail and update, please visit our website