

厚膜貼片電阻

CR Series

Thick Film Chip Resistor

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, Illumination equipment.
- ◆Measuring instrument: Electric meter, Navigation equipment.

FEATURE

- ◆Small size and light weight.
- ◆Reduction of assembly costs matching with placement machines
- ◆Reliability high quality and fast delivery

ORDERING INFORMATION

Example: CR10JH103

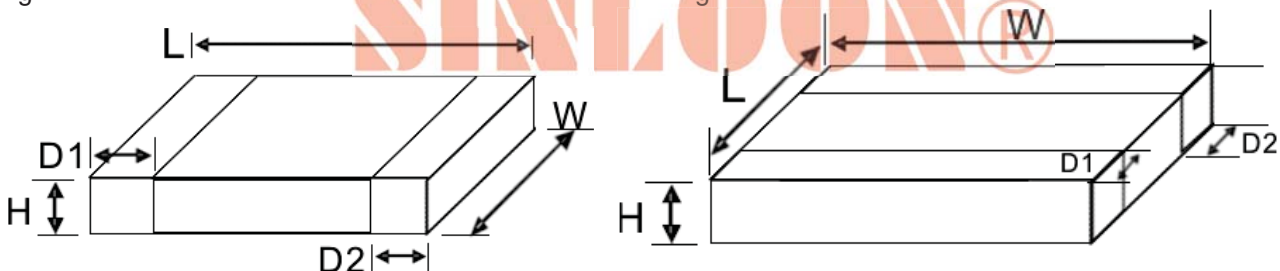
Power	Size	Type	Tolerance	TCR(°C)	Resistance		Packing
1/20W	0201	CR01	J = ±5%	E=±100ppm	E96 (±1%)	E24 (±5%)	10K Reel
1/16W	0402	CR02	H = ±3%	K=±150ppm	1R = 1R00	1R = 1R0	10K Reel
1/10W	0603	CR03	G = ±2%	F=±200ppm	10R=10R0	10R=100	5K Reel
1/8W	0805	CR05	F = ±1%	G=±300ppm	100R=100R	100R=101	5K Reel
1/4W	1206	CR06	D = ±0.5%	H=±400ppm	1K = 1001	100R=102	5K Reel
1/3W	1210	CR10	B = ±0.1%	I=±500ppm	10K = 1002	10K = 103	5K Reel
1/2W	1812	CR18		J=±600ppm	100K=1003	100K=104	4K Reel
	2010	CR20		U=±700ppm	1M=1004	1M=105	4K Reel
1W	2512	CR25		V=±800ppm	10M=1005	10M=106	4K Reel
	1218	CR28		Y=±1000ppm	100M=1006	100M=107	4K Reel
2W	2030	CR30			1000M=1G	2K Reel	

DIMENSION

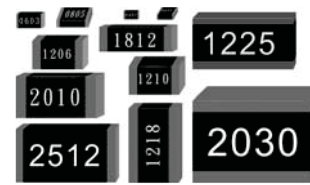
Power	Size	Type	L	W	H	D1	D2	Fig.
1/20W	0201	CR01	0.6±0.03	0.30±0.03	0.23±0.03	0.15±0.05	0.15±0.05	Fig. 1
1/16W	0402	CR02	1.0±0.10	0.50±0.05	0.35±0.05	0.20±0.10	0.25±0.10	
1/10W	0603	CR03	1.6±0.15	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20	
1/8W	0805	CR05	2.0±0.15	1.25±0.10	0.50±0.10	0.35±0.20	0.40±0.20	
1/4W	1206	CR06	3.1±0.10	1.55±0.10	0.55±0.10	0.45±0.20	0.40±0.20	
1/3W	1210	CR10	3.1±0.10	2.55±0.10	0.55±0.10	0.50±0.20	0.50±0.20	
1/2W	1812	CR18	4.50 ±0.20	3.00 ±0.20	0.55 ±0.10	0.45±0.20	0.40±0.20	
	2010	CR20	5.0±0.20	2.50±0.20	0.55±0.10	0.60±0.20	0.50±0.20	
1W	2512	CR25	6.3±0.20	3.20±0.20	0.55±0.10	0.60±0.20	0.50±0.20	
	1218	CR28	3.1±0.10	4.60±0.20	0.55±0.10	0.45±0.20	0.40±0.20	
2W	2030	CR30	5.2±0.20	7.60±0.20	0.76±0.10	0.80±0.20	0.80±0.20	Fig. 2

Fig.1

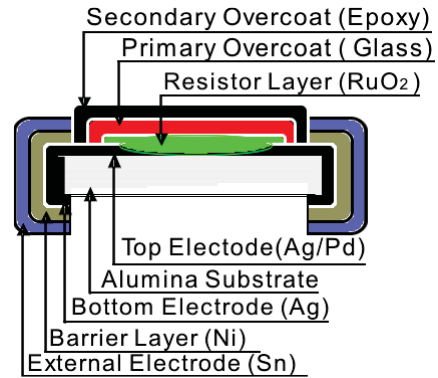
Fig.2



FIGURE



CONSTRUCTION



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Thick Film Chip Resistor

☐ GENERAL ELECTRICAL SPECIFICATION

Type	Size	Rated Power at 70°C	Maximum Voltage		Resistance (Ω)	Tolerance	T.C.R. (ppm/°C)	Jumper Rated Current
			Working	Overload				
CR01	0201	0.05W	25V	50V	10R - 1M	±1%,±2%,±5%	±200	0.5A
CR02	0402	0.063W	50V	100V	1R - 9.9R	±1%,±2%,±5% (Low ohm)	±400	1A
					10R ~ 990R	±1%,±2%,±5%	±300	
					10R~1M	±0.1%,± 0.5% (Precision)	±200	
					1K~10M	±1%,±2%,±5%	±200	
CR03	0603	0.1W	50V	100V	1R - 9.9R	±1%,±2%,±5% (Low ohm)	±400	1A
					10R~1M	±0.1%,± 0.5% (Precision)	±100	
					10R~10M	± 5%	±200	
					10R~10M	±1%,±2%	±100	
CR05	0805	0.125W	150V	300V	1R - 9.9R	±1%,±2%,±5% (Low ohm)	±400	1A
					10R~1M	±0.1%,± 0.5% (Precision)	±100	
					10R~10M	± 5%	±200	
					10R~10M	±1%,±2%	±100	
CR06	1206	0.25W	200V	400V	1R - 9.9R	±1%,±2%,±5% (Low ohm)	±400	2A
					10R~1M	±0.1%,± 0.5% (Precision)	±100	
					10R~10M	± 5%	±200	
					10R~10M	±1%,±2%	±100	
CR10	1210	0.33W	200V	400V	1R - 9.9R	±1%,±2%,±5% (Low ohm)	±400	2A
					10R~1M	±0.1%,± 0.5% (Precision)	±100	
					10R~10M	± 5%	±200	
					10R~10M	±1%,±2%	±100	
CR12	1812	0.5W	200V	400V	1R - 9.9R	±1%,±2%,±5% (Low ohm)	±400	2A
					10R~1M	±0.1%,± 0.5% (Precision)	±100	
					10R~10M	± 5%	±200	
					10R~10M	±1%,±2%	±100	
CR20	2010	0.5W	200V	400V	1R - 9.9R	±1%,±2%,±5% (Low ohm)	±400	2A
					10R~1M	±0.1%,± 0.5% (Precision)	±100	
					10R~10M	± 5%	±200	
					10R~10M	±1%,±2%	±100	
CR28	1218	1W	200V	400V	1R - 9.9R	±1%,±2%,±5% (Low ohm)	±400	2A
					10R~1M	±0.1%,± 0.5% (Precision)	±100	
					10R~10M	± 5%	±200	
					10R~10M	±1%,±2%	±100	
CR25	2512	1W	200V	400V	1R - 9.9R	±1%,±2%,±5% (Low ohm)	±400	2A
					10R~1M	±0.1%,± 0.5% (Precision)	±100	
					10R~10M	± 5%	±200	
					10R~10M	±1%,±2%	±100	
CR30	2030	2W	200V	400V	1R - 9.9R	±1%,±2%,±5% (Low ohm)	±400	2A
					10R~1M	±0.1%,± 0.5% (Precision)	±100	
					10R~10M	± 5%	±200	
					10R~10M	±1%,±2%	±100	
Operating Temperature Range:			-55°C ~ 155°C					

* In case resistors operating ambient temperature in excess of the temperature range -55°C ~+155°C power ratio will be derated in accordance with the figure as shown on the right.

☐ VOLTAGE RATING OR CURRENT RATING

Resistance Range: ≥ 1Ω

Rated Voltage: The resistor shall have a DC continuous working voltage or a RMS AC continuous working voltage at commercial-line frequency and wave form corresponding to the power rating, as determined formula as following:

$E = \sqrt{R \times P}$ E =Rated voltage(V) $E = \sqrt{R \times P}$ P =Power rating(W) R =Nominal resistance(Ω)



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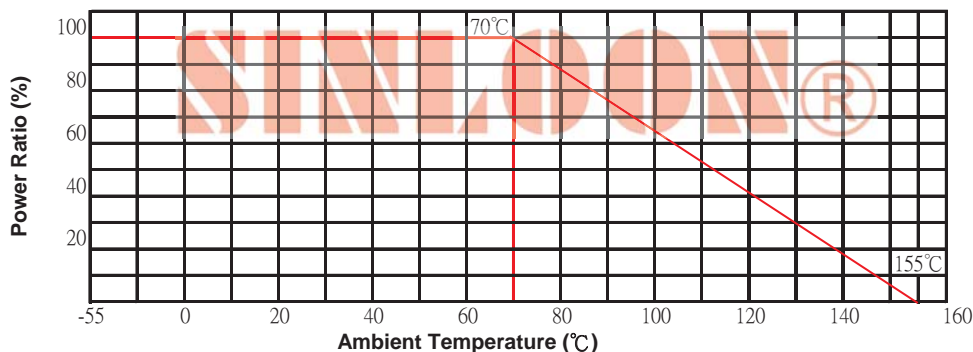
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Test Procedures and Requirements

Test Item	Procedue	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R)	-55°C ~ +155°C, 20°C is the reference temperature	Refer to Rating	JIS C 5201-1 clause 4.8
Short Time Overload	General: 2.5 time RCWV or Max. Overload voltage for 5 seconds. Hifh Power: 2.5 times RCWV of Mac. Overload voltage for 2 seconds.	$\pm 1 = \pm(1.0\% + 0.05\Omega)$ $\pm 5 = \pm(2.0\% + 0.1\Omega)$	JIS C 5201-1 clause 4.13
IR Reflow	<p>Peak : 250^{+5}_0 °C 230°C or higher</p> <p>Pre Heating Zone 180°C 150°C 90 ± 30 s</p> <p>Soldering Zone 30 ± 10 s</p> <p>Heating time Soldering Profile</p>	$\pm 1 = \pm(1.0\% + 0.05\Omega)$ $\pm 5 = \pm(1.0\% + 0.05\Omega)$	SONY SS-00254
Leaching	260±5°C for 30 seconds	>95% Coverage	SONY SS-00254-9
Soldering Heat	260±5°C for 10 seconds	$\pm 1 = \pm(1.0\% + 0.05\Omega)$ $\pm 5 = \pm(1.0\% + 0.05\Omega)$	JIS C 5201-2 clause 4.18
Temperature Cycling	-55°C to +155°C 5 cycles	0.10%,0.50%,1% : $\pm(0.1\%+0.05\Omega)$ 2%,5%: $\pm(0.1\%+0.01\Omega)$	JIS C 5201-2 clause 4.19
Electric Iron	Preheating temperature : 350±5°C Electric iron preheating time: 3+1/0 second	$\pm 1 = \pm(1.0\% + 0.05\Omega)$ $\pm 5 = \pm(1.0\% + 0.05\Omega)$	SONY SS-00254-5
Resistance Solcent	The tested resistor be immersed into isproply alcohol of 20 ~ 25°C for 60 secs. Then the resistor is left in the room for 48 hours.	$\pm 1 = \pm(1.0\% + 0.05\Omega)$ $\pm 5 = \pm(1.0\% + 0.05\Omega)$	JIS C 5201-1 clause 4.29
Load life in Humidity	40±2°C, 90-95% R.H. or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"	0.10%,0.50%,1% : $\pm(0.1\%+0.05\Omega)$ 2%,5%: $\pm(2\%+0.05\Omega)$	JIS C 5201-1 clause 4.24
Load life (Endurance)	70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"	0.10%,0.50%,1% : $\pm(0.1\%+0.05\Omega)$ 2%,5%: $\pm(2\%+0.05\Omega)$	JIS C 5201-1 clause 4.24
Insulation Resistance	Max. Overload voltage for 1 mimute	$\geq 10G \Omega$	JIS C 5201-1 clause 4.6

POWER DERATING CURVE



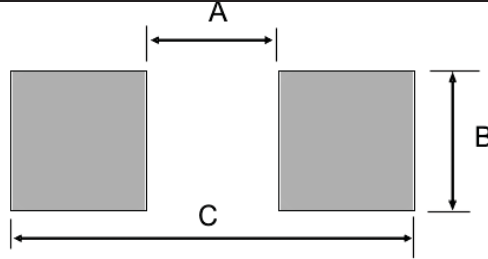
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RECOMMEND LAND PATTERN DESIGN (For Reflow Soldering)

Unit: mm

Type	CR01	CR02	CR03	CR05	CR06	CR10	CR12	CR20	CR28	CR25	CR30
Dim.	0201	0402	0603	0805	1206	1210	1812	2010	1218	2512	2030
A	0.25	0.60	0.80	1.30	2.20	2.00	3.11	3.80	2.04	4.90	3.50
B	0.32	0.70	1.00	1.40	1.70	2.70	3.00	2.70	4.50	3.40	7.80
C	1.10	1.60	2.40	2.90	4.20	4.40	5.91	6.60	4.24	8.10	7.50



PACKAGE SPECIFICATION

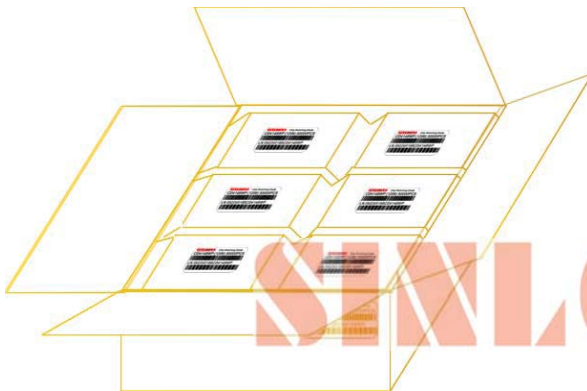
Power	Size	Type	Quantity(ea)			SINLOON® RoHS Compliant 品質承諾標誌 QUALITY COMMITMENT
			Paper Reel Tape	In Box	Carton	
1/20W	0201	CR01	10,000 Pcs 7" Reel	100K pcs	600K pcs	
1/16W	0402	CR02	10,000 Pcs 7" Reel	100K pcs	600K pcs	
1/10W	0603	CR03	5,000 Pcs 7" Reel	50K pcs	300K pcs	
1/8W	0805	CR05	5,000 Pcs 7" Reel	50K pcs	300K pcs	
1/4W	1206	CR06	5,000 Pcs 7" Reel	50K pcs	300K pcs	
1/3W	1210	CR10	5,000 Pcs 7" Reel	50K pcs	300K pcs	
	1812	CR18	4,000 Pcs 7" Reel	40K pcs	240K pcs	
1/2W	2010	CR20	4,000 Pcs 7" Reel	40K pcs	240K pcs	
	2512	CR25	4,000 Pcs 7" Reel	40K pcs	240K pcs	
1W	1218	CR28	4,000 Pcs 7" Reel	40K pcs	240K pcs	
	2030	CR30	4,000 Pcs 7" Reel	40K pcs	240K pcs	



Paper Reel Tape



Reel Tape Leble



Carton Pack



In Box

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※ Mayloon characteristic parameters of electronic product specification changes or updates without prior notice.

