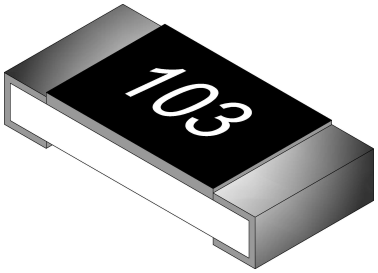
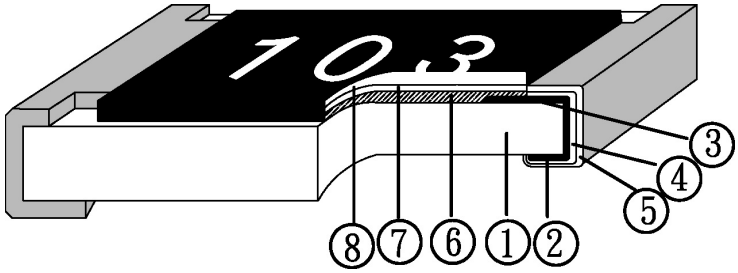
Thick Film Chip Resistor—CR Series



Construction



1	Alumina Substrate	5	External Electrode (Sn)
2	Bottom Electrode (Ag)	6	Resistor Layer (RuO_2)
3	Top Electrode (Ag/Pd)	7	Primary Overcoat (Glass)
4	Barrier Layer (Ni)	8	Secondary Overcoat (Epoxy)

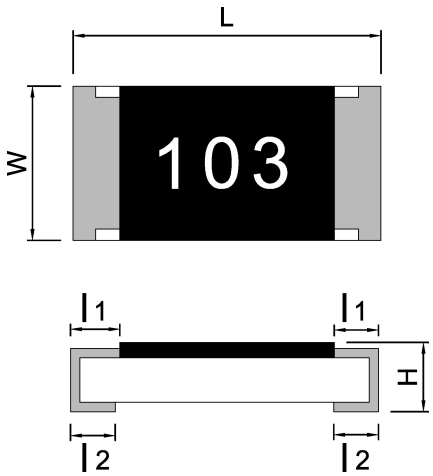
Application

- 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

Features

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

Type Dimension



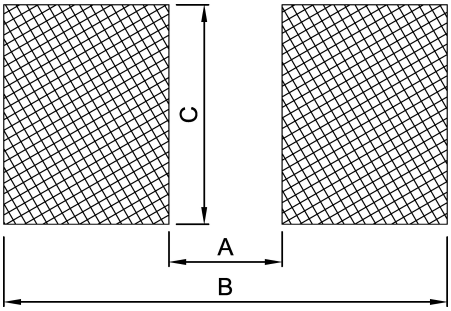
Dimension **Unit: mm**

TYPE	L	W	H	l_1	l_2
CR01005	0.40 ± 0.02	0.20 ± 0.02	0.23 ± 0.05	0.10 ± 0.03	0.10 ± 0.03

Standard & High Power Electrical Specifications

Item / Type	Rated Power at 70℃	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/℃)	Resistance Range			Operating Temperature Range
					B(±0.1%) D(±0.5%)	F(±1%) G±(2%)	J(±5%) K(±10%)	
CR01005	0.031 W	15V	30V	±250	-	10Ω~1MΩ	10Ω~1MΩ	-55℃ ~ +125℃

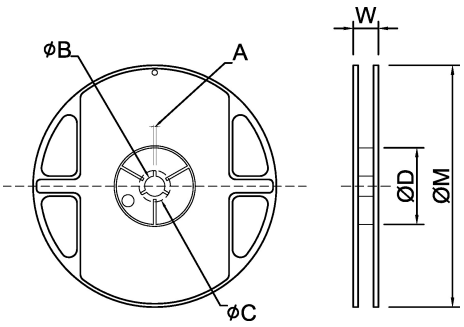
■ Recommend Land Pattern Design (For Reflow Soldering)



■ **Dimension** **Unit: mm**

Item \ Type	CR01005
A	0.12
B	0.48
C	0.18~0.23

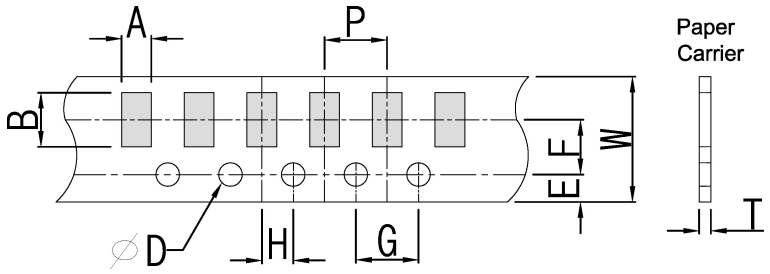
■ Packaging



■ **Dimension** **Unit: mm**

TYPE	SIZE		A	φB	φC	φD	W	φM
CR01005	7”	20K/Reel	2.0±0.5	13.0±0.2	21.0±0.8	60.0+1/-0	11.4±1.0	180.0+0/-3

■ Tapping Specification

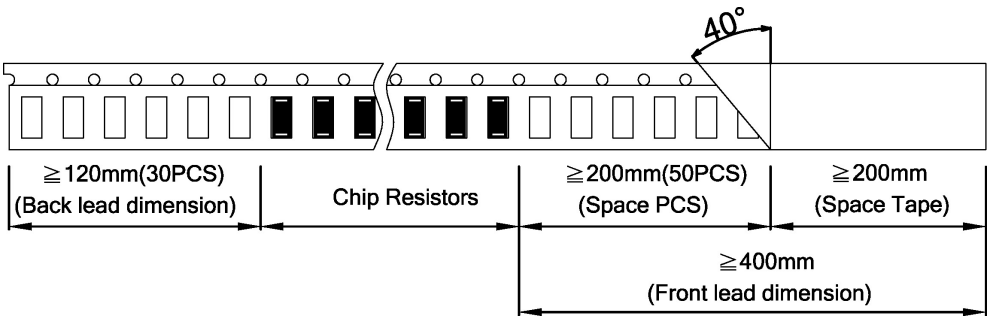


■ **Dimension** **Unit: mm**

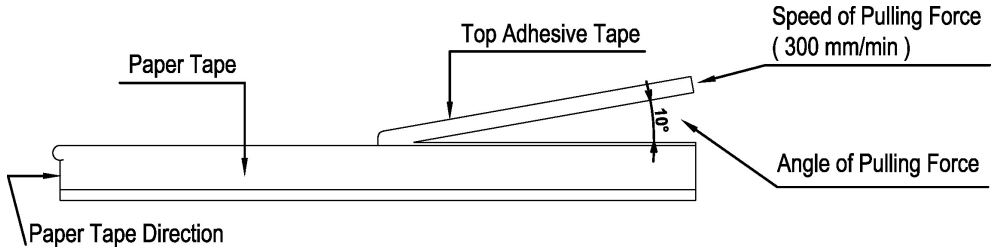
Packaging	Type	A	B	W	E	F	G	H	T	∅D	P
Paper Type	CR01005	0.24±0.03	0.45±0.03	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.05	2.0±0.05	0.31±0.1	1.50+0.1/-0	2.0±0.1

■ Packing Material Data/Storage Data

■ Front & Back Lead Dimension

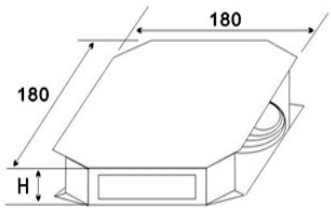


■ Top Adhesive Peel Off Strength：10~70g

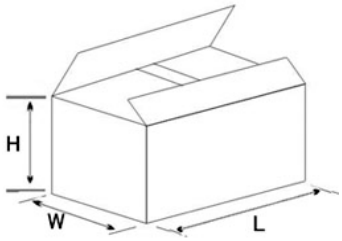


■ Package

Inner Box Size	
Reel	Size H(mm)
1	13
2	24
3	36
5	60
10	113



External Box Size			
Contain (Kpcs)	Length (mm)	Width (mm)	Height (mm)
25K	180	180	60
50K	180	180	110
150K	430	200	200
300K	400	400	200

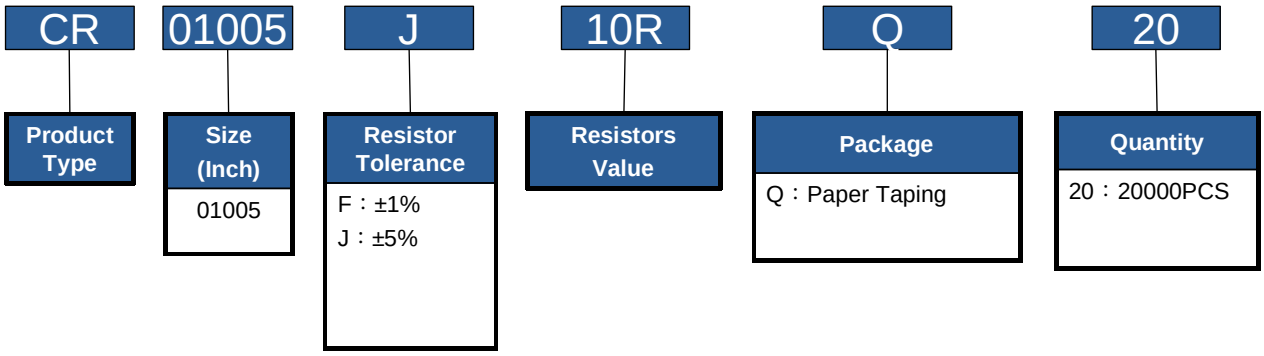


■ Storage Data：

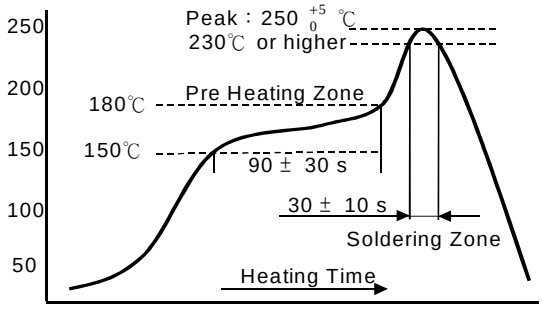
Storage time at the environment temp: 25±5℃& humidity: 50±20% is valid for one year from the date of delivery.

Parts Number Explanation

Example:

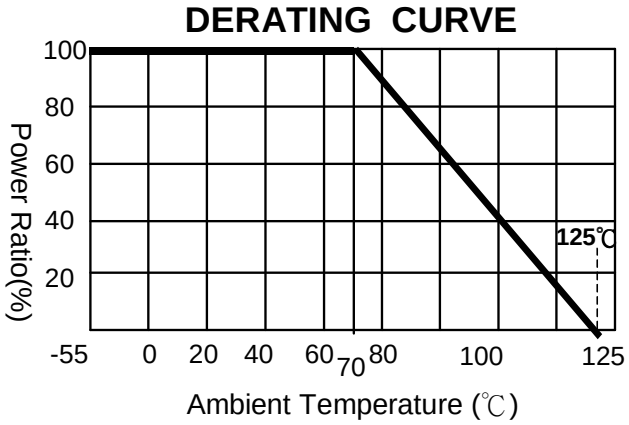


Test Procedures and Requirements

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS C 5201-1 clause 4.8	-55℃ ～+155℃, 20℃ is the reference temperature	Refer to Ratings
Short Time Overload	JIS C 5201-1 clause 4.13	General： 2.5 times RCWV or Max. Overload voltage for 5 seconds. High Power： 2.5 times RCWV or Max. Overload voltage for 2 seconds.	±1：±(1.0%+0.05Ω) ±5：±(2.0%+0.1Ω)
IR Reflow	Sony SS-00254		±1：±(1.0%+0.05Ω) ±5：±(1.0%+0.05Ω)
Leaching	Sony SS-00254-9	260±5℃ for 30 seconds.	>95% Coverage
Soldering Heat	JIS C 5201-1 clause 4.18	260±5℃ for 10 seconds.	±1：±(0.5%+0.05Ω) ±5：±(1.0%+0.05Ω)
Temperature Cycling	JIS C 5201-1 clause 4.19	-55℃ to +155℃,5 cycles	0.1%、0.5%、1%： ±(0.5%+0.05Ω) 2%、5%： ±(1.0%+0.10Ω)
Electric Iron	Sony SS-00254-5	Preheating temperature：350±5℃ Electric iron preheating time：3+1/-0 sec	±1：±(1.0%+0.05Ω) ±5：±(1.0%+0.05Ω)
Resistance to Solvent	JIS C 5201-1 clause 4.29	The tested resistor be immersed into isopropyl alcohol of 20~25℃ for 60 secs. Then the resistor is left in the room for 48 hrs.	±1：±(0.5%+0.05Ω) ±5：±(0.5%+0.05Ω)
Load Life in Humidity	JIS C 5201-1 clause 4.24	40±2℃, 90~95% R.H. or Max. working voltage for 1000 hrs with 1.5 hrs〝ON〞and 0.5 hr〝OFF〞.	0.1%、0.5%、1%： ±(0.5%+0.05Ω) 2%、5% ： ±(2.0%+0.05Ω)
Load Life (Endurance)	JIS C 5201-1 clause 4.25	70±2℃, or Max. working voltage for 1000 hrs with 1.5 hrs〝ON〞and 0.5 hr〝OFF〞.	0.1%、0.5%、1%： ±(1.0%+0.05Ω) 2%、5% ： ±(3.0%+0.10Ω)
Insulation Resistance	JIS C 5201-1 clause 4.6	Max. Overload voltage for 1 minute.	≧10GΩ

■ Performance Characteristics

■ Power Derating Curve



Power rating or current rating is in the case based on continuous full-load at ambient temperature of 70℃.
For operation at ambient temperature in excess of 70℃, the load should be derated in accordance with figure of derating Curve.

■ 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:

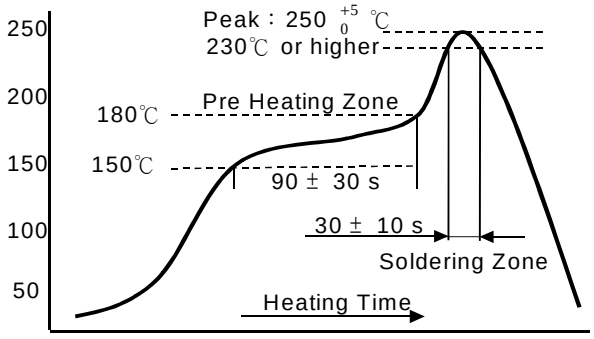
$E=\sqrt{P \times R}$

E=Rated voltage(V)
P=Power rating(W)
R=Nominal resistance(Ω)

■ Operation and Storage Temperature

	MIN	MAX
Operation temperature	-55℃	70℃
Storage temperature	20℃	30℃
Storage humidity	30%	70%

■ Soldering Profile



■ Equipments Applicable:

Our company's products are produced under low temperature processing applicable to IR reflow surface mounting devices. It is comparatively not applicable to wave soldering which will possibly cause the risk ablating the element protection layer and the front conductor and cause the drift of the resistance value and ablation of the markings.

■ Product Testing Method:

Our products are tested with our company's tapping & testing equipments by using four-feet probe to touch at the back of both electrodes. Supposed different testing points or methods are requested, please advise beforehand and customized-made production is available.

■ Standard Resistance Values in a Decade

Note: 01005 series resistor has no marking code.