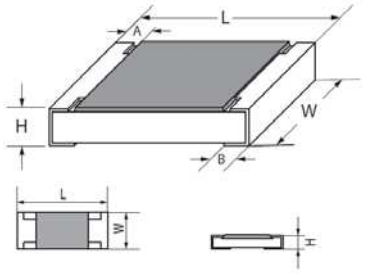
1. Dimension



Type	Dimension(mm)				
	L	W	H	A	B
01005	0.40±0.02	0.20±0.02	0.13±0.02	0.10±0.05	0.10±0.03
0201	0.60±0.03	0.30±0.03	0.23±0.03	0.10±0.05	0.15±0.05
0402	1.00±0.10	0.50±0.05	0.35±0.05	0.20±0.10	0.25±0.10
0603	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20
0805	2.00±0.15	1.25+0.15/-0.10	0.55±0.10	0.40±0.20	0.40±0.20
1206	3.10±0.15	1.55 +0.15/-0.10	0.55±0.10	0.45±0.20	0.45±0.20
1210	3.10±0.10	2.60±0.20	0.55±0.10	0.50±0.25	0.50±0.20
1812	4.50±0.20	3.20±0.20	0.55±0.20	0.50±0.20	0.50±0.20
2010	5.00±0.10	2.50±0.20	0.55±0.10	0.60±0.25	0.50±0.20
2512	6.35±0.10	3.20±0.20	0.55±0.10	0.60±0.25	0.50±0.20

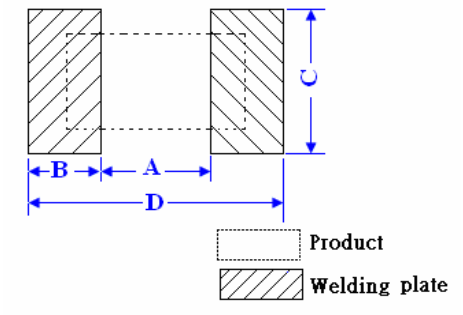
2. Resistance Range

Type	Power Rating	Resistance Range			
	at 70℃	0.5%	1.0%	2.0%	5.0%
01005	1/32W	---	10Ω-10MΩ	10Ω-10MΩ	1Ω -10MΩ
0201	1/20W	---	1Ω-10MΩ	1Ω-10MΩ	1Ω-10MΩ
0402	1/16W	1Ω-10MΩ	1Ω-10MΩ	1Ω-10MΩ	1Ω-10MΩ
0603	1/10W	1Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ
0805	1/8W	1Ω-10MΩ	0.1Ω≤R＜10MΩ	0.1Ω≤R＜10MΩ	0.1Ω≤R＜10MΩ
	1/4W	---	0.01Ω≤R＜0.1Ω	0.01Ω≤R＜0.1Ω	0.01Ω≤R＜0.1Ω
1206	1/4W	1Ω-10MΩ	0.1Ω≤R＜10MΩ	0.1Ω≤R＜10MΩ	0.1Ω≤R＜10MΩ
	1/3W	---	0.01Ω≤R＜0.1Ω	0.01Ω≤R＜0.1Ω	0.01Ω≤R＜0.1Ω
1210	1/2W	1Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ
1812	3/4W	1Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ
2010	3/4W	1Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ
2512	1W	1Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ

3. Ratings

Type	Max. Working Voltage	Max. Overload Voltage	Dielectric withstanding Voltage	Resistance Value of Jumper	Rated Current of Jumper	Max. Overload Current of Jumper	Operating Temperature
01005	15V	30V	--	<50mΩ	0.5A	1A	-55℃~125℃
0201	25V	50V	--	<50mΩ	0.5A	1A	-55℃~155℃
0402	50V	100V	100V	<50mΩ	1A	2A	-55℃~155℃
0603	75V	150V	300V	<50mΩ	1A	2A	-55℃~155℃
0805	150V	300V	500V	<50mΩ	2A	5A	-55℃~155℃
1206	200V	400V	500V	<50mΩ	2A	10A	-55℃~155℃
1210	200V	500V	500V	<50mΩ	2A	10A	-55℃~155℃
1812	200V	500V	500V	<50mΩ	2A	10A	-55℃~155℃
2010	200V	500V	500V	<50mΩ	2A	10A	-55℃~155℃
2512	200V	500V	500V	<50mΩ	2A	10A	-55℃~155℃

4. Recommend the size of welding plate

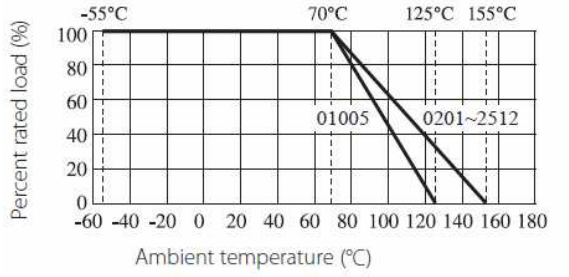


Type	Dimension(mm)			
	A	B	C	D
01005	0.14±0.03	0.2±0.03	0.2±0.03	0.54±0.03
0201	0.25±0.05	0.35±0.05	0.4±0.05	1.0±0.05
0402	0.50±0.05	0.45±0.05	0.5±0.05	1.4±0.05
0603	0.9±0.05	0.65±0.05	0.8±0.05	2.1±0.05
0805	1.0±0.1	1.0±0.1	1.3±0.1	3.0±0.1
1206	2.0±0.1	1.1±0.1	1.6±0.1	4.2±0.1
1210	2.0±0.1	1.1±0.1	2.6±0.1	4.2±0.1
1812	3.2±0.1	1.4±0.1	3.3±0.1	5.8±0.1
2010	3.6±0.1	1.3±0.1	2.6±0.1	6.2±0.1
2512	5.0±0.1	1.6±0.1	3.3±0.1	8.2±0.1

5. Derating Curve

Resistors shall have a power rating based on continuous load operation at an ambient temperature from -55℃ to 70℃. For temperature in excess of 70℃, the load shall be derated as shown in figure 1

Figure 1



Voltage rating:

Resistors shall have a rated direct-current (DC) continuous working

Voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula:

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

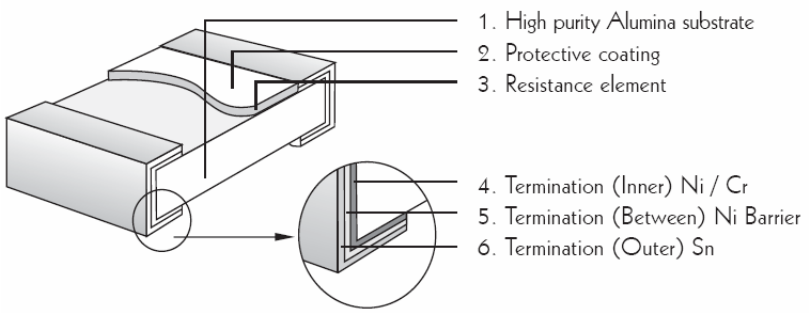
Where: RCWV commercial-line frequency and waveform (Volt.)

P = power rating (WATT.) R = nominal resistance (OHM)

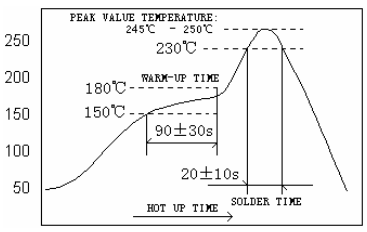
In no case shall the rated DC or RMS AC continuous working voltage be greater than the applicable maximum value.

The overload voltage is 2.5 times RCWV or Max. Overload voltage whichever is less

6. Structure



7. Performance Specification

Characteristic	Limits	Test Method (GB/T 5729&JIS-C-5201&IEC60115-1)
◎Temperature Coefficient	01005: 1Ω≤R＜10Ω: -200~+600PPM/℃ 10Ω≤R＜100Ω: ±300PPM/℃ 100Ω≤R≤10MΩ:±200PPM/℃ 0201: 1Ω≤R≤10Ω: -100~ + 350PPM/℃ >10Ω: ±200PPM/℃ 0402： 1Ω≤R≤10Ω: ±200PPM/°C >10Ω: ±100PPM/℃ 0603： 0.01Ω≤R≤0.03Ω:±1500 PPM/°C 0.03Ω＜R≤0.05Ω：±1000 PPM/°C 0.05Ω＜R＜1Ω: ±800PPM/°C 1Ω≤R≤10Ω: ±200PPM/°C >10Ω: ±100PPM/℃ 0805,1206,1210,2010,1812,2512: 0.01Ω≤R≤0.015Ω: ±1500PPM/°C 0.015Ω＜R≤0.03Ω: ±1000PPM/°C 0.03Ω＜R＜1Ω: ±800PPM/°C 1Ω≤R≤10Ω: ±200PPM/°C >10Ω: ±100PPM/℃	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature （t_1）; R_2: Resistance at test temperature (Upper limit temperature or Lower limit temperature) t_1: +25℃ or specified room temperature t_2: Upper limit temperature or Lower limit temperature test temperature
◎ *Short-time overload	±0.5%,±1%: ±(1.0%+0.05Ω) ±2%,±5% : ±(2.0%+0.05Ω) 01005: ±(2.0%+0.05Ω)	4.13 Permanent resistance change after the application of a potential of 2.5 times RCWV or Max. Overload Voltage whichever less for 5 seconds..
	* <50mΩ	Apply max Overload current for 0Ω
* Dielectric withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation breaks down.	4.7 Resistors shall be clamped in the trough of a 90℃metallic v-block and shall be tested at ac potential respectively specified in the given list of each product type for 60-70 seconds.
◎ *Solderability	Coverage must be over 95%.	Wave solder: Test temperature of solder: 245℃±3℃ dipping time in solder: 2-3 seconds.
	Go up tin rate bigger than half of end pole	Reflow: 

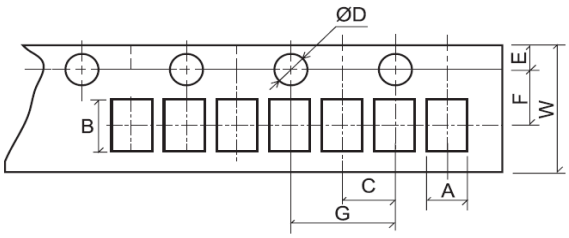
◎ Rapid change of temperature	±0.5%,±1%: ±(0.5%+0.05Ω)	4.19 30 min at -55 °C and 30 min at 155°C; 100 cycles.
	±2%,±5% : ±(1.0%+0.05Ω)	
	01005: ±(1.0%+0.05Ω)	
◎ Soldering heat	±(1.0%+0.05Ω)	4.18 Dip the resistor into a solder bath having a temperature of 260℃±5℃ and hold it for 10±1 seconds.
Terminal bending	±(1.0%+0.05Ω)	4.33 Twist of test board: Y/X = 3/90 mm for 60Seconds
* Insulation resistance	≥1,000 MΩ	4.6 The measuring voltage shall be ,measured with a direct voltage of (100±15)V or a voltage equal to the dielectric withstanding voltage., and apply for 1min.
◎ Humidity (steady state)	±0.5%,±1%: ±(0.5%+0.05Ω)	4.24Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40±2℃ and 90-95% relative humidity,
	±2%,±5% : ±(3.0%+0.05Ω)	
	01005(-55℃~125℃): ±(2.0%+0.05Ω)	
◎ *Load life in humidity	±0.5%,±1% : ±(1.0%+0.05Ω)	7.9 Resistance change after 1,000 hours (1.5 hours “ON”,0.5 hour “OFF”) at RCWV in a humidity chamber controlled at 40℃±2℃ and 90 to 95% relative humidity.
	±2%,±5% : ±(3.0%+0.05Ω)	
	01005: ±(3.0%+0.05Ω)	
	* <50mΩ	Apply to rated current for 0Ω
◎ *Load life	±0.5%,±1%: ±(1.0%+0.05Ω)	4.25.1 Permanent resistance change after 1,000 hours operating at RCWV with duty cycle 1.5 hours “ON”, 0.5 hour “OFF” at 70℃±2℃ ambient.
	±2%,±5% : ±(3.0%+0.05Ω)	
	01005: ±(3.0%+0.05Ω)	
	* <50Mω	Apply to rated current for 0Ω
◎ *Low Temperature Storage	±0.5%,±1% : ±(1.0%+0.05Ω)	4.23.4 Lower limit temperature，for 2H.
	±2%,±5% : ±(3.0%+0.05Ω)	
	* <50mΩ	Apply to rated current for 0Ω
◎ *High Temperature Exposure	±0.5%,±1%: ±(1.0%+0.05Ω)	4.23.2 Upper limit temperature ，for 16H.
	±2%,±5% : ±(3.0%+0.05Ω)	
	01005: ±(1.0%+0.05Ω)	4.23.2 Upper limit temperature ，for 1000H.
	* <50mΩ	Apply to rated current for 0Ω
◎ *Leaching	No visible damage	J-STD-002 Test D Samples completely immersed for 30 sec in solder bath at 260℃.

The resistors of 0Ω only can do the characteristic noted of *

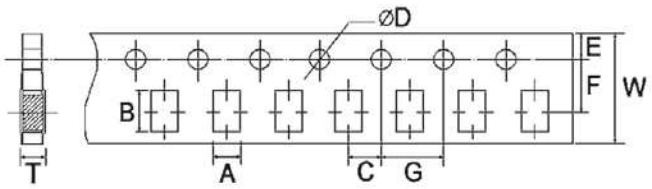
The resistors of 01005 & 0201 only can do the characteristic noted of ◎

8. Packing of Surface Mount Resistors

8.1 Dimension of Paper Taping :(Unit: mm)

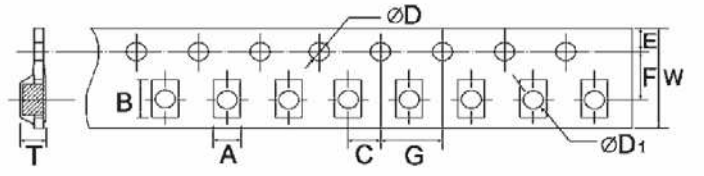


Type	A	B	C ±0.05	+0.1 ΦD -0	E ±0.1	F ±0.05	G ±0.1	W ±0.2	T
01005	0.24±0.05	0.45±0.05	2.00	1.50	1.75	3.50	4.00	8.00	0.40±0.1
0201	0.40±0.05	0.70±0.05	2.00	1.50	1.75	3.50	4.00	8.00	0.42±0.1
0402	0.65±0.10	1.20±0.10	2.00	1.50	1.75	3.50	4.00	8.00	0.42±0.05



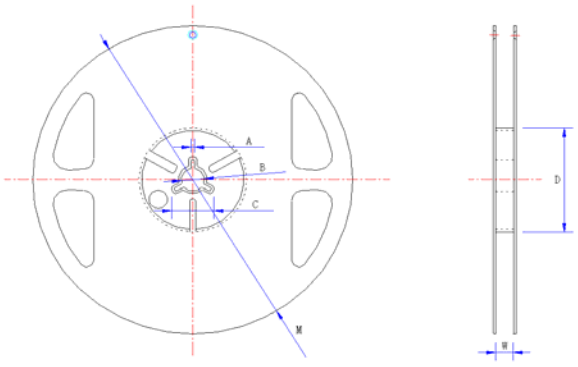
Type	A ±0.2	B ±0.2	C ±0.05	+0.1 ΦD -0	E ±0.1	F ±0.05	G ±0.1	W ±0.2	T ±0.1
0603	1.10	1.90	2.00	1.50	1.75	3.50	4.00	8.00	0.67
0805	1.65	2.40	2.00	1.50	1.75	3.50	4.00	8.00	0.81
1206	2.00	3.60	2.00	1.50	1.75	3.50	4.00	8.00	0.81
1210	2.80	3.50	2.00	1.50	1.75	3.50	4.00	8.00	0.75

8.2 Dimension of Embossed Taping: (Unit: mm)



Type	A ±0.2	B ±0.2	C ±0.05	+ 0.1 ϕD - 0	+0.25 ϕD1 -0	E ±0.1	F ±0.05	G ±0.1	W ±0.2	T ±0.1
2010	2.90	5.60	2.00	1.50	1.50	1.75	5.50	4.00	12.00	1.00
1812	3.50	4.80	2.00	1.50	1.50	1.75	5.50	4.00	12.00	1.00
2512	3.50	6.70	2.00	1.50	1.50	1.75	5.50	4.00	12.00	1.00

8.3 Dimension of Reel：(Unit: mm)



Type	Taping	Qty/Reel	A ±0.5	B ±0.5	C ±0.5	D ±1	M ±2	W ±1
01005	Paper	20,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
0201	Paper	15,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
0402	Paper	10,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
0603	Paper	5,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
0805	Paper	5,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
1206	Paper	5,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
1210	Paper	5,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
2010	Embossed	4,000pcs	2.0	13.0	21.0	60.0	178.0	13.8
1812	Embossed	4,000pcs	2.0	13.0	21.0	60.0	178.0	13.8
2512	Embossed	4,000pcs	2.0	13.0	21.0	60.0	178.0	13.8