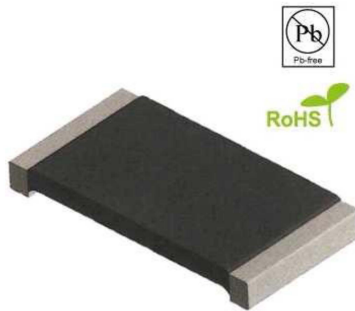


■ Metal Alloy Low-Resistance Resistor

● SR Series



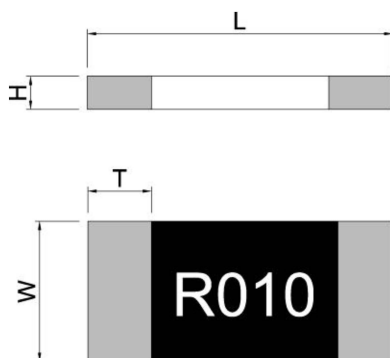
■ Application

- Power supply
- Battery pack
- DIY tools
- Inverter/Converter (AC/DC, DC/DC, DC/AC)
- Measurable instrument
- Consumer electronics
- Note book
- PC power pack
- LED driver
- Others (Auto tronics... etc.)

■ Features

- Ideal for all types of current sensing, voltage division and pulse applications including switching and linear power supplies, instruments, power amplifiers.
- Excellent frequency response.
- Stable high frequency characteristic with reduced lead inductance and excellent frequency response.
- Pure tin plating provides compatibility with lead (Pb) free and lead containing soldering processes.
- Excellent stability ($|\Delta R/R| \leq \pm 0.5\%$ for 1000h at 100°C) different environmental conditions.

■ Type Dimension



■ Dimension

Unit: mm

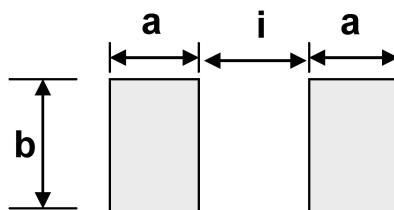
TYPE	Resistance Range mΩ	L	W	H	T
SR1206 1W	1~100	3.200±0.254	1.600±0.254	0.545±0.254	0.508±0.254
SR2010 1W	0.5~3	5.080±0.254	2.540±0.254	0.787±0.254	1.295±0.254
	3.1~100			0.645±0.254	0.787±0.254
SR2512 1W, 1.5W, 2W	0.5~680	6.248±0.254	3.202±0.254	0.787±0.254	0.893±0.254
SR2512 1W, 1.5W	4.1 ~75.0			0.645±0.254	1.118±0.254
	75.1 ~ 680.0			0.645±0.254	0.868±0.254
SR2512 2W	4.1~450	6.248±0.254	3.202±0.254	0.645±0.254	0.893±0.254
SR2512 3W	0.5	6.35±0.254	3.00±0.200	0.600±0.200	2.675±0.254
	0.6~2.9 & 4.1~50	6.248±0.254	3.202±0.254	0.787±0.254	0.901±0.254
	3~4				1.676±0.254
SR2725 4W	0.25, 0.5	6.807±0.254	6.452±0.254	0.991±0.254	2.159±0.254
	1			1.092±0.254	2.159±0.254
	1.5			0.991±0.254	2.159±0.254
	2			0.889±0.254	1.803±0.254
	2.5				1.651±0.254
	3~50				1.295±0.254
SR2728 3W, 3.5W	4~100	6.706±0.254	7.188±0.254	0.991±0.254	1.143±0.254
SR2728 4W	4~50	6.706±0.254	7.188±0.254	0.991±0.254	1.143±0.254
SR4527 5W	0.5~5	11.430±0.254	6.850±0.254	1.500±0.254	3.215±0.254
	5.1~120				1.815±0.254

● For non-standard parts, please contact our sales dept.

Standard Electrical Specifications

Model	Power Rating at 70℃	T.C.R. (ppm/℃) /mΩ	Max.Rating Current	Max.Overload Current	Resistance Range mΩ			Operating Temperature Range (℃)
					0.5% (D)	1.0% (F)	5.0% (J)	
SR1206	1W	1.0~15.0mΩ: ≤±50 15.1~100.0mΩ: ≤±25	31.62A	63.25A	7~100mΩ	1~100 mΩ		- 55 ~ + 170
SR2010	1W	0.5~0.9 mΩ: ≤±50 1.0~1.9mΩ: ≤±50 2.0~100mΩ: ≤±25	44.72A	89.44A	7~100mΩ	0.5~100 mΩ		
SR2512	1 W	0.5~1.0mΩ: ≤±50	44.72A	100.00A	7~680mΩ	0.5~680 mΩ		
	1.5 W	1.1~680mΩ: ≤±25	54.77A	122.48A	7~680mΩ	0.5~680 mΩ		
	2 W	0.5~1.0mΩ: ≤±50 1.1~450mΩ: ≤±25	63.25A	141.42A	7~450mΩ	0.5~450 mΩ		
	3 W	0.5~1.0mΩ: ≤±50 1.1~50.0mΩ: ≤±25	77.46A	134.16A	7~50mΩ	0.5~50 mΩ		
SR2725	4 W	0.25~50.0mΩ: ≤±50	126.49A	252.95A	---	0.25~50 mΩ		
SR2728	3 W	4.0~100mΩ: ≤±25	27.39A	47.43A	4~100mΩ	4~100mΩ		
	3.5 W	4.0~100mΩ: ≤±25	29.58A	51.23A	4~100mΩ	4~100mΩ		
	4 W	4.0~ 50.0mΩ: ≤±25	31.62A	54.77A	4~100mΩ	4~50mΩ		
SR4527	5W	0.5~1.0mΩ: ≤±50 1.1~120mΩ: ≤±25	100A	173.21A	7~120mΩ	0.5~120 mΩ		

Recommend Land Pattern Design (For Reflow Soldering)

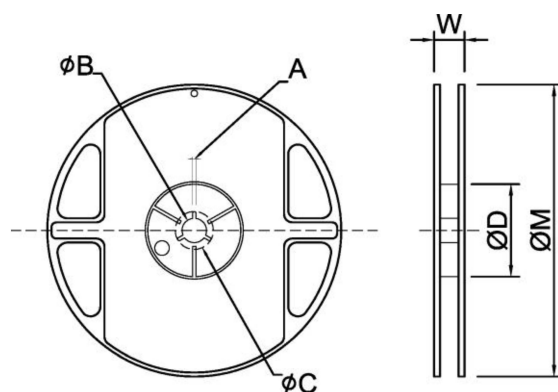


Dimension

Unit: mm

Type	Resistance Range mΩ	a	b	i
SR1206 - 1W	1~100	1.60	2.18	1.00
SR2010 - 1W	0.5~3	2.89	2.92	1.22
	3.1~100	2.29	2.92	2.41
SR2512 - 1W, 1.5W, 2W	0.5~4	3.05	3.68	1.27
SR2512 - 1W, 1.5W, 2W	4.1~450	2.11	3.68	3.18
	4.1~50	2.11	3.68	3.18
SR2512 - 3W	0.5~4	3.05	3.68	1.27
	4.1~50	2.11	3.68	3.18
SR2725 - 4W	0.6~2.9& 4.1~50	2.19	3.68	3.00
SR2728 - 3W, 3.5W, 4W	3~100	2.79	3.68	1.80
SR4527 - 5W	0.25 ~3	3.18	6.86	1.32
	4~100	2.75	7.82	3.51

■ Packaging

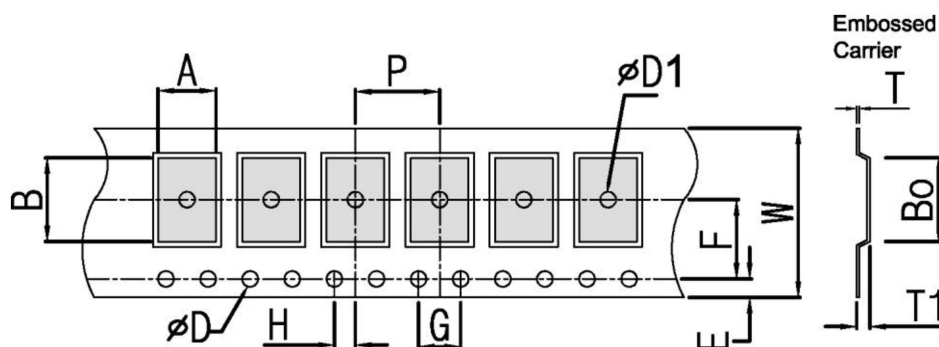


■ Dimension

Unit: mm

Reel Type / Tape	A	φ B	φ C	φ D	W	φ M
7" reel for 12 mm embossed	2.5 ± 0.5	13.5 ± 0.5	17.7 ± 0.5	60.0 ± 0.5	16.2 ± 0.5	178 ± 1.0
7" reel for 8 mm embossed (for LR1206 only)	2.0 ± 0.5	13.2 ± 0.5	17.7 ± 0.5	60.0 ± 0.5	12.00 ± 0.5	178 ± 1.0
7" reel for 24 mm embossed	2.0 ± 0.5	13.5 ± 0.5	17.7 ± 0.5	60.0 ± 0.5	24.4 ± 2.0	178 ± 1.0

■ Embossed Dimension



■ Dimension

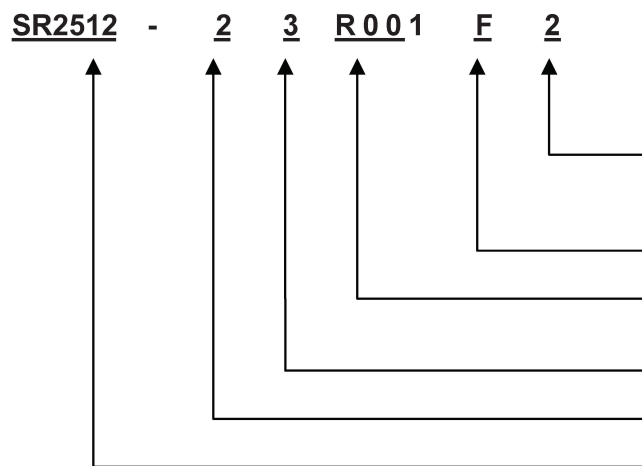
Unit: mm

Item	W	P	E	F	φ D	φ D1	G	H	A	B0	T1	T
SR1206	8.0±0.15	4.0±0.10	1.75±0.10	3.5±0.10	8.0±0.15	+0.1 1.50 +0	4.0±0.10	2.0±0.10	1.83±0.10	3.48±0.10	1.10±0.10	0.20±0.05
SR2010	12.0±0.15	4.0±0.10	1.75±0.10	5.5±0.10	12.0±0.15		4.0±0.10	2.0±0.10	2.90±0.10	5.45±0.10	1.33±0.10	0.23±0.05
SR2512	12.0±0.15	4.0±0.10	1.75±0.10	5.5±0.10	12.0±0.15		4.0±0.10	2.0±0.10	3.50±0.10	6.75±0.10	1.30±0.10	0.20±0.05
SR2725	12.0±0.15	8.0±0.10	1.75±0.10	5.5±0.10	12.0±0.15		4.0±0.10	2.0±0.10	6.75±0.10	7.15±0.10	1.95±0.10	0.25±0.05
SR2728	12.0±0.15	12.0±0.10	1.75±0.10	5.5±0.10	12.0±0.15		4.0±0.10	2.0±0.10	7.70±0.10	7.15±0.10	1.45±0.10	0.25±0.05
SR4527	24.0±0.15	12.0±0.10	1.75±0.10	11.5±0.10	24.0±0.15		4.0±0.10	2.0±0.10	7.20±0.10	11.80±0.10	2.00±0.10	0.30±0.10

■ Parts Number Explanation

■ Example:

Ordering Information



Packing

1=Tape & Reel ; B=Bulk Pack

2= 2,000 Pcs

Tolerance

D=±0.5% ; F=±1.0% ; J=±5.0%

Resistance

EX : R001=1mΩ ; R010=10mΩ

Power Rating (Watts)

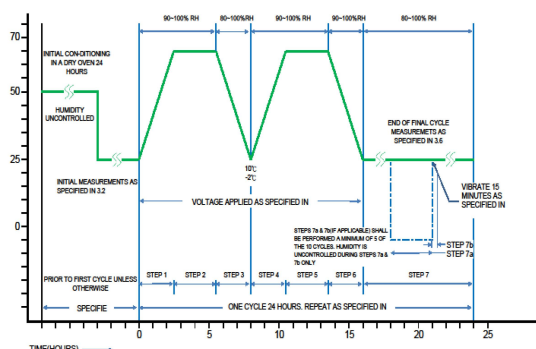
Number of Terminals

Model (Size)

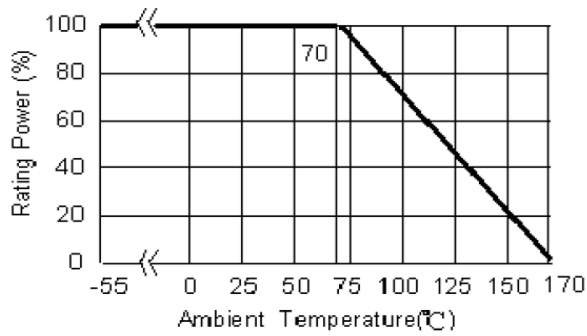
Test Procedures and Requirements

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (TCR)	JIS C 5201 clause 4.8	$TCR (ppm/^{\circ}C) = \frac{R2-R1}{R1 (T2-T1)} \times 10^6$ R1 : resistance of room temperature (T1) R2 : resistance of 150 °C (T2)	Refer to Ratings
Short Time Overload	JIS C 5201 clause 4.13	3 times rated power for LR2512-3W, LR2728-3W, LR2728-3.5W, LR2728-4W, LR4527-5W 4 times rated power for LR1206-1W, LR2010-1W, LR2725-4W, 5 times rated power for LR2512-1W, LR2512-1.5W, LR2512-2W Rating power duration: 5secs	$\pm(0.5\%+0.0005\Omega)\Delta R$
Insulation Resistance	JIS C 5201 clause 4.6	100±15V _{DC} for 1 minute	$\geq 10^9\Omega$
Dielectric Withstanding Voltage	JIS C 5201 clause 4.7	Applied 500V _{AC} for 1 minute, and Limit surge current 50 mA (max.)	Without break down
Resistance to Solder Heat	JIS C 5201 clause 4.18	Solder temp./immersion time: 260±5°C, 10±1secs	$\pm(0.5\%+0.0005\Omega)\Delta R$
Solderability Test	JIS C 5201 clause 4.17	Solder Bath/Dip and Look Test, 245±5°C, 3±0.5 secs	95% coverage
Vibration	JIS C 5201 clause 4.22	Frequency varied 55Hz in one minute, 3 orientations @ Total duration 12 hours	$\pm(0.5\%+0.0005\Omega) \Delta R$
Resistance to Solvent	JIS C 5201 clause 4.29, 4.30	Immersion time: 60±5 secs @ 20°C~25°C	$\pm(0.5\%+0.0005\Omega) \Delta R$
Low Temperature Exposure (Storage)	JIS C 5201 clause 4.23.4	1,000 hours @ -55±2°C	$\pm(0.5\%+0.0005\Omega) \Delta R$
High Temperature Exposure (Storage)	JIS C 5201 clause 4.23.2	1,000 hours @ + 170°±5C	$\pm(1.0\%+0.0005\Omega) \Delta R$
Temperature Cycling	JIS C 5201 clause 4.19	Air to air, - 55°C to + 150°C, 1,000 cycles, 15 minutes at each extreme, transition time 2 to 3 minutes	$\pm(0.5\%+0.0005\Omega) \Delta R$
Moisture Resistance (Climatic Sequence)	MIL-STD 202 Method 106	Mil-STD-202, Method 106, 0% power, 7a and 7b not required, t = 24 h/cycle, 10 cycles, Unpowered, (Figure 1)	$\pm(0.5\%+0.0005\Omega) \Delta R$
Bias Humidity	JIS C 5201 clause 4.24	+ 85 °C, 85% RH, 10% Bias, Extended Life Test: 1,000 hours, 1.5 hours On, 0.5 hours Off	$\pm(0.5\%+0.0005\Omega) \Delta R$
Load Life	JIS C 5201 clause 4.25.1	Test temperature 70±2°C Rated continuous working voltage, Extended Life Test: 1,000 hours, 1.5 hours On , 0.5 hours Off	$\pm(1.0\%+0.0005\Omega) \Delta R$

Figure 1

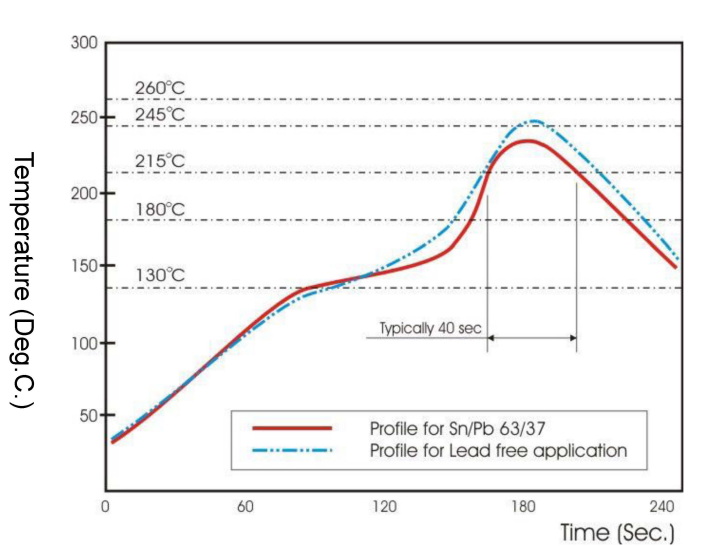


■ Power Derating Curve

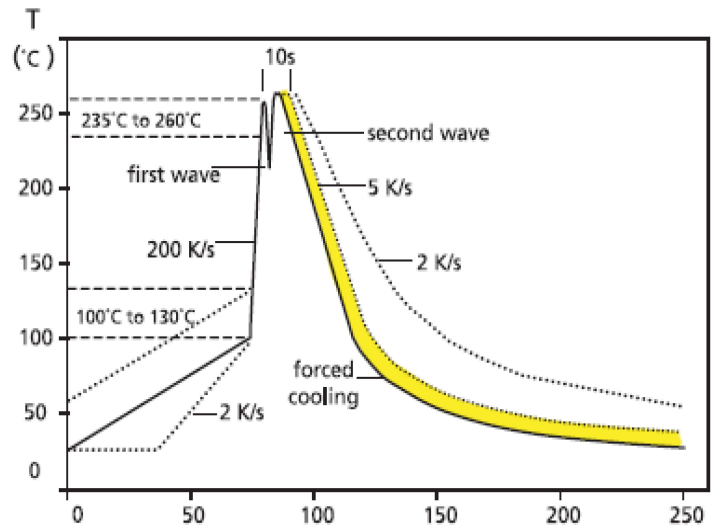


■ Recommend Soldering Conditions:

Surface-mount components are tested for solderability at a temperature of 245 °C for 3 seconds. Typical examples of soldering processes that provide reliable joints without any damage are given in below:



Recommended IR Reflow Soldering Profile



Recommended double-wave Soldering Profile

Typical values (solid line)

Process limits (dotted line)

■ Marking

Marking code:(All the products marking are 4 digits)

- Product resistance is indicated by using two marking notation styles:

a. "R" designates the decimal location in ohms, e.g.

For 1m Ω the product marking is R001;

For 25m Ω the product marking is R025;

For 100m Ω the product marking is R100.

b. "m" designates the decimal location in milliohms, e.g.

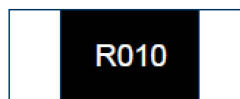
For 0.25m Ω the product marking is 0m25;

For 0.5m Ω the product marking is 0m50;

For 5.5m Ω the product marking is 5m50;

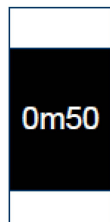
For 25.5m Ω the product marking is 25m5.

SR1206 series:



→ Ex. Resistance 10mΩ

SR2010 series:



→ Ex. Resistance 0.5mΩ (when resistance below than 1mΩ)

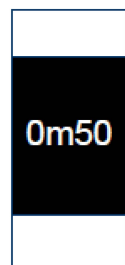


→ Ex. Resistance 2mΩ (when resistance below or equal than 3mΩ)

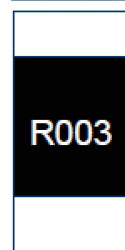


→ Ex. Resistance 5mΩ (when resistance greater than 3mΩ)

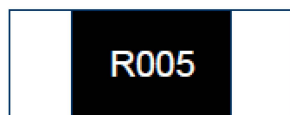
SR2512 series:



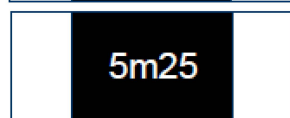
→ Ex. Resistance 0.5mΩ (when resistance below than 1mΩ)



→ Ex. Resistance 3mΩ (when resistance below or equal than 4mΩ)

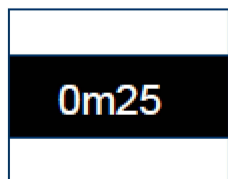


→ Ex. Resistance 5mΩ (when resistance greater than 4mΩ)

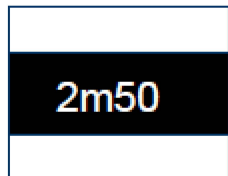


→ Ex. Resistance 5.25mΩ (when resistance greater than 4mΩ)

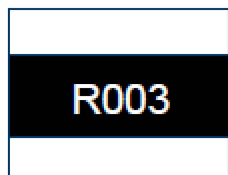
SR2725 series:



→ Ex. Resistance 2.5mΩ (for 1.5mΩ and 2.5mΩ only)

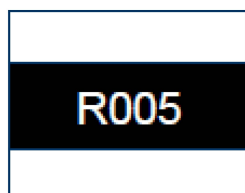


→ Ex. Resistance 0.25mΩ (or 0.25mΩ only)



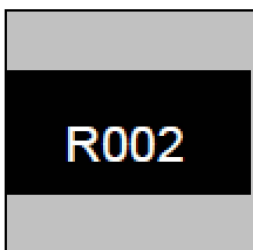
→ Ex. Resistance 3mΩ (for 1m , 2m and 3mΩ only)

SR2728 series:

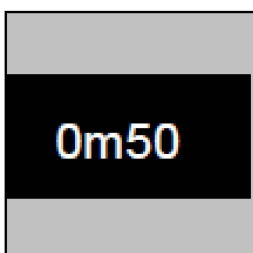


→ Ex. Resistance 5mΩ

SR4527 series:



→ Ex: Resistance 2mΩ.



→ Ex: Resistance 0.5mΩ.