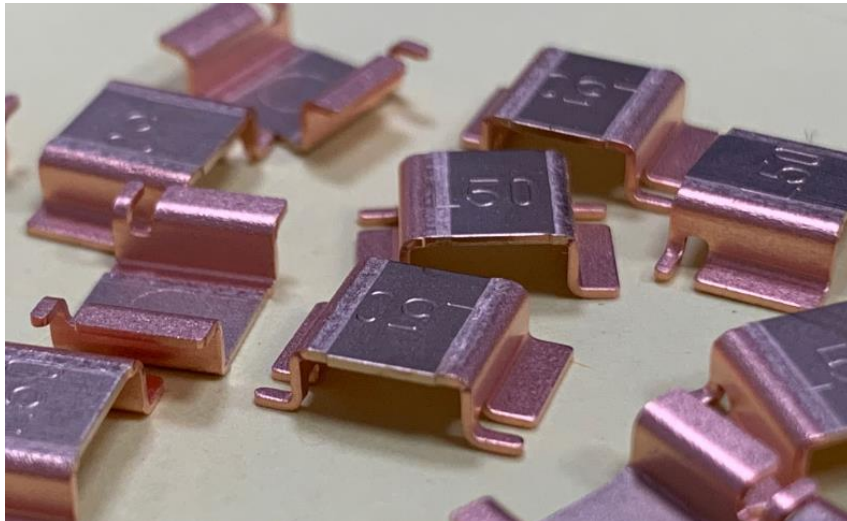


High Power Shunt Resistor Specification

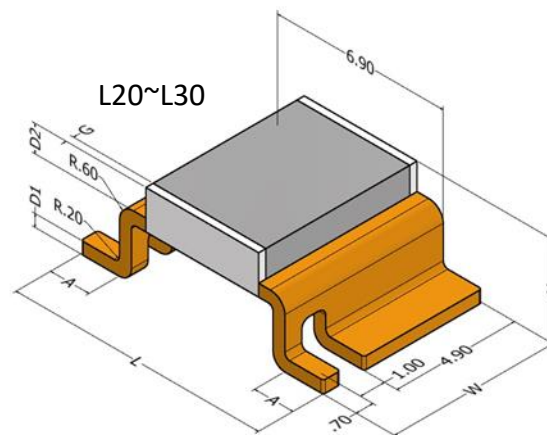
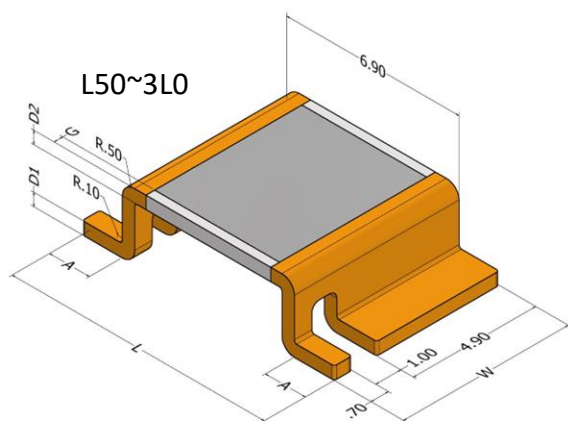


Current Sensing Shunt Resistor

Scope

This specification applies for metal type current shunt resistor.

Dimensions



Type	Dimensions(mm)						
(inch size)	L	W	H(Ref.)	A	D1	D2(Ref)	G(max)
SR4026-L20	10.1±0.2	6.6±0.2	3.75	1.4±0.2	0.50±0.1	1.4	0.7
SR4026-L30	10.1±0.2	6.6±0.2	3.75	1.4±0.2	0.50±0.1	1.4	0.7
SR4026-L50	10.1±0.2	6.6±0.2	2.65	1.4±0.2	0.45±0.1	0.45	0.7
SR4026-1L0	10.1±0.2	6.6±0.2	2.65	1.4±0.2	0.40±0.1	0.40	0.7
SR4026-2L0	10.1±0.2	6.6±0.2	2.6	1.4±0.2	0.55±0.1	0.55	0.7
SR4026-3L0/-L	10.1±0.2	6.6±0.2	2.65	1.4±0.2	0.40±0.1	0.40	0.7

Features

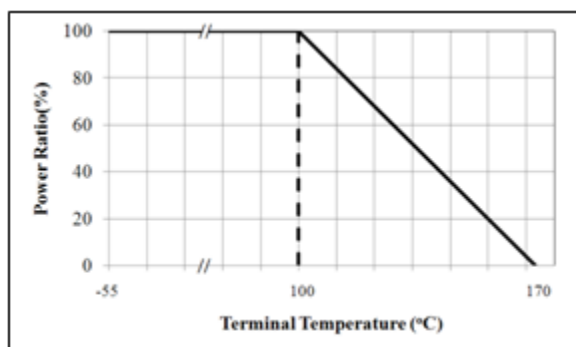
- ◆ 5W permanent power
- ◆ Resistance value is 0.5~1.0mΩ
- ◆ Lead free, RoHs compliant for global applications and halogen free

Application

- ◆ Power modules
- ◆ Frequency converters
- ◆ Current sensor for power hybrid sources
- ◆ High current for automotive

Current Sensing Shunt Resistor

Derating Curve



Part Numbers

SR 4026 E E L 0L50 -L

(1) (2) (3) (4) (5) (6)

- (1) Series Name: SR (Shunt Resistor)
- (2) Chip size: 4026(inch)
- (3) Packaging Material: Emboss
- (4) Resistance Tolerance: $\pm 1\%$ (F), $\pm 5\%$ (J)
- (5) Power rating: L=5W, J=4W, H=3W
- (6) Resistance Code: Ex: 0L50 means 0.5m Ω , etc.
- (7) L: means NiCrAl low inductance material

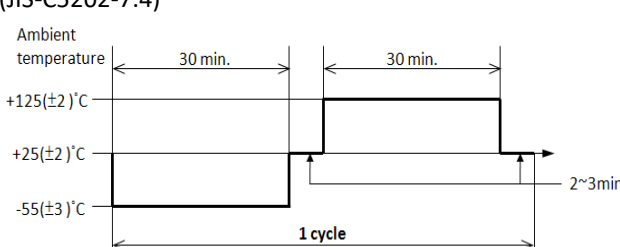
Electrical Specification

Item	Power Rating	Resistance Range(m Ω)	Operation Temp. Range	TCR (PPM/ $^{\circ}$ C)	Resistance Material
SR4026	5W	0.2	-55~+170 $^{\circ}$ C	± 50	MnCuSn
SR4026	5W	0.3	-55~+170 $^{\circ}$ C	± 50	MnCu
SR4026	5W	0.5	-55~+170 $^{\circ}$ C	± 50	MnCuSn
SR4026	4W	1.0	-55~+170 $^{\circ}$ C	± 50	MnCu
SR4026	4W	2.0	-55~+170 $^{\circ}$ C	± 50	FeCrAl
SR4026	3W	3.0	-55~+170 $^{\circ}$ C	± 50	FeCrAl
SR4026-L	3W	3.0	-55~+170 $^{\circ}$ C	± 50	NiCrAl

Current Sensing Shunt Resistor

Performances

Environmental Performance

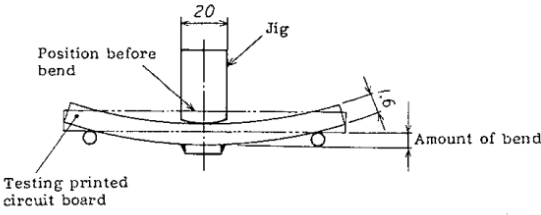
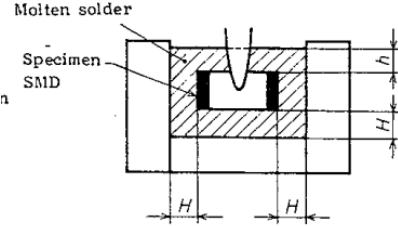
No.	Item	Test Condition	Specification
1	Short Time Overload	Loading 5 times rate power 5sec	ΔR : $\pm 1\%$
2	Temperature Coefficient of Resistance (T.C.R.)	-20°C / +125°C. (JIS-C5202-5.2) $TCR \text{ (ppm/}^\circ\text{C)} = \frac{\Delta R}{R \times \Delta t} \times 10^6$	Refer to electrical specification.
3	Moisture Resistance	The specimens shall be placed in a chamber and subjected to a relative humidity of 90~98% percent and a temperature of 25°C / 65°C 10 cycles (MIL-STD-202, Method 106)	ΔR : $\pm 1\%$
4	High Temperature Exposure	The ship (mounted on board) is exposed in the heat chamber 170°C for 1000 hrs. (JIS-C5202-7.2)	ΔR : $\pm 1\%$
5	Load Life	Apply rated power for 1000 hours with 1.5 hours ON and 0.5 hour OFF. (JIS-C5202-7.10)	ΔR : $\pm 1\%$
6	Rapid change of temperature	The chip (mounted on board) is exposed, -55 $\pm 3^\circ\text{C}$ (30min.)/+125 $\pm 2^\circ\text{C}$ (30min.) for 1000 cycles. The following conditions as the following figure. (JIS-C5202-7.4) 	ΔR : $\pm 1\%$

Remark:

- All Reliability test should follow De-rating curve , terminal temperature of component should be below 100°C

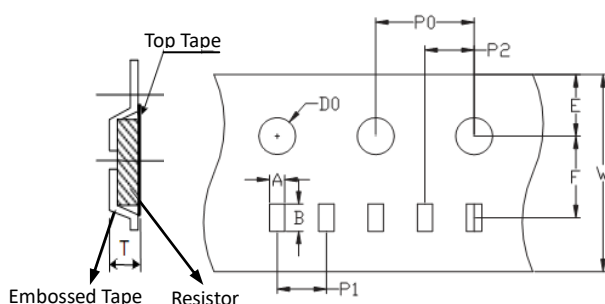
Function Performance

Current Sensing Shunt Resistor

No.	Item	Test Condition	Specification
1	Bending Strength	<p>Mount the chip to test 90mm(L)*40mm(W) FR4 printed circuit board substrate. Apply pressure in direction of arrow unit band width reaches 2mm(+0.2/-0mm) illustrated in the figure below and hold for 10±1 sec. (JIS-C5202-6.1)</p> <p>Unit: mm</p> 	ΔR: ±1%
2	Solderability	<p>The specimen chip shall be immersed into the flux specified in the solder bath 235±5°C for 2±0.5 sec. It shall be immersed to a point 10mm from its root. (Sn96.5/Ag3.0/Cu0.5) (JIS-C5 202-6.11)</p>  <p>h = 10 mm H = 10 mm min.</p>	Solder shall be covered 95% or more of the electrode area.

Tape Packaging Specifications

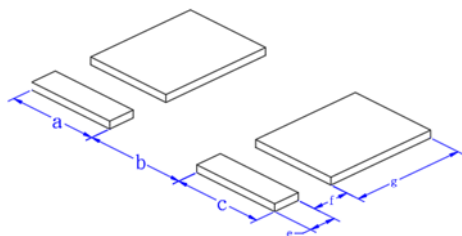
◆Embossed Plastic Tape Specifications



Type	Carrier Dimensions (mm)									
	A	B	E	F	W	P0	P1	P2	D0	T
4026-L20/L30	6.9±0.1	10.4±0.1	1.75±0.1	11.5±0.1	24.0±0.3	4.0±0.1	12.0±0.1	2.0±0.1	1.5±0.1	4.2±0.1
4026	6.9±0.1	10.4±0.1	1.75±0.1	11.5±0.1	24.0±0.3	4.0±0.1	12.0±0.1	2.0±0.1	1.5±0.1	3.2±0.1

Current Sensing Shunt Resistor

Recommended Pad Layout



Type (inch size)	Dimensions(mm)					
	a	b	c	e	f	g
SR4026	2.44	5.8	2.44	0.9	0.9	5.6

Note. pad size, solder insufficient, excessive solder, solder void and component shifted will affect the resistance accuracy after IR reflow. Circuit calibration is a must to be done by functional test.

Packaging

Size EIA (EIAJ)	4026
Standard Packing Quantity (pcs /Reel)	1400

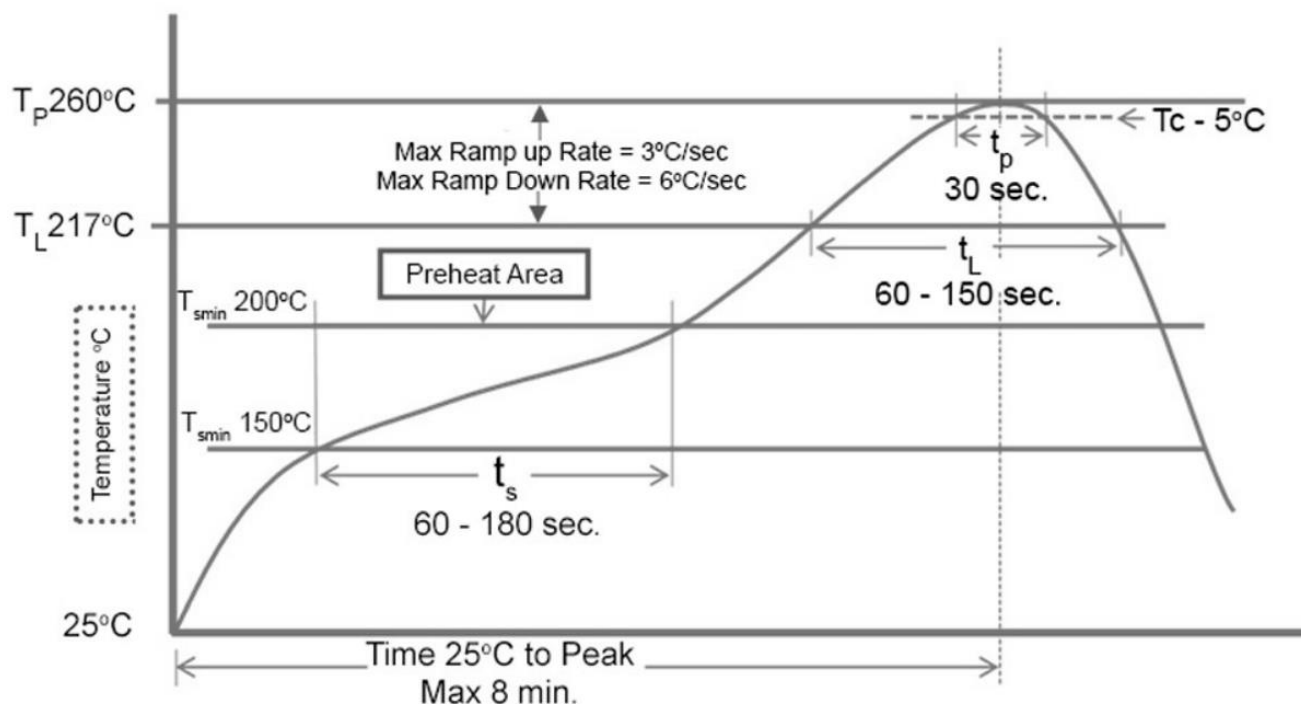
Storage Conditions

Temperature : 22~28℃, Humidity : 40~75%

Soldering Recommendations

- ◆ Peak reflow temperatures and durations :
 - IR Reflow Peak = 260℃ max for 10 sec
 - Not suitable for wave soldering
- ◆ Recommended IR Reflow Profile :

Current Sensing Shunt Resistor



ECN

Engineering Change Notice : The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.