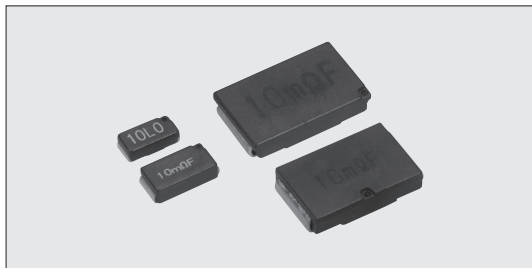
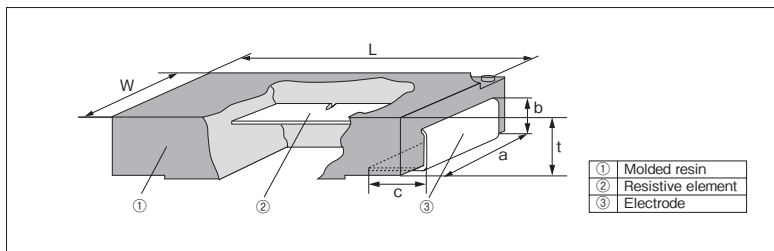


## SL·SLN Current Detecting Chip Resistors (High Power)



Coating color : Black

### Construction



### Features

- SMD type of small size, ultra-low resistance (3mΩ~) and high accuracy (±0.5%) resistor for current sensing.
- Encapsulated with flame retardant resin molding. (UL94 V-0)
- Excellent dimension accuracy, mountability and shock-resistance due to molded products.
- Excellent terminal strength and solderability due to structure of a metal plate terminal electrode.
- Easy to absorb the thermal expansion and shrinkage because of a metal plate terminal structure.
- Suitable for flow, reflow and iron solderings.
- Products with lead free termination meet EU-RoHS requirements. EU-RoHS regulation is not intended for Pb-glass contained in electrode, resistor element and glass.
- AEC-Q200 qualified.

### Applications

Automotive  
Note PCs  
Battery packs  
AC Adapters  
DC-DC converters, etc.

### Reference Standards

IEC 60115-1  
JIS C 5201-1

### Dimensions

Type (Inch Size Code)	Dimensions (mm)						Weight (g) (1000pcs)
	L±0.3	W±0.2	t±0.2	a±0.2	b±0.2	c	
SLW07 (2010)	5.0	2.5	1.7	2.0	0.9	1.2±0.3	45
SLW1 (2512)	6.3	3.1	1.9	2.4	1.2	1.2±0.3	90
SLN3 (4527)	11.5	7.0	2.4	5.5	1.6	2.55±0.4	500
SLN5 (4527)	11.5	7.0	2.5	5.5	1.9	2.55±0.4	600

### Type Designation

Example

SL	W1	T	TE	20L0	F	75
Product Code	Power Rating	Terminal Surface Material	Taping	Nominal Resistance	Resistance Tolerance	T.C.R (×10 <sup>-6</sup> /K)
SL SLN	W07:1.0W W1:1.5W 3:3W 5:7W	T:Sn	TE:Plastic embossed TED:Plastic embossed (SLN5 only) BK:Bulk	D,F:4 digits J:3 digits	D:±0.5% F:±1% J:±5%	Nil:0~150 0~200 ±75(SLN3/SLN5) ±100 ±110 ±180 50:±50(SLW1) 75:±75(SLW1)

Resistance Value (Ω)	3 digits	Resistance Value (Ω)	4 digits
5m~9.1m	5L0~9L1	3m~9.1m	3L00~9L10
10m~91m	10L~91L	10m~91m	10L0~91L0
0.1~0.91	R10~R91	0.1~0.91	R100~R910

The terminal surface material lead free is standard.

Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

For further information on taping, please refer to APPENDIX C on the back pages.

### Ratings

Type	Power Rating	Resistance Range <sup>*1</sup> (Ω)			T.C.R. (×10 <sup>-6</sup> /K)	Rated Terminal Part Temp.	Operating Temp. Range	Taping & Q'ty/Reel (pcs)
		D:±0.5% E24·E96 <sup>*3</sup>	F:±1% E24·E96 <sup>*3</sup>	J:±5% E24				TE·TED (SLN5)
SLW07	1W	—	5m~100m		0~200:R≤10mΩ 0~150:R≥11mΩ	125°C	-55°C~+180°C	2,000
SLW1	1.5W	10m~100m	5m~100m		±180:R<15mΩ ±100:R≥15mΩ ±75:20m≤R≤100mΩ ±50:34.8m≤R≤100mΩ	120°C		1,000
SLN3	3W	5m~110m			±110:R<10mΩ ±75:R≥10mΩ	105°C		-65°C~+180°C
SLN5	7W (5W <sup>*2</sup> )	3m~200m		—		70°C (120°C <sup>*2</sup> )		

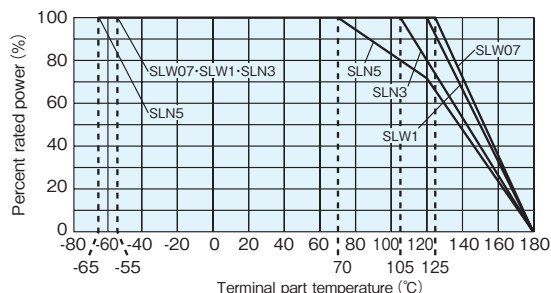
Rated voltage = √(Power Rating × Resistance value).

\*1 5m, 6m, 7m, 8m and 9mΩ are available in each resistance range.

\*2 When the rated terminal part temperature is 120°C, rated power is 5W.

\*3 SLW07 and SLN5 (3m~4.7mΩ) offer only E24 series.

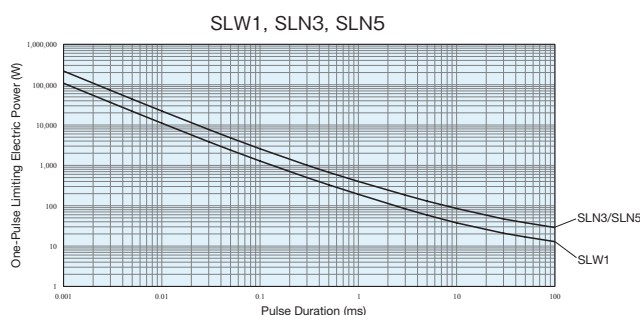
## Derating Curve



When the terminal part temperature of the resistor exceeds the rated terminal part temperature shown above, the power shall be derated according to the derating curve.  
 ※Please refer to "Introduction of the derating curves based on the terminal part temperature" on the beginning of our catalog before use.

## One-Pulse Limiting Electric Power

※The maximum applicable voltage is equal to the max. overload voltage.  
 Please ask us about the resistance characteristic of continuous applied pulse.  
 The pulse endurance values are not assured values, so be sure to check the products on actual equipment when you use them.



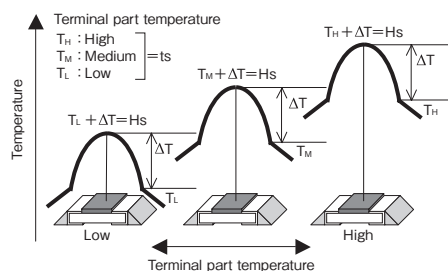
## Thermal Resistance

Type	Resistance (Ω)	Rth (°C/W)
SLW07	5m	26
	22m	48
	100m	78
SLW1	5m	16
	20m	39
	100m	59
SLN3	5m	11
	11m	19
	5m	11
SLN5	11m	19
	200m	15

$$R_{th} = (H_s - t_s) / \text{Power}$$

Regarding the temperature rise, the value of the temperature varies per conditions and board for use since the temperature is measured under our measuring conditions. Please refer to us before use.

The temperature of the resistor will increase the same  $\Delta T$  from the standard terminal part temperature regardless of the ambient temperature when the same power is applied. This is because there is hardly any heat dissipation from the resistor surface to the ambient air.



## Performance

Test Items	Performance Requirements		Test Methods
	Limit	Typical	
Resistance	Within specified tolerance	—	25°C
T.C.R.	Within specified T.C.R.	—	+25°C/+125°C
Overload (Short time)	1: SLW07, SLW1 0.5: SLN3 2: SLN5	1: SLW07, SLW1 0.25: SLN3 0.5: SLN5	SLW07: 3W for 5s SLW1: 5W for 5s SLW1 (T.C.R. ±50/±75): 4W for 5s SLN3: 10W for 5s SLN5: 15W for 5s
Resistance to soldering heat	1: SLW07, SLW1 0.5: SLN3, SLN5	1: SLW07, SLW1 0.5: SLN3, SLN5	260°C ±5°C, 10s ±1s 260°C ±5°C, 10s ~12s
Rapid change of temperature	1: SLW07, SLW1 0.5: SLN3, SLN5	0.5: SLW07, SLW1 0.3: SLN3, SLN5	-55°C (30min.) / +150°C (30min.) 100 cycles -55°C (15min.) / +150°C (15min.) 1000 cycles
Moisture resistance	2: SLW07, SLW1 0.5: SLN3, SLN5	1: SLW07, SLW1 0.35: SLN3, SLN5	40°C ±2°C, 90~95%RH, 1000h 1.5h ON/0.5h OFF cycle SLN3: 85°C ±2°C, 85%RH, 1000h, 0.3W SLN5: 85°C ±2°C, 85%RH, 1000h, 0.7W
Endurance of Rated Terminal part Temperature	2	1: SLW07, SLW1, SLN3 1.2: SLN5	Terminal part temp.: 125°C (SLW07) : 120°C (SLW1, SLN5 5W) : 105°C (SLN3) : 70°C (SLN5 7W) 1.5h ON/0.5h OFF cycles
Low temperature exposure	0.5	0.25	SLW07, SLW1: -55°C, 1h SLN3, SLN5: -65°C, 24h

## Precautions for Use

- In case of using the low ohm resistors as shunt resistors, please lay out a pattern considering the electromagnetic induction with surrounding inductors.
- In the resistance values of 50mΩ or under, the resistance value after soldering may change depending on the size of pad pattern or solder amount. Make sure the effect of decline/increase of resistance value before designing.