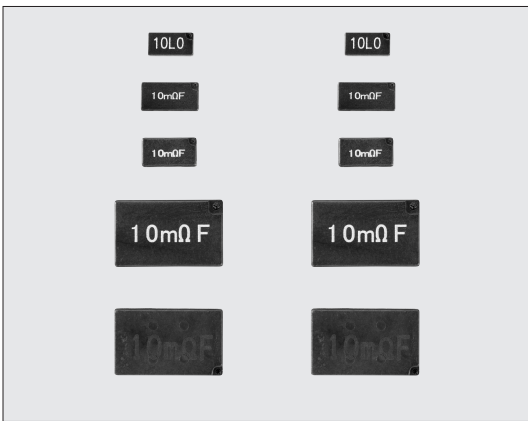


TSL • SL • SLN | 电流检测用片式电阻器 Current Detecting Chip Resistors

电流检测用片式电阻器
Current Detecting Chip Resistors



外观颜色: 黑色 Coating color: Black

■ 特点 Features

- 是小型、超低电阻值(3mΩ~)、高精度(±0.5%)、SMD形状的电流检测用电阻器。
- 是阻燃性树脂(UL94 V-0)模压密封型。
- 由于是模压成形,尺寸精度高,装载性、耐冲击性好。
- 由于是金属端子电极,端子强度、焊接性优异。
- 是金属板端子电极结构,吸收热膨胀收缩。
- 对应波峰焊、回流焊、烙铁焊接。
- 端子无铅品,符合欧盟RoHS。电极、电阻膜层、玻璃中所含的铅玻璃不适用欧盟RoHS指令。
- AEC-Q200相关数据已取得。
- SMD type of small size, ultra-low resistance (3mΩ~) and high accuracy (±0.5%) resistor for current detection.
- 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.

■ 用途 Applications

- | | |
|----------|------------------------|
| 汽车 | Automotive |
| 笔记本电脑 | Note PCs |
| 移动电脑 | Mobile PCs |
| 电池组 | Battery packs |
| AC适配器 | AC Adapters |
| DC-DC换流器 | DC-DC converters, etc. |

■ 参考标准 Reference Standards

- IEC 60115-1
- JIS C 5201-1

■ 额定值 Ratings

型号 Type	额定功率 Power Rating	电阻值范围 ^{※3} Resistance Range (Ω) (E24)				电阻温度系数 ^{※4} T.C.R. (×10 ⁻⁶ /K)	最高使用电压 Max. Working Voltage	最高过载电压 Max. Overload Voltage	额定环境温度 Rated Ambient Temp.	额定端子部温度 Rated Terminal Part Temp.	使用温度范围 Operating Temp. Range	编带和包装数/卷	
		D: ±0.5%	F: ±1%	G: ±2%	J: ±5%							TE	
SL07	0.75W	-	5m~100m	-	5m~100m	0~200:R<10mΩ 0~150:R≥11mΩ	-	-	70℃	125℃	-55℃~ +180℃	2,000	
TSL1	1W	10m~100m	5m~100m	-	5m~100m	±180:R<13mΩ ±100:R≥15mΩ	200V	400V		125℃		1,000	3,000
SL1	1W	10m~1M	5m~1M	3m, 4m	3m~22M					±180:R<10mΩ ±100:R≥11mΩ			500V
SL2	2W	10m~1M	5m~1M	3m, 4m	3m~22M	±110:R<10mΩ ±75:R≥10mΩ	-	-				125℃:R<360mΩ 90℃:R≥390mΩ	
SLN2	2W	5m~200m	5m~200m	-	5m~200m				-	-	-	-	-

额定电压是√额定功率×公称电阻值所算出的值或表中最高使用电压两者中小的值为额定电压。

Rated voltage = √Power Rating × Resistance value or Max. working voltage, whichever is lower.

※3在电阻值范围内, 3m, 4m, 5m, 6m, 7m, 8m, 9mΩ都对应。 Available for 3m, 4m, 5m, 6m, 7m, 8m and 9mΩ inside each resistance range.

※4关于电阻温度系数为±50及±75×10⁻⁶/K的产品, 请您另行询问。 Please ask separately us about T.C.R. (±50 and ±75 × 10⁻⁶/K).

本样本手册中记载的产品规格如有变更, 恕不一一奉告。订购以及使用之前, 请仔细确认规格表的内容。

用于车载设备、医疗设备、航空设备以及其他涉及人身安全、或可能引起重大损失的设备上时, 请务必事先与我司联系。这些产品在这类用途中出现故障或失灵可能导致人身事故或严重损坏。

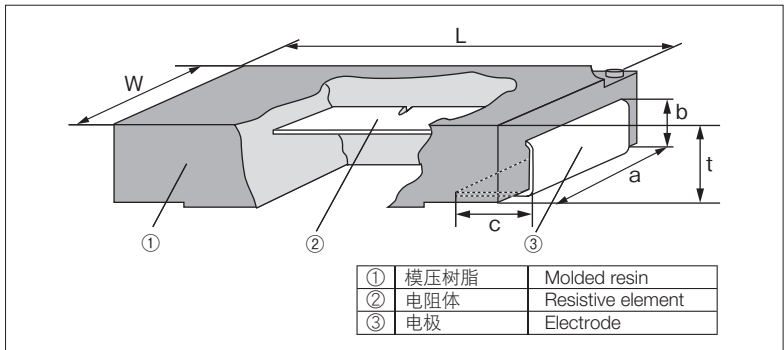
Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

Contact our sales representatives before you use our products for applications including automobiles, medical equipment and aerospace equipment.

Malfunction or failure of the products in such applications may cause loss of human life or serious damage.

Mar. 2015

■ 结构图 Construction



■ 外形尺寸 Dimensions

型号 Type (Inch Size Code)	尺寸 Dimensions (mm)						Weight (g) (1000pcs)
	L±0.3	W±0.2	t±0.2	a±0.2	b±0.2	c	
SL07 (2010)	5.0	2.5	1.7	2.0	0.9	1.2±0.3	45
TSL1 (2512)	6.3	3.1	1.0	2.4	0.7	1.2±0.3	41
SL1 • SLZ1 (2512)	6.3	3.1	1.9	2.4	1.2	1.2±0.3	90
SL2 (4528)	11.5	7.0	2.5	5.0	1.7	2.6±0.5	476
SLN2 (4528)	11.5	7.0	2.4	5.5	1.6	2.55±0.4	500

■ 品名构成 Type Designation

实例 Example	SL	1	T	TE	10L0	F					
品种 Product Code	TSL SL SLN	额定功率 Power Rating	0.7:0.75W 1:1W 2:2W	端子表面材质 Terminal Surface Material	T: Sn (L: Sn/Pb ^{※2})	二次加工 Taping	TE: Plastic embossed BK: Bulk	公称电阻值 Nominal Resistance	D, F: 4 digits J, G: 3 digits Ex. ^{※1} 0.1Ω: R10 5mΩ: 5L0	阻值允许偏差 Resistance Tolerance	D: ±0.5% F: ±1% G: ±2% J: ±5%

※1	电阻值范围 (Ω) Resistance Value	3位显示 3 digits	电阻值范围 (Ω) Resistance Value	4位显示 4 digits
	3m~9.1m	3L0~9L1	5m~9.1m	5L00~9L10
	10m~91m	10L~91L	10m~91m	10L0~91L0
	0.1~0.91	R10~R91	0.1~0.91	R100~R910
	1~9.1	1R0~9R1	1~9.1	1R00~9R10

※2 对于SL07, SLN2, 端子表面材质只有T标记对应。

※2 With SL07 and SLN2, only the symbol T is available as the terminal surface material.

端子表面材质, 以无铅品为准。

欲知关于此产品含有的环境有害物质详情(除EU-RoHS以外), 请与我们联系。

编带细节请参考卷末附录C。

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.

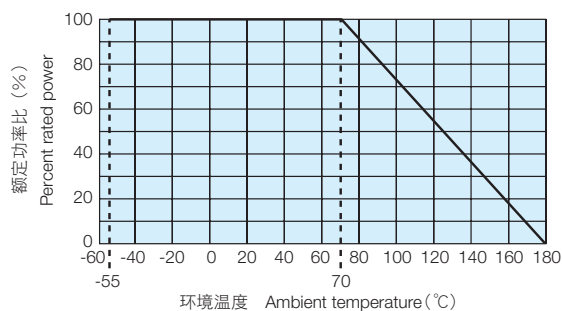
For further information on taping, please refer to APPENDIX C on the back pages.

■ 跳线额定 Jumper Ratings

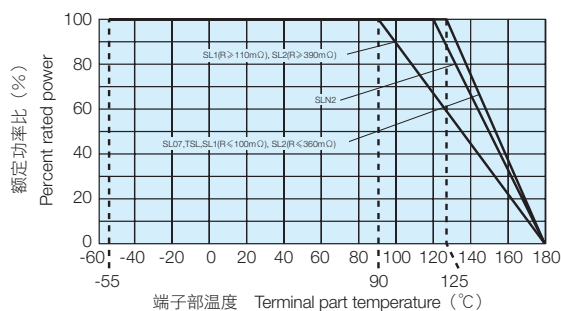
型号 Type	电阻值 Resistance	额定电流 Current Rating	电阻温度系数 T.C.R. (×10 ⁻⁶ /K)
SLZ1	0.5mΩ以下 0.5mΩ max.	44A	4000以下 4000 max.

新

■ 负荷减轻特性曲线 Derating Curve

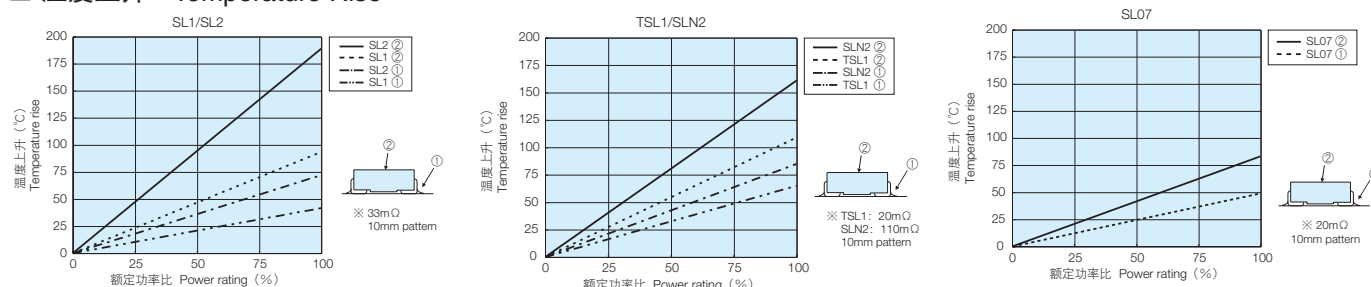


在环境温度70℃以上使用时，应按下图负荷减轻特性曲线，减小额定功率。
For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the above derating curve.



超过上述端子部温度使用时，请根据负荷减轻特性曲线减小额定功率后使用。
※有关使用方法，请参照卷首的“端子部温度负荷减轻特性曲线的说明”。
For resistors operated terminal part temperature of described for each size or above a power rating shall be derated in accordance with derating curve.
※Please refer to “Introduction of the derating curve based on the terminal part temperature” on the beginning of our catalog before use.

■ 温度上升 Temperature Rise



表面温度上升，是以本公司测定条件测定的，由于使用状况、使用基板不同，数值也会有所不同，因此，在使用时请另行询问。

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.

■ 性能 Performance

试验项目 Test Items	标准值 Performance Requirements ΔR±%		试验方法 Test Methods
	保证值 Limit	代表值 Typical	
电阻值 Resistance	在规定的允许偏差内 Within specified tolerance	-	25°C
电阻温度系数 T.C.R.	在规定值以内 Within specified T.C.R.	-	25°C/+125°C
过载(短时间) Overload (Short time)	1: SL07, TSL1, SL1, SL2 0.5: SLN2	1: SL07, TSL1, SL1, SL2 0.25: SLN2	SL07: 额定功率×4倍施加5秒钟 Rated power×4 for 5s TSL1: 额定功率×2.5倍施加5秒钟 Rated power×2.5 for 5s SL1, SL2: 额定功率×5倍施加5秒钟 Rated power×5 for 5s
耐焊接热 Resistance to soldering heat	1: SL07, TSL1, SL1, SL2 0.5: SLN2	1: SL07, TSL1, SL1, SL2 0.5: SLN2	260°C±5°C, 10s±1s 260°C±5°C, 10s~12s
温度突变 Rapid change of temperature	1: SL07, TSL1, SL1, SL2 0.5: SLN2	0.5: SL07, TSL1, SL1, SL2 0.25: SLN2	-55°C (30min.) /+150°C (30min.) 100 cycles -55°C (15min.) /+150°C (15min.) 1000 cycles
耐湿负荷 Moisture resistance	2: SL07, TSL1, SL1, SL2 0.5: SLN2	0.5: SL07, TSL1, SL1, SL2 0.25: SLN2	40°C±2°C, 90%~95%RH, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle 85°C±2°C, 85%RH±3%RH, 1000h 额定功率×0.1倍 Rated power×0.1
在70°C时的耐久性 Endurance at 70°C	2: SL07, TSL1, SL1, SL2 1: SLN2	0.5	70°C±2°C, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
低温放置 Low temperature exposure	0.5	0.25	SL07, TSL1, SL1, SL2: -55°C, 1h SLN2: -65°C, 24h

■ 使用注意事项 Precautions for Use

- 作为分流电阻使用时，应考虑和周围线圈的电感感应后配置模式。
- 在50mΩ以下的电阻值，根据焊盘图案大小和接续焊接的量，焊接后的电阻值会变动。应在事前确认电阻值降低·提高的影响后，进行设备设计。
- 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.