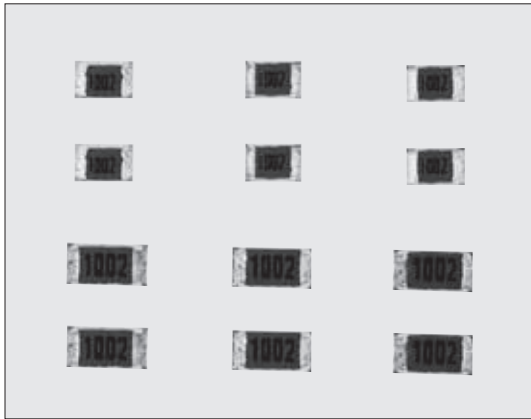


THERMAL SENSORS



LT73 矩形片式正温度线性温度传感器 Linear Positive Temp. Coefficient Flat Chip Resistors

温度传感器
Thermal Sensors



外观颜色: 橙色 Coating color: Orange

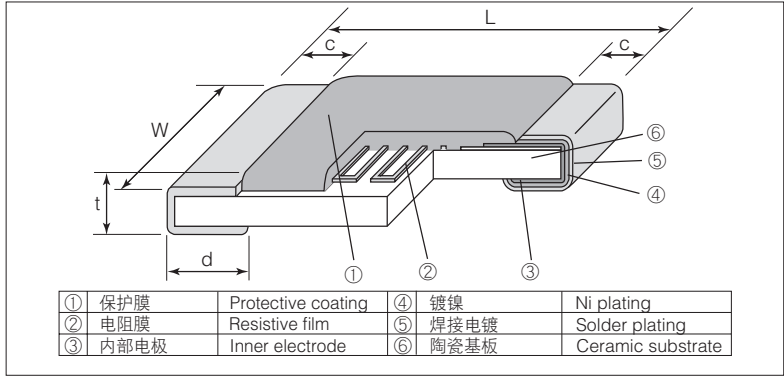
特点 Features

- 表面封装型的感温性金属保护膜电阻器。
- T.C.R.为+150~+4500×10⁻⁶/K, 种类丰富。
- 适用于各种工业设备的温度控制。
- 和回流焊、波峰焊对应。
- 端子无铅品, 符合欧盟RoHS。
- SMD thin film resistors with thermo-perceptivity.
- Various TCRs +150~+4500×10⁻⁶/K are available.
- Suitable for temperature control in various industrial equipment.
- Suitable for both flow and reflow soldering.
- Products with lead free termination meet EU-RoHS requirements.

参考标准 Reference Standards

IEC 60115-8
JIS C 5201-8

结构图 Construction



外形尺寸 Dimensions

型号 Type (Inch Size Code)	尺寸 Dimensions (mm)					Weight (g/1000pcs)
	L±0.2	W±0.2	c	d ^{+0.2} _{-0.1}	t±0.1	
2A (0805)	2.0	1.25	0.4±0.2	0.3	0.5	4.54
2B (1206)	3.2	1.6	0.5±0.3	0.4	0.6	9.14

品名构成 Type Designation

实例 Example

LT73	2B	T	TD	202	J	0150
品种 Product Code	额定功率 Power Rating	端子表面材质 Termination Surface Material	二次加工 Taping	公称电阻值 Nominal Resistance	阻值允许偏差 Resistance Tolerance	电阻温度系数 T.C.R. (×10 ⁻⁶ /K)
	2A:0.1W 2B:0.125W	T:Sn (L:Sn/Pb)	TD:4mm pitch paper TE:4mm pitch plastic embossed BK: Bulk	3 digits	G:±2% J:±5%	4 digits

端子表面材质以无铅品为标准。

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.

额定值 Ratings

型号 Type	额定功率 Power Rating	最高使用电压 Max. Working Voltage	最高过载电压 Max. Overload Voltage	热时间常数 Thermal Time Constant	热消散系数 Thermal Dissipation Constant	额定环境温度 Rated Ambient Temperature	使用温度范围 Operating Temperature Range	编带和包装数/卷 Taping & Q'ty/Reel (pcs)	
								TD	TE
2A	0.1W	50V	100V	1.0s	1.37mW/°C	+70°C	-40°C~+125°C	5,000	4,000
2B	0.125W	75V	150V	1.5s	1.47mW/°C			5,000	4,000

*1 热时间常数·损耗因数以静止空气中测量的值为参考值。并且, 单元单体的值由于连接方法和固定方法的不同而改变。

*1 Thermal time constant and dissipation constant are reference values, which are values of elements and vary with connecting or fixing methods.

电阻温度系数和电阻值范围 T.C.R. and Resistance Range

电阻温度系数 T.C.R. (×10 ⁻⁶ /K)	电阻温度系数允许偏差 T.C.R. Tolerance	电阻值范围 (Ω) Resistance Range (E24)		阻值允许偏差 Resistance Tolerance
		2A	2B	
150 • 250 • 350 • 450 • 500	±100×10 ⁻⁶ /K	2k~24k	2k~51k	G:±2%
600 • 700 • 800 • 900		1k~20k	1k~43k	
1000 • 1200 • 1400	±15%	1k~13k	1k~27k	J:±5%
1600 • 1800		510~4.7k	1k~10k	
2000 • 2200 • 2400		510~4.7k	510~9.1k	
2600 • 2800		510~3k	510~6.2k	
3000 • 3300 • 3600		510~3k	510~6.2k	
3900		510~3k	510~6.2k	
4200		100~1k	100~2k	
4500		51~510	51~510	

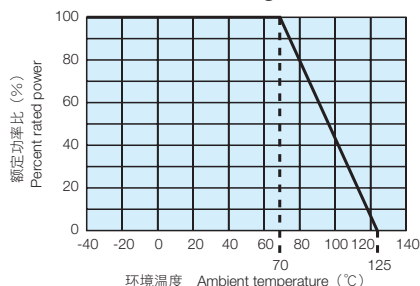
T.C.R.测定温度 T.C.R. Measuring Temperature: +25°C~+75°C

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.

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■ 负荷减轻特性曲线 Derating Curve

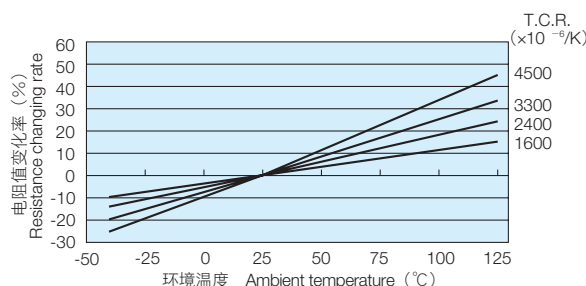


在环境温度70℃以上使用时，应按照上图负荷减轻特性曲线，减小额定功率。

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.

■ 电阻温度特性实例

Examples of Temperature Characteristics of Resistance



■ 电阻温度特性近似式

Approximate Expression for Resistance-Temperature Characteristics

(是代表值，不是保证值。 Values are not guaranteed but typical.)

$$R_T = R_{25} (C_0 + C_1 T + C_2 T^2)$$

R_T : T℃时的电阻值 R_T : Resistance value at T℃
 R_{25} : 25℃时的电阻值 R_{25} : Resistance value at 25℃
 T: 环境温度(℃) T: Ambient temperature (℃)
 C_0, C_1, C_2 : 常数 C_0, C_1, C_2 : Constants

T.C.R. ($\times 10^{-3}/K$)	C_0	C_1	C_2
3000	0.9288	0.0028	1.9983×10^{-6}
3300	0.9232	0.0030	2.9980×10^{-6}
3600	0.9175	0.0032	4.0000×10^{-6}
3900	0.9099	0.0035	4.0064×10^{-6}
4200	0.9026	0.0038	3.9964×10^{-6}
4500	0.8948	0.0041	4.0064×10^{-6}

■ 性能 Performance

试验项目 Test Items	标准值 Performance Requirements $\Delta R \pm (\% + 0.05 \Omega)$		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℃
电阻温度系数 T.C.R.	在规定的值以内 Within specified T.C.R.	-	+25℃/+75℃
过载(短时间) Overload (Short time)	1	0.23	额定电压×2.5倍或最高过载电压中低的一方施加5秒钟。 Rated voltage×2.5 or Max. overload vol. for 5s, whichever is lower.
耐焊接热 Resistance to soldering heat	1	0.10	260℃±5℃, 10s±1s
温度突变 Rapid change of temperature	1	0.10	-40℃ (30min.) / +125℃ (30min.) 5 cycles
耐湿负荷 Moisture resistance	3	0.54	40℃±2℃, 90%~95%RH, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
在70℃时的耐久性 Endurance at 70℃	3	0.62	70℃±2℃, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle

本产品因为在超过70℃高温环境下，有电阻值漂移大的倾向，请确认之后使用。并且，由于本产品使用特殊皮膜，在静电破坏皮膜时，会导致电阻变化，所以在静电使用时请注意。

Confirming resistance drift is recommended since this product has a tendency to have bigger resistance change than general flat chip over 70℃.

Please pay attention not to be applied ESD, it may cause of resistance change.

实数值 (不在保证范围) Actual Value (Out of guarantee)

试验项目 Test Items	参考值 Reference	试验方法 Test Methods
低温放置 Low temperature exposure	0.05%	-40℃, 45min
高温放置 High temperature exposure	0.6%	+125℃, 1000h
静电特性 ESD	500V	人体模型, Human body model, 100pF 1.5kΩ

■ 使用注意事项 Precautions for Use

- 根据所使用的电源不同，电阻的自身发热温度也不同，电阻值也会发生相应的变化。因此，建议在使用该电阻时考虑到电阻的自身产热问题。
- 特别是使用无铅助焊剂时，由于吸湿性提高了，有时会有大量离子性物质。使用RMA系的焊锡或助焊剂时，应充分进行清洗。还有，由于保管环境和安装条件、环境等，附着了汗·盐等离子性物质时，在耐湿性·耐腐蚀性等方面将受到影响。
- 过电压等过大电流流动时，LT73的金属保护膜会受到破坏，应注意。
- 注意不使烙铁直接接触产品。会有发生电阻值变化的危险。还有，烙铁直接接触保护涂层时，有瞬间即炭化的危险。对电蚀的耐候性和保护涂层的绝缘性都会降低，应注意。并且，烙铁温度非常高温时也同样可能造成保护涂层劣化，因此应注意。
- 关于这一产品的保管，应避免阳光直射·高温多湿。直射阳光，会发生编带变质，难以保持适当的剥离强度，应注意。在5~35℃/35~75%RH以下时，交货后12个月内，焊接性不会降低，但由于结露·有毒气体(硫化氢、二氧化硫、氯化氢等)、灰尘等，焊接性会降低，保管时应充分注意。
- 耐热屏蔽胶带连接到安装的芯片电阻器，上部电极可能被剥离。据证实，由于暴露载在高温下安装附着力变得更加牢固。因此，我们建议要控制使用胶带。如果耐热屏蔽胶带不可避免被使用，请确保胶带粘合剂不直接与产品接触。
- The resistance value of this resistor changes by its self-heating by power applied. Therefore, it is recommended to use it by taking its self heat-generation into consideration.
- Ionic impurities such as flux etc. that are attached to these products or those mounted onto a PCB, negatively affect their moisture resistance, corrosion resistance, etc. The flux may contain ionic substances like chlorine, acid, etc. while perspiration and saliva include ionic impurities like sodium (Na⁺), chlorine (Cl⁻) etc. Therefore these kinds of ionic substances may induce electrical corrosion when they invade into the products. Either thorough washing or using RMA solder and flux are necessary since lead free solder contains ionic substances. Washing process is needed, before putting on moisture proof material in order to prevent electrical corrosion.
- An overcurrent such as surge, etc. may break the metal film of LT73.
- Please pay attention that the top of an iron does not direct touch to the components. There is a risk that may cause a change in resistance. Take care that another risk may happen that the protecting coat is carbonized in an instant when touched directly by the top of the iron, also climatic-proof for electric corrosion or insulation of protecting coat may be dropped down. Be sure not to give high temperature on the top of the iron as it will degrade the protecting coat.
- Avoid storing components under direct sun rays, high temperature/humidity. Direct sun rays will cause quality change of taping and difficulty of keeping appropriate peeling strength. 5~35℃/35~75%RH, there is no deterioration of solderability for 12 months, but take special care for storing, because condensation, dust, and toxic gas like hydrogen sulfide, sulfuric acid gas, hydrogen chloride, etc. may drop solderability.
- The upper electrodes could be peeled off when a heat-resistant masking tape is attached to the mounted chip resistors and then detached from them. It is confirmed that the adhesiveness gets stronger due to the exposure to heat under mounting. Accordingly, we recommend the use of masking tape be refrained. If the use of heat-resistant masking tape is unavoidable, please make sure that the adhesives on the tape do not directly come in contact with the product.

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