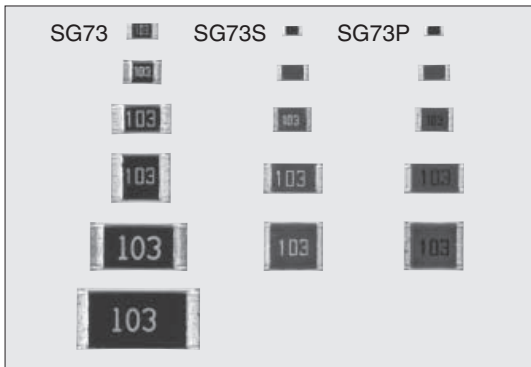


THICK FILM (RESISTANT TO SURGE)

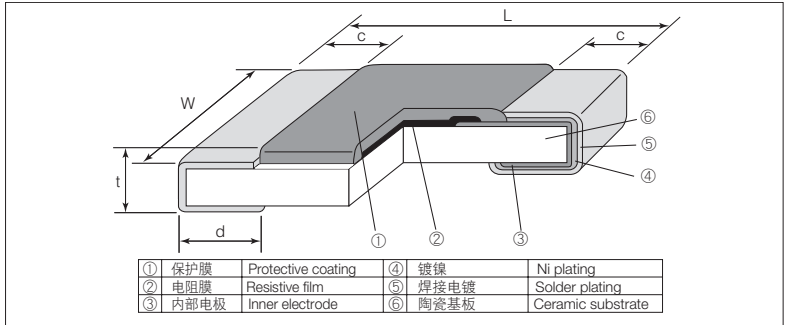


矩形片式电阻器
Flat Chip Resistors

SG73•SG73S•SG73P 矩形浪涌片式电阻器 Surge Current Flat Chip Resistors



■ 结构图 Construction



外观颜色: 深红色 (SG73), 黑色 (SG73S, SG73P 1E)
绿色 (SG73S, SG73P, 1J, 2A, 2B, 2E)
Coating color: Wine red (SG73), Black (SG73S, SG73P 1E)
Green (SG73S, SG73P 1J, 2A, 2B, 2E)

■ 外形尺寸 Dimensions

型号 Type (Inch Size Code)	尺寸 Dimensions (mm)					Weight (g) (1000pcs)
	L	W	c	d	t	
SG73 1J (0603)	1.6±0.2	0.8±0.1	0.3±0.1	0.3±0.1	0.45±0.1	2.14
SG73 2A (0805)	2.0±0.2	1.25±0.1	0.4±0.2	0.3 ^{※1}	0.5±0.1	4.54
SG73 2B (1206)	3.2±0.2	1.6±0.2	0.5±0.3	0.4 ^{※1}	0.6±0.1	9.14
SG73 2E (1210)		2.6±0.2				15.50
SG73 W2H ^{※1} (2010)	5.0±0.2	2.5±0.2	0.65±0.15	0.6±0.1	0.6±0.1	24.30
SG73 W3A ^{※1} (2512)	6.3±0.2	3.1±0.2				37.10
SG73S1E, SG73P1E (0402)	1.0 ^{※1}	0.5±0.05	0.15±0.1	0.25 ^{※1}	0.35±0.05	0.68
SG73S1J, SG73P1J (0603)	1.6±0.2	0.8±0.1	0.3±0.1	0.3±0.1	0.45±0.1	2.14
SG73S2A, SG73P2A (0805)	2.0±0.2	1.25±0.1	0.3 ^{※1}	0.3 ^{※1}	0.5±0.1	4.54
SG73S2B, SG73P2B (1206)	3.2±0.2	1.6±0.2	0.4 ^{※1}	0.4 ^{※1}	0.6±0.1	9.14
SG73S2E, SG73P2E (1210)		2.6±0.2				15.50

※1 SG73 2H 和 SG73 3A 可以对应 ("d" 尺寸不同。"d" 尺寸=0.4^{+0.2}_{-0.1} mm)
※1 SG73 2H 和 SG73 3A 也是仍然可用 (different "d" dimensions=0.4^{+0.2}_{-0.1} mm)

■ 特点 Features

- 和片状电阻 (RK73) 比较, 它的耐浪涌电压和脉冲电压优异。
- SG73S (用于浪涌) 和 SG73P (用于脉冲) 可以选择 ±0.5% 的阻值允许偏差。
- 对应回流焊、波峰焊。
- 端子无铅电镀品, 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。
- Superior to RK73 series chip resistors in surge withstanding voltage and pulse withstanding voltage.
- SG73S (for surge) and SG73P (for pulse) are able to select resistance tolerance from ±0.5%.
- Suitable for both reflow and flow 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

- 发动机操作装置。
- 感应闪电电路。
- E.C.U.
- Circuits to catch inductive lighting surge.

■ 参考标准 Reference Standards

IEC 60115-8
JIS C 5201-8
EIAJ RC-2134C

■ 品名构成 Type Designation

品种 Product Code	额定功率 Power Rating	端子表面材质 Terminal Surface Material	二次加工 Taping	公称电阻值 Nominal Resistance	阻值允许偏差 Resistance Tolerance
SG73 SG73S SG73P	1J: 0.1W 2A: 0.125W 2B: 0.25W 2E: 0.33W W2H: 0.75W W3A: 1W	T: Sn (L: Sn/Pb ^{※2})	TP: 2mm pitch punch paper TD: 4mm pitch punch paper TE: 4mm pitch plastic embossed BK: Bulk	D, F: 4 digits G, J, K, M: 3 digits	D: ±0.5% F: ±1% G: ±2% J: ±5% K: ±10% M: ±20%
SG73S SG73P	1E: 0.125W 1J: 0.2W 2A: 0.25W 2B: 0.33W 2E: 0.5W				

※2 SG73 W2H, W3A, SG73P 及 SG73S, 端子表面材质只有 T 标记对应。
※2 With SG73 W2H, W3A, SG73P and SG73S, 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负荷物质详情 (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	电阻温度系数 T.C.R. (×10 ⁻⁶ /K)	电阻值范围 Resistance Range (Ω)				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.	二次加工和包装数量/卷 Packaging & Qty/Reel (pcs)			
			D: ±0.5% E24 • E96	F: ±1% E24 • E96	G: ±2% J: ±5% E24	K: ±10% M: ±20% E12					TP	TD	TE	
SG73 1J	0.1W	±400 ±200	—	—	—	50V	100V	70°C	125°C	10,000	5,000	—		
SG73 2A	0.125W	±400 ±200								1~8.2 10~1M	10,000	5,000	4,000	
SG73 2B	0.25W (0.33W ^{※4})	±400 ±200								1~8.2 10~1M	—	5,000	4,000	
SG73 2E	0.33W	±400 ±200								1~8.2 10~1M	—	5,000	4,000	
SG73 W2H	0.75W	±400 ±200								1~8.2 10~1M	—	—	4,000	
SG73 W3A	1.0W	±400 ±200								1~8.2 10~1M	—	—	4,000	
SG73S 1E SG73P 1E	0.125W (0.2W ^{※4})	±200								—	—	—	—	
SG73S 1J SG73P 1J	0.2W (0.25W ^{※4})	±100 ^{※3}								—	—	—	—	
SG73S 2A SG73P 2A	0.25W (0.5W ^{※4})	±200								10~1M	1~1M	1~10M	—	—
SG73S 2B SG73P 2B	0.33W (0.5W ^{※4})									150V(150V)	200V(200V)	70°C	100°C	—
SG73S 2E SG73P 2E	0.5W		200V	400V	70°C	110°C	—							

使用温度范围 Operating Temperature Range: -55°C~+155°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的值为额定电压。

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

※3 SG73P/S 1J 的 Cold T.C.R. 是 ±150 × 10⁻⁶/K。

※3 Cold T.C.R. of SG73P/S 1J is ±150 × 10⁻⁶/K.

※4 关于 () 内的额定功率、最高使用电压、最高过载电压, 请您咨询。

※4 Please consult with us about the power rating, the Max. working voltage and the Max. overload voltage with ().

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, 请仔细确认规格书的内容。

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.

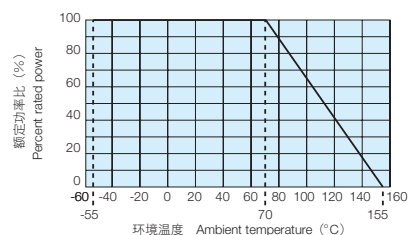
Contact our sales representatives before you use our products for applications including automobiles, medical equipment and aerospace equipment.

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

Mar. 2015

■ 负荷减轻特性曲线 Derating Curve

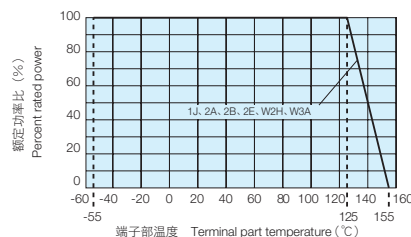
环境温度 Ambient temperature
(SG73/SG73P/SG73S)



在环境温度70°C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 left derating curve.

端子部温度 Terminal part temperature
(SG73)



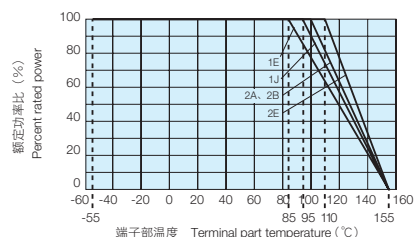
超过上述端子部温度使用时，请根据负荷减轻特性曲线减小额定功率后使用。

※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”。

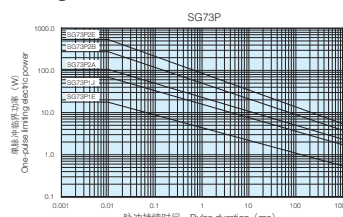
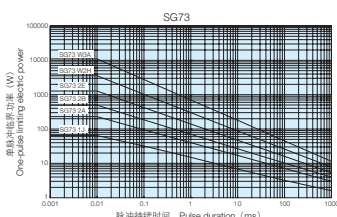
For resistors operated terminal part temperature of described for each size or above, a power rating shall be derated in accordance with derating curve.

※Please refer to "Introduction of the derating curves based on the terminal part temperature" on the beginning of our catalog before use.

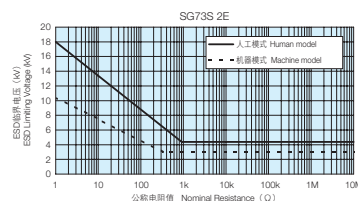
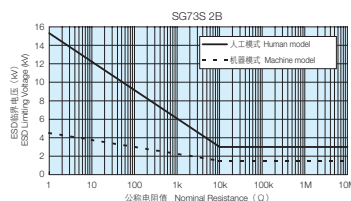
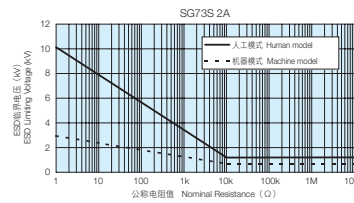
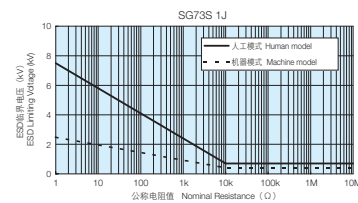
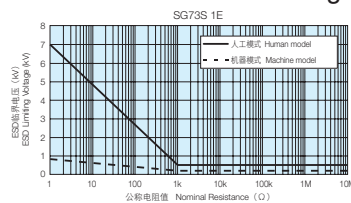
(SG73P/SG73S)



■ 单脉冲临界功率曲线 One-Pulse Limiting Electric Power



■ ESD临界电压 ESD Limiting Voltage



■ 性能 Performance

试验项目 Test Items	标准值 Performance Requirements $\Delta R \pm (\% + 0.1 \Omega)$		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°C
电阻温度系数 T.C.R.	在规定的允许偏差内 Within specified T.C.R.	-	+25°C/-55°C and +25°C/+125°C
过载(短时间) Overload (Short time)	2	0.5	额定电压×2.5倍施加5秒钟 Rated voltage ×2.5 for 5s
耐焊接热 Resistance to soldering heat	1	0.75	260°C±5°C, 10s±1s
温度突变 Rapid change of temperature	0.5	0.3	-55°C (30min.) / +125°C (30min.) 100 cycles
耐湿负荷 Moisture resistance	3	0.75	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
在70°C时的耐久性 Endurance at 70°C	3	0.75	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
高温放置 High temperature exposure	1	0.3	+155°C, 1000h

■ 使用注意事项 Precautions for Use

- 片状电阻器的基材是氧化铝。由于和安装基板的热膨胀系数不同，在反复提供热循环等热应力时，接合部的焊锡（焊缝部）有时会发生裂纹。特别是大型尺寸W2H/W3A，由于热膨胀大，而且自身发热也大，环境温度的变动有大的反复时和载荷启闭有反复时，需要注意裂纹的发生。用环氧树脂印刷电路板（FR-4）作一般性热循环试验，在使用温度范围的上下限进行试验时，1J~2E的类型，不容易发生裂纹，而W2H/W3A型，则有易于发生裂纹的倾向。由于热应力而发生裂纹，取决于安装的焊接区的大小、焊接量、安装基板的散热性等。因此，在环境温度有大的变化和载荷ON/OFF使用条件时，应充分注意后进行设计。
- The substrate of chip resistors is alumina. Cracks may occur at the connection of solder (solder fillet portion) due to the difference of the coefficient of thermal expansion from a mounting board when heat stress like heat cycle, etc. are repeatedly given to them. Care should be taken to the occurrence of the cracks when the change in ambient temperature or ON/OFF of load is repeated, especially when large types of W2H/W3A which have large thermal expansion and also self heating. By general temperature cycle test using glass-epoxy (FR-4) boards under the maximum/minimum temperatures of operating temperature range, the crack does not occur easily in the types of 1J~2E, but the crack tends to occur in the types of W2H/W3A. The occurrence of the crack by heat stress may be influenced by the size of a pad, solder volume, heat radiation of mounting board etc., so please pay careful attention to designing when a big change in ambient temperature and conditions for use like ON/OFF of load can be assumed.