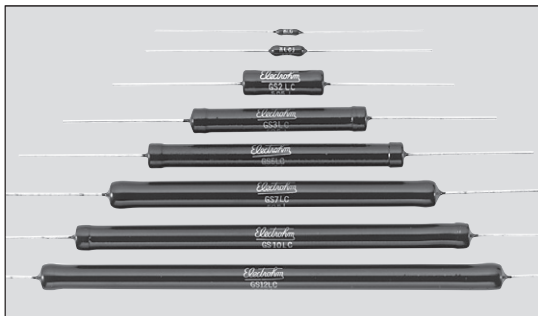


HIGH RESISTANCE



GS 高电压高电阻值厚膜电阻器 High Voltage High Resistance Thick Film Resistors



外观颜色: 茶色 Coating color: Brown
表示: 文字表示 Marking: Alphanumeric

■ 特点 Features

- 是能够经受高电压、高功率的小型构造。
- 耐浪涌特性优异的电容器。
- 是电阻值范围在 $0.5M\Omega \sim 10G\Omega$ 、电阻温度系数小的电阻。
- 对应欧盟RoHS。在电阻中所含的铅玻璃和铜帽中所含铅，不包含在欧盟RoHS指令中。
- Miniature construction endurable to high voltage and high power.
- Resistors excellent in anti-surge characteristics.
- Wide resistance range of $0.5M\Omega \sim 10G\Omega$ and small T.C.R.
- Products meet EU-RoHS requirements. EU-RoHS regulation is not intended for Pb-glass contained in resistor element and Pb contained in Brass cap.

■ 用途 Applications

- 复印机。
- LBP。
- 电源电路的充电和放电用电阻。
- 高电压的分压用电阻。
- Copying machines.
- LBPs.
- Charging and discharging resistors for power supply circuits.
- High voltage dividing resistors.

■ 额定值 Ratings

型 号 Type	额定功率 Power Rating	电阻温度系数 T.C.R. ($\times 10^{-6}/K$)	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	耐电压 Dielectric Withstanding Voltage
			D: $\pm 0.5\%$ $E24 \times 25 \times 10^3 \sim 50 \times 10^3$	F: $\pm 1\%$ $E24 \times 25 \times 10^3 \sim 50 \times 10^3$	G: $\pm 2\%$ $E24 \times 25 \times 10^3 \sim 50 \times 10^3$	J: $\pm 5\%$ $E24 \times 25 \times 10^3 \sim 50 \times 10^3$	K: $\pm 10\%$ $E24 \times 25 \times 10^3 \sim 50 \times 10^3$			
GS 1/4DC*	0.25W	D: ± 100	0.5M~20M		0.5M~100M	0.5M~100M	0.5M~100M	0.5kV	1kV	1.25kV
GS 1/4LC*		L: ± 200								
GS 1/2DC*	0.5W	D: ± 100	0.5M~50M	0.5M~100M	0.5M~100M	0.5M~100M	0.5M~100M	1kV	2kV	2.5kV
GS 1/2LC*		L: ± 200								
GS 1DC	1W	D: ± 100						3kV	4.5kV	6kV
GS 1LC		L: ± 200								
GS 2DC	2W	D: ± 100						5kV	7.5kV	10kV
GS 2LC		L: ± 200								
GS 3DC	3W	D: ± 100						15kV	20kV	30kV
GS 3LC		L: ± 200								
GS 5DC	5W	D: ± 100						20kV	30kV	40kV
GS 5LC		L: ± 200								
GS 7DC	7W	D: ± 100						30kV	40kV	50kV
GS 7LC		L: ± 200								
GS 10DC	10W	D: ± 100						35kV	50kV	60kV
GS 10LC		L: ± 200								
GS 12DC	12W	D: ± 100						40kV	60kV	70kV
GS 12LC		L: ± 200								

额定环境温度 Rated Ambient Temperature: $+25^{\circ}C$

使用温度范围 Operating Temperature Range: $-55^{\circ}C \sim +125^{\circ}C$

※ GS1/4和GS1/2由于可能对应编带, 请问询。 Since the taping for GS1/4 and GS1/2 is available, please inquire of us about this matter.

额定电压是 $\sqrt{\text{额定功率} \times \text{公称电阻值}}$ 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 = $\sqrt{\text{Power Rating} \times \text{Resistance value}}$ or Max. working voltage, whichever is lower.

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。

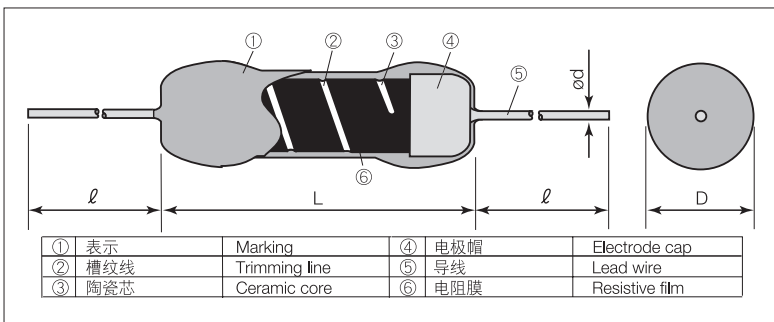
用于车载设备、医疗设备、航空设备以及其它涉及人身安全、或可能引起重大损失的设备上时, 请务必事先与我公司联系。这些产品在这类用途中出现故障或失灵可能导致人身事故或严重损坏。

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.

■ 结构图 Construction



■ 外形尺寸 Dimensions

型号 Type	尺寸 Dimensions (mm)				Weight (g) (1000pcs)
	L	D	d (Nominal)	ℓ	
GS 1/4	6.3±1.0	2.3±0.5	0.65	38±3	320
GS 1/2	9.5±1.0	3.5±0.6	0.8		590
GS 1	15.0±1.5	4.5±1.0			1,230
GS 2	24.0±1.5	7.9±1.0	1.0		4,190
GS 3	52.0±2.0				7,750
GS 5	76.0±2.0				10,790
GS 7	97.0±3.0				13,350
GS 10	117.0±3.0				16,180
GS 12	137.0±3.0				18,440

■ 品名构成 Type Designation

实例 Example

GS	1/2	L	C	106	J
品种 Product Code	额定功率 Power Rating	电阻温度系数 T.C.R. ($\times 10^{-6}/K$)	端子表面材质 Terminal Surface Material	公称电阻值 Nominal Resistance	阻值允许偏差 Resistance Tolerance
	1/4: 0.25W 1/2: 0.5W 1: 1W 2: 2W 3: 3W 5: 5W 7: 7W 10: 10W 12: 12W	D: ± 100 L: ± 200	C: SnCu	D, F: 4 digits G, J, K: 3 digits	D: $\pm 0.5\%$ F: $\pm 1\%$ G: $\pm 2\%$ J: $\pm 5\%$ K: $\pm 10\%$

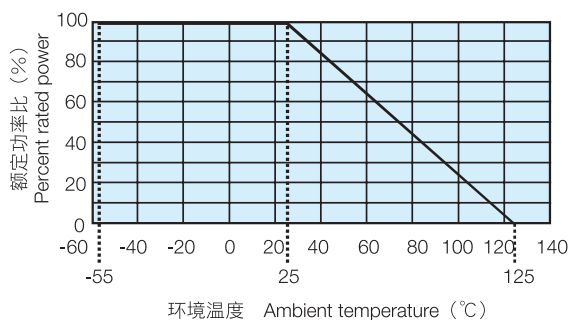
预知关于此产品含有的环境负荷物质详情(除EU-RoHS以外), 请与我们联系。

所有产品定制成形和gs1/4,gs1/2定制编带都可对应。

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

Custom forming for all of items and custom taping for GS1/4 GS1/2 are available on request.

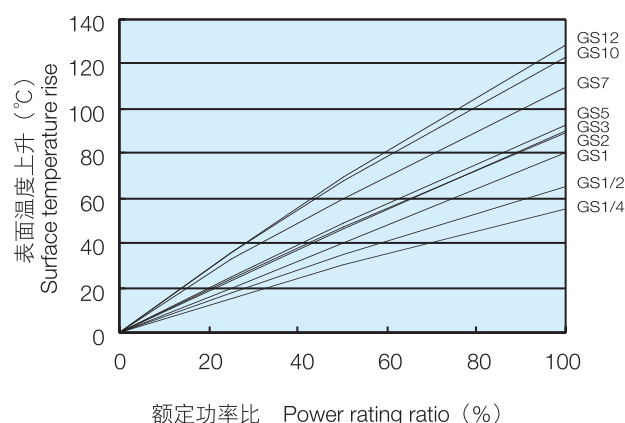
■ 负荷特性曲线 Derating Curve



在环境温度25℃以上使用时，应按照上图负荷特性曲线，减小额定功率。

For resistors operated at an ambient temperature of 25℃ or above, a power rating shall be derated in accordance with the above derating curve.

■ 表面温度上升 Surface Temperature Rise



■ 性能 Performance

试验项目 Test Items	标准值 Performance Requirements $\Delta R \pm \%$	试验方法 Test Methods
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.	在规定值以内 Within specified T.C.R.	+25℃/+125℃
过载 (短时间) Overload (Short time)	2 : TCR $200 \times 10^{-6}/K$ 0.5 : TCR $100 \times 10^{-6}/K$	额定电压×2.5倍 (GS1/4、GS1/2)、额定电压×2倍 (GS1~GS12) 和最高过载电压中低的一方的电压施加5秒钟 Rated voltage × 2.5 (GS1/4, GS1/2), Rated voltage × 2 (GS1~GS12) or Max. overload voltage, whichever is lower, for 5s.
耐焊接热 Resistance to soldering heat	2 : TCR $200 \times 10^{-6}/K$ 0.5 : TCR $100 \times 10^{-6}/K$	350℃±10℃, 3s±0.5s or 260℃±5℃, 10s±1s
温度突变 Rapid change of temperature	2 : TCR $200 \times 10^{-6}/K$ 0.5 : TCR $100 \times 10^{-6}/K$	-55℃ (30min.) / +125℃ (30min.) 5 cycles
耐湿性 Moisture resistance	5 : TCR $200 \times 10^{-6}/K$ 2 : TCR $100 \times 10^{-6}/K$	40℃, 90%~95%RH, 1000h
在25℃的耐久性 Endurance at 25℃	5 : TCR $200 \times 10^{-6}/K$ 2 : TCR $100 \times 10^{-6}/K$	25℃, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
电压系数 Voltage coefficient	$\pm 50 \times 10^{-6}/V$: TCR $200 \times 10^{-6}/K$ $\pm 10 \times 10^{-6}/V$: TCR $100 \times 10^{-6}/K$	GS1/4, 1/2 only 额定电压或最高使用电压中低的一方的电压和它的1/10电压 Rated voltage or max. working voltage, whichever is lower and 1/10 of its voltage.
电压特性 Voltage characteristics	5 : TCR $200 \times 10^{-6}/K$ 3 : TCR $100 \times 10^{-6}/K$	GS1~12 额定电压或最高使用电压中低的一方的电压和它的1/10电压 Rated voltage or max. working voltage, whichever is lower and 1/10 of its voltage.
耐溶剂性 Resistance to solvent	外观上应无表示消失等异常 No evidence of damage to protective coating and marking.	在异丙醇中浸1分钟后，刷10次，三回，液温25℃±5℃ Soaking in IPA for 1min and brushing 10 times -3 cycles-liquid temp. 25℃±5℃
耐脉冲 mpulse withstand voltage	外观无跳火异常 No abnormality in appearance and flash-over.	以1分钟间隔施加脉冲电压5次 An impulse voltage shall be applied 5 times at an interval of 1min.

■ 使用注意事项 Precautions for Use

- 耐脉冲，是以1/40 μs 或1.2/50 μs 的波形作为标准的标准值。
- 由于标准值是根据时间常数和波尾长的长度而变动的，因此，在标准波形以外使用时，请事先向本公司询问。
- 由于连续地施加高电压，杂物等附着在电阻器表面，成为发生表面泄漏和电晕的原因，所以，请在粉尘少的地方使用。同时，请定期进行电阻器表面的清扫。
- 为了稳定而长时间使用，请在额定功率的50%以下使用。
- 高电阻值的产品，为防止表面漏电，请不要直接用手接触。
- 附近有导电物体时，由于有可能发生电晕和放电短路，因此，为了避开这些，请离附近导电物体3kVd.c 1cm以上安装。
- 本电阻器的基本材料使用了陶瓷。
- 如果跌落、碰撞了，有时会造成破损和内部断裂，因此使用时要注意。
- 在油中使用，请事前向本公司询问。
- 在高湿度中保管・使用时，由于吸湿，电阻值会不稳定，请注意。
- Impulse withstanding voltage is specified for waveform of 1/40 μs or 1.2/50 μs as a standard. Please inquire of us in advance when using other than the standard waveform, since the specified value may change, depending on time constant or length of wave tail.
- Use the components under less dusty places, as continual applying of high voltage makes dust adhere to the surface of the resistors and causes surface leakage and corona. Also periodic cleaning of the surface of resistors is needed.
- Use them at 50% or under of the rated power for stable use for a long time.
- Do not touch the resistors with high resistance value by hand to prevent surface-leakage current.
- Set the products away from near electric conductors 1cm or over per 3kVd.c. to avoid occurrence of corona and short-circuit by discharge, if there are electric conductors near to.
- Ceramic is used for the core of these resistors. Pay attention to the handling as the characteristics may be deteriorated by damage and inner crack when they are fallen or shocked.
- In case of using in oil, inquire of us in advance.
- Take care that the resistors may become instable in resistance value by absorption of humidity when they are stored or used in high humidity environment.