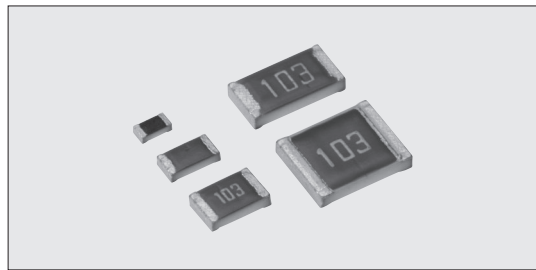


THICK FILM (ANTI SURGE)

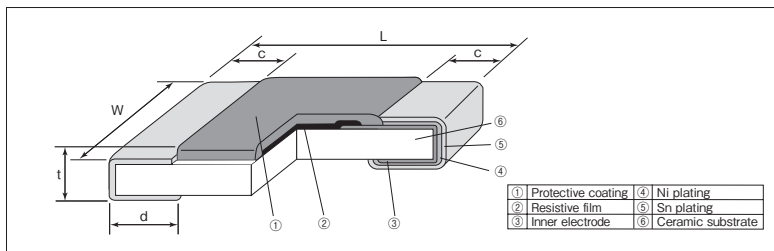


SG73S ■ Endured Surge Voltage Flat Chip Resistors



Coating color: Black (1E)
Green (1J, 2A, 2B, 2E)

■ Construction



■ Dimensions

Type (Inch Size Code)	Dimensions (mm)					Weight(g) (1000pcs)
	L	W	c	d	t	
1E (0402)	1.0 ^{+0.1} _{-0.05}	0.5±0.05	0.15±0.1	0.25 ^{+0.05} _{-0.1}	0.35±0.05	0.68
1J (0603)	1.6±0.2	0.8±0.1	0.3±0.1	0.3±0.1	0.45±0.1	2.14
1J AT (0603)			0.35±0.15	0.5±0.2		
2A (0805)	2.0±0.2	1.25±0.1	0.3 ^{+0.2} _{-0.1}	0.3 ^{+0.2} _{-0.1}	0.5±0.1	4.54
2A AT (0805)			0.45±0.25	0.6±0.2	0.55±0.1	
2B (1206)	3.2±0.2	1.6±0.2	0.4 ^{+0.2} _{-0.1}	0.4 ^{+0.2} _{-0.1}	0.6±0.1	9.14
2B AT (1206)			0.55±0.35	0.8±0.2		
2E (1210)		2.6±0.2	0.4 ^{+0.2} _{-0.1}	0.4 ^{+0.2} _{-0.1}		15.5

■ Features

- Superior to RK73 series chip resistors in surge withstanding voltage and high power.
- Resistance tolerance is available 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 Tested.

■ Applications

- E.C.U.
- Circuits to catch inductive lighting surge.

■ Reference Standards

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

■ Type Designation

Example

SG73S	2A		T	TD	103	J
Product Code	Power Rating	Characteristic	Terminal Surface Material	Taping	Nominal Resistance	Resistance Tolerance
	1E : 0.125W 0.33W 1J : 0.2W 0.5W 2A : 0.25W 0.75W 2B : 0.33W 1W 2E : 0.5W 1.5W	Nil : Standard A : Heat shock resistance*	T : Sn	TP:2mm pitch punch paper TD:4mm pitch punch paper TE:4mm pitch plastic embossed BK:Bulk	D,F : 4 digits G,J : 3 digits	D : ±0.5% F : ±1% G : ±2% J : ±5%

※1 1J, 2A, and 2B are available for Heat shock resistance.

No resistance marking.

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	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (×10 ⁻⁶ /K)	Resistance Range (Ω)			Max. Working Voltage	Max. Overload Voltage	Packaging & Q' ty/Reel (pcs)		
					D: ±0.5% E24 · E96	F: ±1% E24 · E96	G: ±2% J: ±5% E24			TP	TD	TE
1E	0.125W 0.33W	70°C —	125°C 105°C	±200	10~1M	1~1M	1~10M	75V	100V	10,000	—	—
1J	0.2W	70°C	135°C	±100	510~576k	510~576k	510~560k	150V	200V	10,000 ^{※4}	5,000	—
				±100 ^{※2}	10~499	1~499	1~470					
				±100	590k~1M	590k~1M	620k~10M					
	0.5W	—	105°C	±100 ^{※2}	510~576k	510~576k	510~560k					
2A	0.25W 0.75W	70°C —	125°C 105°C	±200	10~1M	1~1M	1~10M	400V	600V (800V) ^{※3}	10,000 ^{※4}	5,000	4,000 ^{※4}
2B	0.33W 1.0W	70°C —	125°C 105°C	±200	10~1M	1~1M	1~10M	200V	400V	—	5,000	4,000 ^{※4}
2E	0.5W 1.5W	70°C —	125°C 105°C	±200	10~1M	1~1M	1~10M	200V	400V	—	5,000	4,000 ^{※4}

Operating Temperature Range : -55°C~+155°C

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

※2 Cold T.C.R. (-55°C~+25°C) is ±150×10⁻⁶/K.

※3 Applies when power rating is 0.4W or lower.

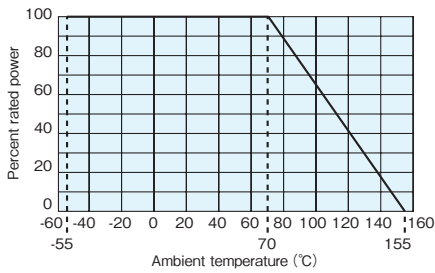
※4 Standard packaging : TD(4mm pitch punch paper)

If any questions arise whether to use the "Rated Ambient Temperature" or the "Rated Terminal Part Temperature" in your usage conditions, please give priority to the "Rated Terminal Part Temperature".

For more details, please refer to "Introduction of the derating curves based on the terminal part temperature" on the beginning of our catalog.

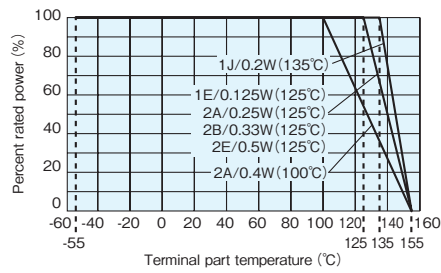
Derating Curve

Ambient temperature



For resistors operated at an ambient temperature of 70°C or higher, the power shall be derated in accordance with the above derating curve.

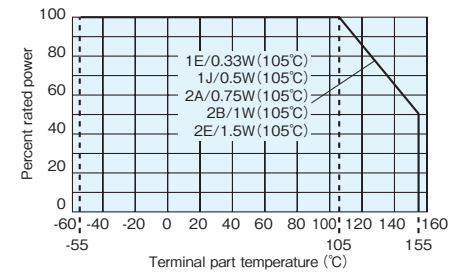
Terminal part temperature



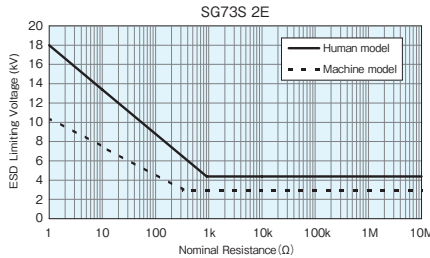
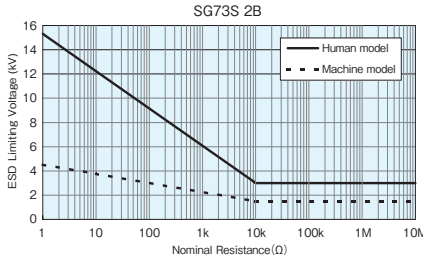
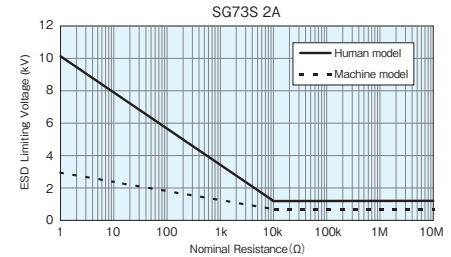
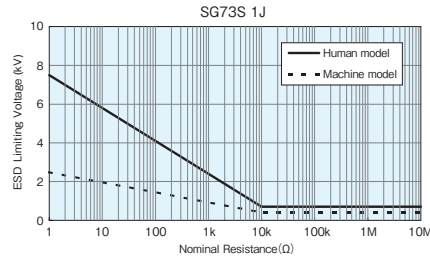
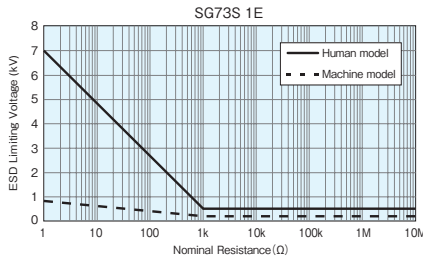
When the terminal part temperature of the resistor exceeds the rated terminal part temperature shown above, the power shall be derated according to the derating curve.

If you want to use at the rated power of ※3, please use the derating curves based on the terminal part temperature of the center graph. ※Please refer to "Introduction of the derating curves based on the terminal part temperature" on the beginning of our catalog before use.

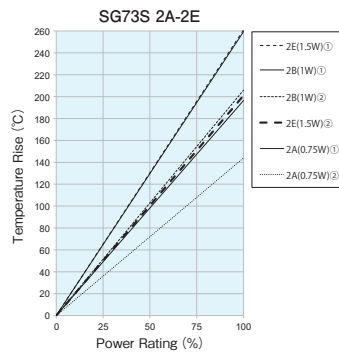
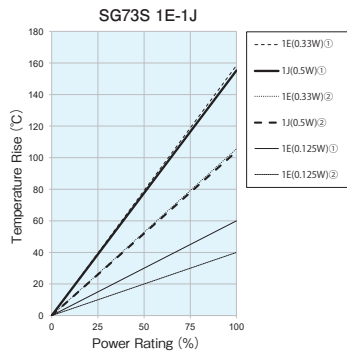
Terminal part temperature



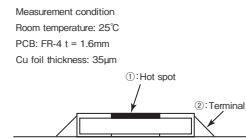
ESD Limiting Voltage



Temperature Rise



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.



Performance

Test Items	Performance Requirements $\Delta R \pm (\% + 0.1 \Omega)$		Test Methods					
	Limit	Typical						
Resistance	Within specified tolerance	—	25°C					
T.C.R.	Within specified T.C.R.	—	+25°C/−55°C and +25°C/+125°C					
Overload (Short time)	2	0.5	Overload for 5s					
			Type	1E	1J	2A	2B	2E
			Overload	1.25W	2.063W	2W (1.6W ^{※3})	3W	4W
Resistance to soldering heat	1	0.75	260°C ± 5°C, 10s ± 1s					
Rapid change of temperature	0.5:Characteristic [Nil] (Standard) 1:Characteristic [A] (Heat shock resistance)	0.3:Characteristic [Nil] (Standard) 0.5:Characteristic [A] (Heat shock resistance)	Characteristic [Nil] (Standard) : −55°C (30min.) /+125°C (30min.) 100 cycles Characteristic [A] (Heat shock resistance) : −55°C (30min.) /+125°C (30min.) 1000 cycles					
Moisture resistance	3	0.75	40°C ± 2°C, 90% ~ 95%RH, 1000h 1.5h ON/0.5h OFF cycle					
Endurance at 70°C or rated terminal part temperature	3	0.75	70°C ± 2°C or rated terminal part temperature ± 2°C 1000h 1.5h ON/0.5h OFF cycle					
High temperature exposure	1	0.3	+155°C, 1000h					

Precautions for Use

- 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. 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.