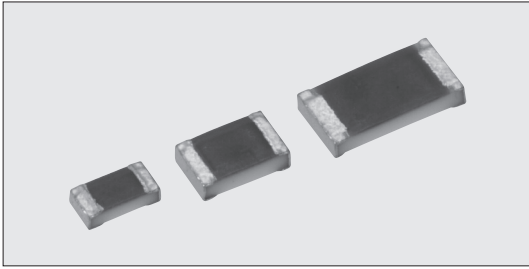


THICK FILM (ANTI SURGE)



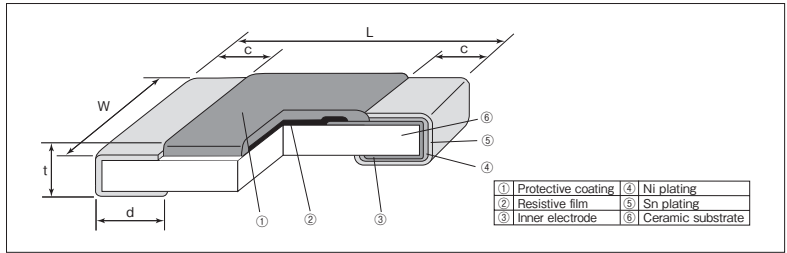
Flat Chip Resistors

SG73G ■ Endured Pulse Power Flat Chip Resistors (Ultra Precision Grade)



Coating color : Green

■ Construction



■ Features

- Superior to RK73 series chip resistors in pulse withstanding voltage and high power.
- High Precision resistor with T.C.R. $\pm 50 \times 10^{-6}/K$ and Tolerance $\pm 0.25\%$.
- 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

- Car electronics, Power supply, Industrial equipment

■ Reference Standards

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

■ Dimensions

Type (Inch Size Code)	Dimensions (mm)					Weight (g) (1000pcs)
	L ± 0.2	W	c	d	t ± 0.1	
1J (0603)	1.6	0.8 ± 0.1	0.3 ± 0.1	0.3 ± 0.1	0.45	2.14
1J AT (0603)			0.35 ± 0.15	0.5 ± 0.2		
2A (0805)	2.0	1.25 ± 0.1	0.3 $\pm_{0.1}^{0.2}$	0.3 $\pm_{0.1}^{0.2}$	0.5	4.54
2A AT (0805)			0.45 ± 0.25	0.6 ± 0.2		
2B (1206)	3.2	1.6 ± 0.2	0.4 $\pm_{0.1}^{0.2}$	0.4 $\pm_{0.1}^{0.2}$	0.6	9.14
2B AT (1206)			0.55 ± 0.35	0.8 ± 0.2		

■ Type Designation

Example

SG73G	2A		T	TD	1002	D
Product Code	Power Rating	Characteristic	Terminal Surface Material	Taping	Nominal Resistance	Resistance Tolerance
	1J : 0.2W 0.33W ^{#1} 2A : 0.25W 0.5W ^{#1} 2B : 0.33W 0.5W ^{#1}	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	4桁	C : $\pm 0.25\%$ D : $\pm 0.5\%$

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. ($\times 10^{-6}/K$)	Resistance Range (Ω)		Max. Working Voltage	Max. Overload Voltage	Packaging & Q'ty/Reel (pcs)							
					C: $\pm 0.25\%$ E24 · E96	D: $\pm 0.5\%$ E24 · E96			TP	TD	TE					
1J	0.2W	70°C	125°C	± 50	10~1M	10~1M	150V	200V	10,000 ^{#2}	5,000	—					
	0.33W ^{#1}	70°C	125°C													
2A	0.25W	70°C	125°C				200V	400V	10,000 ^{#2}	5,000	4,000 ^{#2}					
	0.5W ^{#1}	70°C	100°C													
2B	0.33W	70°C	125°C									200V	400V	—	5,000	4,000 ^{#2}
	0.5W ^{#1}	70°C	120°C													

Operating Temperature Range : $-55^{\circ}C \sim +155^{\circ}C$

Rated voltage = $\sqrt{\text{Power Rating} \times \text{Resistance value}}$ or Max. working voltage, whichever is lower.

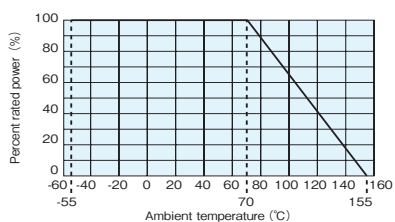
※1 If you use at the rated power, please keep the condition that the terminal of the resistor is below the rated terminal part temperature. Please refer to the derating curves based on the terminal temperature of right side on the next page.

※2 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.

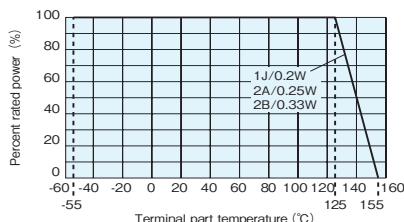
Derating Curve

Ambient temperature

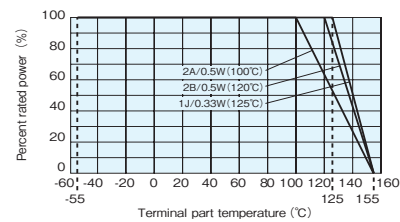


For resistors operated at an ambient temperature of 70°C or higher, the power shall be derated in accordance with the above derating curve.

Terminal part temperature



Terminal part temperature

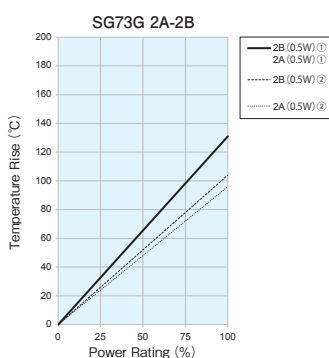
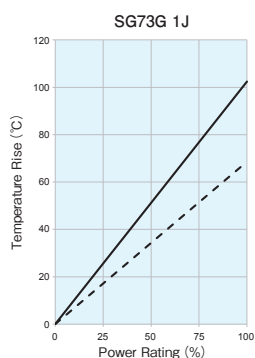


When the terminal part temperature of the resistor exceeds the rated terminal part temperature shown above, the power shall be derated according to the derating curve.

If you want to use at the rated power of ※1, please use the derating curves based on the terminal part temperature of right side.

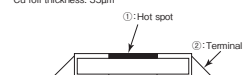
※Please refer to "Introduction of the derating curves based on the terminal part temperature" on the beginning of our catalog before use.

Temperature Rise

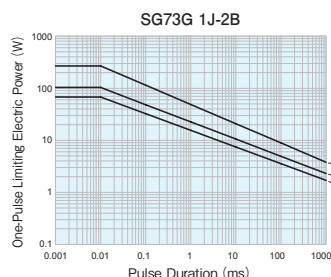


Regarding the temperature rise, the value of the temperature varies per conditions and board for use since the temperature is measured under our measuring conditions.

Measurement condition
Room temperature: 25°C
PCB: FR-4t = 1.6mm
Cu foil thickness: 35μm



One-Pulse Limiting Electric Power



The maximum applicable voltage is equal to the max. overload voltage.
Please ask us about the resistance characteristic of continuous applied pulse.
The pulse endurance values are not assured values, so be sure to check the products on actual equipment when you use them.

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	Rated voltage $\times 2.5$ for 5s (2A : 0.5W, Rated voltage $\times 2$ for 5s)
Resistance to soldering heat	1	0.75	260°C $\pm 5^\circ\text{C}$, 10s ± 1 s
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	2	0.75	40°C $\pm 2^\circ\text{C}$, 90%~95%RH, 1000h 1.5h ON/0.5h OFF cycle
Endurance at 70°C or rated terminal part temperature	2	0.75	70°C $\pm 2^\circ\text{C}$ or rated terminal part temperature $\pm 2^\circ\text{C}$ 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.