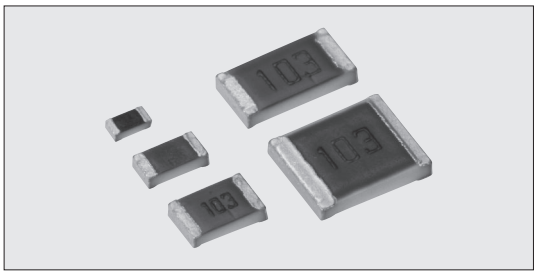
EU RoHS

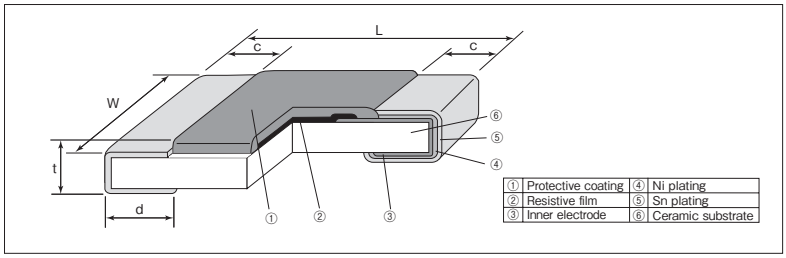
Flat Chip Resistors

SG73P-RT Endured Pulse Power Flat Chip Resistors (Anti Sulfuration)



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

Construction



①	Protective coating	④	Ni plating
②	Resistive film	⑤	Sn plating
③	Inner electrode	⑥	Ceramic substrate

Features

- Excellent anti-sulfuration characteristic due to using high sulfuration-proof inner top electrode material.
- Superior to RK73 series chip resistors pulse withstanding voltage and high power.
- SG73P (for pulse) are able to select 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

- Car electronics, Power supply, Industrial robot

Reference Standards

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

Dimensions

Type (Inch Size Code)	Dimensions (mm) L	W	c	d	t	Weight (g) (1000pcs)
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
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
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
2E (1210)		2.6±0.2				15.5

Type Designation

Example

SG73P	2A	R	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	R : Anti sulfuration	T : Sn	TP: 2mm pitch punch paper TD: 4mm pitch punch paper TE: 4mm pitch plastic embossed BK: Bulk	D, F : 4digits G, J : 3digits	D : ±0.5% F : ±1% G : ±2% J : ±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.

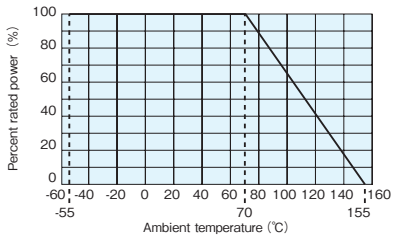
Ratings

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

Operating Temperature Range : −55℃~+155℃
Rated voltage = $\sqrt{\text{Power Rating} \times \text{Resistance value}}$ or Max. working voltage, whichever is lower.
※1 Cold T.C.R. (−55℃~+25℃) is ±150×10⁻⁶/K.
※2 Applies when power rating is 0.4W or lower.
※3 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.

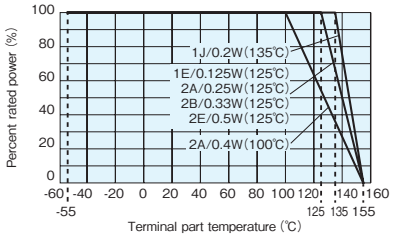
■Derating Curve

Ambient temperature

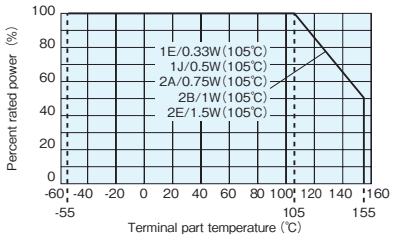


For resistors operated at an ambient temperature of 70℃ or higher, the power shall be derated in accordance with the above derating curve.

Terminal part temperature



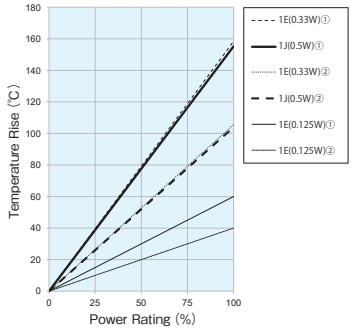
Terminal part temperature



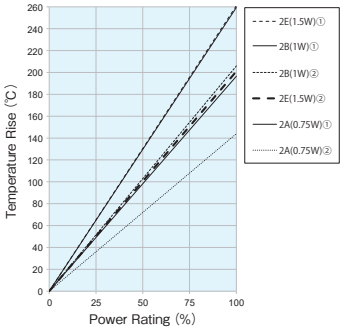
When the terminal part temperature of the resistor exceeds the rated terminal part temperature shown above, the power shall be derated according to the derating curve.
If you want to use at the rated power of ※2, please use the derating curues based on the terminal part temperature of the center graph.
※Please refer to "Introduction of the derating curves based on the terminal part temperature" on the beginning of our catalog before use.

■Temperature Rise

SG73P 1E-1J

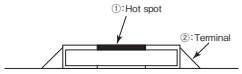


SG73P 2A-2E



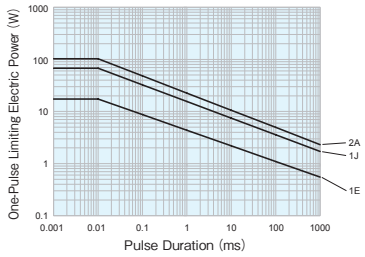
Regarding the temperature rise, the value of the temperature varies per conditions and board for use since the temperature is measured under our measuring conditions.

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

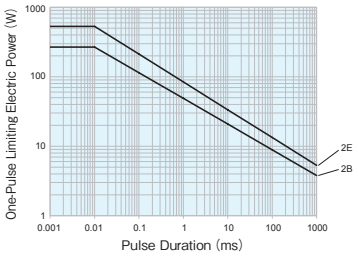


■One-Pulse Limiting Electric Power

SG73P 1E-2A



SG73P 2B-2E



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 ΔR± (%+0.1Ω)		Test Methods
	Limit	Typical	
Resistance	Within specified tolerance	—	25℃
T.C.R.	Within specified T.C.R.	—	+25℃/−55℃ and +25℃/+125℃
Overload (Short time)	2	0.5	Overload for 5s Type: 1E / 1J / 2A / 2B / 2E Overload: 1.25W / 2.063W / 2W (1.6W※2) / 3W / 4W
Resistance to soldering heat	1	0.75	260℃±5℃, 10s±1s
Rapid change of temperature	0.5	0.3	−55℃ (30min.) /+125℃ (30min.) 100 cycles
Moisture resistance	3	0.75	40℃±2℃, 90%~95%RH, 1000h 1.5h ON/0.5h OFF cycle
Endurance at 70℃ or rated terminal part temperature	3	0.75	70℃±2℃ or rated terminal part temperature ±2℃ 1000h 1.5h ON/0.5h OFF cycle
High temperature exposure	1	0.3	+155℃, 1000h
Sulfuration test	5	0.2	Soaked in industrial oil with sulfur substance 3.5% contained 105℃±3℃ 500h

■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.