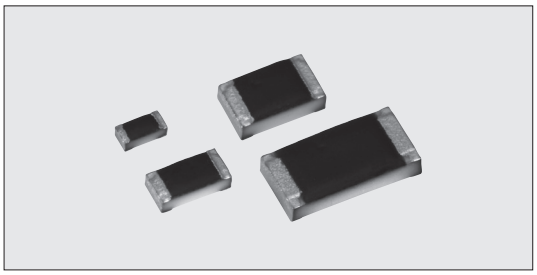
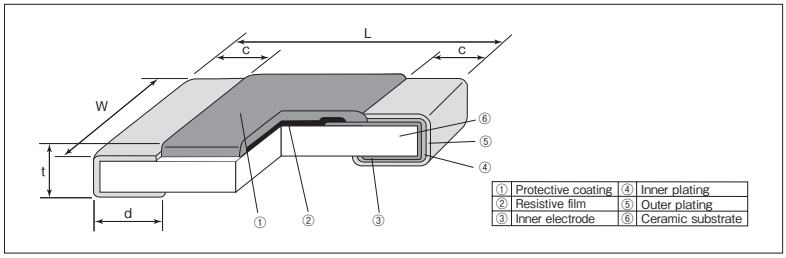
THICK FILM FOR HIGH TEMPERATURE NEW EU RoHS

HSG73P High Temperature Flat Chip Resistors



Coating color : Black

■Construction



■Features

- High heat resistance that can be used even at high temperatures of 155℃ or higher. The maximum operating temperature of Sn plating products compatible with solder mounting is 175℃, and Au plating products compatible with conductive glue mounting is 200℃.
- Excellent heat resistance and weather resistance are ensured by the use of metal glaze thick film.
- High stability and high reliability with the triple-layer structure of electrode.
- Superior to RK73 series chip resistors pulse withstanding voltage and high power.
- Applicable to various kinds of automatic mounters for taping, etc.
- Products meet EU-RoHS requirements. EU-RoHS regulation is not intended for Pb-glass contained in electrode, resistor element and glass.
- AEC-Q200 Tested.

■Reference Standards

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

■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	0.2±0.15	$0.25^{+0.05}_{-0.1}$	0.35±0.05	0.68
1E AT (0402)				0.3±0.15		
1J (0603)	1.6±0.2	0.8±0.1	0.3±0.15	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	0.4±0.25	$0.3^{+0.2}_{-0.1}$	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	0.55±0.35	$0.4^{+0.2}_{-0.1}$	0.6±0.1	9.14
2B AT (1206)				0.8±0.2		

■Type Designation

Example

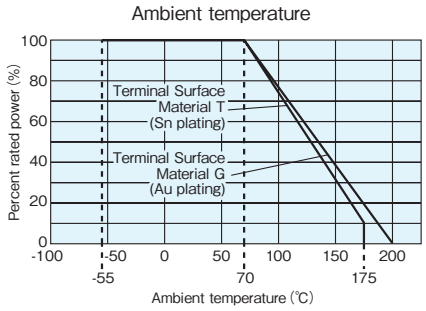
HSG73P	2B		T	TD	103	J
Product Code	Power Rating	Characteristic	Terminal Surface Material	Taping	Nominal Resistance	Resistance Tolerance
	1E : 0.125W 0.2W※1 1J : 0.2W 0.33W 2A : 0.25W 0.5W 2B : 0.33W 0.75W	Nil:Standard NEW A:Heat shock resistance※2	NEW T : Sn G : Au	TP : 2mm pitch punch paper TD : 4mm pitch punch paper BK : Bulk	F : 4 digits J : 3 digits	F : ±1% J : ±5%

※2 With type A only T is available as the terminal surface material.
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.

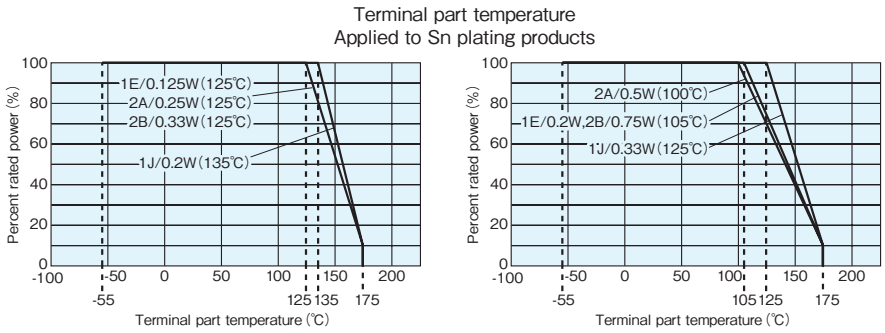
Type	Power Rating	Rated Ambient Temp.		Rated Terminal Part Temp.		T.C.R. (×10⁻⁶/K)	Resistance Range (Ω)		Max. Working Voltage	Max. Overload Voltage	Packaging & Q'ty/Reel (pcs)	
		Terminal Surface Material:T (Sn plating)	Terminal Surface Material:G (Au plating)	Terminal Surface Material:T (Sn plating)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

Operating Temperature Range : −55℃~+175℃(Terminal Surface Material:T)、−55℃~+200℃(Terminal Surface Material:G)
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.
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

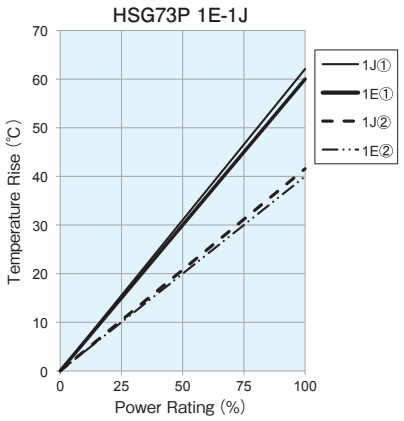


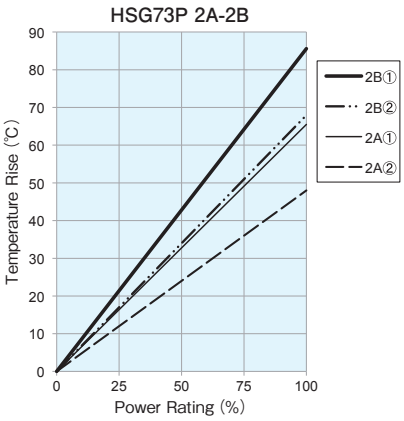
For resistors operated at an ambient temperature of 70℃ or higher, the power shall be derated in accordance with the above derating curve.



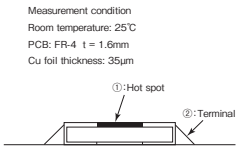
When the terminal part temperature of the resistor exceeds the rated terminal part temperature shown above, the power shall be derated according to the derating curve.
If you want to use at the rated power of ※1, please use the derating curves based on the terminal part temperature of right side.
※Please refer to "Introduction of the derating curves based on the terminal part temperature" on the beginning of our catalog before use.

■Temperature Rise

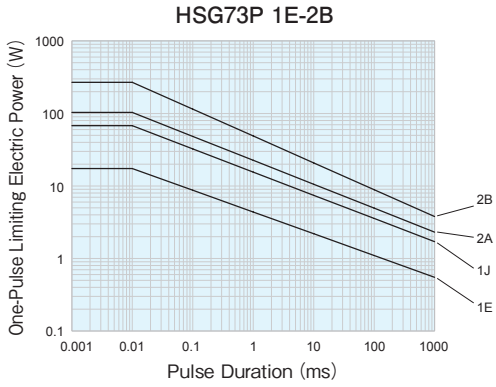




Regarding the temperature rise, the value of the temperature varies per conditions and board for use since the temperature is measured under our measuring conditions.



■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.

■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.	—	Characteristic「Nil」(Standard) : +25℃/−55℃,+25℃/+125℃ Characteristic「A」(Heat shock resistance) : +25℃/−55℃,+25℃/+175℃
Overload (Short time)	2	0.5	Rated voltage×2.5 for 5s (2A : 0.5W, 2B : 0.75W Rated volatege×2 for 5s)
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℃ (30min.) /+125℃ (30min.) 100 cycles Characteristic「A」(Heat shock resistance) : −55℃ (30min.) /+175℃ (30min.) 1000 cycles
Moisture resistance	2 : 1J, 2A, 2B 3 : 1E	0.75 : 1J, 2A, 2B 1 : 1E	40℃±2℃, 90%～95%RH, 1000h 1.5h ON/0.5h OFF cycle
Endurance at 70℃	2 : 1J, 2A, 2B 3 : 1E	0.75 : 1J, 2A, 2B 1 : 1E	70℃±2℃ 1000h 1.5h ON/0.5h OFF cycle
High temperature exposure	2	0.5	+200℃, 1000h (Terminal Surface Material「G」: Au plating products)
Endurance at 175℃	1	0.3	+175℃,1000h,Power Rating×10%(Terminal Surface Material「T」: Sn plating products)

■Precautions for Use

- The substrate of chip resistors is alumina. Cracks may occur at the connection 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, 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.