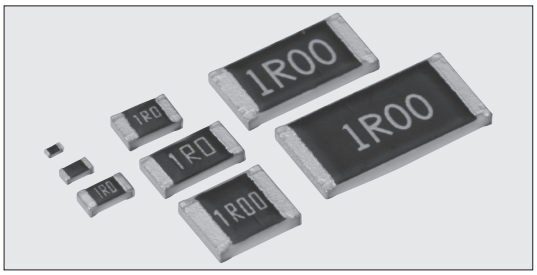
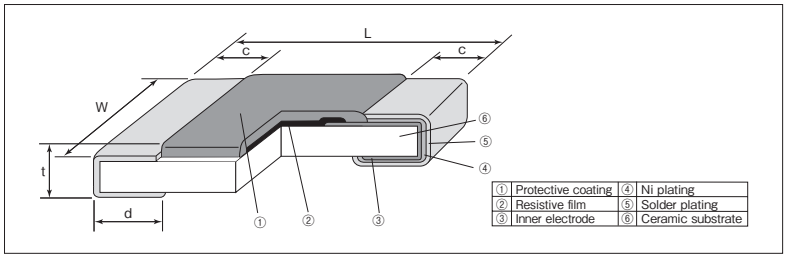
EU RoHS

SR73 Low Resistance Flat Chip Resistors



Coating color：Black (1H)
Indigo (1E, 1J, 2A, 2B, 2E, W2H, W3A, W3A2)

■Construction



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

■Features

- Current detecting resistors for power supply, motor circuits, etc.
- High reliability and performance with resistance tolerance ±0.5%, T.C.R. ±100×10^{-6}/K
- 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 (Exemption 1H).

■Applications

- Car electronics, Computers, HDDs, Cellular-telephones, Power supplies, and Motor circuits, etc.

■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)
1H (0201)	0.6±0.03	0.3±0.03	0.1±0.05	0.15±0.05	0.23±0.03	0.14
1E (0402)	$1.0^{+0.1}_{-0.05}$	$0.5^{+0.1}_{-0.05}$	0.25±0.1	0.25±0.1	0.35±0.05	0.68
1J (0603)	1.6±0.2	$0.8^{+0.15}_{-0.1}$	0.35±0.1	0.35±0.1	0.45±0.1	2.14
2A (0805)	2.0±0.2	1.25±0.1	0.4±0.2	$0.3^{+0.2}_{-0.1}$	0.5±0.1	4.54
2B (1206)	3.2±0.2	1.6±0.2	0.5±0.3	$0.4^{+0.2}_{-0.1}$	0.6±0.1	9.14
2E (1210)		2.6±0.2				15.5
W2H (2010)※1	5.0±0.2	2.5±0.2		0.65±0.15		24.3
W3A (2512)※1	6.3±0.2	3.1±0.2				37.1
W3A2 (2512)※1						

※1 SR73 2H, 3A and 3A2 are also still available (different "d" dimensions=$0.4^{+0.2}_{-0.1}$mm)

■Type Designation

Example

SR73	2B	T	TD	R10	J
Product Code	Power Rating	Terminal Surface Material	Taping	Nominal Resistance	Resistance Tolerance
	1H:0.1W 1E:0.166W 1J:0.2W 0.25W 2A:0.33W 0.5W※5 2B:0.33W 0.5W※5 2E:0.5W 0.66W※5 W2H:0.75W W3A:1.0W W3A2:2.0W※5	T:Sn G:Au※2 (L:Sn/Pb)※3	TCM:2mm pitch press paper TPL・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 Ex. 0.1Ω:R100 47mΩ:47L	D:±0.5% F:±1% G:±2% J:±5%

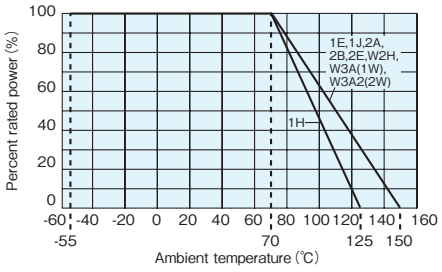
Resistance Value (Ω)	3digits
24m～91m	24L～91L
0.1～0.91	R10～R91
1～9.1	1R0～9R1
10	100

Resistance Value (Ω)	4digits
0.1～0.976	R100～R976
1～9.76	1R00～9R76
10	10R0

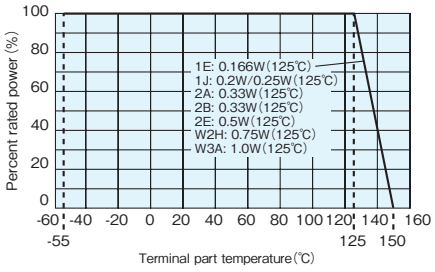
※2 Products with gold plated electrodes are also available only 1J, 2A and 2B type (0.1Ω～10Ω、F:±1%、J:±5%), so please consult with us.
※3 With type 1H, W2H and W3A, W3A2 only T is available as the terminal surface material. The terminal surface material lead free is standard.
Contact us when you have 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.

■Derating Curve

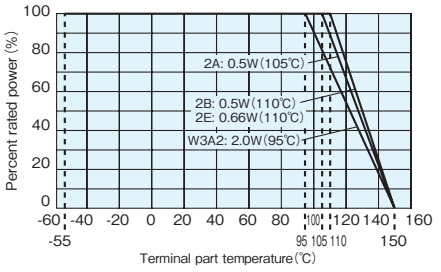
Ambient temperature



Terminal part temperature



Terminal part temperature
SR73 2A(0.5W), SR73 2B(0.5W),
SR73 2E(0.66W), SR73 W3A2



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

■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	Taping & Q'ty /Reel (pcs) TCM	TPL・TP	TD	TE
1H※4	0.1W	70℃	—	0～+400	—	1～10	—	0.27～10	TCM:15,000	—	—	—
				0～+500	—	—	—	0.18～0.24				
1E※4	0.166W	70℃	125℃	±200	—	0.51～10	0.51～10	0.51～10	—	TPL:20,000 TP :10,000	—	—
				±300	—	0.2～0.47	0.2～0.47	0.2～0.47				
				±500	—	0.1～0.18	0.1～0.18	0.1～0.18				
1J	0.2W	70℃	125℃	±200	—	1.02～10	1.1～10	1.1～10	—	TP :10,000※6	5,000	
	0.25W	70℃	125℃	±200	—	0.1～1	0.1～1	0.1～1				
2A	0.33W	70℃	125℃	±100	0.15～10	0.1～10	—	—	—	TP :10,000※6	5,000	4,000※6
				±200	—	—	0.1～10	0.1～10				
				±500	—	—	—	0.051～0.091				
				±800	—	—	—	0.03～0.047				
	0.5W※5	70℃	105℃	±100	0.15～10	0.1～10	—	—				
				±200	—	—	0.1～10	0.1～10				
				±500	—	—	—	0.051～0.091				
				±800	—	—	—	0.03～0.047				
2B	0.33W	70℃	125℃	±100	0.15～10	0.1～10	—	—	—	—	5,000	4,000※6
				±200	—	—	0.1～10	0.1～10				
				±500	—	—	—	0.056～0.091				
				±800	—	—	—	0.03～0.051				
	0.5W※5	70℃	110℃	±100	0.15～10	0.1～10	—	—				
				±200	—	—	0.1～10	0.1～10				
				±500	—	—	—	0.056～0.091				
				±800	—	—	—	0.03～0.051				
2E	0.5W	70℃	125℃	±100	—	0.1～10	—	—	—	—	5,000	4,000※6
				±200	—	—	0.1～10	0.047～10				
				±500	—	—	—	0.036～0.043				
				±1000	—	—	—	0.024～0.033				
	0.66W※5	70℃	110℃	±100	—	0.1～10	—	—				
				±200	—	—	0.1～10	0.047～10				
				±500	—	—	—	0.036～0.043				
				±1000	—	—	—	0.024～0.033				
W2H	0.75W	70℃	125℃	±100	—	0.1～10	—	—	—	—	—	4,000
				±200	—	—	0.1～10	0.1～10				
				±500	—	—	—	0.056～0.091				
				±800	—	—	—	0.033～0.051				
W3A	1W	70℃	125℃	±100	—	0.1～10	—	—	—	—	—	4,000
				±200	—	—	0.1～10	0.1～10				
				±500	—	—	—	0.056～0.091				
				±800	—	—	—	0.039～0.051				
W3A2	2W※5	70℃	95℃	±100	—	0.1～10	—	—	—	—	—	4,000
				±200	—	—	0.1～10	0.1～10				
				±500	—	—	—	0.056～0.091				
				±800	—	—	—	0.039～0.051				

Operating Temperature Range：−55℃～+125℃ (1H)、−55℃～+150℃ (1E、1J、2A、2B、2E、W2H、W3A、W3A2)

Rated voltage=$\sqrt{\text{Power Rating}\times\text{Resistance value}}$

※4 The nominal resistance value for SR73 1H, SR73 1E (F：±1%) is in E24.

※5 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 previous page.

※6 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.

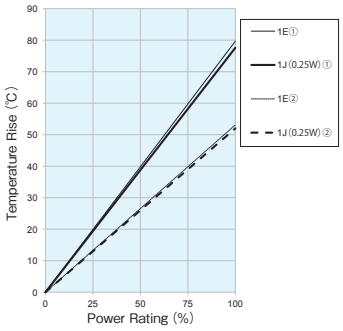
While using under high power, the temperature of the product may increase depending on the condition of heat dissipation from PCB.

Be sure to check the terminal part temperature as well as precausions to use on delivery specifications before use.

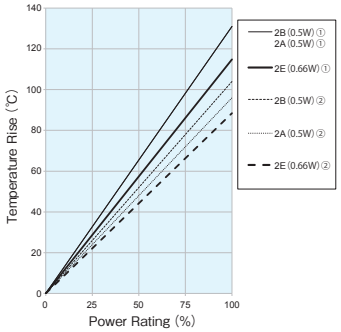
THICK FILM (LOW RESISTANCE)

■Temperature Rise

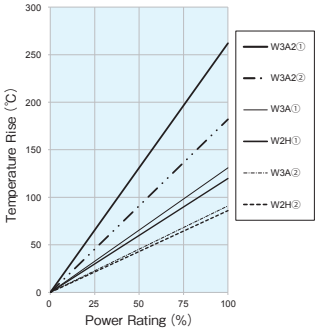
SR73 1E-1J



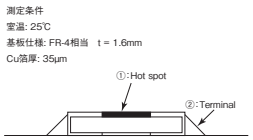
SR73 2A-2E



SR73 W2H-W3A2

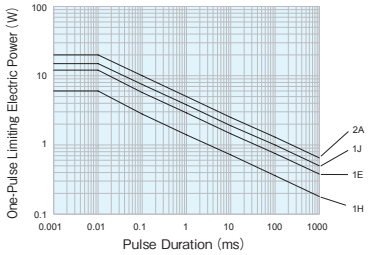


Regarding the temperature rise, the value of the temperature varies per conditions and board for use since the temperature is measured under our measuring conditions.

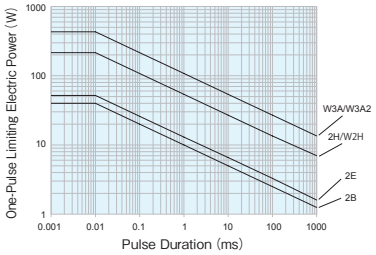


■One-Pulse Limiting Electric Power

SR73 1H-2A



SR73 2B-W3A2



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± (%+0.005Ω)		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	Rated voltage×2.5 for 5s (W3A2 : Rated voltage×2.0 for 5s)
Resistance to soldering heat	3 : 1H 1 : 1E～W3A2	0.75 : 1H 0.3 : 1E～W3A2	260℃±5℃, 10s±1s
Rapid change of temperature	1	0.3	−40℃ (30min.) /+125℃ (30min.) 100 cycles
Moisture resistance	3 : 1H 2 : 1E～W3A2	1	40℃±2℃, 90%～95%RH, 1000h 1.5h ON/0.5h OFF cycle
Endurance at 70℃ or rated terminal part temperature	3 : 1H 2 : 1E～W3A2	1	70℃±2℃ or rated terminal part temperature ±2℃ 1000h 1.5h ON/0.5h OFF cycle
High temperature exposure	1	0.3	+125℃, 1000h : 1H +150℃, 1000h : 1E, 1J, 2A, 2B, 2E, W2H, W3A, W3A2

■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, especially when large types of W2H/W3A/W3A2 which have large thermal expansion and also self heating. By general temperature cycle test using glass-epoxy(FR-4) boards under the maximum/minimum temperatures of operating temperature range, the crack does not occur easily in the types of 1H～2E, but the crack tends to occur in the types of W2H/W3A/W3A2. 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.
- The resistance value after soldering may change depending on the size of pad pattern or solder amount. Make sure the effect of decline/increase of resistance value before designing.