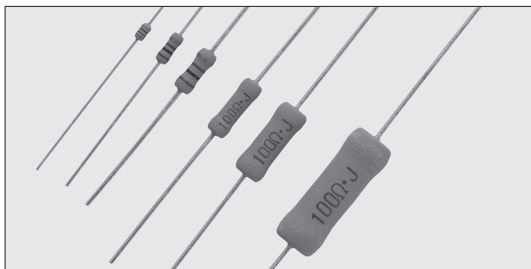


## SPR Special Power Resistors (Small type)

## SPRX Fixed Metal Film Resistors (Small type)



Coating color : Light green

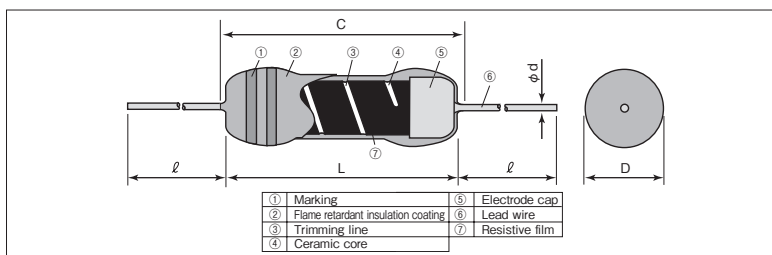
Marking : Color code (0.25W, 0.5W, 1W)

Alphanumeric (2W, 3W, 5W)

### Features

- Small size power type resistors.
- Flame retardant coating. (Equivalent to UL94 V-0)
- Automatic insertion is applicable.
- Various types of formings are available.
- High reliability.
- Excellent in pulse characteristic.
- Products meet EU-RoHS requirements.
- Automatic mounting machine is applicable by surface mounted device style lead forming.

### Construction



### Dimensions

Type	Dimensions (mm)					Weight (g) (1000pcs)	
	L	C Max.	D	d (Nominal)	ℓ <sup>※1</sup>		
SPR (X) 1/4	3.3±0.3	3.5	1.7±0.3	0.45	20Min.	140	
SPR (X) 1/2	6.2±0.5	7.1	2.5±0.5	0.6	24Min.	250	
SPR (X) 1	9.0±1.0	11.1	3.5±0.5	0.8		500	
SPR (X) 2	12.0±1.0	15.0	4.2±0.8			800	
SPR (X) 3	15.5±1.0	18.0	6.0±1.0			30±3	1,400
SPR (X) 5	24.5±1.0	28.0	9.0±1.0			38±3	4,600

※1 Lead length changes depending on taping and forming type.

### Type Designation

Example

SPR	1	C	T52	A	103	J
Product Code	Power Rating	Terminal Surface Material	Taping & Forming	Packaging	Nominal Resistance	Resistance Tolerance
SPR: Special Power Resistors (Small type) SPRX: Fixed Metal Film Resistors (Small type)	1/4: 0.25W 1/2: 0.5W 1: 1W 2: 2W 3: 3W 5: 5W	C: SnCu	See table below	A: AMMO R: REEL NII: BOX TEB: TEG: Plastic embossed (N forming)	F: 4 digits G, J: 3 digits	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 and forming, please refer to APPENDIX C on the back pages.

### Taping & Forming Matrix

Type	Axial Taping				Stand-off Axial Taping			VT Radial Taping				GT Radial Taping	L Forming								U Forming	M Forming				N Forming	
	T26	T52	T521	T631	L52	L521	L631	VT	VTP	VTE	VTF	GT	L10A	L12.5A	L15A	L20A	L25A	L30A	L35A	U	M10	M12.5	M15	M20	N17	N20	
SPR (X) 1/4	○	○	—	—	—	—	—	○	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
SPR (X) 1/2	○	○	—	—	○	—	—	—	○	○	—	○	○	—	—	—	—	—	—	—	—	M10F	—	—	—	—	—
SPR (X) 1	—	○	—	—	○	—	—	—	○	—	—	○	—	○	○	—	—	—	—	—	○	—	M12.5D	M15F	—	—	—
SPR (X) 2	—	○	○	—	—	○	—	—	○	—	○	○	—	—	○	○	—	—	—	○	—	—	—	M15E	M20U	○	—
SPR (X) 3	—	—	○	○	—	○	○	—	—	—	—	○	—	—	—	○	○	—	—	○	—	—	—	M20E	—	—	○
SPR (X) 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	○	○	—	—	—	—	—	—	—	—

### Ratings

Type	Power Rating	Resistance Range (Ω)			T.C.R. (×10 <sup>-6</sup> /K)	Max. Working Voltage	Max. Overload Voltage	Dielectric Withstanding Voltage	Taping & Q'ty/AMMO (pcs)			
		F:±1% (E24·E96) ※2	G:±2% (E24) ※2	J:±5% (E24)					T26A	T52A	T521A	T631A
SPR1/4	0.25W	—	—	2.2~10k	±350	E=√P×R(V)	500V	300V	2,000	2,000	—	—
SPR1/2	0.5W	10~91k	10~91k	2.2~91k			800V	500V	2,000	2,000	—	—
SPR1	1W						—	2,000	2,000	—	—	
SPR2	2W						1,000V	700V	—	1,000	1,000	—
SPR3	3W					500V	—	—	—	500	1,000	
SPR5	5W	10~100k	10~100k	2.2~110k		600V	1,200V	800V	—	—	—	—
SPRX1/4	0.25W	—	—	0.1~2.0		E=√P×R(V)	E×2.5(V)	300V	2,000	2,000	—	—
SPRX1/2	0.5W	1.0~2.0	0.22~2.0					500V	2,000	2,000	—	—
SPRX1	1W							—	2,000	—	—	
SPRX2	2W							700V	—	1,000	1,000	—
SPRX3	3W	—	—					—	—	500	1,000	
SPRX5	5W							800V	—	—	—	—

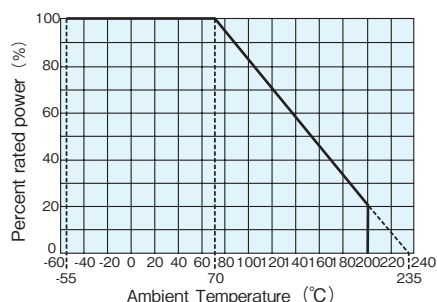
※2 Please consult with us for resistance other than catalog specification (tol.F/G)

Rated Ambient Temperature : +70°C

Operating Temperature Range : -55°C ~ +200°C

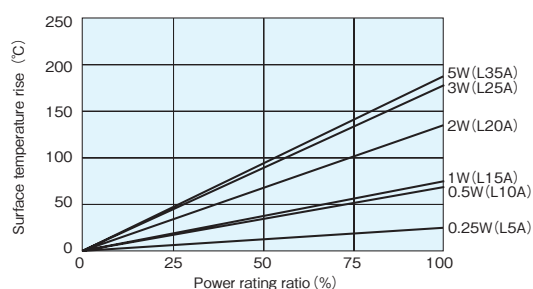
Rated voltage =  $\sqrt{\text{Power Rating} \times \text{Resistance value}}$  or Max. working voltage, whichever is lower.

## Derating Curve

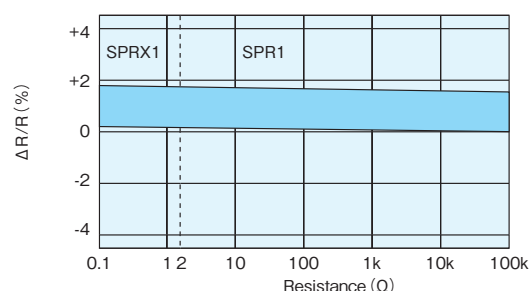


For resistors operated at an ambient temperature of 70°C or higher, the power shall be derated in accordance with the above derating curve.

## Surface Temperature Rise



## Load Life at 70°C 1000h



## Performance

Test Items	Performance Requirements $\Delta R \pm (\% + 0.05\Omega)$		Test Methods
	Limit	Typical	
Resistance	Within specified tolerance	—	Measuring points are 10mm±1mm from the end cap.
T.C.R.	Within specified T.C.R.	—	+25°C/+125°C
Overload (Short time)	$\pm (1\% + 0.1\Omega)$	0.5	Rated voltage×2.5 or Max. overload vol., whichever is lower, for 5s
Resistance to soldering heat	1	0.5	260°C±5°C, 10s±1s, 350°C±10°C, 3.5s±0.5s
Terminal strength	No lead-coming off and loose terminals	—	Twist 360°, 5 times
Rapid change of temperature	1	0.5	−55°C (30min.) / +155°C (30min.) 5 cycles
Moisture resistance	$\pm (3\% + 0.1\Omega) : 1/4W \sim 2W$ $\pm (5\% + 0.1\Omega) : 3W, 5W$	1.5 : 1/4W~2W 2.5 : 3W, 5W	40°C±2°C, 90%~95%RH, 1000h 1.5h ON/0.5h OFF cycle
Endurance at 70°C	$\pm (3\% + 0.1\Omega) : 1/4W \sim 2W$ $\pm (5\% + 0.1\Omega) : 3W, 5W$	1.5 : 1/4W~2W 2.5 : 3W, 5W	70°C±2°C, 1000h 1.5h ON/0.5h OFF cycle
Resistance to solvent	No abnormality in appearance. Marking shall be easily legible.	—	Ultrasonic washing with Isopropyl alcohol for 2 min. Power : 0.3W/cm², f : 28kHz, Temp : 35°C±5°C
Flame retardant	No evidence of flaming or self-flaming.	—	Flame test : The test flame shall be applied and removed for each 15 sec respectively to repeat the cycle 5 times. Overload flame retardant : AC voltage corresponding to 2, 4, 8, 16 and 32 times the power rating shall be applied for each 1min. until disconnection occurs. However the applied voltage shall not exceed the value of 4 times of the maximum operating voltage.

## Precautions for Use

- Water and moisture may affect and change the high resistance range of this product largely. Consult us in advance when you consider using this product for such applications that may cause serious damage.
- Ionic impurities such as flux etc. attached to these products or mounted onto PCB, negatively affect the moisture resistance, corrosion resistance, etc. Ionic substances like sweat and salt that may be caused according to the storage environment, mounting conditions and mounting environment, also affect the above characteristics. Wash thoroughly these ionic substances. Confirm the reliability of washing and decide the dry conditions so that washing solvent is not to be remained inside the product after washing. Do not apply electricity to the product nor use the product itself until the drying is fully completed.
- Be careful to handle these resistors because outer coatings are comparatively weak to outer shock due to flameproof special coats. Please wash them to a minimum. No external force is given to the coating films until they are well dried because the coating films become weaker right after washing. The original strength will be returned after they are dried, so please pay attention not to apply any external force onto the coating film of resistors for 20 minutes after drying. Especially no PC boards shall be piled up.