

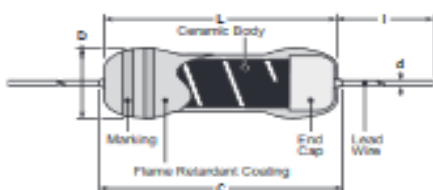


**features**

- Fixed metal film resistor available (specify "SPRX")
- Flameproof silicone coating equivalent to (UL94V0)
- High reliability performance
- Suitable for automatic machine insertion
- Products with lead-free terminations meet EU RoHS and China RoHS requirements
- Surface mount style "N" forming is suitable for automatic mounting

Features

**dimensions and construction**



Type	Dimensions (inches (mm))				
	L	C (max.)	D	d nominal	l*
SPR1/4 SPRX1/4	.13±.012 (3.3±0.3)	.138 (3.5)	.087±.012 (1.7±0.3)	.018 (0.45)	.707 Min. (20.0 Min.)
SPR1/2 SPRX1/2	.244±.02 (6.2±0.5)	.280 (7.1)	.088±.02 (2.5±0.5)	.024 (0.6)	.945 Min. (24.0 Min.)
SPR1 SPRX1	.354±.020 (9.0±1.0)	.437 (11.1)	.138±.02 (3.5±0.5)	.031 (0.8)	
SPR2 SPRX2	.472±.020 (12.0±1.0)	.581 (15.0)	.195±.031 (4.2±0.8)		1.18±.118 (30.0±3.0)
SPR3 SPRX3	.810±.020 (20.5±1.0)	.700 (18.0)	.236±.030 (6.0±1.0)		
SPR5 SPRX5	.985±.020 (25.5±1.0)	1.10 (28.0)	.354±.030 (9.0±1.0)	1.50±.118 (38.0±3.0)	

\* Lead length changes depending on taping and forming type.

**ordering information**

SPR	1/2	C	T22	R	103	J
Type	Power Rating	Termination Material	Taping and Forming	Packaging	Nominal Resistance	Tolerance
SPR SPRX	1/4: 0.25W 1/2: 0.5W 1: 1W 2: 2W 3: 3W 5: 5W	C: NiCo	Axial: T26, T52, T521, T631 Stand-off Axial: LS2, LS21, LB31 Radial: VT, VTP, VTE, GT, VTF L, U, M, N Forming	A: Ammo R: Reel TER: Embossed plastic (N forming)	±2%, ±5% 2 significant figures + 1 multiplier "R" indicates decimal on value <10Ω ±1%: 3 significant figures + 1 multiplier "R" indicates decimal on value +100Ω	F: ±1% G: ±2% J: ±5%

For further information on packaging, please refer to Appendix C.

Specifications, glass leads may be changed at any time without prior notice. Please confirm detailed specifications before you order and/or use. 11/21/17

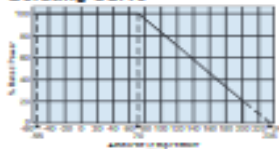
### applications and ratings

Part Designation	Power Rating @ 70°C	Minimum Dielectric Withstanding Voltage	T.C.R. (ppm/°C)	Resistance Range E-24* (J±1%, G±2%)	Resistance Range E-24 (J±5%)	Absolute Maximum Working Voltage	Absolute Maximum Overload Voltage	Operating Temperature Range
SPR1H	0.25W	300V	+350	10Ω - 91kΩ	2.2Ω - 10kΩ	$E = \sqrt{P \times R}$	500V	-55°C to +200°C
SPR1Q	0.5W	500V			2.2Ω - 91kΩ		800V	
SPR1	1W	700V			2.2Ω - 91kΩ		1000V	
SPR2	2W				2.2Ω - 91kΩ		600V	
SPR3	3W	2.2Ω - 91kΩ			1200V			
SPR5	5W	800V			100 - 100kΩ		2.2Ω - 119kΩ	
SPRX1H	0.25W	300V		1.0Ω - 2.0Ω	0.1Ω - 2.0Ω	$E = \sqrt{P \times R}$	$E \times 2.5$	
SPRX1Q	0.5W	500V						
SPRX1	1W	700V						
SPRX2	2W	700V						
SPRX3	3W	800V						

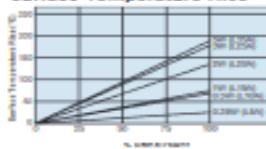
\* Please consult when there is a demand of the resistance besides the 1% and 2% range.  
 Rated Ambient Temperature: +70°C

### environmental applications

Derating Curve



Surface Temperature Rise



Load Life @ 70°C, 1000 Hr



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

### Performance Characteristics

Parameter	Requirement Limit	ΔR Δ(%) ± 0.05Ω	Typical	Test Method
Resistance	Within specified tolerance	—	—	Measuring points are at 10mm ±1mm from the end cap.
T.C.R.	Within specified T.C.R.	—	+25°C/+125°C	
Overload (Short time)	±(1%+0.1Ω)	±0.5%	—	Rated voltage x 2.5 or max. overload voltage for 5 seconds, whichever is lower
Resistance to Solder Heat	±1%	±0.5%	—	260°C ±5°C, 10 seconds ± 1 second
Terminal Strength	No lead-coring off and loose terminals	—	—	Twist 360°C, 5 times
Rapid Change of Temperature	±1%	±0.5%	—	-55°C (30 minutes), +155°C (30 minutes), 5 cycles
Moisture Resistance	±(1%+0.1Ω) ±(0.5%+0.1Ω) ±(0.5%+0.1Ω)	1.8 14W/2W 2.5 3W 5W	—	40°C ± 2°C, 90 - 95% RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle
Endurance at 70°C	±(1%+0.1Ω) ±(0.5%+0.1Ω) ±(0.5%+0.1Ω)	1.8 14W/2W 2.5 3W 5W	—	70°C ± 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle
Resistance to Solvent	No abnormality in appearance. Marking shall be easily legible	—	—	Ultrasonic washing with isopropyl alcohol for 2 minutes. Power: 0.5W/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 seconds respectively to repeat the cycle 8 times. Overload flame retardant power (W) corresponding to 2, 4, 8, 16 and 32 times the power rating shall be applied for each 1 minute until disconnection occurs. However the applied voltage shall not exceed the value of 4 times of the maximum operating voltage.

Specifications, given herein may be changed at any time without prior notice. Please see the latest specifications before you order another one.

5/07/18