



features

- Fixed metal film resistor available (specify “SPRX”)
- Flameproof silicone coating equivalent to (UL94V0)
- High reliability performance
- Suitable for automatic machine insertion
- Marking: Light green body color
Color-coded bands on 1/2W - 1W
Alpha-numeric black marking on 2W - 5W
- Products with lead-free terminations meet EU RoHS and China RoHS requirements
- Surface mount style “N” forming is suitable for automatic mounting

dimensions and construction



| Type | Dimensions inches (mm) | | | | |
|-------------------|-------------------------|----------------|------------------------|-------------------------|--------------------------|
| | L | C (max.) | D | d nominal | I* |
| SPR1/4 SPRX1/4 | .13±.012 (3.3±0.3) | .138 (3.5) | .067±.012 (1.7±0.3) | .018 (0.45) | .787 Min. (20.0 Min.) |
| SPR1/2 SPRX1/2 | .244±.02 (6.2±0.5) | .280 (7.1) | .098±.02 (2.5±0.5) | .024 (0.6) | .945 Min. (24.0 Min.) |
| SPR1 SPRX1 | .354±.039 (9.0±1.0) | .437 (11.1) | .138±.02 (3.5±0.5) | .031 (0.8) | |
| SPR2 SPRX2 | .472±.039 (12.0±1.0) | .591 (15.0) | .165±.031 (4.2±0.8) | | 1.18±.118 (30.0±3.0) |
| SPR3 SPRX3 | .610±.039 (15.5±1.0) | .709 (18.0) | .236±.039 (6.0±1.0) | 1.50±.118 (38.0±3.0) | |
| SPR5 SPRX5 | .965±.039 (24.5±1.0) | 1.10 (28.0) | .354±.039 (9.0±1.0) | | |

* Lead length changes depending on taping and forming type.

ordering information

| | | | | | | | |
|------------|-------------|---|----------------------|---|---|---|----------------------------|
| New Part # | SPR | 1/2 | C | T52 | R | 103 | J |
| Type | SPR SPRX | Power Rating | Termination Material | Taping and Forming | Packaging | Nominal Resistance | Tolerance |
| | | 1/4: 0.25W 1/2: 0.5W 1: 1W 2: 2W 3: 3W 5: 5W | C: SnCu | Axial: T26, T52, T521, T631 Stand-off Axial: L52, L521, L631 Radial: VT, VTP, VTE, GT L, U, M, N Forming | A: Ammo R: Reel TEB: 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.

applications and ratings

| Part Designation | Power Rating @ 70°C | Minimum Dielectric Withstanding Voltage | T.C.R. (ppm/°C) | Resistance Range E-24 (F±1%, G±2%) | Resistance Range E-24* (J±5%) | Absolute Maximum Working Voltage | Absolute Maximum Overload Voltage | Operating Temperature Range |
|------------------|---------------------|---|-----------------|------------------------------------|-------------------------------|----------------------------------|-----------------------------------|-----------------------------|
| SPR1/4 | 0.25W | 300V | ±350 | — | 2.2Ω - 10KΩ | 250V | 500V | -55°C to +200°C |
| SPR1/2 | 0.5W | 500V | | 10Ω - 91KΩ | 2.2Ω - 91KΩ | 400V | 800V | |
| SPR1 | 1W | | | | 2.2Ω - 91KΩ | 500V | 1000V | |
| SPR2 | 2W | 2.2Ω - 91KΩ | | | | | | |
| SPR3 | 3W | 2.2Ω - 91KΩ | | | | | | |
| SPR5 | 5W | 800V | | | 10Ω - 100KΩ | 2.2Ω - 110KΩ | 600V | |
| SPRX1/4 | 0.25W | 300V | | — | 0.1Ω - 2.0Ω | $E = \sqrt{P \times R}$ | E x 2.5 | |
| SPRX1/2 | 0.5W | 500V | | | | | | |
| SPRX1 | 1W | | | | | | | |
| SPRX2 | 2W | 700V | | | | | | |
| SPRX3 | 3W | | | | | | | |
| SPRX5 | 5W | 800V | | | | | | |

* High values may have electric corrosion. KOA recommends the RCR series.

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 $\Delta R \pm(\% + 0.05\Omega)$ | | Test Method |
|-----------------------------|---|-----------------------------|---|
| | Limit | Typical | |
| Resistance | Within specified tolerance | — | Measuring points are at 10mm ±1mm from the end cap. |
| T.C.R. | Within specified T.C.R. | — | Room temperature +100°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-coming 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 | ±(3%+0.1Ω):1/4W-2W ±(5%+0.1Ω):3W,5W | 1.5: 1/4W-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 | ±(3%+0.1Ω):1/4W-2W ±(5%+0.1Ω):3W,5W | 1.5: 1/4W-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: 0.3W/cm ³ , 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 5 times. Overload flame retardant: power (AC) 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 confirm technical specifications before you order and/or use.

12/18/12