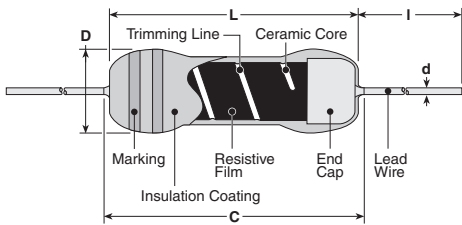


features

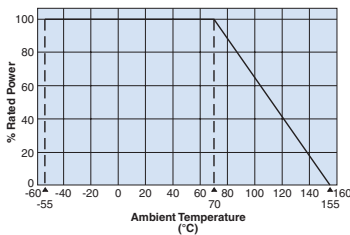
- Semi-precision metal film resistors
- The discharge path resistor is recognized by UL 1676 and c-UL (CAS-C22.2 No.1-M94). (File No. E159326) (RK only)
- Meets requirements of MIL-R-22684
- Suitable for automatic machine insertion
- MFS two times the power rating of the standard body type
- Marking: Blue-gray body color with color-coded bands
- Products with lead-free terminations meet EU RoHS and China RoHS requirements

dimensions and construction

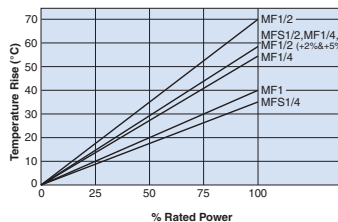


| Type | Dimensions inches (mm) | | | | |
|--------|------------------------|----------------|--|----------------|--------------------------|
| | L (ref.) | C (max.) | D | d (nom.) | I |
| MFS1/4 | .126±.008 (3.2±0.2) | .133 (3.4) | .066 ^{+0.007} / _{-.004} (1.7 ^{+0.2} / _{-.1}) | .018 (0.45) | 1.18±.118 (30.0±3.0) |
| MF1/4 | .248±.02 (6.3±0.5) | .280 (7.1) | .091±.012 (2.3±0.3) | .024 (0.6) | |
| MFS1/2 | .248±.02 (6.3±0.5) | .280 (7.1) | .091±.012 (2.3±0.3) | .024 (0.6) | |
| MF1/2 | .374±.04 (9.5±1.0) | .437 (11.1) | .138±.016 (3.5±0.4) | .024 (0.6) | 1.50±.118 (38.0±3.0) |
| MF1 | .610±.02 (15.5±0.5) | .721 (18.3) | .217±.02 (5.5±0.5) | .031 (0.8) | |
| RK1/4 | .248±.02 (6.3±0.5) | .280 (7.1) | .091±.012 (2.3±0.3) | .024 (0.6) | |
| RK1/2 | .374±.04 (9.5±1.0) | .437 (11.1) | .138±.016 (3.5±0.4) | .031 (0.8) | 0.94 min. (24.0 min.) |
| RK1 | .610±.04 (15.5±1.0) | .720 (18.3) | .217±.02 (5.5±0.5) | .031 (0.8) | 1.50±.118 (38.0±3.0) |

Derating Curve



Surface Temperature Rise



ordering information

| New Part # | MF | 1/4 | L | C | T52 | R | R20 | J |
|----------------------|----|---------------------|--|---------|---|--------------------|---|---|
| Type | MF | 1/4: 0.25W MFS | | | | | | |
| Power Rating | | 1/2: 0.50W 1: 1W | | | | | | |
| T.C.R. | | | E: ±25 C: ±50 D: ±100 L: ±200 G: ±250 B: ±350 | | | | | |
| Termination Material | | | | C: SnCu | | | | |
| Taping and Forming | | | | | 1/4: T26, T52, VT, VTP, VTE, MT, M, U, M10, M25 1/2: T26, T52, VTP, VTE, M12.5, M15 1: T521 | | | |
| Packaging | | | | | | A: Ammo R: Reel | | |
| Nominal Resistance | | | | | | | +2%: 2 significant figures + 1 multiplier +0.5%, +1%: 3 significant figures + 1 multiplier "R" indicates decimal on value <100Ω | |
| Tolerance | | | | | | | | B: ±0.1% C: ±0.25% D: ±0.5% 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 (Ω) | | | | | | Absolute Maximum Working Voltage | Absolute Maximum Overload Voltage | Operating Temperature Range |
|------------------|---------------------|---|-----------------|----------------------|----------------|--------------------|--------------------|---------------|---------------|----------------------------------|-----------------------------------|-----------------------------|
| | | | | (B±0.1%) E-96 | (C±0.25%) E-96 | (D±0.5%) E-24 E-96 | (F±1.0%) E-24 E-96 | (G±2.0%) E-24 | (J±5.0%) E-24 | | | |
| MFS1/4C | 0.25W | 300V | C: ±50 | — | — | 49.9 - 562k | 10 - 1M | — | — | 250V | 300V | -55°C to +155°C |
| MFS1/4D | | | D: ±100 | | | | | | | | | |
| MFS1/4L | | | L: ±200 | | | | | | | | | |

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

1/13/09

applications and ratings

| Part Designation | Power Rating @ 70°C | Minimum Dielectric Withstanding Voltage | T.C.R. (ppm/°C) | Resistance Range (Ω) | | | | | | Absolute Maximum Working Voltage | Absolute Maximum Overload Voltage | Operating Temperature Range |
|------------------|---------------------|---|-----------------|----------------------|----------------|--------------------|--------------------|---------------|---------------|----------------------------------|-----------------------------------|-----------------------------|
| | | | | (B±0.1%) E-96 | (C±0.25%) E-96 | (D±0.5%) E-24 E-96 | (F±1.0%) E-24 E-96 | (G±2.0%) E-24 | (J±5.0%) E-24 | | | |
| MF1/4C | 0.25W | 500V | C: ±50 | 30.1 - 750K | 30.1 - 1.0M | 10 - 2.21M | 10 - 2.21M | — | — | 250V | 500V | -55°C to +155°C |
| MF1/4D | | | D: ±100 | 24.3Ω - 750K | 24.3 - 1.0M | | 1.0 - 3.01M | | | | | |
| MF1/4E | | | E: ±25 | 30.1 - 750K | 30.1 - 1.0M | 30.1 - 1.0M | 30.1 - 1.0M | | | | | |
| MF1/4L | | | L: ±200 | — | — | — | 1.0 - 10 | | | | | |
| MFS1/2C | 0.50W | 500V | C: ±50 | — | — | 10 - 1M | 10 - 2.21M | 10 - 2.2M | — | 350V | 700V | |
| MFS1/2D | | | D: ±100 | | | | | 10 - 2.2M | | | | |
| MFS1/2L | | | L: ±200 | | | | 2.2 - 2.2M | | | | | |
| MF1/2C | 0.50W | 700V | C: ±50 | 47.5 - 1.0M | 47.5 - 1.5M | 10 - 5.05M | 10 - 4.99M | — | — | 350V | 700V | |
| MF1/2D | | | D: ±100 | — | — | | 10 - 5.11M | | | | | |
| MF1/2E | | | E: ±25 | 47.5 - 1.0M | 47.5 - 1.5M | 47.5 - 2.0M | 47.5 - 2.0M | | | | | |
| MF1/2L | | | L: ±200 | — | — | — | 1.0 - 10 | | | | | |
| MF1C | 1W | 700V | C: ±50 | 47.5Ω - 1.0M | 47.5 - 2.49M | 10Ω - 5.11M | 1.0 - 6.81M | — | — | 350V | 700V | |
| MF1D | | | D: ±100 | — | — | | 1.0 - 6.81M | | | | | |
| MF1E | | | E: ±25 | 47.5 - 2.0M | 7.5 - 2.49M | 47.5 - 4.64M | 47.5 - 5.11M | | | | | |
| RK1/4D | 0.25W | 500V | D: ±100 | — | — | — | 3.09M - 25M | — | — | 500V | 700V | |
| RK1/4L | | | L: ±200 | — | — | — | — | 3.3M - 33M | 3.3M - 33M | | | |
| RK1/4B | | | B: ±350 | — | — | — | 100k - 25M | 100k - 33M | 100k - 33M | | | |
| RK1/2D | 0.50W | 500V | D: ±100 | — | — | — | 5.11M - 33M | — | — | 700V | 1000V | |
| RK1/2L | | | L: ±200 | — | — | — | — | 6.2M - 33M | 6.2M - 33M | | | |
| RK1/2B | | 700V | B: ±350 | — | — | — | 100k - 35M | 100k - 51M | 100k - 51M | | | |
| RK1BC | 1W | 1000V | B: ±350 | — | — | — | 100k - 51M | 100k - 100M | 100k - 100M | 1000V | 1500V | |
| RK1/2G* | 0.50W | 700V | G: ±250 | — | — | — | — | — | 1M - 12M | 350V | 700V | |

* Discharge path resistor

environmental applications

Performance Characteristics

| Parameter | Requirement Δ R ±(% + 0.05Ω) | | Test Method |
|---------------------------------|---|--|---|
| | Limit | Typical | |
| Resistance | Within specified tolerance | — | 25°C |
| T.C.R. | Within specified T.C.R. | — | Room temperature, +100°C |
| Overload (Short Time) | RK: ±1%; RK1/2G: ±2.5% MF: ±0.5% | RK: ±0.6%; RK1/2G: ±2.5% MF: ±0.3% | Rated voltage x 2.5 or max. overload voltage for 5 seconds, whichever is less; MFS1/2: Rated voltage x 2 or max. overload voltage for 5 seconds, whichever is less |
| Resistance to Solder Heat | RK: ±1%; RK1/2G: ±5%; MFS: ±0.75%; MF1/4, MFS1/2, MF1/2: ±0.5% | RK: ±0.5%; RK1/2G: ±1% MFS1/4: ±0.4%; MF1/4, MFS1/2, MF1/2: ±0.25% | 260°C ± 5°C, 10 seconds ± 1 second or 350°C ± 10°C, 3.5 seconds ± 0.5 second |
| Dielectric Withstanding Voltage | No breakdown | — | 1 minute |
| Insulation Resistance | Not less than 10,000MΩ | — | 100V, 1 minute |
| Rapid Change of Temperature | RK,MF: ±1%; RK1/2G: ±5% | MF: ±0.3%; RK: ±0.5%, RK1/2G: ±1% | -55°C (30 minutes), +155°C (30 minutes), 5 cycles |
| Moisture Resistance | RK: ±5%; RK1/2G: ±10%; MFS1/4: ±1.5%; MF1/4, MFS1/2, MF1/2: ±1% | RK: ±2%; RK1/2G: ±5%; MFS1/4: ±1%; MF1/4, MFS1/2, MF1/2: ±0.75% | 40°C ± 2°C, 90 - 95% RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle |
| Endurance at 70°C | RK: ±5%; RK1/2G: ±10%; MFS1/4: ±1.5%; MF1/4, MFS1/2, MF1/2: ±1% | RK: ±2%; RK1/2G: ±5%; MFS1/4: ±1%; MF1/4, MFS1/2, MF1/2: ±0.75% | 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 | — | The resistor shall be immersed for 5 seconds in IPA |
| Impulse | No such abnormalities as short-circuit, burnout, breakdown, etc. | — | Discharge from 1000pF capacitor 50 pulses. Internal 2.5 seconds. Charge voltage: 1.25kV (RK1/4), 2.5kV (RK1/2) and 6kV (RK1) |

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1/09/09