KOA SPEER ELECTRONICS, INC.

MF, MFS, RK

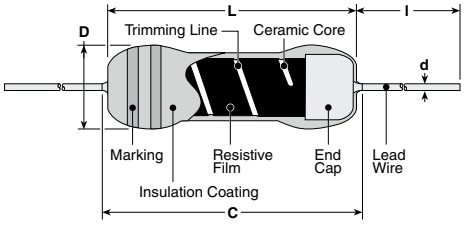
general purpose metal film leaded resistor

EU RoHS COMPLIANT

features

- Semi-precision metal film resistors
- 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
- AEC-Q200 Qualified: MF1/4, MFS1/4, MFS1/2

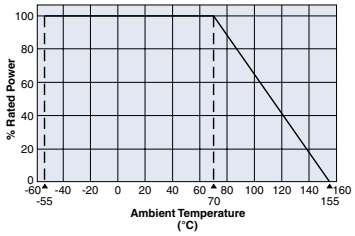
dimensions and construction



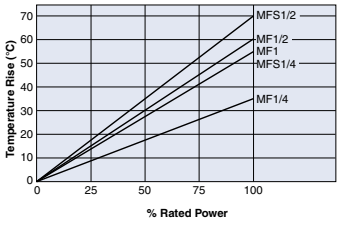
Type	Dimensions inches (mm) L (ref.)	C (max.)	D	d (nom.)	l*
MFS1/4	.126±.008 (3.2±0.2)	.133 (3.4)	.066 $^{+.007}_{-.004}$ (1.7 $^{+0.2}_{-0.1}$)	.018 (0.45)	1.10±.118 (28.0±3.0)
MF1/4	.248±.02 (6.3±0.5)	.280 (7.1)	.091±.012 (2.3±0.3)	.024 (0.6)	
MFS1/2	.248±.02 (6.3±0.5)	.280 (7.1)	.091±.012 (2.3±0.3)	.024 (0.6)	
MF1/2	.354±0.4 (9.0±1.0)	.437 (11.1)	.138±.016 (3.5±0.4)	.024 (0.6)	
MF1	.610±.02 (15.5±0.5)	.721 (18.3)	.217±.02 (5.5±0.5)	.031 (0.8)	1.50±.118 (38.0±3.0)
RK1/4	.248±.02 (6.3±0.5)	.280 (7.1)	.091±.012 (2.3±0.3)	.024 (0.6)	0.94 min. (24.0 min.)
RK1/2	.374±.04 (9.5±1.0)	.437 (11.1)	.138±.016 (3.5±0.4)	.024 (0.6)	
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)

* Lead length changes depending on taping and forming.

Derating Curve



Surface Temperature Rise



ordering information

New Part # — MF | 1/4 | L | C | T52 | R | R20 | J

Type	Power Rating	T.C.R.	Termination Material	Taping and Forming	Packaging	Nominal Resistance	Tolerance
MF MFS RK	1/4: 0.25W 1/2: 0.50W 1: 1W	E: ±25 C: ±50 D: ±100 L: ±200 G: ±250 B: ±350	C: SnCu	1/4: T26, T52, VT, VTP, VTE, MT, M, U, M10, M12.5 1/2: T26, T52, VTP, VTE, M12.5, M15 1: T521	A: Ammo R: Reel	+2%: 2 significant figures + 1 multiplier +0.5%,+1%: 3 significant figures + 1 multiplier "R" indicates decimal on value <100Ω	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) (B±0.1%) E-96	(C±0.25%) E-96	(D±0.5%) E-24 E-192	(F±1.0%) E-24 E-96	(G±2.0%) E-24	(J±5.0%) E-24	Absolute Maximum Working Voltage	Absolute Maximum Overload Voltage	Operating Temperature Range
MFS1/4C	0.25W	300V	C: ±50	—	—	49.9 - 562k	10 - 1M	—	—	250V	500V	-55°C to +155°C
MFS1/4D			D: ±100									

11/29/16

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applications and ratings (continued)

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MF1/4C	0.25W	500V	C: ±50	—	—	10- 2.21M	10 - 2.21M	—	—	250V	500V	-55°C to +155°C
MF1/4D			D: ±100	—	—							
MF1/4L			L: ±200	—	—	—	1.0 - 10	0.51 - 10				
MFS1/2C	0.50W	500V	C: ±50	—	—	10 - 1M	10 - 2.21M	10 - 2.2M	—	350V	700V	
MFS1/2D			D: ±100									
MF1/2C	0.50W	700V	C: ±50	—	—	10 - 5.05M	10 - 4.99M	—	—	350V	700V	
MF1/2D			D: ±100	—	—		10 - 5.11M					
MF1/2L			L: ±200	—	—	—	1.0 - 10	0.51 - 10Ω				
MF1C	1W	700V	C: ±50	47.5 - 1.0M	47.5 - 2.49M	10 - 5.11M	1.0 - 6.81M	—	—	350V	700V	
MF1D			D: ±100	—	—							
MF1E			E: ±25	47.5 - 1.0M	47.5 - 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	700V	D: ±100	—	—	—	5.11M - 33M	—	—	700V	1000V	
RK1/2L			L: ±200	—	—	—	—	6.2M - 33M	6.2M - 33M			
RK1/2B			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) Limit	Typical	Test Method
Resistance	Within specified tolerance	—	25°C
T.C.R.	Within specified T.C.R.	—	Room temperature, +100°C, RK: +25°C/+125°C
Overload (Short Time)	RK: ±1%, RK1/2G: ±2.5% MF: ±0.5%	RK: ±0.6%, RK1/2G: ±1% 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)

Mouser Electronics

Authorized Distributor

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KOA Speer:

MF1/4CLT52R5761F MF1/2DLT52R2372F MF1DL2430F MF1/4CLT52R47R5F MF1/4DLT52R4422F MF1/2DLT52R1331F MF1/2CLT52R2802F MF1/2CLT52R2803F MF1/4ELT52R4273B MF1/4DLT52R1911F MF1/4CLT52R1742F MF1/4DLT52R3R48F MF1/4DL6R.49F MF1/4DLT52R1913F MF1/2DLT52R1333F MF1/4CLT52R47R0F MF1/4DLT52R1912F MFS1/4DLT52R2001F MF1/4DLT52R5R60F MFS1/4DLT52R2003F MFS1/4DLT52R2002F MF1/4DLT52R6811F MF1/4DLT52R27R0F MF1/2CLT52R3572F MFS1/4DLT52R2000F MF1/4DLT52R5R62F MF1/4DLT52R27R4F MF1/4DL1183F MF1/2CLT52R3651F MF1/4CLT52R5491F MF1/4CLT52R8062F MF1/4DLT52R2R49F MF1/4DL6R81F MF1/2CL2001F MF1/4CL2002F MF1/4DL2001F MF1/4EL2002F MF1/4DL2004F MF1/2CL2004F MF1/4CL2004F MF1/4DLT52R1302F MF1/4CLT52R8061F MF1/2DL2001F MF1/2CLT52R3162F MF1/4CL2001D MF1/4CLT52R8060F MF1/4DLT52R3831F MF1/2CLT52R1742F MF1/2CL2002F MF1/2CLT52R1822F MF1/2DL2002F MF1/2CLT52R1824F MF1/4CL2000F MF1/4DCT52R3R16F MF1/4DL2000F MF1/2CLT52R1821F MF1/2CL2000F MF1/4DL2002F MF1/2CLT52R1820F MF1/4CL2001F MFS1/4DLT52R5622F MF1/2CLT52R47R5F MF1/2DL2000F MF1/2DL2004F MF1/2DLT52R1912F MF1/4CLT52R1242F MF1/4DLT52R1334F MF1/2CLT52R4750F MF1/2DLT52R1821F MF1/2DLT52R33R2F MF1/2DLT52R3323F MF1/2DLT52R3321F MF1/4DLT52R3740F MF1/2DLT52R1823F MF1/4DL1874F MF1/4DLT52R2260F MF1/4CLT52R2803F MF1/4DLT52R2262F MF1/4DLT52R3742F MF1/4CLT52R4222F MF1/2CLT52R8662F MF1/4DLT52R1330F MF1/4DLT52R2264F MF1/2DLT52R3241F MF1/2CLT52R1693F MF1/2DLT52R3322F MF1/4DLT52R2263F MF1/4DLT52R3741F MF1/4DLT52R3743F MF1/4DLT52R3902F MF1/2CLT52R1692F MF1/4CLT52R1243F MF1/2DLT52R1822F MF1/2DLT52R1824F MF1/2DLT52R3320F MF1/4DL1021F MF1/4DL2050F MF1/4DL1304F MF1/4CLT52R1103F MF1/4DLT52R3090F