



Metal Glaze Film Fixed Resistors

Performance Specification

Temperature Coefficient	≤ ±200PPM/°C
Short Time Overload	±(1.0% + 0.05Ω)Max, with no evidence of mechanical damage.
Insulation Resistance	Min. 10,000 Mega Ohm
Dielectric Withstanding Voltage	No evidence of flashover, mechanical damage, arcing or insulation breakdown.
Pulse Overload	±(2.0% + 0.05Ω)Max, with no evidence of mechanical damage.
Terminal Strength	No evidence of mechanical damage.
Resistance to Soldering Heat	±(1.0% + 0.05Ω)Max, with no evidence of mechanical damage.
Solderability	Min. 95% coverage.
Resistance to Solvent	No deterioration of protective coating and markings.
Temperature Cycling	±(1.0% + 0.05Ω)Max, with no evidence of mechanical damage.
Humidity (Steady State)	±(2.0% + 0.05Ω)Max, with no evidence of mechanical damage.
Load Life in Humidity	±(5.0% + 0.05Ω)Max, with no evidence of mechanical damage.
Load Life	±(5.0% + 0.05Ω)Max, with no evidence of mechanical damage.
Surge Withstanding Voltage	±(20.0% + 0.05Ω)Max, with no evidence of mechanical damage.

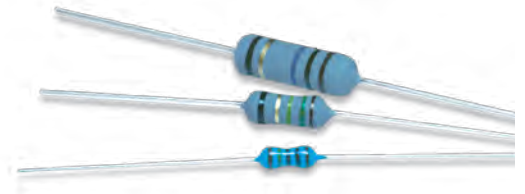
Ordering Procedure: Ex.: MGR 1W, +/-5%, 470KΩ, T/B-1000, Non-Flame

M	G	R	F	1	W	J	0	4	7	4	A	1	0
Type: MGR = Metal Glaze Film								Resistance Value: • E-24 series: 1 st digit is "0" 2 nd & 3 rd digits are the significant figures of the resistance 4 th indicates the number of zeros: "J" ~ 0.1, "K" ~ 0.01 Ex.: 4.7Ω ~ 47J, 4.7KΩ ~ 472					
Feature: 0 = UL epoxy for 1/4W only F = UL Non-Flame for 1/2W, 1W, 2W		Wattage: Normal: W4 = 1/4W (UL Epoxy Paint) Only W2 = 1/2W (UL Non-Flame Paint) 1W = 1W (UL Non-Flame Paint) 2W = 2W (UL Non-Flame Paint)						• E-96 series: 1 st to 3 rd digits are the significant figures of the resistance and the 4 th digit indicates the number of zeros. Ex.: 1.33KΩ = 1331					
		Small: S2 = 1/2WS 1S = 1WS 2S = 2WS 3S = 3WS						Packing Type: A = Tape/Box T = Tape/Reel B = Bulk/Box P = Tape/Box of PT-26mm					
		Extra small: U2 = 1/2WSS 1U = 1WSS 2U = 2WSS 3U = 3WSS						Packing Qty: 1 = 1,000 pcs. 4 = 4,000 pcs. 5 = 5,000 pcs. A = 500 pcs. B = 2,500 pcs. 0 = Bulk/Box					
						Tolerance: F = ±1% G = ±2% J = ±5%						Additional Information: 0 = PT-52mm, Standard lead wire for Bulk/Box 8 = PT-58mm 9 = PT-64mm	

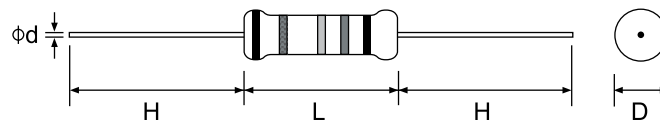
Metal Glaze Film Fixed Resistors

Features

- Small in dimension and broad range in high resistance
- Metal glaze resistor elements provide high stable performance against environmental conditions and overload
- Excellent in absorption of electric shock (Pulse, Surge Voltage)
- Approved to IEC 60065 safety requirements (VDE)
(For 1/2W: 1M ~ 100M, 1W and 2W: 100K ~ 100M)
- Recognized by UL 1676 for 1/2W, 1W and 2W normal size resistance value 960K ~ 12M



Standard : 2% ,5% ,10% -- E-24 series
1% -- E-96 series



Part No.	Style	Power Rating at 70°C	Dimension (mm)					Std Packing Qty
			D Max	L Max	d±0.05	H±3	PT	
Normal Size								
MGR0W4	MGR 25	1/4W (0.25W)	2.7	7.0	0.60	28	52	4,000
MGRFW2	MGR 50	1/2W (0.50W)	3.8	10.0	0.60	28	52	1,000
MGRF1W	MGR 100	1W	5.2	13.0	0.75	25	52	1,000
MGRF2W	MGR 200	2W	6.0	17.0	0.75	28	64	500
Small Size / Ultra Small Size								
MGR0U2	MGR-50-SS	1/2W	2.7	7.0	0.60	28	52	4,000
MGRFS2	MGR-50-S	1/2W	3.3	9.5	0.60	28	52	1,000
MGRF1U	MGR-100-SS	1W	4.0	10.0	0.60	28	52	1,000
MGRF1S	MGR-100-S	1W	4.7	11.0	0.70	28	52	1,000
MGRF2U	MGR-200-SS	2W	4.7	13.0	0.75	28	52	1,000
MGRF2S	MGR-200-S	2W	5.2	13.0	0.75	28	52	1,000
MGRF3U	MGR-300-SS	3W	5.2	13.0	0.75	28	52	1,000
MGRF3S	MGR-300-S	3W	6.0	17.0	0.75	28	64	500

Metal Glaze Film Fixed Resistors

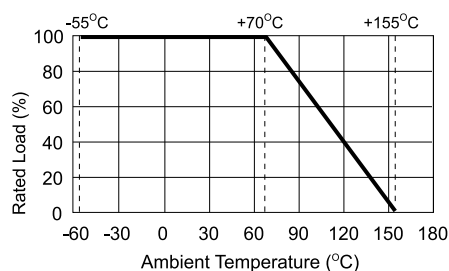
Surge Characteristics

Part No.	Style	Max Working Voltage	Max Overload Voltage	Dielectric Withstanding Voltage	Surge Withstanding Voltage	Resistance Range
Normal Size						
MGR0W4	MGR 25	1,600V	2,000V	700V	100KΩ~100MΩ: 3,000V	±1%: 100KΩ ~ 1MΩ ±5%: 1KΩ ~ 100MΩ
MGRFW2	MGR 50	3,500V	4,000V	700V	100KΩ~360KΩ: 5,000V 361KΩ~1MΩ: 7,000V 1.1MΩ~100MΩ: 10,000V	±1%: 100KΩ ~ 1MΩ ±5%: 1KΩ ~ 100MΩ
MGRF1W	MGR 100	3,500V	4,000V	1,000V	100KΩ~ 100MΩ: 10,000V	±1%: 100KΩ ~ 1MΩ ±5%: 1KΩ ~ 100MΩ
MGRF2W	MGR 200	3,500V	4,000V	1,000V	100KΩ~ 100MΩ: 10,000V	±1%: 100KΩ ~ 1MΩ ±5%: 1KΩ ~ 100MΩ
Small Size / Ultra Small Size						
MGR0U2	MGR-50-SS	500V	700V	500V	100KΩ~1MΩ: 3,000V 1.1MΩ~6.2MΩ: 4,000V ≥~6.8MΩ: 10,000V	±1%: 100KΩ ~ 1MΩ ±5%: 1KΩ ~ 33MΩ ±10%: 1KΩ ~ 33MΩ
MGRFS2	MGR-50-S	500V	700V	500V		±1%: 100KΩ ~ 1MΩ ±5%: 1KΩ ~ 33MΩ ±10%: 1KΩ ~ 33MΩ
MGRF1U	MGR-100-SS	700V	1,000V	700V	100KΩ~1MΩ: 4,000V 1.1MΩ~6.2MΩ: 5,000V ≥~6.8MΩ: 10,000V	±1%: 100KΩ ~ 1MΩ ±5%: 1KΩ ~ 33MΩ ±10%: 1KΩ ~ 33MΩ
MGRF1S	MGR-100-S	700V	1,000V	700V		±1%: 100KΩ ~ 1MΩ ±5%: 1KΩ ~ 33MΩ ±10%: 1KΩ ~ 33MΩ
MGRF2U	MGR-200-SS	1,000V	1,400V	700V	100KΩ~1MΩ: 5,000V 1.1MΩ~6.2MΩ: 6,000V ≥~6.8MΩ: 10,000V	±1%: 100KΩ ~ 1MΩ ±5%: 1KΩ ~ 33MΩ ±10%: 1KΩ ~ 33MΩ
MGRF2S	MGR-200-S	1,000V	1,400V	700V		±1%: 100KΩ ~ 1MΩ ±5%: 1KΩ ~ 33MΩ ±10%: 1KΩ ~ 33MΩ
MGRF3U	MGR-300-SS	1,000V	1,400V	700V	100KΩ~1MΩ: 5,000V 1.1MΩ~6.2MΩ: 6,000V ≥~6.8MΩ: 10,000V	±1%: 100KΩ ~ 1MΩ ±5%: 1KΩ ~ 33MΩ ±10%: 1KΩ ~ 33MΩ
MGRF3S	MGR-300-S	1,000V	1,400V	700V	100KΩ~1MΩ: 8,000V 1.1MΩ~6.2MΩ: 9,000V ≥~6.8MΩ: 10,000V	±1%: 100KΩ ~ 1MΩ ±5%: 1KΩ ~ 33MΩ ±10%: 1KΩ ~ 33MΩ

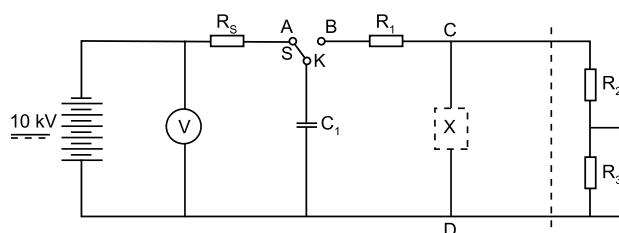
Surge Withstanding Voltage: IEC 60065

- Discharge test: 3KV ~ <10KV, 0.01μF capacitor discharge pulse, 10 times (1 pulse: 2.5 sec "ON", 2.5 sec "OFF")
- Discharge test: ≥10KV, 0.001μF (1nF) capacitor discharge pulse, 50 times (1 pulse: 2.5 sec "ON", 2.5 sec "OFF")

Derating Curve



Surge Test - Test Circuit



Note: C1 = 0.01μF <10,000V C1 = 0.001μF (1nF) ≥10,000V
R1 = 1KΩ R2 = 100MΩ R3 = 0.1MΩ R3 = 15MΩ