

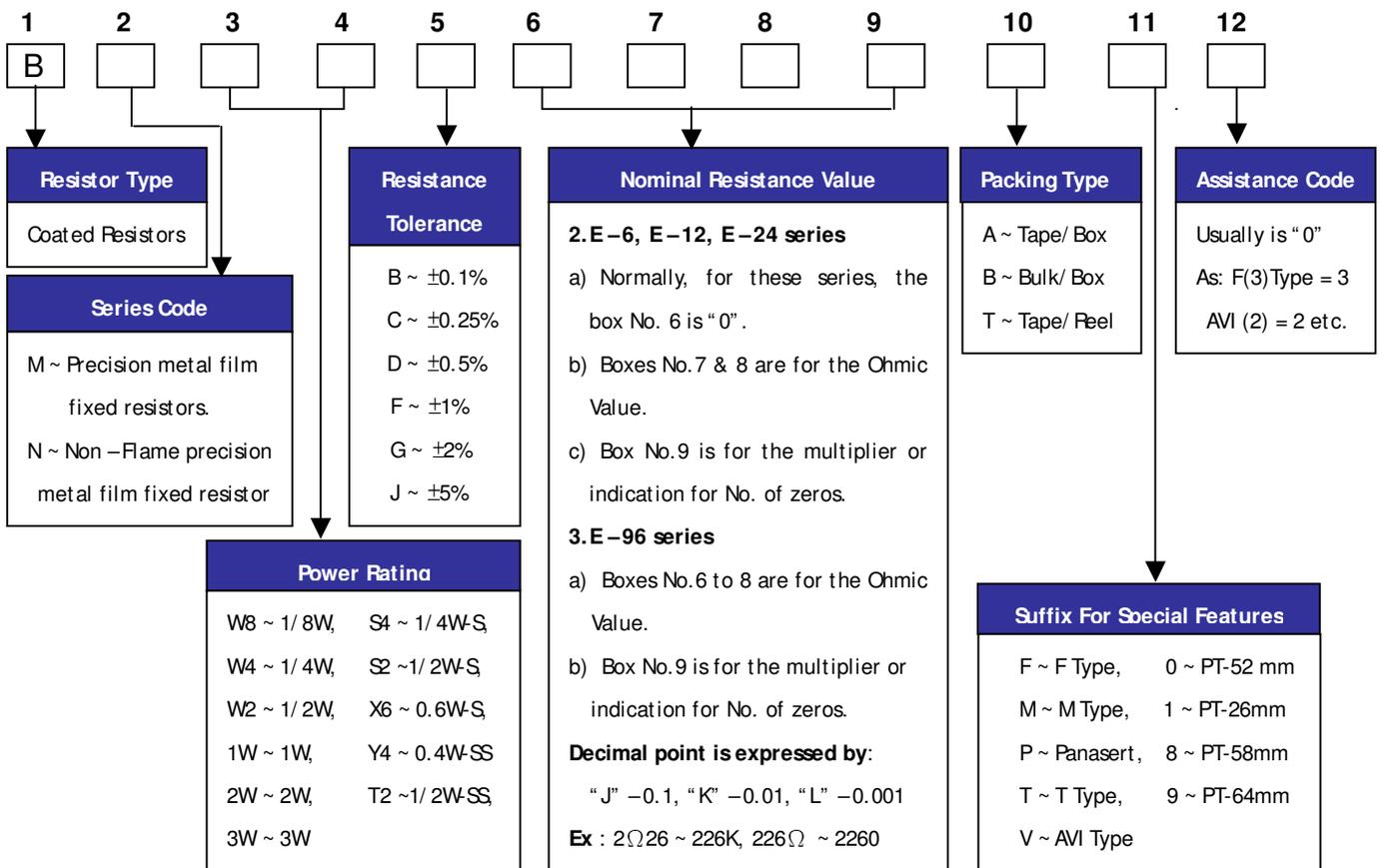
ROYAL OHM

Precision Metal Film Fixed Resistors

Materials & Features

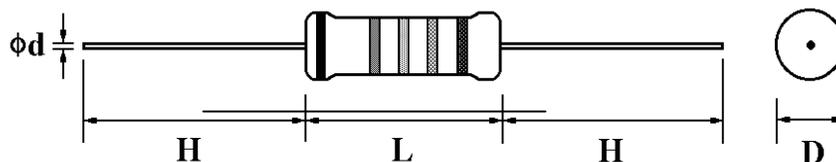
- ❑ EIA standard color-coding
- ❑ Flame retardant type available
- ❑ Low noise & voltage coefficient
- ❑ Low temperature coefficient range
- ❑ Wide precision range in small package
- ❑ Too low or too high ohmic value can be supplied on a case-to-case basis
- ❑ Nichrome resistor element provides stable performance in various environments
- ❑ Multiple epoxy coating on vacuum-deposited metal film provides superior moisture protection

Explanation of Part Number and Ordering Procedure



Note: Special T.C.R. requirements can be supplied on a case-to-case basis. Please indicate when ordering.

Dimension



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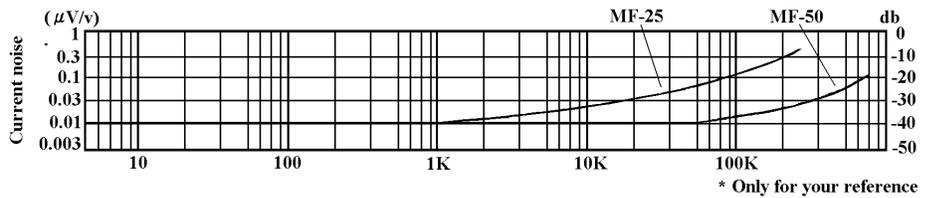
Normal Size							Small Size						
Part No.	Style	Power Rating at 70°C	Dimension (mm)				Part No.	Style	Power Rating at 70°C	Dimension (mm)			
			D Max.	L Max.	d ^{+0.02} _{-0.05}	H ± 3				D Max.	L Max.	d ^{+0.02} _{-0.05}	H ± 3
BMW8	MF-12	1/8W (0.125W)	1.85	3.5	0.5	28	BMS4	MF-25-S	1/4W (0.25W)	1.85	3.5	0.5	28
BMW4	MF-25	1/4W (0.25W)	2.5	6.8	0.6	28	BNY4	MF-40-SS	0.4W	1.9	3.7	0.5	28
BMW2	MF-50	1/2W (0.5W)	3.5	10.0	0.6	28	BMS2	MF-50-S	1/2W (0.5W)	3.0	9.0	0.6	28
BM1W	MF-100	1W	5.0	12.0	0.8	28	BNT2	MF-50-SS	1/2W (0.5W)	2.5	6.8	0.6	28
BM2W	MF-200	2W	5.5	16.0	0.8	28	BMX6	MF-60-S	0.6W	2.5	6.8	0.6	28
BM3W	MF-300	3W	6.5	17.5	0.8	28							

General Specification

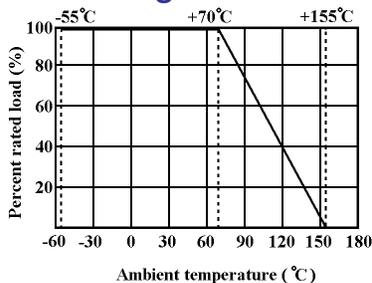
Part No.	Style	Dielectric Withstanding V.	Max. Working Voltage	Max. Overload Voltage	Resistance Tolerance	T.C.R.	Resistance Range	Special Order		
								Resistance Tolerance	T.C.R.	Resistance Range
BMW8	MF-12	400V	200V	400V	± 5%	± 200 PPM/°C	1Ω ~ 1MΩ	± 0.25%	± 15PPM/°C	51.1Ω~200KΩ
BMS4	MF-25-S				± 2%	± 100 PPM/°C	10Ω ~ 1MΩ	± 0.5%	± 25PPM/°C	51.1Ω~511KΩ
BNY4	MF-40-SS	200 V	200 V	400 V	± 1%	± 50 PPM/°C	10Ω ~ 1MΩ	± 0.5%	± 50PPM/°C	51.1Ω~511KΩ
BMW4	MF-25	500V	250V	500V	± 5%	± 200 PPM/°C	1Ω ~ 1MΩ	± 0.1%	± 15PPM/°C	100Ω~100KΩ
BMX6	MF-60-S				± 2%	± 100 PPM/°C	10Ω ~ 1MΩ	± 0.25%	± 25PPM/°C	51.1Ω~330KΩ
BNT2	MF-50-SS	250 V	250 V	500 V	± 1%	± 50 PPM/°C	10Ω ~ 1MΩ	± 0.5%	± 50PPM/°C	10Ω~1MΩ
BMW2	MF-50	700V	350V	700V	± 5%	± 200 PPM/°C	1Ω ~ 1MΩ	± 0.1%	± 15PPM/°C	100Ω~330KΩ
BMS2	MF-50-S				± 2%	± 100 PPM/°C	10Ω ~ 1MΩ	± 0.25%	± 25PPM/°C	51.1Ω~511KΩ
					± 1%	± 50 PPM/°C	10Ω ~ 1MΩ	± 0.5%	± 50PPM/°C	10Ω~1MΩ
BM1W	MF-100	1000V	500V	1000V	± 5%	± 200 PPM/°C	10Ω ~ 1MΩ	± 0.1%	± 15PPM/°C	100Ω~330KΩ
BM2W	MF-200				± 2%	± 100 PPM/°C	51.1Ω ~ 1MΩ	± 0.25%	± 25PPM/°C	51.1Ω~511KΩ
BM3W	MF-300				± 1%	± 50 PPM/°C	51.1Ω ~ 1MΩ	± 0.5%	± 50PPM/°C	51.1Ω~1MΩ

Note: MF-xx-ss is Non-Flame coating.

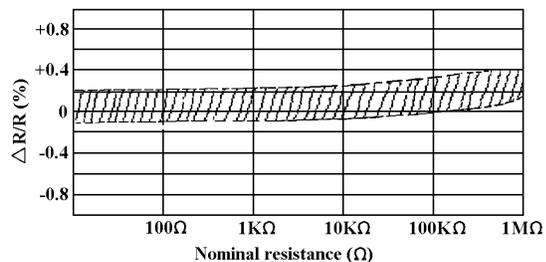
Current Noise Level



Derating Curve



Load Life



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Performance Specifications

Characteristics	Test Methods	Limits	
Temperature coefficient JIS- C - 5202 5.2	Natural resistance change per temp. degree centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6$ (PPM/°C) R ₁ : Resistance value at room temperature (t ₁) R ₂ : Resistance value at room temp. plus 100°C (t ₂)	Within the temperature coefficient specified below	
		Max. T.C.R. ± 15 PPM/°C ± 100 PPM/°C ± 25 PPM/°C ± 200 PPM/°C ± 50 PPM/°C	
Dielectric withstanding voltage JIS- C - 5202 5.7	Resistors shall be clamped in the trough of a 90° metallic V-block and shall be tested at AC potential respectively specified in the above list for 60 + 10 / - 0 seconds.	No evidence of flashover mechanical damage, arcing or insulation breaks down.	
Temperature cycling JIS- C - 5202 7.4	Resistance change after continuous five cycles for duty cycle specified		
	Step	Temperature	Time
	1	-55°C ± 3°C	30 mins
	2	R _{room} temp.	10 - 15 mins
	3	+155°C ± 3°C	30 mins
4	R _{room} temp.	10 - 15 mins	
Resistance change rate is ± (1%+ 0.05Ω). No evidence of mechanical damage.			
Short - time overload JIS- C - 5202 5.5	Permanent resistance change after the application of a potential of 2.5 times RCWW for 5 seconds	Resistance change rate is ± (0.5%+ 0.05Ω). No evidence of mechanical damage.	
Pulse overload JIS- C - 5202 5.8	Resistance change after 10,000cycles (1 second "on", 25 seconds "off") at 4 times RCWW.	Resistance change rate is ± (1%+ 0.05Ω). No evidence of mechanical damage.	
Load life in humidity JIS- C - 5202 7.9	Resistance change after 1,000 hours (1.5 hours "on", 0.5 hour "off") at RCWW in a humidity test chamber controlled at 40°C ± 2°C and 90 to 95%relative humidity.	Resistance value	$\Delta R/R$
		Normal type	± 1.5%
		Non-Flame type	± 5%
Load life JIS- C - 5202 7.10	Permanent resistance change after 1,000 hours operating at RCWW with duty cycle of 1.5 hours "on", 0.5 hour "off" at 70°C ± 2°C ambient	Resistance value	$\Delta R/R$
		Normal type	± 1.5%
		Non-Flame type	± 5%
Terminal strength JIS- C - 5202 6.1	Direct load: Resistance to a 2.5 kgs direct load for 10 seconds in the direction of the longitudinal axis of the terminal leads. Twist test: Terminal leads shall be bent through 90° at a point of about 6mm from the body of the resistor and shall be rotated through 360° about the original axis of the bent terminal in alternating direction for a total of 3 rotations.	No evidence of mechanical damage.	
Resistance to soldering heat JIS- C - 5202 6.4	Permanent resistance change when leads immersed to 3.2 - 4.8mm from the body in 350°C ± 10°C solder for 3 ± 0.5 seconds	Resistance change rate is ± (1%+ 0.05Ω). No evidence of mechanical damage.	
Solderability JIS- C - 5202 6.5	The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Test temp. of solder: 235°C ± 5°C Dwell time in solder: 3 +0.5/ -0 seconds	95%coverage Min.	
Resistance to solvent JIS- C - 5202 6.9	Specimens shall be immersed in a bath of trichroethane completely for 3 mins with ultrasonic.	No deterioration of protective coating and markings.	

*RCWW= Rated Continuous Working Voltage = $\sqrt{\text{Rated Power} \times \text{Resistance Value}}$