

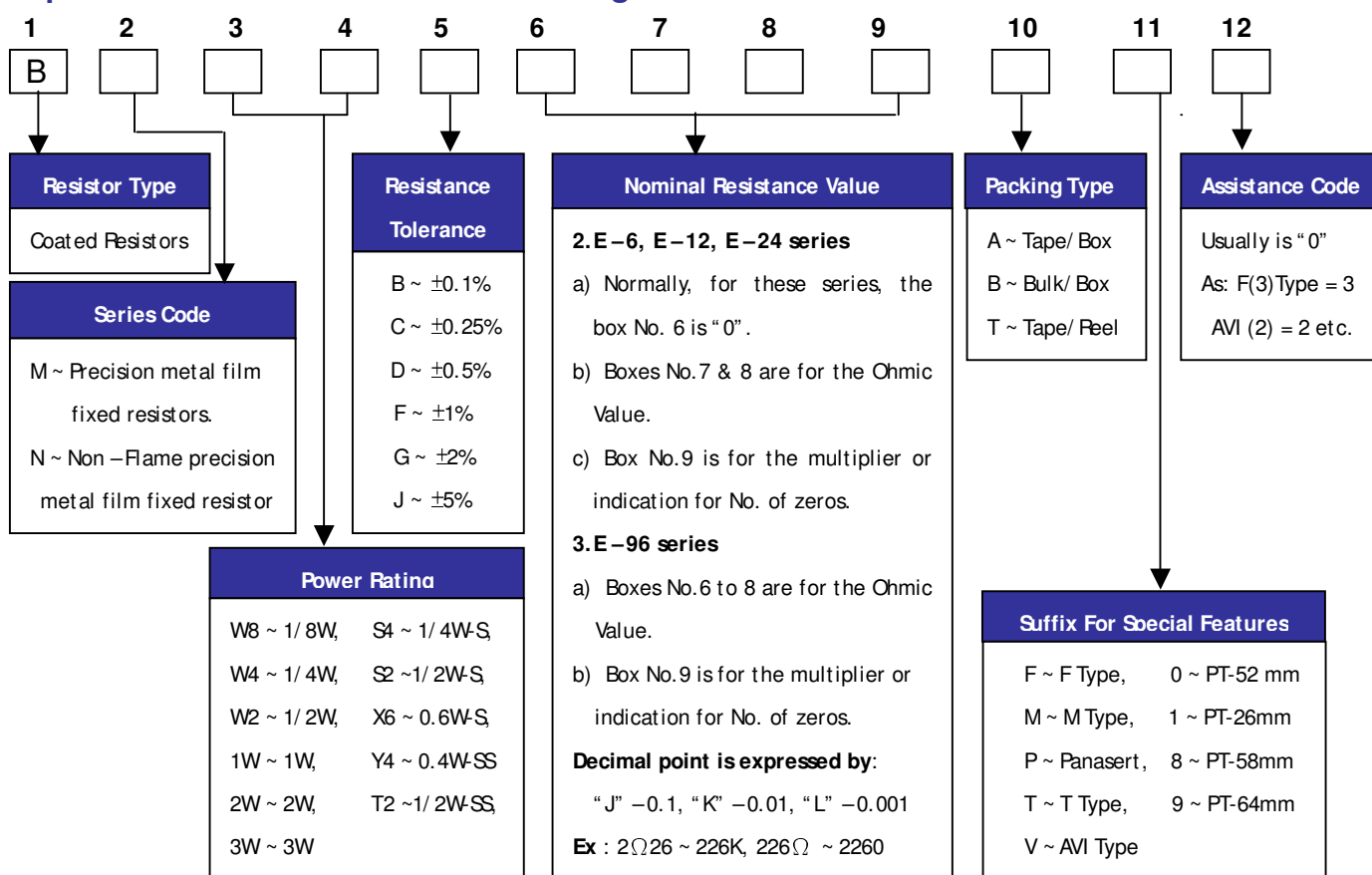
ROYAL OHM

Precision Metal Film Fixed Resistors

Materials & Features

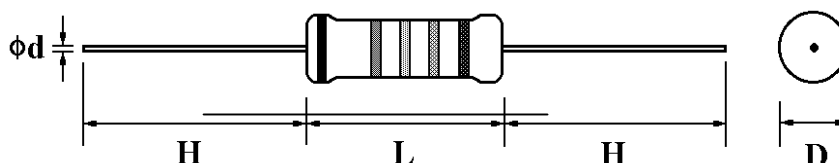
- ❑ EIA standard color-coding
- ❑ Flame retardant type available
- ❑ Low noise & voltage coefficient
- ❑ Low temperature coefficient range
- ❑ Wide precision range in small package
- ❑ Too low or too high ohmic value can be supplied on a case-to-case basis
- ❑ Nichrome resistor element provides stable 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



ROYAL OHM

Precision Metal Film Fixed Resistors

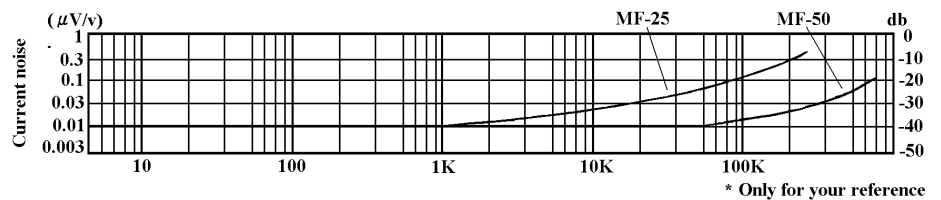
Normal Size							Small Size						
Part No.	Style	Power Rating at 70°C	Dimension (mm)				Part No.	Style	Power Rating at 70°C	Dimension (mm)			
			D Max.	L Max.	d $\begin{smallmatrix} +0.02 \\ -0.05 \end{smallmatrix}$	H ± 3				D Max.	L Max.	d $\begin{smallmatrix} +0.02 \\ -0.05 \end{smallmatrix}$	H ± 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

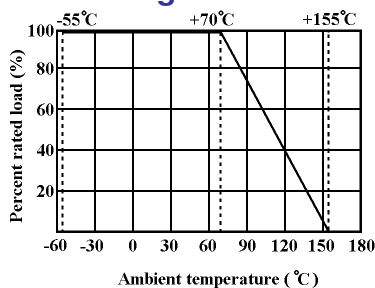
Part No.	Style	Dielectric With -standing V.	Max. Working Voltage	Max. Overload Voltage	Resistance Tolerance	T.C.R.	Resistance Range	Special Order		
								Resistance Tolerance	T.C.R.	Resistance Range
BMW8	MF-12	400V	200V	400V	$\pm 5\%$	$\pm 200 \text{ PPM}/^\circ\text{C}$	$1\Omega \sim 1\text{M}\Omega$	$\pm 0.25\%$	$\pm 15 \text{ PPM}/^\circ\text{C}$	$51.1\Omega \sim 200\text{K}\Omega$
BMS4	MF-25-S				$\pm 2\%$	$\pm 100 \text{ PPM}/^\circ\text{C}$	$10\Omega \sim 1\text{M}\Omega$	$\pm 0.5\%$	$\pm 25 \text{ PPM}/^\circ\text{C}$	$51.1\Omega \sim 511\text{K}\Omega$
BNY4	MF-40-SS				$\pm 1\%$	$\pm 50 \text{ PPM}/^\circ\text{C}$	$10\Omega \sim 1\text{M}\Omega$		$\pm 50 \text{ PPM}/^\circ\text{C}$	
BMW4	MF-25	500V	250V	500V	$\pm 5\%$	$\pm 200 \text{ PPM}/^\circ\text{C}$	$1\Omega \sim 1\text{M}\Omega$	$\pm 0.1\%$	$\pm 15 \text{ PPM}/^\circ\text{C}$	$100\Omega \sim 100\text{K}\Omega$
BMX6	MF-60-S				$\pm 2\%$	$\pm 100 \text{ PPM}/^\circ\text{C}$	$10\Omega \sim 1\text{M}\Omega$	$\pm 0.25\%$	$\pm 25 \text{ PPM}/^\circ\text{C}$	$51.1\Omega \sim 330\text{K}\Omega$
BNT2	MF-50-SS				$\pm 1\%$	$\pm 50 \text{ PPM}/^\circ\text{C}$	$10\Omega \sim 1\text{M}\Omega$	$\pm 0.5\%$	$\pm 50 \text{ PPM}/^\circ\text{C}$	$10\Omega \sim 1\text{M}\Omega$
BMW2	MF-50	700V	350V	700V	$\pm 5\%$	$\pm 200 \text{ PPM}/^\circ\text{C}$	$1\Omega \sim 1\text{M}\Omega$	$\pm 0.1\%$	$\pm 15 \text{ PPM}/^\circ\text{C}$	$100\Omega \sim 330\text{K}\Omega$
BMS2	MF-50-S				$\pm 2\%$	$\pm 100 \text{ PPM}/^\circ\text{C}$	$10\Omega \sim 1\text{M}\Omega$	$\pm 0.25\%$	$\pm 25 \text{ PPM}/^\circ\text{C}$	$51.1\Omega \sim 511\text{K}\Omega$
					$\pm 1\%$	$\pm 50 \text{ PPM}/^\circ\text{C}$	$10\Omega \sim 1\text{M}\Omega$	$\pm 0.5\%$	$\pm 50 \text{ PPM}/^\circ\text{C}$	$10\Omega \sim 1\text{M}\Omega$
BM1W	MF-100	1000V	500V	1000V	$\pm 5\%$	$\pm 200 \text{ PPM}/^\circ\text{C}$	$10\Omega \sim 1\text{M}\Omega$	$\pm 0.1\%$	$\pm 15 \text{ PPM}/^\circ\text{C}$	$100\Omega \sim 330\text{K}\Omega$
BM2W	MF-200				$\pm 2\%$	$\pm 100 \text{ PPM}/^\circ\text{C}$	$51.1\Omega \sim 1\text{M}\Omega$	$\pm 0.25\%$	$\pm 25 \text{ PPM}/^\circ\text{C}$	$51.1\Omega \sim 511\text{K}\Omega$
BM3W	MF-300				$\pm 1\%$	$\pm 50 \text{ PPM}/^\circ\text{C}$	$51.1\Omega \sim 1\text{M}\Omega$	$\pm 0.5\%$	$\pm 50 \text{ PPM}/^\circ\text{C}$	$51.1\Omega \sim 1\text{M}\Omega$

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

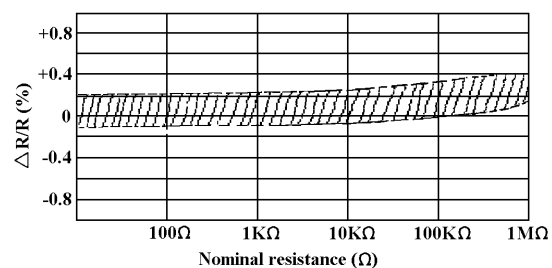
Current Noise Level



Derating Curve



Load Life



ROYAL OHM

Precision Metal Film Fixed Resistors

Performance Specifications

Characteristics	Test Methods	Limits
Temperature coefficient JIS- C - 5202 5.2	Natural resistance change per temp. degree centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM/}^\circ\text{C)}$ 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.
		$\pm 15 \text{ PPM/}^\circ\text{C}$ $\pm 100 \text{ PPM/}^\circ\text{C}$ $\pm 25 \text{ PPM/}^\circ\text{C}$ $\pm 200 \text{ PPM/}^\circ\text{C}$ $\pm 50 \text{ PPM/}^\circ\text{C}$
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
	1	-55°C ± 3°C
	2	R _{oom} temp.
	3	+155°C ± 3°C
	4	R _{oom} temp.
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 = $\sqrt{\text{Rated Power} \times \text{Resistance Value}}$