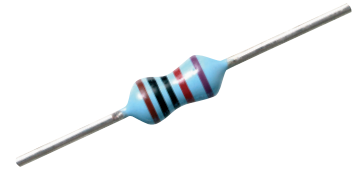


# MRA Precision Metal Film Resistors **ARCOL**

Europe's No 1 selling axial thin film high precision resistor. Stable films are sputtered on to high purity alumina rods, then covered in tough epoxy to protect from any environmental extremes

- Power dissipation up to 2W
- Value range from R1 to 10M
- Precision tolerance down to  $\pm 0.05\%$
- Low TCR  $\pm 5\text{ppm}/^\circ\text{C}$
- RoHS Compliant

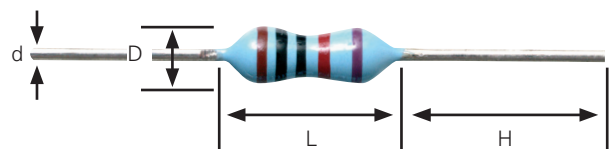


## Characteristics

Tolerance (Code):	$\pm 0.05\%$ , $\pm 0.1\%$ (B), $\pm 0.25\%$ (C), $\pm 0.5\%$ (D), $\pm 1\%$ (F)
Operating temperature:	$-55^\circ\text{C}$ to $+155^\circ\text{C}$
Temperature coefficient:	$\pm 5\text{ppm}/^\circ\text{C}$ , $\pm 10\text{ppm}/^\circ\text{C}$ , $\pm 15\text{ppm}/^\circ\text{C}$ , $\pm 25\text{ppm}/^\circ\text{C}$ , $\pm 50\text{ppm}/^\circ\text{C}$ , $\pm 100\text{ppm}/^\circ\text{C}$
Overload:	$\pm 0.25\%$ rated continuous working voltage $=\sqrt{(P*R)*2.5}$ for 5 seconds
Endurance:	$\pm 0.2\%$ , $70\pm 2^\circ\text{C}$ , rated continuous working voltage for 1000 hours with 1.5 hrs ON and 0.5 hrs OFF
Damp heat with load:	$\pm 0.3\%$ , $40\pm 2^\circ\text{C}$ , 90 - 95% RH, rated continuous working voltage for 1000 hours with 1.5 hrs ON and 0.5 hrs OFF
Solderability:	90% min coverage, $245\pm 5^\circ\text{C}$ for 3 seconds
Temperature coefficient:	by type, resistance value $25^\circ\text{C}$ and $100^\circ\text{C}$
Pulse overload:	$\pm 0.75\%$ , 4 times rated continuous working voltage $=\sqrt{(P*R)}$ for 10,000 cycles with 1 second ON and 25 seconds OFF
Terminal strength:	Tensile $\geq 2.5\text{kg}$ , direct load for 10 seconds in the direction of the terminal leads
Shelf life:	$\Delta R \pm 0.1\%$ , 12 months at $25^\circ\text{C}\pm 3^\circ\text{C}$ , 80% RH maximum

## Dimensions (mm)

Type	L	D	H	d $\pm 0.03$
MRA0104	$3.3 +0.7/-0.2$	$1.8 \pm 0.3$	$29 \pm 2.0$	0.45
MRA0207	$6.3 \pm 0.5$	$2.3 \pm 0.3$	$28 \pm 2.0$	0.55
MRA0309	$9.0 \pm 0.5$	$3.2 \pm 0.5$	$26 \pm 2.0$	0.65
MRA0412	$11.5 \pm 1.0$	$4.5 \pm 0.5$	$35 \pm 2.0$	0.78
MRA0516	$15.5 \pm 1.0$	$5.0 \pm 0.5$	$32 \pm 2.0$	0.78

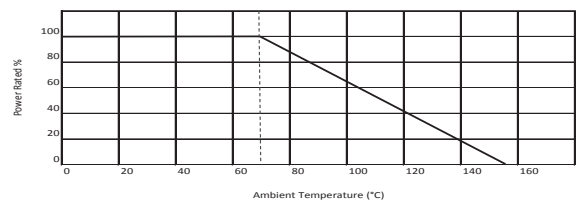


## Ordering Procedure

**Standard Resistor:** Series, Resistance Value, Tolerance, TCR, Packaging (TA: Taped Ammo, TR: Taped Reel)

e.g.: MRA0104 10R B 15PPM TA

## Derating Curve



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## Electrical Specifications

Type	Wattage	Max. operating voltage	Resistance Range / Tolerance / TCR (ppm/°C)									
			±0.05%	TCR	±0.1%	TCR	±0.25%	TCR	±0.5%	TCR	±1%	TCR
MRA0104	1/8W	200V			10R - 1M	±15ppm ±25ppm ±50 ppm	10R - 1M	±15ppm ±25ppm ±50 ppm	10R - 4M99	±15ppm	10R - 4M99	±15ppm
			1R - 1M	±100ppm			10R - 10M	±25ppm ±50 ppm	10R - 10M	±25ppm ±50 ppm		
							1R - 10M	±100ppm	R1 - 10M	±100ppm		
MRA0207	1/4W	250V	10R - 1M	±5ppm ±10ppm ±15ppm ±25ppm	10R - 1M	±5ppm ±10ppm ±15ppm ±25ppm ±50ppm	10R - 1M	±5ppm ±10ppm ±15ppm ±25ppm ±50 ppm	10R - 1M	±5ppm ±10ppm	10R - 1M	±10ppm
							1R - 1M	±100ppm	10R - 10M	±15ppm ±25ppm ±50 ppm	10R - 10M	±15ppm ±25ppm ±50 ppm
									1R - 10M	±100ppm	R1 - 10M	±100ppm
MRA0309	1/2W	350V	10R - 1M	±5ppm ±10ppm ±15ppm ±25ppm	10R - 1M	±5ppm ±10ppm ±15ppm ±25ppm ±50ppm	10R - 1M	±5ppm ±10ppm ±15ppm ±25ppm ±50 ppm	10R - 1M	±5ppm ±10ppm	10R - 1M	±10ppm
							1R - 1M	±100ppm	10R - 10M	±15ppm ±25ppm ±50 ppm	10R - 10M	±15ppm ±25ppm ±50 ppm
									1R - 10M	±100ppm	R1 - 10M	±100ppm
MRA0412	1W	450V			10R - 1M	±15ppm ±25ppm ±50ppm	10R - 1M	±15ppm ±25ppm ±50ppm	10R - 4M99	±15ppm	10R - 4M99	±15ppm
			1R - 1M	±100ppm			10R - 10M	±25ppm ±50 ppm	10R - 10M	±25ppm ±50 ppm		
							1R - 10M	±100ppm	R1 - 10M	±100ppm		
MRA0516	2W	500V			10R - 1M	±15ppm ±25ppm ±50ppm	10R - 1M	±15ppm ±25ppm ±50ppm	10R - 4M99	±15ppm	10R - 4M99	±15ppm
			1R - 1M	±100ppm			10R - 10M	±25ppm ±50 ppm	10R - 10M	±25ppm ±50 ppm		
							1R - 10M	±100ppm	R1 - 10M	±100ppm		

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