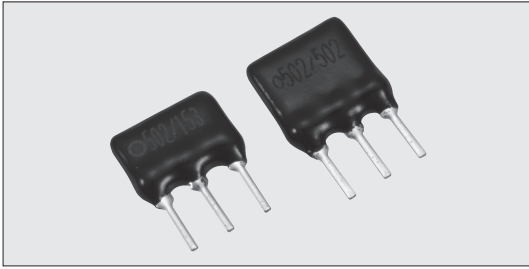
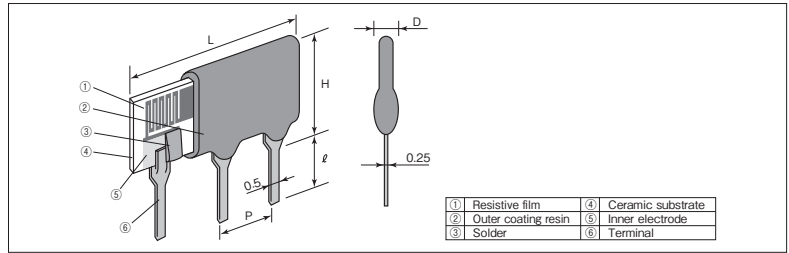


MRP Precision Metal Film Resistor Networks (Balance Resistors)



Coating color: Black

Construction



Features

- Relative resistance tolerance 0.025% is available.
- Relative T.C.R. tracking $2 \times 10^{-6}/K$ is available.
- Excellent in stability and electrical characteristics.
- Products meet EU-RoHS requirements.

Dimensions

Type	Dimensions (mm)					Weight (g) (1000pcs)
	L max.	H max.	D max.	P	ℓ^{*1}	
MRPL03	8.5	6.5	2.5	2.54±0.2	3±0.5	183
MRPA03		8.5				256

*1 Length of lead frame (ℓ): 4.5±0.5mm is also available.

Applications

- Thermo Controllers, Oscilloscopes, Recorders, Medical Equipment

Type Designation

MRP	L03	E	A	D	103/103	B	A
Product Code	Style	Absolute T.C.R. ($\times 10^{-6}/K$)	T.C.R. Tracking ($\times 10^{-6}/K$)	Terminal Surface Material	Nominal Resistance R1/R2	Absolute Resistance Tolerance	Resistance Ratio Tolerance
	L03 A03	E : ±25 C : ±50	A : 2 Y : 5 T : 10	D : SnAgCu	3 digits/3 digits	B : ±0.1% C : ±0.25% D : ±0.5% F : ±1%	E : 0.025% A : 0.05% B : 0.1% C : 0.25% D : 0.5%

*Resistance combination of R1,R2 is standardized to 200/20k·1k/1k·1k/2k·1k/4k·1k/9k·1k/10k·1k/20k·10k/10k·10k/100k·50k/50k·100k/100k. Refer to us for combination of different kinds of resistance except those mentioned above. Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

Ratings

Type	Power Rating		Absolute T.C.R. ($\times 10^{-6}/K$)	T.C.R. Tracking ($\times 10^{-6}/K$)	Resistance Range (Ω)	Resistance Tolerance	Max. Working Voltage	Max. Overload Voltage	Resistance Ratio
	Element	Package							
MRPL03	100mW	200mW	E : ±25 C : ±50	A : 2(R2/R1≤10) Y : 5 T : 10	50~100k	B : ±0.1% C : ±0.25% D : ±0.5% F : ±1%	100V	200V	See below table
MRPA03									

Absolute Resistance Tolerance	Resistance Ratio Tolerance					
	B : ±0.1%	E : 0.025%	A : 0.05%	B : 0.1%	C : 0.25%	D : 0.5%
B : ±0.1%	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ	—	—
C : ±0.25%	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ	—
D : ±0.5%	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ
F : ±1%	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ	50Ω~100kΩ
R1/R2 Relative Resistance Ratio	100max.	100max.	100max.	150max.	150max.	150max.

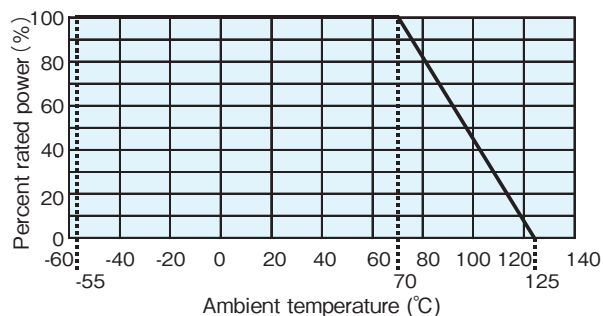
Rated Ambient Temperature : +70°C

Operating Temperature Range : -55°C~+125°C

Rated voltage= $\sqrt{\text{Power Rating} \times \text{Resistance value}}$ or Max. working voltage, whichever is lower.

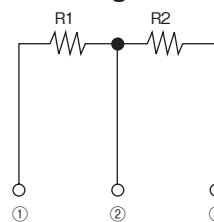
*Refer to us for manufacturing smaller values of absolute T.C.R..

Derating Curve



For resistors operated at an ambient temperature of 70°C or higher, the power shall be derated in accordance with the above derating curve.

Equivalent Circuit Diagram



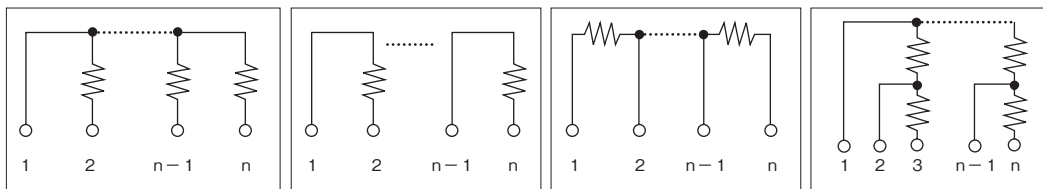
The left side terminal on the marked surface is Pin No.1.

Performance

Test Items	Performance Requirements $\Delta R \pm (\% + 0.05\Omega)$	Test Methods
Resistance	Within specified tolerance	25°C
T.C.R.	Within specified T.C.R.	+25°C / +65°C
Overload (Short time)	0.05	Rated Voltage $\times 2.5$ or max. overload vol. whichever is lower, for 5s
Resistance to soldering heat	0.1	350°C $\pm 10^\circ\text{C}$, 3.5s $\pm 0.5\text{s}$
Rapid change of temperature	0.1	-55 $^{\circ}\text{C}$ (30min.) / +125 $^{\circ}\text{C}$ (30min.) 5 cycles
Moisture resistance	0.1	40°C $\pm 2^\circ\text{C}$, 90%~95%RH, 1000h 1.5h ON/0.5h OFF cycle
Endurance at 70°C	0.1	70°C $\pm 2^\circ\text{C}$, 1000h 1.5h ON/0.5h OFF cycle
Resistance to solvents	No abnormality in outer coating and markings	Soaking in 2-propanol of 20°C~25°C for 180s $\pm 10\text{s}$.
Insulation resistance	10,000M Ω or above	500V (d.c.) for 1min. between Terminals and Coating
Withstand voltage	0.5	500V (a.c.) for 1min. between Terminals and Coating

Custom Circuit Examples

Refer to us for the following circuit constructions, resistances, etc.



Precautions for Use

- Ionic impurities such as flux etc. that are attached to these products or those mounted onto a PCB, negatively affect their moisture resistance, corrosion resistance, etc. The flux may contain ionic substances like chlorine, acid, etc. Please wash them to get rid of these ionic substances especially when using lead-free solder that may contain much of the said substances for improving a wetting characteristic. Using RMA solder or RMA flux, or well-washing is needed. Also, attaching ionic substances such as perspiration, salt etc. by storage environments or mounting conditions/environments negatively affects their moisture resistance, corrosion resistance etc. Please wash them to remove the ionic substances when they are polluted.
- Pay attention to use when the components are polluted by ionic impurities like sodium (Na^+), chlorine (Cl^-) etc. included in perspiration and saliva, because it leads to electric erosion.