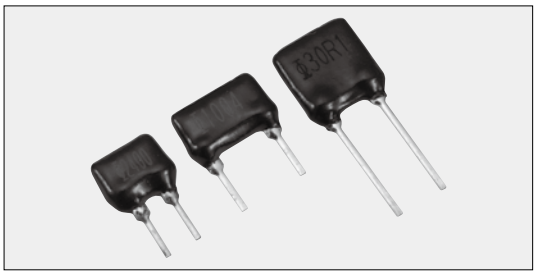
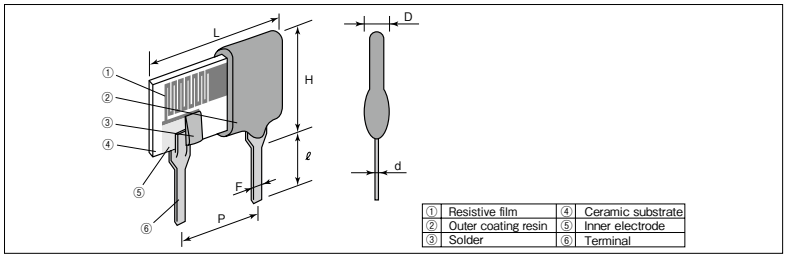
MRS Plate - Shaped High Precision Metal Film Resistors



Coating color : Black
Marking : Alphanumeric

■Construction



①	Resistive film	④	Ceramic substrate
②	Outer coating resin	⑤	Inner electrode
③	Solder	⑥	Terminal

■Features

- Easily usable lead frame shape with wide resistance range.
- Super-high precision resistors with resistance tolerance ±0.01% and T.C.R. ±2.5×10^{-6}/K.
- High density mounting available due to its plate shape and thinness (t=2.5mm Max.).
- Excellent in long-term stability.
- Products meet EU-RoHS requirements.

■Applications

- Therâmo Controllers
- Medical Equipment
- Oscilloscopes
- Measuring Equipment
- Recorders

■Dimensions

Type	Dimensions (mm)							Weight (g) (1000pcs)
	L max.	H max.	D max.	P±0.2	F(Nom.)	d(Nom.)	ℓ	
MRS1/8	5.6	6.2	2.5	2.54	0.5	0.25	3±0.5	103
MRS1/4	7.5			5.08				137
MRS1/3		9.0		3.81			8±2	212

■Type Designation

Example

MRS	1/3	S	D	1002	T
Product Code	Power Rating	T.C.R. (×10^{-6}/K)	Terminal Suface Material	Nominal Resistance	Resistance Tolerance
	1/8 : 0.125W 1/4 : 0.25W 1/3 : 0.3W	S : ±2.5 Y : ±5 T : ±10 E : ±25	D : SnAgCu	4 digits	T : ±0.01% Q : ±0.02% A : ±0.05% B : ±0.1% C : ±0.25% D : ±0.5%

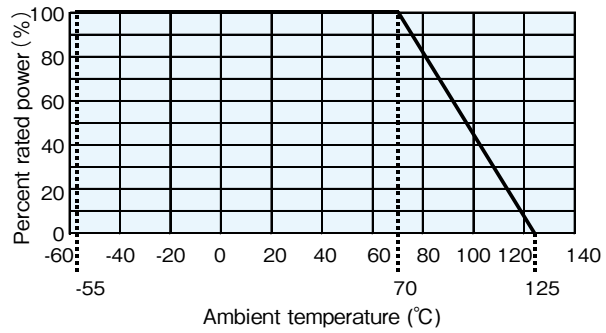
Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

■Ratings

Type	Power Rating	T.C.R. (×10^{-6}/K)	Resistance Range※1 (Ω)						Max. Working Voltage	Max. Overload Voltage
			T : ±0.01% E96	Q : ±0.02% E96	A : ±0.05% E24·E96※2 & 25, 50×10^{n}	B : ±0.1% E24·E96※2 & 25, 50×10^{n}	C : ±0.25% E24·E96 & 25, 50×10^{n}	D : ±0.5% E24·E96 & 25, 50×10^{n}		
MRS1/8YD	0.125W	Y : ±5	–	–	100~250k	100~250k	100~250k	100~250k	200V	400V
MRS1/8TD		T : ±10	–	–	100~250k	100~510k	30~510k	30~510k		
MRS1/8ED		E : ±25	–	–	100~250k	100~510k	10~510k	10~510k		
MRS1/4YD	0.25W	Y : ±5	–	–	100~510k	100~510k	100~510k	100~510k	250V	500V
MRS1/4TD		T : ±10	–	–	100~510k	100~1M	30~1M	30~1M		
MRS1/4ED		E : ±25	–	–	100~510k	100~1M	10~1M	10~1M		
MRS1/3SD	0.3W	S : ±2.5	100~100k	30.1~100k	30.1~100k	30.1~100k	–	–	200V	
MRS1/3YD		Y : ±5	100~100k	30.1~100k	10~100k	10~100k	–	–		
MRS1/3TD		T : ±10	100~100k	30.1~100k	10~100k	10~100k	–	–		

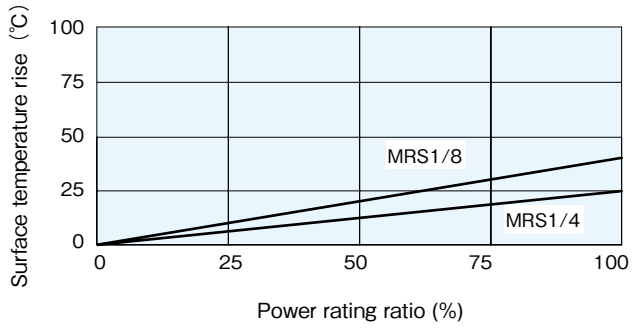
※1 Please consult with us for resistance other than E24 and E96.
※2 MRS1/3 is available only in E96 series.
Rated Ambient Temperature : +70℃
Operating Temperature Range : −55℃ ~ +125℃
Rated voltage = $\sqrt{\text{Power Rating} \times \text{Resistance value}}$ or Max. working voltage, whichever is lower.

■Derating Curve



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

■Surface Temperature Rise



■Performance

Test Items	Performance Requirements ΔR±(%+0.05Ω)	Test Methods
Resistance	Within specified tolerance	25℃
T.C.R.	Within specified T.C.R.	+25℃/+65℃
Overload (Short time)	0.05	Rated Voltage×2.5 or Max. overload Vol. whichever is lower, for 5s
Resistance to soldering heat	0.1 : MRS1/8, 1/4 0.05 : MRS1/3	350℃±10℃ 3.5s±0.5s
Rapid Change of temperature	0.1 : MRS1/8, 1/4 0.05 : MRS1/3	MRS1/8,1/4 : -55^{+0}_{-5}℃(30min.)/+125^{+3}_{-0}℃(30min.) 5 cycles MRS1/3 : -55^{+0}_{-5}℃(30min.)/+125^{+3}_{-0}℃(30min.) 50 cycles
Dielectric withstanding voltage	0.5 : MRS1/8, 1/4 0.05 : MRS1/3	500V(a.c.) for 1min. between terminals and coatings
Endurance at 70℃	0.1 : MRS1/8, 1/4 0.05 : MRS1/3	70℃±2℃, 1 000h 1.5h ON/0.5h OFF cycle
Moisture resistance	0.1 : MRS1/8, 1/4 0.05 : MRS1/3	40℃±2℃, 90%~95%RH, 1000h 1.5h ON/0.5h OFF cycle
Insulation resistance	10,000MΩ and more	500V(d.c.), 1min.
Resistance to solvent	No abnormality in appearance. Marking shall be easily legible.	Soaking in 2-propanol of 20℃~25℃ for 180s±10s

■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.