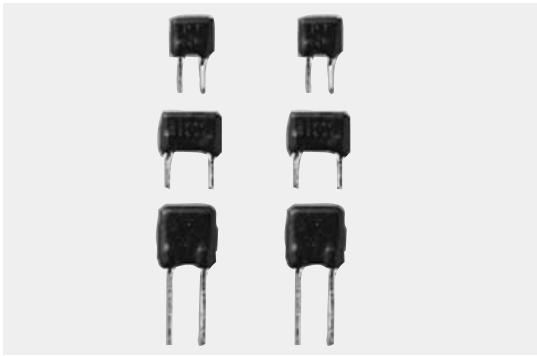


# METAL FILM (ULTRA PRECISION)



## MRS 板状高精度金属膜电阻器 Plate - Shaped High Precision Metal Film Resistors



外观颜色：黑色 Coating color: Black

### ■ 特点 Features

- 是电阻值范围广、容易使用的导线架型。
- 是阻值允许偏差±0.01%、电阻温度系数±2.5×10<sup>-6</sup>/K的超级高精度品。
- 板状薄型 (t=2.5mm最大)，可高密度安装。
- 长期稳定性优异。
- 对应欧盟RoHS。
- 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<sup>-6</sup>/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.

### ■ 品名构成 Type Designation

#### 实例 Example

MRS	1/3	S	D	1002	T
品种 Product Code	额定功率 Power Rating	电阻温度系数 T.C.R. (×10 <sup>-6</sup> /K)	端子表面材质 Terminal Surface Material	公称电阻值 Nominal Resistance	阻值允许偏差 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%

预知关于此产品含有的环境负荷物质详情 (除EU-RoHS以外)，请与我们联系。

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

### ■ 额定值 Ratings

型号 Type	额定功率 Power Rating	电阻温度系数 T.C.R. (×10 <sup>-6</sup> /K)	电阻值范围 Resistance Range (Ω)						最高使用电压 Max. Working Voltage	最高过载电压 Max. Overload Voltage
			T: ±0.01% E96	Q: ±0.02% E96	A: ±0.05% E24+E96 <sup>※2</sup> & 25.50×10 <sup>3</sup>	B: ±0.1% E24+E96 <sup>※2</sup> & 25.50×10 <sup>3</sup>	C: ±0.25% E24+E96 & 25.50×10 <sup>3</sup>	D: ±0.5% E24+E96 & 25.50×10 <sup>3</sup>		
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	500V
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 请询问关于E24和E96以外的电阻值。

※2 MRS1/3, 只对应E96系列。

※1 Please consult with us for resistance other than E24 and E96.

※2 MRS1/3 is available only in E96 series.

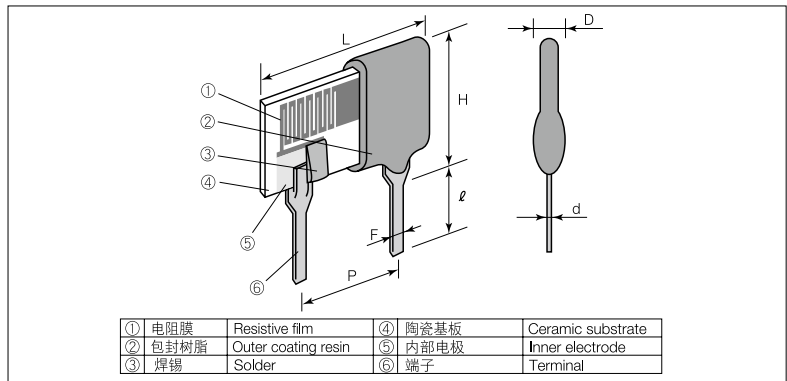
额定环境温度 Rated Ambient Temperature: +70°C

使用温度范围 Operating Temperature Range: -55°C~+125°C

额定电压是√(额定功率×公称电阻值)所算出的值或表中最高使用电压两者中小的值为额定电压。

Rated voltage = √(Power Rating × Resistance value or Max. working voltage, whichever is lower).

### ■ 结构图 Construction



### ■ 外形尺寸 Dimensions

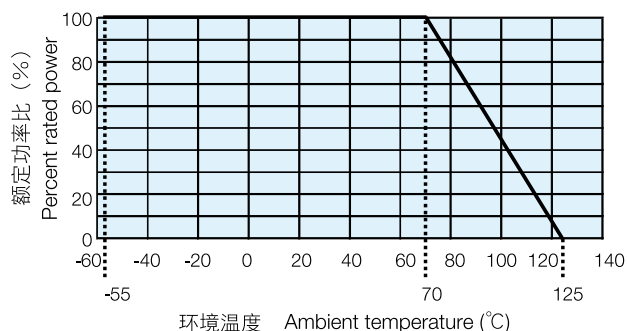
型号 Type	尺寸 Dimensions (mm)							Weight (g) (1000pcs)
	L Max.	H Max.	D Max.	P±0.2	F (Nom.)	d (Nom.)	ℓ	
MRS1/8	5.6	6.2	2.5	2.54	0.5	0.25	3±0.5	103
MRS1/4				5.08				137
MRS1/3	7.5	9.0		3.81			8±2	212

### ■ 用途 Applications

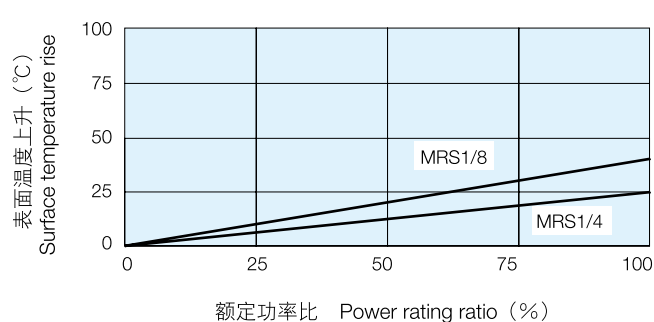
- 热控制器
- 医疗设备
- Thermo Controllers
- Medical Equipment
- 示波器
- 计量测量器
- Oscilloscopes
- Measuring Equipment
- 录音录像机
- Recorders

超精密型电阻器  
Super Precision Type Resistors

## ■ 负荷特性曲线 Derating Curve



## ■ 表面温度上升 Surface Temperature Rise



在环境温度70℃以上使用时，应按照上图负荷特性曲线，减小额定功率。  
For resistors operated at an ambient temperature of 70℃ or above, a power rating shall be derated in accordance with the above derating curve.

## ■ 性能 Performance

试验项目 Test Items	标准值 Performance Requirements $\Delta R \pm (\% + 0.05 \Omega)$	试验方法 Test Methods
电阻值 Resistance	在规定的允许偏差内 Within specified tolerance	+25℃
电阻温度系数 T.C.R.	在规定值以内 Within specified T.C.R.	+25℃/+65℃
过载 (短时间) Overload (Short time)	0.05	额定电压×2.5倍或者最高过载电压，取两者中低的一方施加5秒 Rated voltage × 2.5 or Max. overload vol., whichever is lower, for 5s.
耐焊接热 Resistance to soldering heat	0.1 :MRS1/8, 1/4 0.05:MRS1/3	350℃±10℃, 3.5s±0.5s
温度突变 Rapid change of temperature	0.1 :MRS1/8, 1/4 0.05:MRS1/3	MRS1/8, 1/4: -55 <sup>+5</sup> ℃ (30min)/+125 <sup>+5</sup> ℃ (30min) 5 cycles MRS1/3: -55 <sup>+5</sup> ℃ (30min)/+125 <sup>+5</sup> ℃ (30min) 50 cycles
耐电压 Dielectric withstanding voltage	0.1 :MRS1/8, 1/4 0.05:MRS1/3	500V (a.c.) 在端子和包装涂层间1分钟 500V(a.c.) for 1min. between terminals and coatings
在70℃的耐久性 Endurance at 70℃	0.1 :MRS1/8, 1/4 0.05:MRS1/3	70℃±2℃, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
耐湿负荷 Moisture resistance	0.1 :MRS1/8, 1/4 0.05:MRS1/3	40℃±2℃, 90%~95%RH, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
绝缘电阻 Insulation resistance	10,000MΩ以上 10,000MΩ and more	500V(d.c.), 1min
耐溶剂性 Resistance to solvent	应当外观无异常，表示可以容易地辨认。 No abnormality in appearance. Marking shall be easily legible.	在20~25℃的二丙醇中浸渍180±10秒钟 Soaking in 2-propanol of 20℃~25℃ for 180s±10s

## ■ 使用注意事项 Precautions for Use

- 焊剂等在本产品和安装的印刷电路板上附着离子性杂质时，其耐湿性·耐腐蚀性将受到影响。焊剂内有时含有氯·酸等离子性物质，为除去这些离子性物质应进行清洗。特别是使用无铅焊剂时，由于湿润性提高了，有时会含有大量离子性物质，所以在使用RMA系的焊锡或焊剂时，应充分进行清洗。并且，保管环境和安装条件、环境等，附着了汗·盐等离子性物质时，其耐湿性·耐腐蚀性也将受到影响。对于这种污染，为了除去这些离子性物质，应当进行清洗。
- 产品受到含有人的汗和唾液等的钠(Na<sup>+</sup>)、氯(Cl<sup>-</sup>)等离子性杂质污染时，已确认会引发电蚀，因此，在使用时要注意。
- 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 the 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<sup>+</sup>), chlorine (Cl<sup>-</sup>) etc. included in perspiration and saliva, because it leads to electric erosion.