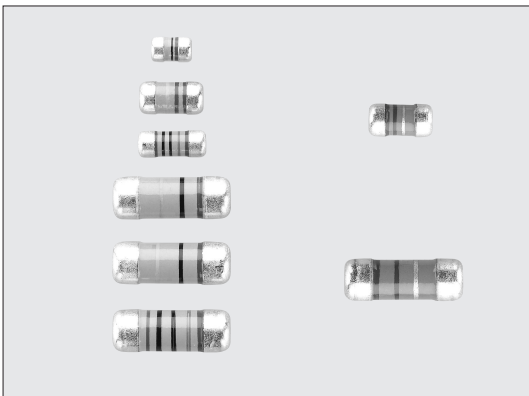


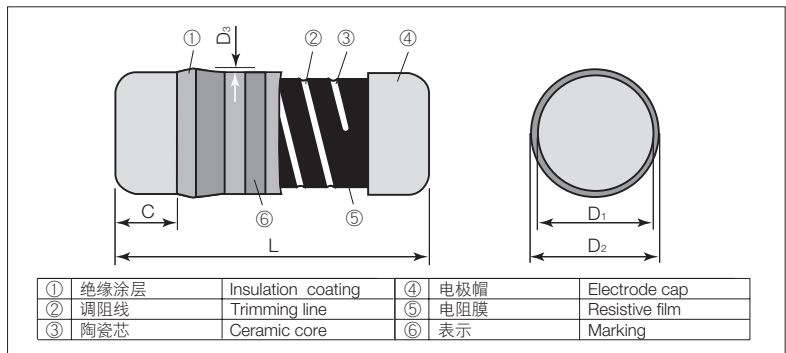
MELF (METAL FILM)



RN41 • RM41 MELF型金属膜固定电阻器 MELF Type Fixed Metal Film Resistors



■ 结构图 Construction



外观颜色: RN蓝色、RM绿色

Coating color: RN Blue, RM Green

表示: RN41 2A(E24 • 96), RN41(E24),

Coating code: RM41: 3色带 3 color-bands RN41
50(E96): 4色带 4 color-bands RN41
25(E24 • 96): 5色带 5 color-bands

■ 外形尺寸 Dimensions

型号 Type (Inch/DIN Size Code)	尺寸 Dimensions (mm)					Weight (g) (1000pcs)
	L	C	D ₁	D ₂ Max.	D ₃ Max.	
2A (0805/0102)	2.0±0.1	0.3Min.	1.25±0.05	1.35	0.07	11
2D (1206/0203)	3.2±0.2	0.5Min.	1.55±0.15	1.75	0.1	26
2ES (1406/0204)	3.5±0.2	0.5~0.9	1.4±0.1	1.55	0.1	20
2E • 2H • 3AS (2309/0207)	5.9±0.2	0.5Min.	2.2±0.1	2.4	0.15	75

■ 特点 Features

- 是表面封装的金属膜固定电阻器。
- 由于是圆筒形，所以没有安装时的方向性。
- 可以是高精度品 (阻值允许偏差±0.1%、T.C.R.±25×10⁻⁶/K)。
- 电极强度坚固。
- 抗噪声优异。
- 对应回流焊、波峰焊、烙铁焊接。
- 端子无铅电镀品，符合欧盟RoHS。
- AEC-Q200相关数据已取得。(RN41 2ES/3AS)
- SMD metal film resistors.
- Free direction for mounting due to cylindrical design.
- High precision products (Resistance tolerance ±0.1% and T.C.R.±25×10⁻⁶/K) available.
- The electrode strength is firm.
- The noise characteristics is excellent.
- Suitable for reflow, flow and iron solderings.
- Products with lead free termination meet EU-RoHS requirements.
- AEC-Q200 qualified (RN41 2ES/3AS)

■ 品名构成 Type Designation

实例 Example	品种 Product Code	额定功率 Power Rating	端子表面材质 Terminal Surface Material	二次加工 Packaging	公差电阻值 Nominal Resistance	阻值允许偏差 Resistance Tolerance	电阻温度系数 T.C.R. (×10 ⁻⁶ /K)
RN41	2B	T	TE	1001	F	50	
	2A:0.125W 2D:0.2W 2ES:0.25W 2ES:0.4W 2E:0.28W 2H:0.5W 3AS:1W	T:Sn (L:Sn/Pb)	TE: 编带 TE: Taping BK: 散装 BK: Bulk	B,C,D,F:4 digits J:3 digits	B:±0.1% C:±0.25% D:±0.5% F:±1% J:±5%	25 50 100 200	
RM41	2D	T	TE	1R0	J		
	2D:0.2W 2H:0.5W	T:Sn (L:Sn/Pb)	TE: 编带 TE: Taping BK: 散装 BK: Bulk	3 digits	J:±5%		

■ 参考标准 Reference Standards

IEC 60115-8
JIS C 5201-8
EIAJ RC-2132A

欲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。
编带细节请参考卷末附录C。

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

For further information on taping, please refer to APPENDIX C on the back pages.

■ 额定值 Ratings

型号 Type	额定功率 Power Rating	电阻温度系数 T.C.R. (×10 ⁻⁶ /K)	电阻值范围 (Ω) 阻值允许偏差 Resistance Range and Resistance Tolerance					最高使用电压 Max. Working Voltage	最高过载电压 Max. Overload Voltage	二次加工和包装数量/卷 Packaging & Qty/Reel (pcs)	
			B: ±0.1% E24 • E96	C: ±0.25% E24 • E96	D: ±0.5% E24 • E96	F: ±1% E24 • E96	J: ±5% E24			箱 Box	卷 Reel
RN41 2A	0.125W	±100	-	-	-	100~100k	-	150V	200V	50,000	3,000
RN41 2D	0.2W	±50	-	-	-	10~604k	-	150V	300V	36,000	2,000
RN41 2ES	0.25W	±25	43k~511k	100~100k	100~604k	-	-	200V	400V	40,000	3,000
		±50	-	-	-	1~5.11M	0.22~0.91				
RN41 2ES	0.4W ^{※2}	±50	-	-	-	1~100Ω	0.22~0.91	-	-	40,000	3,000
RN41 2E	0.25W	±25	-	100~100k	100~1M	-	-	250V	500V	10,000	1,500
		±50	-	-	-	100~1M	-				
RN41 2H	0.5W	±200	-	-	-	-	0.22~100k	250V	600V	10,000	1,500
RN41 3AS	1W ^{※1}	±50	-	-	-	1~1M	0.22~0.91	400V	600V	10,000	1,500
RM41 2D	0.2W	±350	-	-	-	-	0.22~8.2 (E12)	-	-	36,000	2,000
RM41 2H	0.5W	±350	-	-	-	-	-	-	-	10,000	1,500

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

使用温度范围 Operating Temperature Range: -55°C~+155°C

额定电压是√额定功率×公差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.

※1 由于额定功率是以本公司的评价标准做出保证的，所以请您在订货或使用前咨询。

※1 A power rating shall be guaranteed with a method shown in the item. (Performance) Please inquire before you order and/or use.

※2 额定功率是端子部温度下的保证值。

本样本手册中记载的产品规格如有变更，恕不一一奉告。订购及使用之前，请仔细确认规格表的内容。

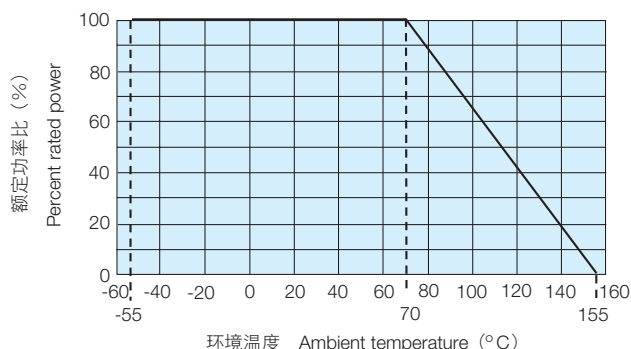
用于车载设备、医疗设备、航空设备以及其他涉及人身安全、或可能引起重大损失的设备上时，请务必事先与我司联系。这些产品在这类用途中出现故障或失灵可能导致人身事故或严重损坏。

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

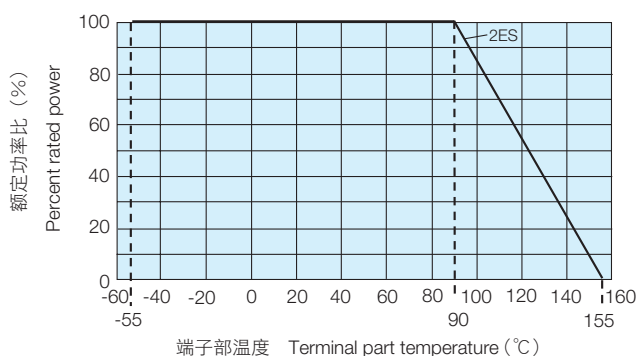
Contact our sales representatives before you use our products for applications including automobiles, medical equipment and aerospace equipment.

Malfunction or failure of the products in such applications may cause loss of human life or serious damage.

■ 负荷减轻特性曲线 Derating Curve



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



超过上述端子部温度使用时，请根据负荷减轻特性曲线减小额定功率后使用。
※有关使用方法，请参照卷首的“端子部温度负荷减轻特性曲线的说明”。
For resistors operated terminal part temperature of described for each size or above, a power rating shall be derated in accordance with derating curve.
※Please refer to "Introduction of the derating curves based on the terminal part temperature" on the beginning of our catalog before use.

■ 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
	保证值 Limit	代表值 Typical	
电阻值 Resistance	在规定的允许偏差内 Within specified tolerance	-	25°C
电阻温度系数 T.C.R.	在规定值以内 Within specified T.C.R.	-	+25°C/-55°C and +25°C/+125°C
过载(短时间) Overload (Short time)	0.5 2ES: 表1试验组D	0.3	额定电压×2.5倍施加5秒钟 Rated voltage × 2.5 for 5s
断续过负荷 Intermittent overload	1: RN41 2A, 2D, 2H 0.5: RM41 2E	-	额定电压的4倍或最高断续过负荷电压中低的一方施加一万次(2A是3倍) Rated voltage × 4 (2A × 3) or Max. Intermittent overload voltage, whichever is lower, 10,000 cycles. 最高断续过负荷电压 2A: 200V, 2D: 300V, 2E: 500V, 2H: 600V Max. Intermittent overload voltage 2A: 200V, 2D: 300V, 2E: 500V, 2H: 600V
耐焊接热 Resistance to soldering heat	2: 2H (10Ω>) 1: 2H (10Ω≤) 0.5: RN 2A~2E 2ES: 表1试验组D	1: 2H (10Ω>) 0.5: 2H (10Ω≤) 0.3: RN 2A~2E	260°C ± 5°C, 10s ± 1s
温度突变 Rapid change of temperature	0.5: RN41 2A~2E 1: RN41 2H 1: RM41 2ES: 表1试验组D	0.3: RN41 2A~2E 0.7: RN41 2H 0.75: RM41	-55°C (30min.) / +125°C (30min.) 5 cycles
耐湿负荷 Moisture resistance	1: RN41 2D, 2E 3: RN41 2A 5: RN41 2H 5: RM41 2ES: 表1试验组C	0.75: RN41 2D, 2E 1.5: RN41 2A 3: RN41 2H 3: RM41	40°C ± 2°C, 90%~95%RH, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
在70°C时的耐久性 Endurance at 70°C	1.0: RN41 2D, 2E 3: RN41 2A 5: RN41 2H 5: RM41 2ES: 表1试验组A	0.5: RN41 2D, 2E 1.5: RN41 2A 3: RN41 2H 3: RM41	70°C ± 2°C, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
高温放置 High temperature exposure	1: RN41 2ES: 表1试验组C	0.75: RN41	+125°C, 100h

※ 由于RN41 3AS的标准值和上述不同，因此详细请向本公司询问。

※ Performance requirement for RN41 3AS are different from the above, so consult with us about the detail.

表1

稳定性等级 Stability class	不同电阻值下的稳定性等级 Stability class for each resistance Resistance range	不同试验组的规格 Limit resistance changing attests			
		试验组 Test group			
		A	B	C	D
0.25	10~332kΩ	± (0.25+0.05Ω)	± (0.50+0.05Ω)	± (0.25+0.05Ω)	± (0.05+0.05Ω)
0.5	1~<10Ω			± (0.50+0.05Ω)	± (0.10+0.05Ω)
1	0.22~<1Ω	± (0.50+0.05Ω)	± (1.00+0.05Ω)	± (1.00+0.05Ω)	± (0.25+0.05Ω)
2	>332kΩ~≤11MΩ			± (2.00+0.05Ω)	± (0.50+0.05Ω)

■ 使用注意事项 Precautions for Use

- 助焊剂等在本产品和安装的印刷电路板上附着了离子性杂质时，其耐湿性·耐腐蚀性等方面将受到影响。助焊剂内，有时会含有氯·酸等的离子性物质。为除去这类离子性物质，应进行清洗。特别是使用无铅助焊剂时，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系的焊锡或助焊剂时，应进行充分清洗。并且，在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，为除去这类离子性物质，应当进行清洗。
- 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.

本样本手册中记载的产品规格如有变更，恕不一一奉告。订购以及使用之前，请仔细确认规格表的内容。

用于车载设备、医疗设备、航空设备以及其它涉及人身安全、或可能引起重大损失的设备上时，请务必事先与我公司联系。这些产品在这类用途中出现故障或失灵可能导致人身事故或严重损坏。

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