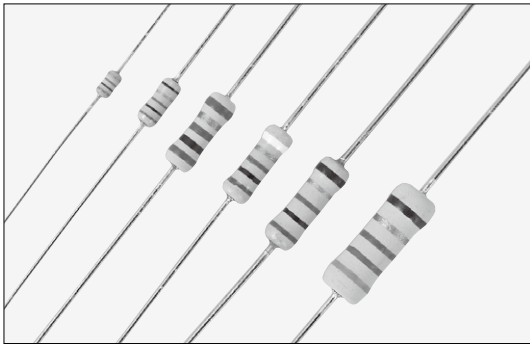


DISCHARGE PATH RESISTOR



RCR 涂层绝缘型耐浪涌固定电阻器 Coat-Insulated Fixed Anti Surge Resistors



外观颜色: 蓝灰色 Coating color: Blue gray
表示: 4色线颜色码+识别颜色码*

(RCR16以外)、4色线颜色码 (RCR16)
Marking: 4 line color codes + 5th color code*

(Excluding RCR16), 4 line color codes (RCR16)

※RCR50+: 绿色、RCR60: 白色、其它: 黑色
※RCR50+: Green, RCR60: White, Others: Black
F级产品的色环请参考产品规格书。

Please confirm contents on technical specifications about the color code of F grade product.

■ 特点 Features

- 耐浪涌特性优异的电阻器。
- 到高阻值的耐湿性也很稳定的特性。
- RCR50+ (1MΩ~12MΩ)、RCR50EN (1MΩ~12MΩ)、RCR60 (1MΩ~12MΩ) 是UL1676和c-UL (CSA-C22.2 No.1-M94) 放电电阻标准认定品。
- RCR50EN (100kΩ~33MΩ) 与RCR60 (470kΩ~56MΩ) 是EN60065 14.1项稳定标准认定品。
- ※由于用途的不同会有不对应CLASSII的情况
- 对应欧盟RoHS。在电阻中所含的铅玻璃, 不包含在欧盟RoHS指令中。
- 对应(取得数据) AEC-Q200。
- Excellent anti-surge characteristics.
- Stable characteristics of moisture resistance up to high resistance range.
- RCR50+ (1MΩ~12MΩ) and RCR60 (1MΩ~12MΩ) are discharge resistors recognized by UL1676 and c-UL (CSA-C22.2 No.1-M94).
- RCR50EN (100kΩ~33MΩ) and RCR60 (470kΩ~56MΩ) is approved by EN60065 safety.
- ※There is the case that RCR50EN cannot meet CLASS II depending on a use.
- Products meet EU-RoHS requirement. EU-RoHS regulation is not intended for Pb-glass contained in resistor element.

■ 用途 Applications

- TV、CRT显示 TVs、CRT displays
- 复印机 Copy machines
- LBP LBPs
- VTR VTRs
- 开关电源 Switching power supplies
- AC适配器 AC adapters
- AEC-Q200 qualified.

■ 取得规格 Approvals Awarded

RCR50+ : UL1676 & c-UL (CSA-C22.2 No.1-M94)(File No. E159326)

RCR50EN : EN60065 (VDE File No. VDE-Reg.-Nr.40024807), UL1676 & c-UL (CSA-C22.2 No.1-M94) (File No. E159326)

RCR60 : EN60065 (BSI File No.8164, VDE File No.VDE-Reg.-Nr.124069), UL1676 & c-UL (CSA-C22.2 No.1-M94)(File No. E159326)

■ 额定值 Ratings

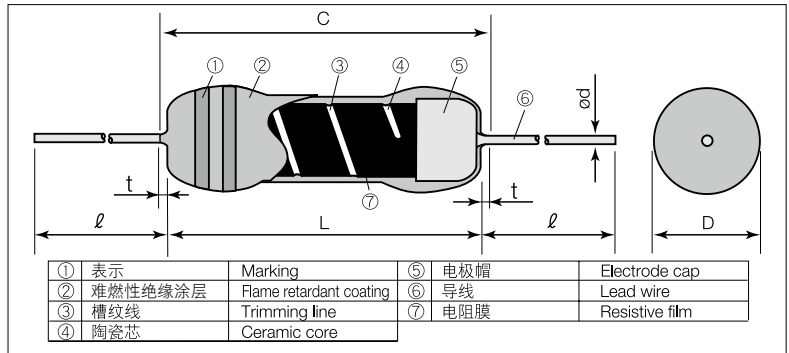
型号 Type	额定功率 Power Rating	电阻值范围 (Ω) Resistance Range		最高使用电压 Max. Working Voltage	最高过载电压 Max. Overload Voltage	耐电压 Dielectric Withstanding Voltage	带带和包装数/AMMO包装 Taping & Q'ty/AMMO (pcs)			
		F: ±1% (E24 + E96)	J: ±5% (E24)				T26	T52	T521	T631
RCR16	0.25W	100k~1M	100k~5.1M	500V	1000V	300V	5,000	3,000	-	-
RCR25		100k~9.1M	100k~33M	DC 1600V AC 1150V	DC 2000V AC 1500V	700V	2,000	2,000	-	-
RCR50	0.5W	3.3Ω~910k	3.3~910k	2000V	2500V	700V	-	2,000	-	-
RCR50+		1M~9.1M	1M~12M				-	-	-	
RCR50EN		100k~9.1M	100k~33M				-	-	-	
RCR60	1W	100k~9.1M	100k~56M	4000V	5000V	700V	-	2,000	-	-
RCR75	2W	100k~9.1M	100k~100M	5000V	5000V	700V	-	1,000	-	-
RCR100	3W	100k~9.1M	100k~33M	5000V	5000V	1000V	-	-	500	1,000

额定环境温度 Rated Ambient Temperature : +70℃ 使用温度范围 Operating Temperature Range: -55℃~+155℃

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成为额定电压。

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	C Max.	t Max.	D	d (Nominal)	ℓ ^{※2}	
RCR16	3.2±0.2	3.4	-	1.7 ^{+0.2} _{-0.1}	0.45	20 Min.	150
RCR25	6.3±0.5	7.1	-	2.5±0.5	0.6		240
RCR50 (+)	9.5±1.0	-	3.0	3.5±0.4	0.7	20 Min.	520
RCR50EN	9.5±1.0	-	3.0	3.5±0.4	0.7		520
RCR60	12.0±1.0	-	3.0	4.0±0.5	0.8		800
RCR75	15.5±1.0	-	3.0	6.0 ^{+1.0} _{-0.4}	0.8		1400

※2 引线长度按照成型和编带而改变。

※2 Lead length changes depending on taping and forming type.

■ 品名构成 Type Designation

实例 Example	RCR	50	+	C	T52	A	106	J
品种 Product Code	RCR	50	+	C	T52	A	106	J
额定功率 Power Rating		16:0.25W 25:0.25W 50:0.5W 60:1W 75:2W 100:3W						
UL、C-UL认定符号 UL、C-UL Recognized Marking			UL、C-UL认定符号 UL、C-UL Recognized Marking + : RCR50+ EN : RCR50EN 空栏: 其它 Nil: Others					
端子表面材质 Terminal Surface Material				C:SnCu				
二次加工 Taping & Forming					参照下述 See table below			
包装 Packaging Forming						A:AMMO包装 A:AMMO R:卷 R:REEL TEB:Plastic embossed (N forming)		
公称电阻值 Nominal Resistance						F:4 digits J:3 digits		
阻值允许偏差 Resistance Tolerance						F:±1% J:±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。
编带细节请参考卷末附录C.

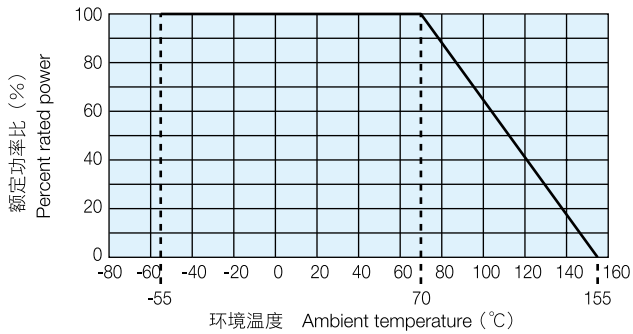
Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

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

■ 二次加工对应表 Taping & Forming Matrix

型号 Type	轴向编带 Axial Taping				L成形 L Forming			M成形 M Forming			M成形 N Forming		
	T26	T52	T521	T631	L15A	L20A	L25A	M5	M10	M15	M20	N14.5	N17
RCR16	○	○	-	-	-	-	-	M5F	-	-	-	-	-
RCR25	○	○	-	-	-	-	-	-	M10F	-	-	-	-
RCR50	-	○	-	-	○	-	-	-	-	M15F	-	-	-
RCR50+	-	○	-	-	○	-	-	-	-	M15F	-	-	-
RCR50EN	-	○	-	-	○	-	-	-	-	M15F	-	-	-
RCR60	-	○	-	-	○	-	-	-	-	M15F	-	-	-
RCR75	-	○	-	-	○	-	-	-	-	-	-	-	○
RCR100	-	-	○	○	-	○	○	-	-	-	M20E	-	-

■ 负荷特性曲线 Derating Curve



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°C or above, a power rating shall be derated in accordance with the above derating curve.

■ 关于浪涌负荷的注意事项 Notice on Surge Load

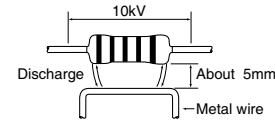
对于本电阻器的耐浪涌负荷压力请参考下面4点表示耐浪涌特性的耐浪涌压力的条件，由于难以保证高过载，请事前向本公司咨询。

Surge withstanding load voltage for the resistors cannot be guarantee when the undermentioned 4items get to a remarkable overload in comparison with the conditions shown by surge withstanding voltage in Anti-surge characteristics. You are kind by requested to contact to us in advance if such acuse is anticipated.

- (1) 被附加的峰值电压
Peak voltage to be applied
- (2) 脉冲宽度
Pulse width
- (3) 电阻周围的绝缘保护条件
Conditions of protecting insulation around the resistor
- (4) 附近导电体的状况
Situation of proximity conductivity object

例如下图那样，离电阻器主体不到5mm的位置有了金属线，由于10kV的浪涌负荷而发生放电，破坏了包装。

As the fig. below for instance when a metal wire is placed at less than 5mm away from the resistor body, there is such a case that causes an electric discharge by a surge load 10kV and then destroys the outer coating.



■ 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		测定位置距离本体10mm±1mm Measuring points are at 10mm±1mm from the end cap.																										
电阻温度系数 T.C.R.	<table border="1"> <thead> <tr> <th>型号 Type</th> <th>电阻温度系数 T.C.R.</th> <th>电阻值范围 Resistance Range</th> </tr> </thead> <tbody> <tr><td>RCR16</td><td>$\pm 200 \times 10^{-6}/K$</td><td>100kΩ~5.1MΩ</td></tr> <tr><td>RCR25</td><td>$\pm 350 \times 10^{-6}/K$</td><td>100kΩ~33MΩ</td></tr> <tr><td>RCR50 (+)</td><td>$\pm 500 \times 10^{-6}/K$</td><td>3.3Ω~91kΩ</td></tr> <tr><td>RCR50EN</td><td>$\pm 350 \times 10^{-6}/K$</td><td>100kΩ~33MΩ</td></tr> <tr><td>RCR60</td><td>$\pm 350 \times 10^{-6}/K$</td><td>100kΩ~56MΩ</td></tr> <tr><td>RCR75</td><td>$\pm 350 \times 10^{-6}/K$</td><td>100kΩ~100MΩ</td></tr> <tr><td>RCR100</td><td>$\pm 200 \times 10^{-6}/K$</td><td>470kΩ~33MΩ</td></tr> </tbody> </table>	型号 Type	电阻温度系数 T.C.R.	电阻值范围 Resistance Range	RCR16	$\pm 200 \times 10^{-6}/K$	100k Ω ~5.1M Ω	RCR25	$\pm 350 \times 10^{-6}/K$	100k Ω ~33M Ω	RCR50 (+)	$\pm 500 \times 10^{-6}/K$	3.3 Ω ~91k Ω	RCR50EN	$\pm 350 \times 10^{-6}/K$	100k Ω ~33M Ω	RCR60	$\pm 350 \times 10^{-6}/K$	100k Ω ~56M Ω	RCR75	$\pm 350 \times 10^{-6}/K$	100k Ω ~100M Ω	RCR100	$\pm 200 \times 10^{-6}/K$	470k Ω ~33M Ω	-	室温/ 上升100°C Room temperature + 100°C		
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过载 (短时间) Overload (Short time)	1	0.5	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	1	0.5	260°C±5°C, 10s±1s or 350°C±10°C, 3.5s±0.5s																										
端子强度 Terminal strength	不应出现导线外露，端子松弛的情况 No lead-coming off and loose terminals		Twist 360°, 5 times																										
温度突变 Rapid change of temperature	1	0.5	-55°C (30min.) / +155°C (30min.) 5 cycles																										
耐湿负荷 Moisture resistance	5	2.5	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 RCR16, 25, 50 (+), 60: WRCR75, 100: W×0.1																										
在70°C时的耐久性 Endurance at 70°C	5	2.5	70°C±2°C, 1000h, Rv 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle																										
耐溶剂性 Resistance to solvent	外观无异常，标识可以容易地判读 No abnormality in appearance. Marking shall be easily legible.		进行2分钟的异丙醇超声波清洗 Ultrasonic washing with Isopropyl alcohol for 2 min. 输出功率 Power: 0.3W/cm², 频率 f: 28kHz, 温度 Temp: 35°C±5°C																										
耐电涌特性 Anti-surge characteristics	10	2.5	放电试验：从充电2~10kV的0.01μF电容器以不到5秒钟一次的比例施加10次放电。 Discharge test : 2kV~10kV 0.01 μ F capacitor discharge pulse 10 times. (1pulse/5s max.) <table border="1"> <thead> <tr> <th>Type</th> <th>RCR16</th> <th>RCR25</th> <th>RCR50 • RCR50+</th> <th>RCR50EN</th> <th>RCR60</th> <th>RCR75</th> <th>RCR100</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Applied voltage</td> <td rowspan="2">2kV</td> <td rowspan="2">3kV</td> <td>3.3Ω~6.2Ω: 10kV</td> <td rowspan="4">10kV</td> <td rowspan="4">10kV</td> <td rowspan="4">10kV</td> <td rowspan="4">10kV</td> </tr> <tr> <td>6.8Ω~10Ω: 7kV</td> </tr> <tr> <td>11Ω~9.1kΩ: 5kV</td> </tr> <tr> <td>10kΩ~91kΩ: 7kV</td> </tr> <tr> <td>100kΩ~33MΩ: 10kV</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Type	RCR16	RCR25	RCR50 • RCR50+	RCR50EN	RCR60	RCR75	RCR100	Applied voltage	2kV	3kV	3.3 Ω ~6.2 Ω : 10kV	10kV	10kV	10kV	10kV	6.8 Ω ~10 Ω : 7kV	11 Ω ~9.1k Ω : 5kV	10k Ω ~91k Ω : 7kV	100k Ω ~33M Ω : 10kV						
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EN60065试验 (限定RCR60) EN60065 test (RCR60 Only)	20	-	放电试验：从充电10kV的1000pF电容器以不到5秒钟一次的比例施加50次放电。 Discharge test : 10kV 1000pF capacitor discharge pulse 50 times.(1pulse/5sec. max.)																										

■ 使用注意事项 Precautions for Use

- 由于包装涂层是难燃性特种涂料，对外部冲击比较弱，所以在使用上应注意。应在最小限度清洗。清洗后涂层膜会比较弱，因此，在充分干燥前，不要在涂层膜上施加外力。由于要在干燥后才能恢复到原来强度，因此应注意，在清洗后约20分钟内，在电阻的涂层膜上不要施加外力。特别不要进行基板的堆叠等。
- 高电阻值的产品，为防表面漏电，请不要直接用手接触。
- 附近有导电体时，有可能发生电晕和放电短路，因此，请与我们联系。
- Be careful to handle these resistors because outer coatings are comparatively weak to outer shock due to flameproof special coats. Please wash them to a minimum. No external force is given to the coating films until they are well dried because the coating films become weaker right after washing. The original strength will be returned after they are dried, so please pay attention not to apply any external force onto the coating film of resistors for 20 minutes after drying. Especially no PC boards shall be piled up.
- Do not touch the resistors with high-resistance value by hand to prevent surface-leakage current.
- Consult with us when there are electric conductors near to because it may cause corona and short-circuit by discharge.