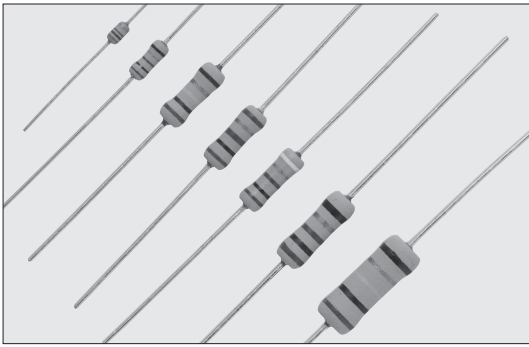


DISCHARGE PATH RESISTOR



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: RCR16以外...4色线颜色代码+识别颜色代码*
RCR16...4色线颜色代码
Marking: Excluding RCR16...4 line color codes + 5th color code*
RCR16...4 line color codes
※1 RCR50+, RCR50EN (1MΩ~12MΩ): 绿色、RCR60: 白色、其它: 黑色
※1 RCR50+, RCR50EN (1MΩ~12MΩ): Green, RCR60: White, Others: Black
F级产品的颜色代码请参考产品规格书。
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。
- 具有到高阻值域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。
- RCR25EN (100kΩ~33MΩ)、RCR50EN (100kΩ~33MΩ) 与 RCR60 (100kΩ~56MΩ) 是EN60065 14.1项稳定标准认定品。
- 符合欧盟RoHS。在电阻中所含的铅玻璃, 不包含在欧盟RoHS指令中。
- 由于对应表面贴装成形, 所以可自动贴装。
- Excellent anti-surge characteristics.
- Stable characteristics of moisture resistance up to high resistance range.
- RCR50+ (1MΩ~12MΩ), RCR50EN (1MΩ~12MΩ) and RCR60 (1MΩ~12MΩ) are conductive-path and Discharge-path resistors recognized by UL1676 and c-UL (CSA-C22.2 No.1-M94).
- RCR25EN (100kΩ~33MΩ), RCR50EN (100kΩ~33MΩ) and RCR60 (100kΩ~56MΩ) is approved by EN60065 14.1 safety.
- Products meet EU-RoHS requirement. EU-RoHS regulation is not intended for Pb-glass contained in resistor element.
- Automatic mounting machine is applicable by surface mounted device style lead forming.

用途 Applications

- TV、TVs
- 复印机 Copy machines
- LBP
- VTRs
- 开关电源 Switching power supplies
- AC适配器 AC adapters

取得规格 Approvals Awarded

型号 Type	UL1676 & c-UL (CSA-C22.2 No.1-M94)		EN60065 14.1项	
	Test a	Test b	Test a	Test b
RCR25EN	○	○	○	○
RCR50+	○	○	○	○
RCR50EN	○	○	○	○
RCR60	○	○	○	○

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	编带和包装数/AMMO包装 Taping & Q'ty/AMMO (pcs)			
		F: ±1% (E24 × E96)	J: ±5% (E24)				T26	T52	T521	T631
RCR16	0.25W	100k~5.1M	100k~5.1M	500V	1000V	300V	5,000	3,000	-	-
RCR25		100k~9.1M	100k~33M	D.C.1600V	D.C.2000V	700V	2,000	2,000	-	-
RCR25EN		-	-	-	-	-	-	-	-	-
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		100k~9.1M	100k~56M							
RCR75	2W	100k~9.1M	100k~100M	5000V	5000V	700V	-	1,000	-	-
RCR100	3W	100k~9.1M	100k~51M	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值成为额定电压。

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

本产品目录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, 请仔细阅读规格表的内容。

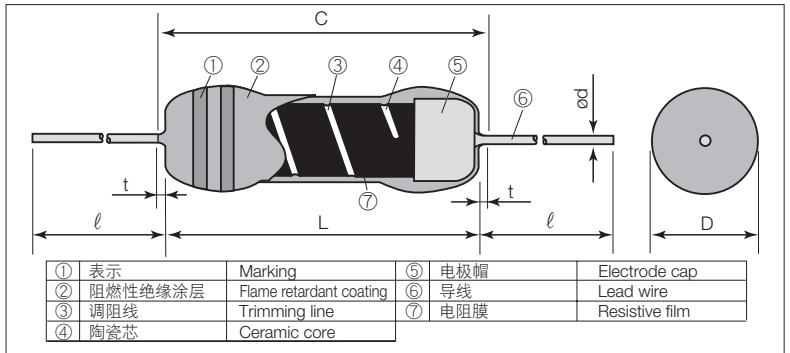
用于车载设备、医疗设备、航空设备以及其它涉及人身安全、或可能引起重大损失的设备上时, 请务必事先与我司联系。这些产品在这类用途中出现故障或失灵可能导致人身事故或严重损坏。Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

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.

Nov. 2017

www.koaglobal.com

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
RCR25EN							520
RCR50 (+) RCR50EN	9.5±1.0	-	3.0	3.5±0.4	0.7		520
RCR60	9.5 ^{+1.0} _{-0.5}	-	3.0	3.5±0.4	0.7	520	
RCR75	12.0±1.0	-	3.0	4.0±0.5	0.8	800	
RCR100	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	EN	C	T52	A	106	J
品种 Product Code	额定功率 Power Rating	安全标准符号 Safety Approvals Marking	端子表面材质 Terminal Surface Material	二次加工 Taping & Forming	包装 Packaging Forming	公称电阻值 Nominal Resistance	阻值允许偏差 Resistance Tolerance
	16:0.25W 25:0.25W 50:0.5W 60:1W 75:2W 100:3W	+ : RCR50+ EN : RCR25EN, RCR50EN 空栏: 其它 Nil: Others	C:SnCu	参照下述 See table below	A:AMMO包装 A:AMMO R:卷 R:REEL TEB:TEG:Plastic embossed (N forming) 空栏:箱子 Nil:BOX	F:4 digits J:3 digits	F:±1% J:±5%

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。

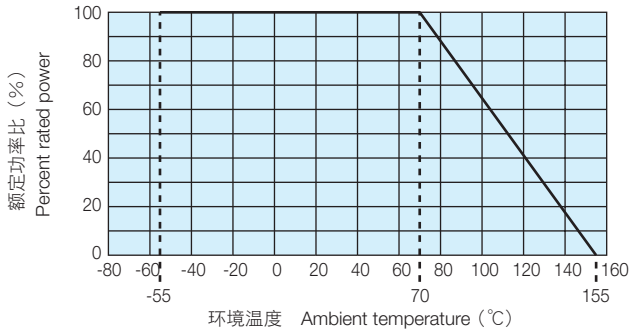
Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

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

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			N成形 N Forming		
	T26	T52	T631	L15A	L20A	M5	M10	M15	M20	N14.5	N17
RCR16	○	○	-	-	-	M5F	-	-	-	-	-
RCR25	○	○	-	-	-	-	M10F	-	-	-	-
RCR25EN	○	○	-	-	-	-	M10F	-	-	-	-
RCR50	-	○	-	○	-	-	-	M15F	-	-	-
RCR50+	-	○	-	○	-	-	-	M15F	-	-	-
RCR50EN	-	○	-	○	-	-	-	M15F	-	-	-
RCR60	-	○	-	○	-	-	-	M15F	-	-	-
RCR75	-	○	-	○	-	-	-	-	-	○	-
RCR100	-	-	○	○	-	○	-	-	M20E	-	○

■ 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.

■ 性能 Performance

试验项目 Test Items	标准值 Performance Requirements $\Delta R \pm (\% + 0.05 \Omega)$	代表值 Typical	试验方法 Test Methods																								
电阻值 Resistance	在规定的阻值允许偏差内 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 RCR25EN</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>100kΩ~5.1MΩ</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 RCR25EN	$\pm 350 \times 10^{-6}/K$	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	$\pm 200 \times 10^{-6}/K$	100k Ω ~5.1M Ω	-	+25°C/+125°C
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 RCR25EN	$\pm 350 \times 10^{-6}/K$	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	$\pm 200 \times 10^{-6}/K$	100k Ω ~5.1M Ω																									
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: W RCR75, 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 0.01μF capacitor discharge pulse 10 times. (1pulse/5s max.) <table border="1"> <thead> <tr> <th>Type</th> <th>RCR16</th> <th>RCR25 • RCR25EN</th> <th>RCR50 • RCR50+</th> <th>RCR50EN</th> <th>RCR60</th> <th>RCR75</th> <th>RCR100</th> </tr> </thead> <tbody> <tr> <td>施加电压 Applied voltage</td> <td>2kV</td> <td>3kV</td> <td>3.3Ω~6.2Ω: 10kV 6.8Ω~10Ω: 7kV 11Ω~9.1kΩ: 5kV 10kΩ~91kΩ: 7kV 100kΩ~33MΩ: 10kV</td> <td>10kV</td> <td>10kV</td> <td>10kV</td> <td>10kV</td> </tr> </tbody> </table>	Type	RCR16	RCR25 • RCR25EN	RCR50 • RCR50+	RCR50EN	RCR60	RCR75	RCR100	施加电压 Applied voltage	2kV	3kV	3.3 Ω ~6.2 Ω : 10kV 6.8 Ω ~10 Ω : 7kV 11 Ω ~9.1k Ω : 5kV 10k Ω ~91k Ω : 7kV 100k Ω ~33M Ω : 10kV	10kV	10kV	10kV	10kV								
Type	RCR16	RCR25 • RCR25EN	RCR50 • RCR50+	RCR50EN	RCR60	RCR75	RCR100																				
施加电压 Applied voltage	2kV	3kV	3.3 Ω ~6.2 Ω : 10kV 6.8 Ω ~10 Ω : 7kV 11 Ω ~9.1k Ω : 5kV 10k Ω ~91k Ω : 7kV 100k Ω ~33M Ω : 10kV	10kV	10kV	10kV	10kV																				
EN60065试验 (RCR50EN, 限定RCR60) EN60065 test (RCR50EN, 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.)																								

■ 关于浪涌负荷的注意事项 Notice on Surge Load

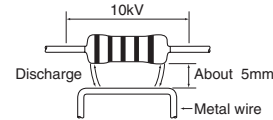
对于本电阻器的耐浪涌负荷压力请参考下面4点表示耐浪涌特性的耐浪涌压力的条件，由于难以保证高过载，请事前向本公司咨询。

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.



■ 使用注意事项 Precautions for Use

- 由于包装涂层是阻燃性特种涂料，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。
- 请勿在高温、高湿度和粘附部位脏污等不良条件下或进行树脂成型时使用本电阻器，因为这可能引起电阻值发生改变。
- 小于RCR50 100k Ω 的电阻膜层有所不同。因此，被湿度较大的环境和离子材料污染后，其性能可能下降。对于此类情况，请事先向我们公司咨询。
- 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.
- Please do not apply resistors under such bad conditions as high temperature, high humidity, and foul adhesion, or with resin molding, because it may cause the change of resistance value.
- The resistance film of less than RCR50 100k Ω is different. Therefore, the characteristic might decrease when it is polluted by a remarkable moisture environment and the ionic material so inquire of our company beforehand, please.

本产品目录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。

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.