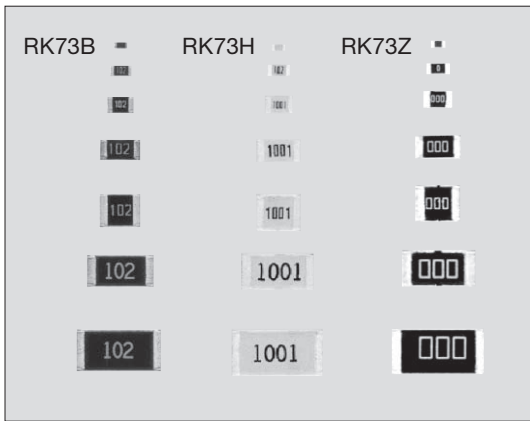


THICK FILM (ANTI SULFURATION)

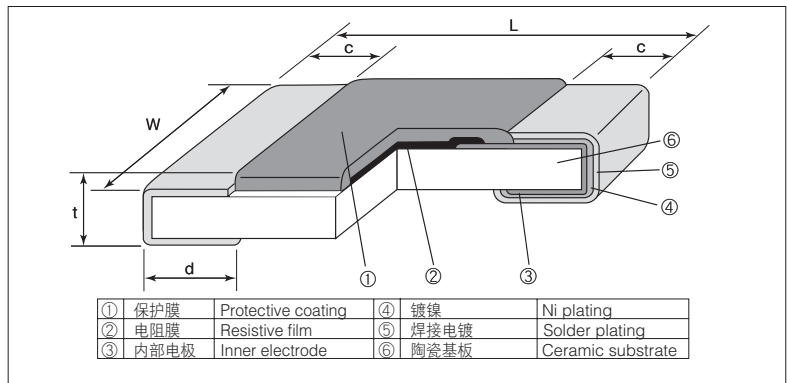


矩形片式电阻器
Flat Chip Resistors

RK73B•RK73H•RK73Z-RT 矩形片式电阻器 (抗硫化) Flat Chip Resistors (Anti Sulfuration)



■ 结构图 Construction



外观颜色:

黑色 Black (RK73B 1F, 1H, 1E, 1J, 2A, 2B, 2E, W2H, W3A)
(RK73H 1F, 1H) (RK73Z 1J, 2A, 2B, 2E, W2H, W3A)

蓝色 Blue (RK73H 1E, 1J, 2A, 2B, 2E, W2H, W3A)

绿色 Green (RK73Z 1H, 1E)

■ 特点 Features

- 由于使用高度抗硫化的电极内端覆盖材料, 因此电阻不会因内部上面的电极硫化而断线。
- 电极三层结构, 具有稳定性和高信赖性。
- 对应回流焊、波峰焊。
- 端子无铅, 符合欧盟RoHS。电极、电阻膜层、玻璃中所含的铅玻璃不适用欧盟RoHS指令。
- AEC-Q200相关数据已取得(除1F)。
- Excellent anti-sulfuration characteristic due to using high sulfuration-proof inner top electrode material.
- Excellent heat resistance and weather resistance are ensured by the use of metal glaze thick film.
- High stability and high reliability with the triple-layer structure of electrode.
- Suitable for both flow and reflow solderings.
- Products with lead free termination meet EU-RoHS requirements. EU-RoHS regulation is not intended for Pb-glass contained in electrode, resistor element and glass.
- AEC-Q200 qualified (Exemption 1F).

■ 参考标准 Reference Standards

- IEC 60115-8
- JIS C 5201-8
- EIAJ RC-2134C

■ 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 Taping	公称电阻值 Nominal Resistance	阻值允许偏差 Resistance Tolerance
RK73B RK73H	1F: 0.03W 1H: 0.05W 1E: 0.063W 1J: 0.1W 2A: 0.125W 2B: 0.25W 2E: 0.33W 0.5W W2H: 0.75W W3A: 1W	RT: Sn	TX: 4mm width-1mm pitch plastic embossed TBL • TC • TCM: 2mm pitch press paper TPL: TP: 2mm pitch punch paper TD: 4mm pitch punch paper TE: 4mm pitch plastic embossed BK: Bulk	1002	D: ±0.5% F: ±1% G: ±2% J: ±5%
RK73Z	1H: 0.5A 1E: 1A 1J: 1A 2A: 2A 2B: 2A 2E: 2A W2H: 2A W3A: 2A	RT: Sn	TC • TCM: 2mm pitch press paper TPL • TP: 2mm pitch punch paper TD: 4mm pitch punch paper TE: 4mm pitch plastic embossed BK: Bulk		

■ 外形尺寸 Dimensions

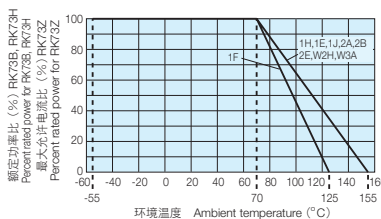
型号 Type (Inch Size Code)	尺寸 Dimensions (mm)					Weight (g) (1000pcs)
	L	W	c	d	t	
1F (01005)	0.4±0.02	0.2±0.02	0.1±0.03	0.11±0.03	0.13±0.02	0.04
1H (0201)	0.6±0.03	0.3±0.03	0.1±0.05	0.15±0.05	0.23±0.03	0.14
1E (0402)	1.0 ^{+0.1} _{-0.05}	0.5±0.05	0.2±0.1	0.25 ^{+0.05} _{-0.1}	0.35±0.05	0.68
1J (0603)	1.6±0.2	0.8±0.1	0.3±0.1	0.3±0.1	0.45±0.1	2.14
2A (0805)	2.0±0.2	1.25±0.1	0.4±0.2	0.3 ^{+0.2} _{-0.1}	0.5±0.1	4.54
2B (1206)	3.2±0.2	1.6±0.2	0.5±0.3	0.4 ^{+0.2} _{-0.1}	0.6±0.1	9.14
2E (1210)		2.6±0.2				15.5
W2H (2010)	5.0±0.2	2.5±0.2	0.65±0.15			24.3
W3A (2512)	6.3±0.2	3.1±0.2				37.1

■ 用途 Applications

- 汽车电子技术、电源、工业机器。
- Car electronics, Power supply, Industrial robot

■ 负荷减轻特性曲线 Derating Curve

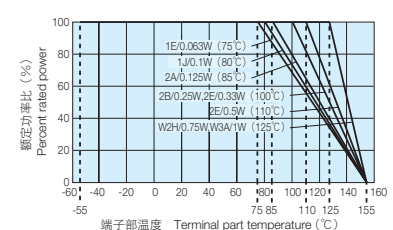
RK73B • RK73H • RK73Z-RT 环境温度
Ambient temperature



在环境温度70度以上使用时, 应按照上图负荷减轻特性曲线, 减小额定功率(RK73B, RK73H)或者额定电流(RK73Z)。

For resistors operated at an ambient temperature of 70°C or above, a power rating (for RK73B, RK73H) or a current rating (for RK73Z) shall be derated in accordance with the above derating curve.

RK73B • RK73H-RT 端子部温度
Terminal part temperature



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.

欲知关于此产品含有的环境有害物质详情(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.

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.

■ 额定值 Ratings

RK73B, RK73H

型号 Type	电阻温度 系数 T.C.R. ($\times 10^{-6}/K$)	额定功率 Power Rating	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	额定 环境温度 Rated Ambient Temp.	额定 端子部温度 Rated Terminal Part Temp.	二次加工和包装数量/卷 Packaging & Qty/Reel (pcs)							
			RK73H		RK73B						TX	TBL	TC • TCM	TPL • TP	TD	TE		
			D: $\pm 0.5\%$ E24 • E96	F: $\pm 1\%$ E24 • E96	D: $\pm 2\%$ E24	F: $\pm 5\%$ E24												
1F	0~+300	0.03W	-	-	1~9.1	1~9.1	20V	30V	70°C	-	40,000	20,000	-	-	-	-		
	± 300			10~91*	10~91	10~91												
	± 250			100~91k*	100~91k	100~91k												
1H	± 300	0.05W	-	10~97.6	-	10~91	25V	50V		-	-	-	-	-	-	-	-	
	± 200			100~1M	-	100~1M												
1E	± 200	0.063W	-	1.02M~10M	10~10M	1~10M	50V	100V		75°C	-	-	-	-	-	-	-	-
	± 100			100~1M	10~1M	-												
1J	± 200	0.1W	-	1.02M~10M	10~10M	1~10M	50V	100V		80°C	-	-	-	-	-	-	-	-
	± 100			100~1M	10~1M	-												
2A	± 200	0.125W	-	1.02M~10M	10~10M	1~10M	150V	200V		85°C	-	-	-	-	-	-	-	-
	± 100			100~1M	10~1M	-												
2B	± 200	0.25W	-	1.02M~10M	10~10M	1~10M	150V	200V	100°C	-	-	-	-	-	-	-	-	
	± 100			100~1M	10~1M	-												
2E	± 200	0.5W	-	-	10~1k	1~1k	200V	400V	110°C	-	-	-	-	-	-	-	-	
	± 200	0.33W		1.1k~1M	1.1k~1M													
	± 100	0.5W		100~1k	10~1k	-												-
		0.33W		1.02k~1M	1.02k~1M	-												-
W2H	± 200	0.75W	-	1.02M~10M	10~10M	1~10M	150V	200V	110°C	-	-	-	-	-	-	-	-	
	± 100			10~1M	10~1M	-												-
W3A	± 200	1W	-	1.02M~10M	10~10M	1~10M	150V	200V	100°C	-	-	-	-	-	-	-	-	
	± 100			10~1M	10~1M	-												-

使用温度范围 Operating Temperature Range: -55~+125°C (1F)、-55°C~+155°C (1H • 1E • 1J • 2A • 2B • 2E • W2H • W3A)

*RK73H1F (F: $\pm 1\%$) 的公称电阻值为E24。 *The nominal resistance value for RK73H1F (F: $\pm 1\%$) is E24.

额定电压是 $\sqrt{\text{额定功率} \times \text{公称电阻值}}$ 所算出的值或表中最高使用电压两者中的小值成为额定电压。

Rated voltage = $\sqrt{\text{Power Rating} \times \text{Resistance value}}$ or Max. working voltage, whichever is lower.

RK73Z

型号 Type	电阻值 Resistance	额定电流 Current Rating	最高过载电流 Max. Overload Current	额定环境温度 Rated Ambient Temperature	使用温度范围 Operating Temp. Range	二次加工和包装数量/卷 Packaging & Qty/Reel (pcs)			
						TC • TCM	TPL • TP	TD	TE
1H	100 Ω 以下 100 Ω max.	0.5A	1A	+70°C	-55°C~+155°C	TC: 10,000 TCM: 15,000	-	-	-
1E	50 Ω 以下 50 Ω max.	1A	2A			-	TPL: 20,000 TP: 10,000	-	-
1J						-	TP: 10,000	5,000	-
2A		-	TP: 10,000			5,000	4,000		
2B		-	-			5,000	4,000		
2E		-	-			5,000	4,000		
W2H	-	-	-			4,000			
W3A	-	-	-	4,000					

■ 性能 Performance

试验项目 Test Items	RK73H, RK73B		RK73Z		试验方法 Test Methods
	标准值 Performance Requirements $\Delta R \pm (\% + 0.05 \Omega)$		标准值 Performance Requirements		
	保证值 Limit	代表值 Typical	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.	在规定的允许偏差内 Within specified T.C.R.		-	-	+25°C/-55°C and +25°C/+125°C
过载 (短时间) Overload (Short time)	2	1: 1F 0.8: another	R $\leq 100\Omega$: 1H R $\leq 50\Omega$: another	R $\leq 90\Omega$: 1H R $\leq 40\Omega$: another	RK73B, RK73H: 把额定电压 $\times 2.5$ 倍施加5秒钟 (仅2B $\times 2$ 倍) RK73B, RK73H: Rated voltage $\times 2.5$ for 5s RK73Z: 把最高过载电流施加5秒钟 Max. overload current, 5s
耐焊接热 Resistance to soldering heat	1: 10 Ω \leq R \leq 1M Ω 3: R < 10 Ω , R > 1M Ω	1: R < 10 Ω , R > 1M Ω 0.5: another	R $\leq 100\Omega$: 1H R $\leq 50\Omega$: another	R $\leq 90\Omega$: 1H R $\leq 40\Omega$: another	260°C \pm 5°C, 10s \pm 1s
温度突变 Rapid change of temperature	1: 1F 0.5: another	0.5: 1F 0.3: another	R $\leq 100\Omega$: 1H R $\leq 50\Omega$: another	R $\leq 90\Omega$: 1H R $\leq 40\Omega$: another	-55°C (30min.) / +125°C (30min.) 100 cycles
耐湿负荷 Moisture resistance	2: 1J, 2A, 2B 3: another	0.75: 1J, 2A, 2B 1.5: 1F 1: another	R $\leq 150\Omega$: 1H R $\leq 100\Omega$: another	R $\leq 100\Omega$: 1H R $\leq 50\Omega$: another	40°C \pm 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	2: 1J, 2A, 2B 3: another	0.75: 1J, 2A, 2B 1: another	R $\leq 150\Omega$: 1H R $\leq 100\Omega$: another	R $\leq 100\Omega$: 1H R $\leq 50\Omega$: another	70°C \pm 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	0.5	R $\leq 150\Omega$: 1H R $\leq 100\Omega$: another	R $\leq 100\Omega$: 1H R $\leq 50\Omega$: another	+125°C, 1000h: 1F +155°C, 1000h: 1H, 1E, 1J, 2A, 2B, 2E, W2H, W3A
硫化试验 Sulfuration test	5	-	R $\leq 150\Omega$: 1H R $\leq 100\Omega$: another	-	用含硫3.5%的工业油浸渍105°C \pm 3°C 500h Soaked in industrial oil with sulfur substance 3.5% contained 105°C \pm 3°C 500h

■ 使用注意事项 Precautions for Use

- 片状电阻器的基材是氧化铝, 由于和安装基板的热膨胀系数不同, 在反复施加热循环等热应力时, 连接部的焊缝会发生裂纹。特别是大型尺寸W2H/W3A, 由于热膨胀大, 而且本身发热也大, 使环境温度变动有较大幅度和, 载荷的ON/OFF有反复时, 需要注意裂纹的发生。用环氧树脂印刷电路板 (FR-4), 在使用温度范围的上、下限进行一般性的热循环试验和, 1F~2E的类型不容易发生裂纹, 而W2H/W3A型则有容易发生裂纹的倾向。因热应力而发生裂纹, 取决于所安装的区域的大小、焊接量、安装基板的散热性等, 因此环境温度有大的变化和载荷的ON/OFF使用条件时, 请务必注意后进行设计。
- RK73B1F、RK73H1F电阻器因设备组装工序中静电的产生和施加而发生损坏, 敬请注意。
- The substrate of chip resistors is alumina. Cracks may occur at the connection of solder (solder fillet portion) due to the difference of the coefficient of thermal expansion from mounting board when heat stress like heat cycle, etc. are repeatedly given to them. Care should be taken to the occurrence of the cracks when the change in ambient temperature or ON/OFF of load is repeated, especially when large types of W2H/W3A which have large thermal expansion and also self heating. By general temperature cycle test using glass-epoxy (FR-4) boards under the maximum/minimum temperatures of operating temperature range, the crack does not occur easily in the types of 1F~2E, but the crack tends to occur in the types of W2H/W3A. The occurrence of the crack by heat stress may be influenced by the size of a pad, solder volume, heat radiation of mounting board etc., so please pay careful attention to redesigning when a big change in ambient temperature and conditions for use like ON/OFF of load can be assumed.
- Care should be taken that RK73B1F and RK73H1F may be damaged when static electricity occurs and is applied in the equipment assembly process.

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