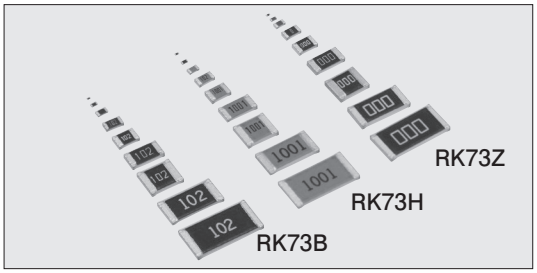
EU RoHS

Flat Chip Resistors

RK73B·RK73H·RK73Z-RT ▌Flat Chip Resistors (Anti Sulfuration)

RK73B·RK73H·RK73Z-KT ▌Flat Chip Resistors (Anti Sulfuration General)



Coating Color :
Black (RK73B 1F, 1H, 1E, 1J, 2A, 2B, 2E, W2H, W3A, W3A2)
(RK73H 1F, 1H) (RK73Z 1J, 2A, 2B, 2E, W2H, W3A)
Blue (RK73H 1E, 1J, 2A, 2B, 2E, W2H, W3A, W3A2)
(RK73-KT 1E)
Green (RK73Z 1H, 1E)

■Features

- Excellent anti-sulfuration characteristic due to using high sulfuration-proof inner top electrode material.(RK73-RT)
- Using special protective film material prevents sulfuration disconnection of the inner top electrode.(RK73-KT)
- 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.
- This products 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)

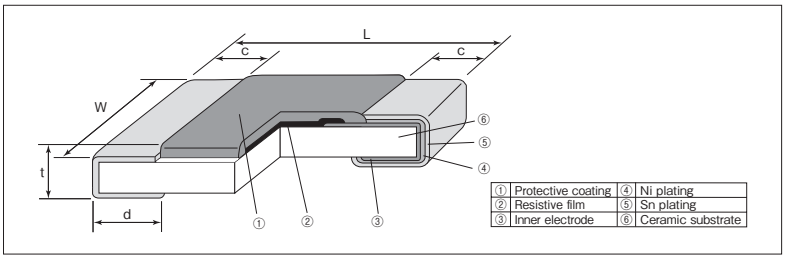
■Applications

- Car electronics, Power supply, Industrial robot

■Reference Standards

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

■Construction



①	Protective coating	④	Ni plating
②	Resistive film	⑤	Sn plating
③	Inner electrode	⑥	Ceramic substrate

■Dimensions

Type (Inch Size Code)	Dimensions (mm) L	W	c	d	t	Weight (g) (1000pcs)
1F (01005) ※1	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
NEW 1E KT (0402)				$0.15^{+0.2}_{-0.1}$		
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
W3A2 (2512) ※1						

※1 Exemption RK73Z

■Type Designation

Example

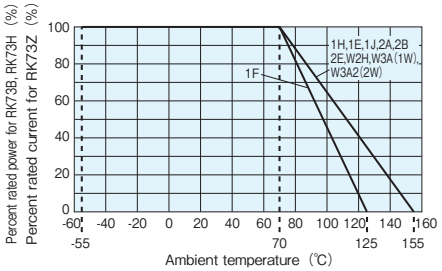
RK73H	2A	R	T	TD	1002	F
Product Code	Power Rating	Characteristic	Terminal Surface Material	Taping	Nominal Resistance	Resistance Tolerance
RK73B RK73H	1F : 0.03W 1H : 0.05W 1E : 0.1W 1J : 0.1W 0.125W 2A : 0.25W 2B : 0.25W 2E : 0.5W W2H : 0.75W W3A : 1W W3A2 : 2W※2	R : Anti sulfuration NEW K : Anti sulfuration (General)	T : Sn	TX : 4mm width-1mm pitch plastic embossed TBL·TCM : 2mm pitch press paper TPL·TP : 2mm pitch punch paper TD : 4mm pitch punch paper TE : 4mm pitch plastic embossed BK : Bulk	RK73B : 3 digits RK73H : 4 digits	D : ±0.5% F : ±1% G : ±2% J : ±5%

RK73Z	2A	R	T	TD
Product Code	Current Rating	Characteristic	Terminal Surface Material	Taping
RK73Z	1H : 0.5A 1E : 1A 1J : 1A 2A : 2A 2B : 2A 2E : 2A W2H : 2A W3A : 2A	R : Anti sulfuration NEW K : Anti sulfuration (General)	T : Sn	TCM : 2mm pitch press paper TPL·TP : 2mm pitch punch paper TD : 4mm pitch punch paper TE : 4mm pitch plastic embossed BK : Bulk

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.

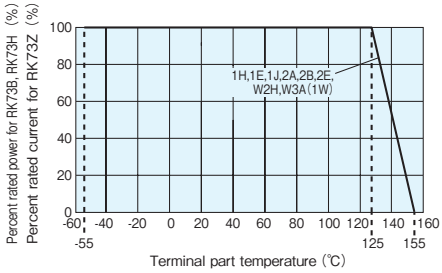
■Derating Curve

RK73B·RK73H·RK73Z-RT Ambient temperature
RK73B·RK73H·RK73Z-KT Ambient temperature

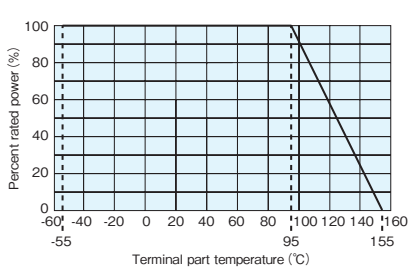


For resistors operated at an ambient temperature of 70℃ or higher, the power (for RK73B, RK73H) or a current rating (for RK73Z) shall be derated in accordance with the above derating curve.

RK73B·RK73H·RK73Z-RT Terminal part temperature
RK73B·RK73H·RK73Z-KT Terminal part temperature



RK73B·RK73H-RT
Terminal part temperature W3A2



When the terminal part temperature of the resistor exceeds the rated terminal part temperature shown above, the power shall be derated according to the derating curve.
※Please refer to "Introduction of the derating curves based on the terminal part temperature" on the beginning of our catalog before use.

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 automotives, medical equipment and aerospace equipment.
Malfunction or failure of the products in such applications may cause loss of human life or serious damage.

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■Ratings

RK73B, RK73H

Type	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (×10⁻⁶/K)	Resistance Range (Ω) RK73H D : ±0.5% E24・E96	RK73H F : ±1% E24・E96	RK73B G : ±2% E24	RK73B J : ±5% E24	Max. Working Voltage	Max. Overload Voltage	Packaging & Q'ty/Reel (pcs) TX	TBL	TCM※4	TPL・TP	TD	TE
1F	0.03W	70℃	–	±200	–	100k～2M	100k～1M	100k～10M	20V	30V	40,000	20,000	–	–	–	–
				±250		10～97.6k	10～91k	10～91k								
				0～+300		–	1～9.1	1～9.1								
1H	0.05W	70℃	125℃	±200	100～100k	100～1M	–	100～1M	25V	50V	–	–	15,000	–	–	–
				±300	–	10～97.6		10～91								
1E	0.1W	70℃	125℃	±100	100～1M	10～1M	–	–	75V	100V	–	–	–	TPL:20,000 TP :10,000	–	–
				±200	–	1.02M～10M	10～10M	1～10M								
NEW 1E KT				±100	10～1M	10～1M	–	–			–	–	–		–	–
				±200	–	1～9.76	–	1～1M								
1J	0.1W	70℃	125℃	±100	1.02k～1M	1.02k～1M	–	–			–	–	–	TP :10,000※3	5,000	–
				±200	–	1.02M～10M	1.1k～10M	1.1k～10M								
	0.125W			±100	100～1k	10～1k	–	–								
				±200	–	–	10～1k	1～1k								
2A	0.25W	70℃	125℃	±100	100～1M	10～1M	–	–	150V	200V	–	–	–	TP :10,000※3	5,000	4,000※3
				±200	–	1.02M～10M	10～10M	1～10M								
2B	0.25W	70℃	125℃	±100	100～1M	10～1M	–	–	200V	400V	–	–	–	–	5,000	4,000※3
				±200	–	1.02M～10M	10～10M	1～10M								
2E	0.5W	70℃	125℃	±100	100～1M	10～1M	–	–			–	–	–	–	5,000	4,000※3
				±200	–	–	10～1M	1～1M								
W2H	0.75W	70℃	125℃	±100	10～1M	10～1M	–	–			–	–	–	–	–	4,000
				±200	–	1～9.76 1.02M～10M	1～10M	1～10M								
W3A	1W	70℃	125℃	±100	10～1M	10～1M	–	–			–	–	–	–	–	4,000
				±200	–	1.02M～10M	10～10M	1～10M								
W3A2	2W※2	70℃	95℃	±100	10～1M	10～1M	–	–	200V	400V	–	–	–	–	–	4,000
				±200	–	1.02M～10M	10～10M	1～10M								

Operating Temperature Range : −55℃～+125℃ (1F)、−55℃～+155℃ (1H・1E・1J・2A・2B・2E・W2H・W3A・W3A2)

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

※2 If you use at the rated power, please keep the condition that the terminal of the resistor is below the rated terminal part temperature. Please refer to the derating curves based on the terminal temperature of right side on the previous page.

※3 Standard packaging : TD(4mm pitch punch paper)

※4 Standard taping specification of 1H is TCM. Previously available "TC(10,000pcs/Reel)" is not recommended for new designs.

If any questions arise whether to use the "Rated Ambient Temperature" or the "Rated Terminal Part Temperature" in your usage conditions, please give priority to the "Rated Terminal Part Temperature". For more details, please refer to "Introduction of the derating curves based on the terminal part temperature" on the beginning of our catalog.

While using under high power, the temperature of the product may increase depending on the condition of heat dissipation from PCB.

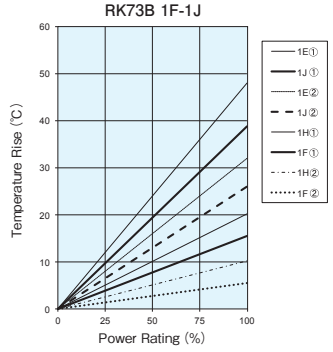
Be sure to check the terminal part temperature as well as precausions to use on delivery specifications before use.

RK73Z

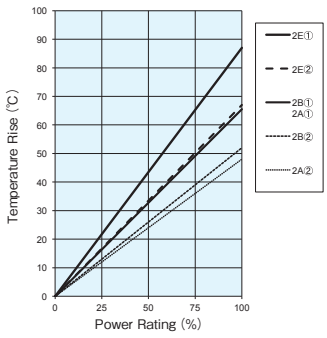
Type	Rated Ambient Temperature	Rated Terminal Part Temp.	Resistance	Current Rating	Max. Overload Current	Operating Temp. Range	Packaging & Q'ty/Reel (pcs) TCM※4	TPL・TP	TD	TE
1H	70℃	125℃	100mΩmax.	0.5A	1A	−55℃～+155℃	15,000	–	–	–
1E NEW 1E KT	70℃	125℃	50mΩmax.	1A	2A		–	TPL:20,000 TP :10,000	–	–
1J							–	TP :10,000※3	5,000	–
2A	70℃	125℃	50mΩmax.	2A	5A		–	TP :10,000※3	5,000	4,000※3
2B					10A		–	–	5,000	4,000※3
2E							–	–	5,000	4,000※3
W2H							–	–	–	4,000
W3A							–	–	–	4,000

■Temperature Rise

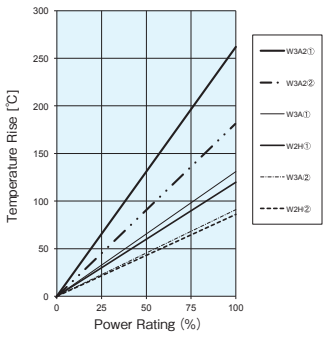
RK73B 1F-1J



RK73B 2A-2E

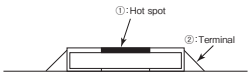


RK73B W2H-W3A2

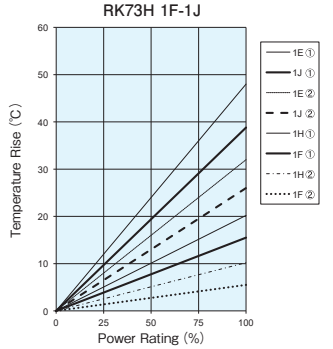


Regarding the temperature rise, the value of the temperature varies per conditions and board for use since the temperature is measured under our measuring conditions.

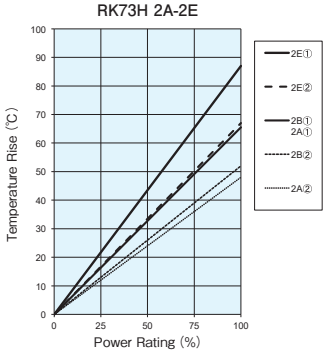
Measurement condition
Room temperature: 25℃
PCB: FR-4t = 1.6mm
Cu foil thickness: 35μm



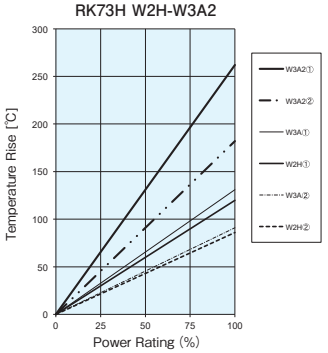
RK73H 1F-1J



RK73H 2A-2E



RK73H W2H-W3A2

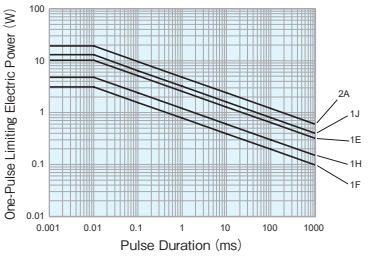


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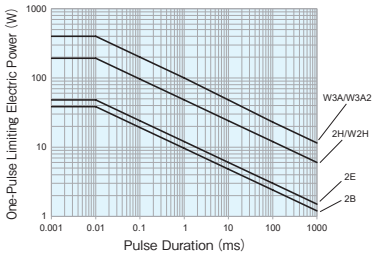
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■One-Pulse Limiting Electric Power

RK73B 1F-2A

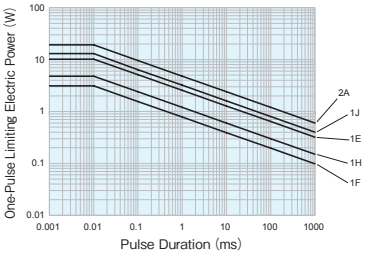


RK73B 2B-W3A2

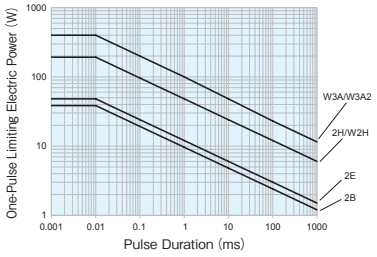


The maximum applicable voltage is equal to the max. overload voltage.
Please ask us about the resistance characteristic of continuous applied pulse.
The pulse endurance values are not assured values,so be sure to check the products on actual equipment when you use them.

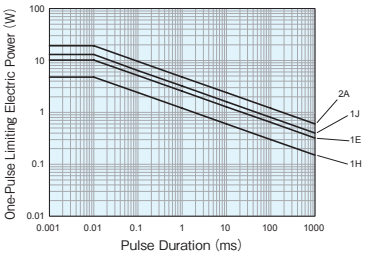
RK73H 1F-2A



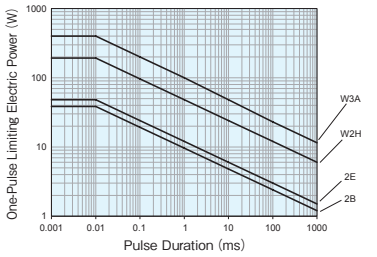
RK73H 2B-W3A2



RK73Z 1H-2A



RK73Z 2B-W3A



Please ask us about the resistance characteristic of continuous applied pulse.
Please calculate One-Pulse Limiting Electric Power using upper limit of resistance (50mΩ or 100mΩ) for applied current.
The pulse endurance values are not assured values,so be sure to check the products on actual equipment when you use them.

■Performance

Test Items	RK73H, RK73B		RK73Z		Test Methods
	Performance Requirements ΔR±(%+0.1Ω)		Performance Requirements		
	Limit	Typical	Limit	Typical	
Resistance	Within specified tolerance	—	R≦100mΩ : 1H R≦50mΩ : others	R≦90mΩ : 1H R≦40mΩ : others	25℃
T.C.R.	Within specified T.C.R.	—	—	—	+25℃/−55℃ and +25℃/+125℃
Overload (Short time)	2	1 : 1F 0.8 : others	R≦100mΩ : 1H R≦50mΩ : others	R≦90mΩ : 1H R≦40mΩ : others	RK73B,RK73H : Rated voltage×2.5 for 5s (1E, 2B, W3A2:Rated voltage×2 for 5s) Max. overload current, 5s
Resistance to soldering heat	1 : 10Ω≦R≦1MΩ 3 : R<10Ω, R>1MΩ	1 : R<10Ω, R>1MΩ 0.5 : others	R≦100mΩ : 1H R≦50mΩ : others	R≦90mΩ : 1H R≦40mΩ : others	260℃±5℃, 10s±1s
Rapid change of temperature	1 : 1F 0.5 : others	0.5 : 1F 0.3 : others	R≦100mΩ : 1H R≦50mΩ : others	R≦90mΩ : 1H R≦40mΩ : others	−55℃ (30min.)/+125℃ (30min.) 100 cycles
Moisture resistance	2 : 1J, 2A, 2B 3 : others	0.75 : 1J, 2A, 2B 1.5 : 1F 1 : others	R≦150mΩ : 1H R≦100mΩ : others	R≦100mΩ : 1H R≦50mΩ : others	40℃±2℃, 90%～95%RH, 1000h 1.5h ON/0.5h OFF cycle
Endurance at 70℃ or rated terminal part temperature	2 : 1J, 2A, 2B 3 : others	0.75 : 1J, 2A, 2B 1 : others	R≦150mΩ : 1H R≦100mΩ : others	R≦100mΩ : 1H R≦50mΩ : others	70℃±2℃ or rated terminal part temperature ±2℃ 1000h 1.5h ON/0.5h OFF cycle
High temperature exposure	1	0.5	R≦150mΩ : 1H R≦100mΩ : others	R≦100mΩ : 1H R≦50mΩ : others	+125℃, 1000h : 1F +155℃, 1000h : 1H, 1E, 1J, 2A, 2B, 2E, W2H, W3A, W3A2
Sulfuration test	5	0.3 : 1F, 1H 0.2 : others	R≦150mΩ : 1H R≦100mΩ : others	R≦100mΩ : 1H R≦50mΩ : others	Characteristic「R」: Soaked in industrial oil with sulfur substance 3.5% contained 105℃±3℃ 500h Characteristic「K」: ASTM B809-95, 105℃±2℃ 750h/EIA-977, 105℃±2℃ 750h

■Precautions for Use

- 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 a 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/W3A2 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/W3A2. 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 designing 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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