



**THE DATASHEET OF  
RK73H1ETTP5603F**





## features

- Wide lineup from 01005 to 2512 size
- Excellent heat resistance and weather resistance are ensured by the use of metal glaze thick film
- Suitable for both flow and reflow solderings
- Products with lead-free terminations meet EU RoHS requirements. EU RoHS regulation is not intended for Pb-glass contained in electrode, resistor element and glass.
- AEC-Q200 Tested: 0201 (1H), 0402 (1E), 0603 (1J), 0805 (2A), 1206 (2B), 1210 (2E), 2010 (2H/W2H), 2512 (3A/W3A/W3A2)

## dimensions and construction



## Derating Curve



For resistors operated at an ambient temperature of 70°C or higher, the power shall be derated in accordance with the above derating curve.

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



\*Parentheses indicate EIA package size codes.

\*\* RK73H 2H, 3A and 3A2 are also still available (different "d" dimensions = 0.4 +0.2/-0.1mm)

Type* (Inch Size Code)	Dimensions inches (mm)				
	L	W	c	d	t
<b>1F</b> (01005)	.016±.0008 (0.4±0.02)	.008±.0008 (0.2±0.02)	.004±.001 (0.1±0.03)	.004±.001 (0.11±0.03)	.005±.0008 (0.13±0.02)
<b>1H</b> (0201)	.024±.001 (0.6±0.03)	.012±.001 (0.3±0.03)	.004±.002 (0.1±0.05)	.006±.002 (0.15±0.05)	.009±.001 (0.23±0.03)
<b>1E</b> (0402)	.039 <sup>+0.04</sup> <sub>-0.02</sub> (1.0 <sup>+0.1</sup> <sub>-0.05</sub> )	.02±.002 (0.5±0.05)	.008±.004 (0.2±0.1)	.01 <sup>+0.02</sup> <sub>-0.04</sub> (0.25 <sup>+0.05</sup> <sub>-0.1</sub> )	.014±.002 (0.35±0.05)
<b>1E AT</b> (0402)			.01±.004 (0.25±0.1)	.012±.006 (0.3±0.15)	
<b>1J</b> (0603)	.063±.008 (1.6±0.2)	.031±.004 (0.8±0.1)	.012±.004 (0.3±0.1)	.012±.004 (0.3±0.1)	.018±.004 (0.45±0.1)
<b>1J AT</b> (0603)			.014±.006 (0.35±0.15)	.02±.008 (0.5±0.2)	
<b>2A</b> (0805)	.079±.008 (2.0±0.2)	.049±.004 (1.25±0.1)	.016±.008 (0.4±0.2)	.012 <sup>+0.08</sup> <sub>-0.04</sub> (0.3 <sup>+0.2</sup> <sub>-0.1</sub> )	.02±.004 (0.5±0.1)
<b>2A AT</b> (0805)			.018±.010 (0.45±0.25)	.024±.008 (0.6±0.2)	
<b>2B</b> (1206)	.126±.008 (3.2±0.2)	.063±.008 (1.6±0.2)	.02±.012 (0.5±0.3)	.016 <sup>+0.08</sup> <sub>-0.04</sub> (0.4 <sup>+0.2</sup> <sub>-0.1</sub> )	.024±.004 (0.6±0.1)
<b>2B AT</b> (1206)			.022±.014 (0.55±0.35)	.031±.008 (0.8±0.2)	
<b>2E</b> (1210)	.197±.008 (5.0±0.2)	.098±.008 (2.5±0.2)	.102±.008 (2.6±0.2)	.016 <sup>+0.08</sup> <sub>-0.04</sub> (0.4 <sup>+0.2</sup> <sub>-0.1</sub> )	.024±.004 (0.6±0.1)
<b>2H</b> (2010)					
<b>W2H</b> *1 (2010)	.248±.008 (6.3±0.2)	.122±.008 (3.1±0.2)	.016 <sup>+0.08</sup> <sub>-0.04</sub> (0.4 <sup>+0.2</sup> <sub>-0.1</sub> )	.026±.006 (0.65±0.15)	
<b>3A</b> *1 (2512)					.026±.006 (0.65±0.15)
<b>W3A/W3A2</b> *1 (2512)					

## ordering information

RK73H	2B		T	TD	1003	F
Type	Size	Characteristics	Termination Material	Packaging	Nominal Resistance	Tolerance
	1F, 1H 1E, 1J 2A, 2B 2E W2H W3A 2H, 3A W3A2	Nil: Standard A: Heat shock resistance *2	T: Sn G: Au *3 (L: Sn/Pb*4)	TX: 4mm width - 1mm pitch plastic embossed TBL - TCM: 2mm pitch press paper *5 TPL - TP: 2mm pitch punch paper TD: 4mm pitch punch paper TE: 4mm pitch plastic embossed Other non-standard reel sizes available, contact factory for other options	3 significant figures + 1 multiplier "R" indicates decimal on value <100Ω	D: ±0.5% F: ±1%

\*2 With type A only T is available as the terminal surface material

\*3 Products with gold plated electrodes are also available with 1E, 1J and 2A types (10Ω~1MΩ), so please consult with us

\*4 With type 1F, 1H, W2H, W3A, W3A2 only T is available as the terminal surface material

\*5 Standard taping specification of 1H is TCM. Previously available "TC(10,000pcs/Reel)" is not recommended for new designs.

The terminal surface material lead free is standard.

For further information on packaging, please refer to Appendix A

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

11/03/23

## applications and ratings

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (x10 <sup>-6</sup> /K)	Resistance Range		Maximum Working Voltage	Maximum Overload Voltage	Operating Temperature Range	
					D±0.5% E-24, E-96	F±1% E-24, E-96*				
RK73H1F (01005)	0.03W	70°C	125°C	±200	—	100kΩ - 2MΩ*	20V	30V	-55°C to +125°C	
					—	10Ω - 91kΩ*				
RK73H1H (0201)	0.05W				±200	10Ω - 1MΩ	10Ω - 10MΩ*	25V		50V
					±400	—	1.0Ω - 9.1Ω*			
RK73H1E (0402)	0.1W				±100	10Ω - 1MΩ	10Ω - 1MΩ	75V		100V
					±200	—	1.0Ω - 9.76Ω, 1.02MΩ - 10MΩ			
RK73H1J (0603)	0.1W				±100	1.02kΩ - 1MΩ	1.02kΩ - 1MΩ	75V		100V
					±200	—	1.02MΩ - 10MΩ			
	0.125W				±100	10Ω - 1kΩ	10Ω - 1kΩ	75V		100V
					±200	—	1.0Ω - 9.76Ω			
RK73H2A (0805)	0.25W				±100	10Ω - 1MΩ	10Ω - 1MΩ	150V		200V
					±200	—	1.0Ω - 9.76Ω			
		±400	—	1.02MΩ - 10MΩ						
RK73H2B (1206)	0.25W	±100	10Ω - 1MΩ	10Ω - 1MΩ	200V	400V				
		±200	—	1.0Ω - 9.76Ω, 1.02MΩ - 5.6MΩ						
		±400	—	5.62MΩ - 10MΩ						
RK73H2E (1210)	0.5W	±100	10Ω - 1MΩ	10Ω - 1MΩ	200V	400V				
		±200	—	1.0Ω - 9.76Ω, 1.02MΩ - 5.6MΩ						
		±400	—	5.62MΩ - 10MΩ						
RK73HW2H/2H (2010)	0.75W	±100	10Ω - 1MΩ	10Ω - 1MΩ	200V	400V				
		±200	—	1.0Ω - 9.76Ω, 1.02MΩ - 5.6MΩ						
		±400	—	5.62MΩ - 10MΩ						
RK73HW3A/3A (2512)	1.0W	±100	10Ω - 1MΩ	10Ω - 1MΩ	200V	400V				
		±200	—	1.0Ω - 9.76Ω, 1.02MΩ - 5.6MΩ						
		±400	—	5.62MΩ - 10MΩ						
RK73HW3A2 (2512)	2.0W	95°C	125°C	±100	10Ω - 1MΩ	10Ω - 1MΩ	200V	400V	-55°C to +155°C	
				±200	—	1.0Ω - 9.76Ω, 1.02MΩ - 5.6MΩ				
				±400	—	5.62MΩ - 10MΩ				

 Rated voltage =  $\sqrt{\text{Power rating} \times \text{resistance value}}$  or max. working voltage, whichever is lower

 \*The nominal resistance value for RK73H1F ( $10\Omega \leq R \leq 2M\Omega$ ) and RK73H1H ( $1\Omega \leq R \leq 9.1\Omega$ ,  $1M\Omega \leq R \leq 10M\Omega$ ) is E24.

If any questions arise whether to use the "Rated Ambient Temperature" or the "Rated Terminal Part Temperature," please give priority to the "Rated Terminal Part Temperature."

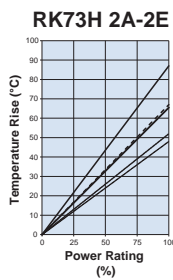
Prior to use and for more details refer to "Introduction of the derating curves based on the terminal part temperature" in the beginning of the catalog.

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

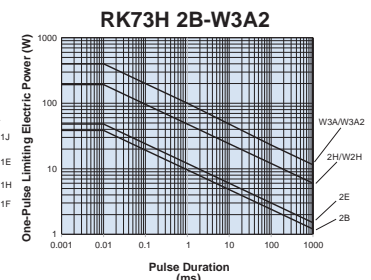
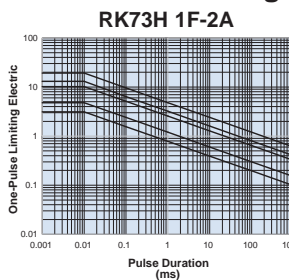
Be sure to check the terminal part temperature as well as precautions to use on delivery specification before use.

## environmental applications

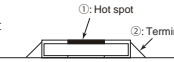
## Temperature Rise



## One-Pulse Limiting Electric Power



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°C  
 PCB: FR-4t = 1.6mm  
 Cu foil thickness: 35µm


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.

## Performance Characteristics

Parameter	Requirement $\Delta R$ (%+0.1%)		Test Method
	Limit	Typical	
Resistance	Within specified tolerance	—	25°C
T.C.R.	Within specified T.C.R.	—	+25°C/-55°C and +25°C/+125°C
Overload (Short time)	±2%	±1%: 1F; ±0.5%: Others	Rated Voltage x 2.5 for 5 seconds (1E, 2B, W3A2: Rated Voltage x 2 for 5 seconds)
Resistance to Soldering Heat	±1%: 1F ~ W3A2 ( $10\Omega \leq R \leq 1M\Omega$ ); ±3%: 1H ~ W3A2 ( $R < 10\Omega$ , $R > 1M\Omega$ )	±0.5%: 1F ~ W3A2 ( $10\Omega < R < 1M\Omega$ ); ±1%: 1H ~ W3A2 ( $R < 10\Omega$ , $R > 1M\Omega$ )	260°C ± 5°C, 10 seconds ± 1 second
Rapid Change of Temperature	±1%: 1F, Characteristic (A) Heat Shock Resistance ±0.5% Others	±0.5%: 1F, Characteristic (A) Heat Shock Resistance ±0.3% Others	Characteristic (Nil) Standard: -55°C (30 minutes), +125°C (30 minutes), 100 cycles Characteristic (A) Heat Shock Resistance: -55°C (30 minutes), +125°C (30 minutes), 1000 cycles
Moisture Resistance	±2%: 1J, 2A, 2B ±3%: Others	±0.75%: 1J, 2A, 2B; ±1.5%: 1F, ±1%: Other	40°C ± 2°C, 90%-95% RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle
Endurance at 70°C	±2%: 1J, 2A, 2B; ±3%: Others	±0.75%: 1J, 2A, 2B; ±1%: Others	70°C ± 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle
High Temperature Exposure	±1%	±0.5%: 1F ±0.3%: Others	+125°C, 1000 hours: 1F; +155°C, 1000 hours: 1E, 1H, 1J, 2A, 2B, 2E, 2H/W2H, 3A/W3A/W3A2

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