

High Power Chip Allows For More Board Space

Technical Information

- Higher power ratings as a result of enhanced heat dissipation
- Superior thermal shock characteristics and high solder joint reliability
- Allows downsizing and increased board space due to higher power rating density
- High reliability and performance with T.C.R. down to ± 75 p.p.m. and 0.5% resistance tolerance

Target Markets

- Power supply market – for current sense detection
- Automotive – ECU's, anti-lock braking systems, air bag systems



KOA Speer Wide Terminal Lineup

Standard

Power Rating:
0.33-2W
Resistance Range:
10-1M Ω
Tolerances:
 $\pm 0.5\%$, $\pm 1\%$, $\pm 5\%$

WK73R

Pulse Power

Power Rating:
1-2W
Resistance Range:
560m-1k Ω
Tolerances:
 $\pm 10\%$, $\pm 20\%$

WG73

Low Resistance

Power Rating:
1-2W
Resistance Range:
10m-9.76 Ω
Tolerances:
 $\pm 0.5\%$, $\pm 1\%$, $\pm 5\%$

WK73S (10m-9.76 Ω)
WU73 (10m-100m Ω)

High Power

Power Rating:
1.5-3W
Resistance Range:
10m-1M Ω
Tolerances:
 $\pm 0.5\%$, $\pm 1\%$, $\pm 5\%$

WK73R (HP)
WK73S (HP)

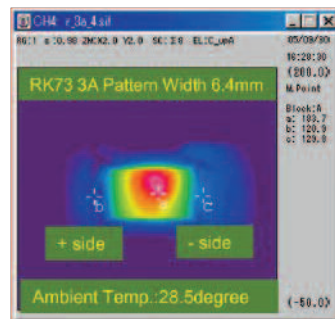
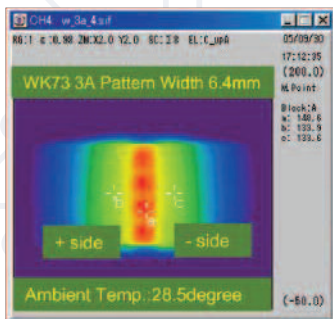
Anti-Sulfur

Power Rating:
0.75-3W
Resistance Range:
1-1M Ω
Tolerances:
 $\pm 1\%$, $\pm 5\%$

WK73R-RT (HP)
WK73S-RT (HP)

Why Choose Wide Terminal Resistors?

- Offers excellent heat radiation and achieves higher rated power for similar dimensions
- Wide terminal type with reverse-geometry against standard type, features closely-spaced electrodes and better heat dissipation and heat-cycle durability



Wide Terminal Type (WK73) Heat Dissipation Image



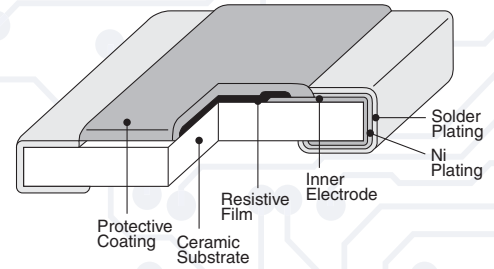
Nominal Terminal Type (RK73) Heat Dissipation Image



Standard: Applications & Ratings

WK73R: High reliability and performance with T.C.R. $\pm 100 \times 10^{-6}/K$, resistance tolerance 0.5%

- Wide-side termination (reverse-geometry) type flat chip resistor
- 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 qualified



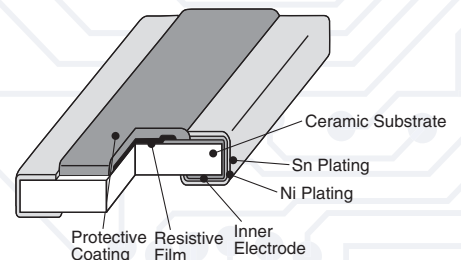
Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (X 10 ⁻⁶ /K)	Resistance Range (Ω)			Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
					D±0.5% E-24/E-96	F±1% E-24/E-96	J±5% E-24			
WK73R1E	0.33W ¹	—	125°C	±100	—	10 - 1M	10 - 1M	75V	100V	-55°C to +155°C
WK73R1J	0.5W ¹	—	125°C	±100	—	10 - 1M	10 - 1M	150V	200V	
WK73R2A	0.75W ¹	—	125°C	±100	—	20.5k - 1M	22k - 1M	200V	400V	
	1.0W ¹	—	125°C	±100	—	10 - 20k	10 - 20k			
WK73R2B	0.75W	70°C	125°C	±100	10 - 1M	10 - 1M	10 - 1M	200V	400V	
	1.0W ¹	—	115°C	±100	10 - 9.76k	10 - 9.76k	10 - 9.1k			
WK73R2H	1.0W	70°C	125°C	±100	—	10 - 430k	10 - 430k	200V	400V	
				±200	—	432k - 1M	470k - 1M			
WK73R2J	1.0W	70°C	100°C	±100	—	10 - 510k	10 - 510k	200V	400V	
				±200	—	511k - 1M	560k - 1M			
WK73R3A	1.5W	70°C	125°C	±100	—	10 - 330k	10 - 330k	200V	400V	
				±200	—	332k - 1M	360k - 1M			
	2.0W ¹	—	115°C	±100	—	10 - 330k	10 - 330k			
				±200	—	332k - 1M	360k - 1M			

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

Pulse Power: Applications & Ratings

WG73: Flat chip resistors (anti-surge)

- Superior to WK73 series in pulse withstanding voltage
- Suitable for both flow and reflow solderings
- Meets EU RoHS requirements
- AEC-Q200 qualified



Part Designation	Power Rating	Rated Ambient Temperature	Rated Terminal Part Temperature	T.C.R. (X 10 ⁻⁶ /K)	Resistance Range ()		Maximum Working Voltage	Maximum Overload Voltage	Operating Temperature Range
					K±10% E-12	M±20% E-12			
WG732B	1.0W	70°C	±125°C	±100	560m ~ 1k	560m ~ 1k	200V	400V	-55°C to +155°C
WG732H	NEW 1.5W	70°C	±125°C	±100	560m ~ 1k	560m ~ 1k	200V	400V	-55°C to +155°C
WG733A	2.0W	70°C	±125°C	±100	560m ~ 1k	560m ~ 1k	200V	400V	-55°C to +155°C

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

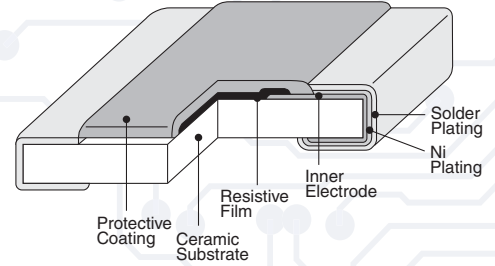
If any questions arise whether to use the “Rated Ambient Temperature” or the “Rated Terminal Part Temperature” in your usage conditions, please give priority to the “Rated Terminal Part Temperature.”

Prior to use and for more details, please refer to the “Introduction of the derating curves based on the terminal part temperature” in the beginning of our catalog.

Low Resistance: Applications & Ratings

WK73S: Now available in 0508 package size with a power rating of 1 Watt (WK73S2A)

- Resistance range of 10m to 9.76Ω
- High reliability and performance with T.C.R. $\pm 100 \times 10^{-6}/K$, resistance tolerance as low as $\pm 0.5\%$
- 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 qualified

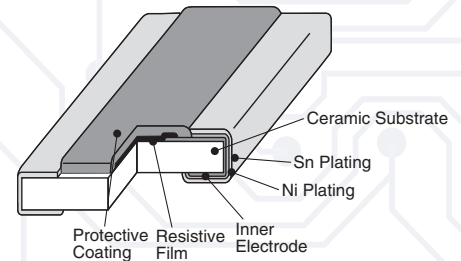


Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (X 10 ⁻⁶ /K)	Resistance Range ()			Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
					D $\pm 0.5\%$ E-24/E-96	F $\pm 1\%$ E-24/E-96	J $\pm 5\%$ E-24			
NEW WK73S2A	1.0W ¹	—	125°C	± 100	—	1 - 9.76	1 - 9.1	200V	400V	-55°C to +155°C
				0~+200	—	30m - 976m	30m - 910m			
				0~+300	—	20m - 29.4m	20m - 27m			
WK73S2B	0.75W	70°C	125°C	± 800	—	—	10m - 27m	200V	400V	
				± 200	—	30m - 422m	30m - 390m			
	1.0W ¹	—	115°C	± 100	430m - 9.76	430m - 9.76	430m - 9.1			
				± 800	—	—	10m - 27m			
WK73S2H	1.0W	70°C	125°C	± 200	—	27m - 215m	27m - 200m	200V	400V	
				± 100	—	220m - 9.76	220m - 9.1			
				± 800	—	—	10m - 24m			
WK73S2J	1.0W	70°C	100°C	± 800	—	—	10m - 30m	200V	400V	
				± 200	—	33m - 237m	33m - 220m			
				± 100	—	240m - 9.76	240m - 9.1			
WK73S3A	1.5W	70°C	125°C	± 800	—	—	10m - 20m	200V	400V	
				± 300	—	22m - 32.4m	22m - 30m			
				± 200	—	33m - 357m	33m - 330m			
				± 100	—	360m - 9.76	360m - 9.1			
	2.0W ¹	—	115°C	± 800	—	—	10m - 20m			
				± 300	—	22m - 32.4m	22m - 30m			
				± 200	—	33m - 357m	33m - 330m			
				± 100	—	360m - 9.76	360m - 9.1			

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

WU73: has a power rating of 1Watt in the 0612 package

- Resistance range of 10m to 100mΩ
- High reliability and performance with T.C.R. $\pm 100 \times 10^{-6}/K$, resistance tolerance of $\pm 1\%$
- 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 qualified



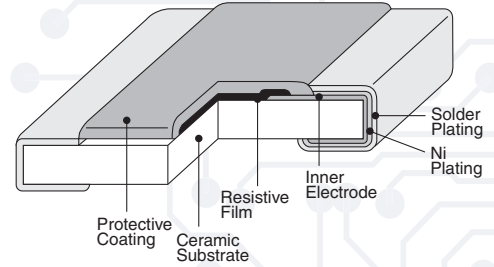
Part Designation	Power Rating	Rated Ambient Temperature	Rated Terminal Part Temperature	T.C.R. (X 10 ⁻⁶ /K)	Resistance Range () E-24, 25m, 50m	Resistance Tolerance	Operating Temperature Range
WU732B	1.0W	70°C	115°C	± 100	10m~12m	F: $\pm 1\%$	-55°C to +155°C
				± 75	13m~27m		
				± 100	30m~100m		
WU732B15	1.5W	—	95°C	± 100	10m~12m	F: $\pm 1\%$	-55°C to +155°C
				± 75	13m~27m		
				± 100	30m~100m		

Rated voltage = $\sqrt{\text{Power rating} \times \text{resistance value}}$

High Power: Applications & Ratings

WK73R/WK73S: Offer a power rating of 1.5 to 3 Watt

- High reliability and performance with T.C.R. $\pm 100 \times 10^{-6}/K$, resistance tolerances of $\pm 0.5\%$, $\pm 1\%$, $\pm 5\%$
- 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 qualified



WK73R

Part Designation	Power Rating	Rated Terminal Part Temp.	T.C.R. (X 10 ⁻⁶ /K)	Resistance Range ()			Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
				D $\pm 0.5\%$ E-24/E-96	F $\pm 1\%$ E-24/E-96	J $\pm 5\%$ E-24			
WK73R2B15	1.5W	95°C	± 100	10 - 9.76k	10 - 9.76k	10 - 9.1k	200V	400V	-55°C to +155°C
WK73R2H2	2.0W	95°C	± 100	—	10 - 430k	10 - 430k	200V	400V	
			± 200	—	432k - 1M	470k - 1M			
WK73R3A3	3.0W	95°C	± 100	—	10 - 330k	10 - 330k	200V	400V	
			± 200	—	332k - 1M	360k - 1M			

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

WK73S

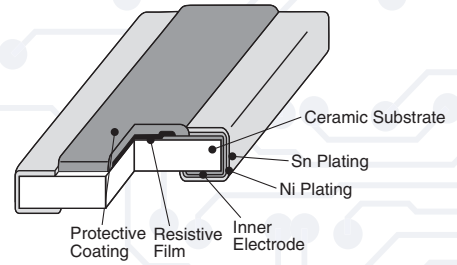
Part Designation	Power Rating	Rated Terminal Part Temp.	T.C.R. (X 10 ⁻⁶ /K)	Resistance Range ()			Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
				D $\pm 0.5\%$ E-24/E-96	F $\pm 1\%$ E-24/E-96	J $\pm 5\%$ E-24			
WK73S2B15	1.5W	95°C	± 100	430m - 9.76	430m - 9.76	430m - 9.1	200V	400V	-55°C to +155°C
			± 200	—	30m - 422m	30m - 390m			
			± 800	—	—	10m - 27m			
WK73S2H2	2.0W ¹	95°C	± 100	—	220m - 9.76	220m - 9.1	200V	400V	
			± 200	—	27m - 215m	27m - 200m			
			± 800	—	—	10m - 24m			
WK73S3A3	3.0W	95°C	± 100	—	360m - 9.76	360m - 9.1	200V	400V	
			± 200	—	33m - 357m	33m - 330m			
			± 300	—	22m - 32.4m	22m - 30m			
			± 800	—	—	10m - 20m			

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

Anti-Sulfur: Applications & Ratings

WK73R-RT/WK73S-RT: Offer a power ratings of 0.75 to 3 Watt

- Excellent anti-sulfuration characteristics due to using high sulfuration-proof inner top electrode material
- 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 qualified



WK73R-RT/WK73S-RT: Offer a power rating of 0.75 to 2 Watt

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (X 10 ⁻⁶ /K)	Resistance Range ()		Maximum Working Voltage	Maximum Overload Voltage	Operating Temperature Range			
					F±1% E-24 • E-96	J±5% E-24						
NEW WK73S2A	1.0W ¹	—	125°C	±100	1 ~ 9.76	1 ~ 9.1	200V	400V	-55°C to +155°C			
	0.75W	—	125°C	±100	20.5k ~ 1M	22k ~ 1M						
WK73R2A	1.0W ¹	—	125°C	±100	10 ~ 20k	10 ~ 20k						
	0.75W	70°C	115°C	±100	1 ~ 9.76	1 ~ 9.1						
WK73S2B	1.0W ¹	—	115°C	±100	1 ~ 9.76	1 ~ 9.1						
				±150	0.3 ~ 0.976	0.3 ~ 0.91						
WK73R2B	0.75W	70°C	125°C	±100	10 ~ 9.76k	10 ~ 9.1k						
	1.0W ¹	—	115°C	±200	10k ~ 1M	10k ~ 1M						
WK73S2H	1.0W	70°C	125°C	±100	1 ~ 9.76	1 ~ 9.1				200V	400V	-55°C to +155°C
				±150	0.2 ~ 0.976	0.2 ~ 0.91						
WK73R2H	1.0W	70°C	125°C	±100	10 ~ 430k	10 ~ 430k						
				±200	432k - 1M	470k - 1M						
WK73S2J	1.0W	70°C	100°C	±100	1 ~ 9.76	1 ~ 9.1	200V	400V	-55°C to +155°C			
				±200	511k ~ 1M	560k ~ 1M						
WK73R2J	1.0W	70°C	100°C	±100	10 ~ 510k	10 ~ 510k						
				±200	511k ~ 1M	560k ~ 1M						
WK73S3A	1.5W	70°C	125°C	±100	1 ~ 9.76	1 ~ 9.1	200V	400V		-55°C to +155°C		
	2.0W ¹	—	115°C	±100	1 ~ 9.76	1 ~ 9.1						
WK73R3A	1.5W	70°C	125°C	±100	10 ~ 330k	10 ~ 330k						
				±200	332k - 1M	360k - 1M						
	2.0W ¹	—	115°C	±100	10 ~ 330k	10 ~ 330k						
				±200	332k - 1M	360k - 1M						

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

WK73R-RT (HP)/WK73S-RT (HP): Offer a power rating of 1.5 to 3 Watt

Part Designation	Power Rating	Rated Terminal Part Temp.	T.C.R. (X 10 ⁻⁶ /K)	Resistance Range ()		Maximum Working Voltage	Maximum Overload Voltage	Operating Temperature Range			
				F±1% E-24 • E-96	J±5% E-24						
NEW WK73S2B15	1.5W	95°C	±100	1 ~ 9.76	1 ~ 9.1	200V	400V	-55°C to +155°C			
			±150	0.3 ~ 0.976	0.3 ~ 0.91						
WK73R2B15	1.5W	95°C	±100	10 ~ 9.76k	10 ~ 9.1k						
			±150	1 ~ 9.76	1 ~ 9.1						
WK73S2H2RT	2.0W	95°C	±100	0.2 ~ 0.976	0.2 ~ 0.91				200V	400V	-55°C to +155°C
			±150	10 ~ 430k	10 ~ 430k						
WK73R2H2RT	2.0W	95°C	±100	10 ~ 430k	10 ~ 430k						
			±200	432k - 1M	470k - 1M						
WK73S3A3RT	3.0W	95°C	±100	1 ~ 9.76	1 ~ 9.1	200V	400V	-55°C to +155°C			
			±100	10 ~ 330k	10 ~ 330k						
WK73R3A3RT	3.0W	95°C	±100	10 ~ 330k	10 ~ 330k						
			±200	332k - 1M	360k - 1M						

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



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