KOA SPEER ELECTRONICS, INC.

Wide Terminal Thick Film Chip Resistor

WK73 Series, WG73, WU73, WN73H

A Complete Family of Wide Side Termination Resistors

Technical Information

- Wide side termination (reverse geometry)
- 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 ±75p.p.m. and 0.5% resistance tolerance
- AEC-Q200 Qualified

Target Markets

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

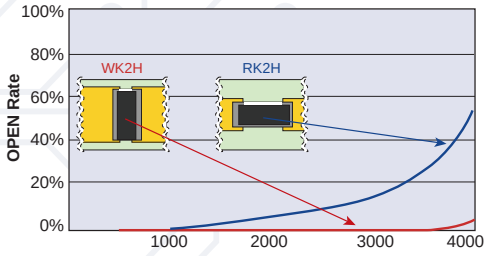
KOA Speer Wide Terminal Lineup

Standard	Pulse Power	Low Resistance	High Power	Anti-Sulfur	Thin Film
WK73R	WG73	WK73S	WK73R	WK73R-RT	WN73H
		WU73	WK73S	WK73S-RT	

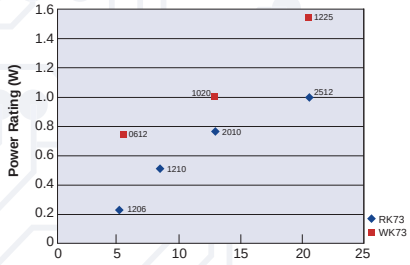
Why Choose Wide Terminal Resistors?

- Offers excellent heat radiation and achieves higher rated power for similar dimensions
- Wide terminal resistors, feature closely-spaced electrodes and better heat dissipation and heat-cycle durability as compared to standard resistor

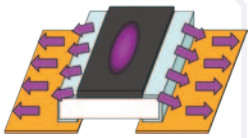
Heat Shock Test



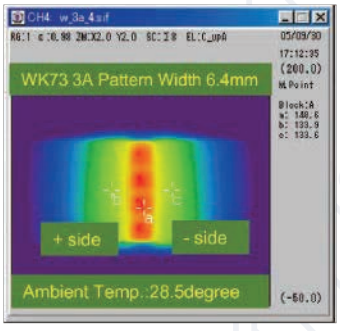
Chip Size and Power Rating

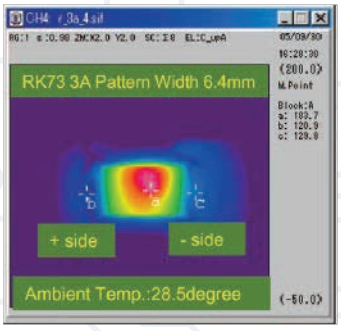


Wide Terminal Type (WK73)
Heat Dissipation Image



Nominal Terminal Type (RK73)
Heat Dissipation Image





Applications & Ratings

Standard

WK73R: High reliability

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 (0204)	0.33W[1]	70°C	125°C	±100	—	10 -1M	10 - 1M	75V	100V	-55°C to +155°C
WK73R1J (0306)	0.5W[1]	70°C	125°C	±100	—	10 -1M	10 -1M	150V	200V	
	0.66W[1]	—				10 - 9.76k	10 - 9.1k			
WK73R2A (0508)	0.75W[1]	70°C	125°C	±100	20.5k - 1M	20.5k - 1M	22k-1M	200V	400V	
	1.0W[1]	—	125°C	±100	10 - 20k	10 - 20k	10 - 20k			
WK73R2B (0612)	0.75W	70°C	125°C	±100	10 - 1M	10 - 1M	10 - 1M	200V	400V	
	1.5W[1]	—	125°C	±100	10 - 9.76k	10 - 9.76k	10 - 9.1k			
WK73R2H (1020)	1.0W	70°C	125°C	±100	—	10 - 430k	10 - 430k	200V	400V	
				±200	—	432k - 1M	470k - 1M			
	2W[1]	—	125°C	±100	—	10 - 430k	10 - 430k			
				±200	—	432k - 1M	470k - 1M			
WK73R3A (1225)	1.5W	70°C	125°C	±100	—	10 - 330k	10 - 330k	200V	400V	
				±200	—	332k - 1M	360k - 1M			
	3W[1]	—	125°C	±100	—	10 - 330k	10 - 330k			
				±200	—	332k - 1M	360k - 1M			

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

[1] If you want to use at rated power, use derating curves based on the terminal part temperature.

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."

Pulse Power

WG73: Flat chip resistors (anti-surge)

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 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	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 = $\sqrt{\text{Power rating x resistance value}}$ 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."

Applications & Ratings

Low Resistance

Thick Film

WK73S: Resistance range of 10m to 9.76Ω

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (X 10^{-6}/K)	Resistance Range (Ω)			Operating Temp. Range
					D±0.5% E-24/E-96	F±1% E-24/E-96	J±5% E-24	
WK73S2A (0508)	1.25W[1]	—	125°C	±100	—	1 - 9.76	1 - 9.1	-55°C to +155°C
				0~+200	—	30m - 976m	30m - 910m	
				0~+300	—	20m - 29.4m	20m - 27m	
WK73S2B (0612)	0.75W	70°C	125°C	±100	430m - 9.76	430m - 9.76	430m - 9.1	
				±200	—	30m - 422m	30m - 390m	
				±800	—	—	10m - 27m	
	1.5W[1]	—	125°C	±100	430m - 9.76	430m - 9.76	430m - 9.1	
				±200	—	30m - 422m	30m - 390m	
				±800	—	—	10m - 27m	
WK73S2H (1020)	1.0W	70°C	125°C	±100	—	220m - 9.76	220m - 9.1	
				±200	—	27m - 215m	27m - 200m	
				±800	—	—	10m - 24m	
	3W[1]	—	125°C	±100	—	220m - 9.76	220m - 9.1	
				±200	—	27m - 21.5m	27m - 220m	
				±800	—	—	10m - 24m	
WK73S3A (1225)	1.5W	70°C	125°C	±100	—	—	360m - 9.1	
				±200	—	360m - 9.76	33m - 330m	
				±300	—	33m - 357m	22m - 30m	
				±800	—	22m - 32.4m	10m - 20m	
	4.0W[1]	—	125°C	±100	—	360m - 9.76	360m - 9.1	
				±200	—	33m - 357m	33m - 330m	
				±300	—	22m - 32.4m	22m - 30m	
				±800	—	—	10m - 20m	

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

[1] If you want to use at rated power, use derating curves based on the terminal part temperature.
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."

Thick Film Current Sense

WU73: Resistance range of 10m to 100mΩ

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (X 10^{-6}/K)	*1Resistance Range (Ω) E-24, 25m, 50m*1	Resistance Tolerance	Operating Temperature Range
WU732B	1.0W	70°C	115°C	±100	10m~12m	F: ±1%	-55°C to +155°C
				±75	13m~27m		
				±100	30m~100m		
WU732B15	1.5W*2	70°C	95°C	±100	10m~12m	F: ±1%	-55°C to +155°C
				±75	13m~27m		
				±100	30m~100m		

Rated voltage = $\sqrt{\text{Power rating x resistance value}}$ or max. working voltage, whichever is lower.
*1 25mΩ and 50mΩ are available.
*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.
If any questions should arise whether to use the "Rated Ambient Temperature" or the "Rated Terminal Part Temperature", please give priority you the "Rated Terminal Part Temperature."

Applications & Ratings

Anti-Sulfur

WK73R-RT/WK73S-RT: Power rating of 0.75 to 4 Watt

Part Designation	Power Rating	Rated Ambient Temperature	Rated Terminal Part Temperature	T.C.R. (X 10^{-6}/K)	Resistance Range (Ω) D±0.5% E-24/E-96	Resistance Range (Ω) F±1% E-24/E-96	Resistance Range (Ω) J±5% E-24	Maximum Working Voltage	Maximum Overload Voltage	Operating Temperature Range
WK73S2A (0508)	1.25W[1]	—	125°C	±100	—	1 ~ 9.76	1 ~ 9.1	200V	400V	-55°C to +155°C
WK73R2A (0508)	0.75W[1]	70°C	125°C	±100	20.5k ~ 1M	20.5k ~ 1M	22k ~ 1M			
	1.0W[1]	—	125°C	±100	10 ~ 20k	10 ~ 20k	10 ~ 20k			
WK73S2B (0612)	0.75W	70°C	125°C	±100	—	1 ~ 9.76	1 ~ 9.1			
	1.5W[1]	—	125°C	±100	—	1 ~ 9.76	1 ~ 9.1			
				±150	—	0.3 ~ 0.976	0.3 ~ 0.91			
WK73R2B (0612)	0.75W	70°C	125°C	±100	—	10 ~ 9.76k	10 ~ 9.1k			
				±200	—	10k ~ 1M	10k ~ 1M			
	1.5W[1]	—	125°C	±100	—	10 ~ 9.76k	10 ~ 9.1k			
WK73S2H (1020)	1.0W	70°C	125°C	±100	—	1 ~ 9.76k	1 ~ 9.1	200V	400V	
				±200	—	0.2 ~ 0.976	0.2 ~ 0.91			
	3W*[1]	—	125°C	±100	—	1 ~ 9.76k	1 ~ 9.1			
				±200	—	0.2 ~ 0.976	0.2 ~ 0.91			
WK73R2H (1020)	1.0W	70°C	125°C	±100	—	10 ~ 430k	10 ~ 430k			
				±200	—	432k - 1M	470k - 1M			
	2W*[1]	—	125°C	±100	—	10 ~ 430k	10 ~ 430k			
				±200	—	432k - 1M	470k - 1M			
WK73S3A (1225)	1.5W	70°C	125°C	±100	—	1 ~ 9.76	1 ~ 9.1	200V	400V	
	4.0W[1]	—	125°C	±100	—	1 ~ 9.76	1 ~ 9.1			
WK73R3A (1225)	1.5W	70°C	125°C	±100	—	10 ~ 330k	10 ~ 330k			
				±200	—	332k - 1M	360k - 1M			
	3W[1]	—	125°C	±100	—	10 ~ 330k	10 ~ 330k			
				±200	—	332k - 1M	360k - 1M			

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

[1] When using Power Rating, please use the derating curves based on the terminal part temperature.

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

Thin Film

WN73H: Thin Film

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (X 10^{-6}/K)	Resistance Range (Ω) E24 • E96 B: ±0.1%	Resistance Range (Ω) E24 • E96 C: ±0.25%	Resistance Range (Ω) E24 • E96 D: ±0.5%	Maximum Working Voltage	Maximum Overload Voltage	Operating Temperature Range
1J	0.3W	85°C	±125°C	±10	100 ~ 43k	100 ~ 43k	100 ~ 43k	75V	150V	-55°C to +155°C
				±25	15 ~ 100k	15 ~ 100k	10 ~ 100k			
				±50	15 ~ 100k	15 ~ 100k	10 ~ 100k			
2B	1W	85°C	±125°C	±10	100 ~ 100k	100 ~ 100k	100 ~ 100k	100V	200V	-55°C to +155°C
				±25	15 ~ 100k	15 ~ 100k	15 ~ 100k			
				±50	15 ~ 100k	15 ~ 100k	15 ~ 100k			

Rated voltage = $\sqrt{\text{Power rating x resistance value}}$ 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.”

KOA SPEER ELECTRONICS, INC.

KOA Speer Electronics, Inc.
199 Bolivar Drive • Bradford, PA 16701 • USA • 814.362.5536
www.KOASpeer.com