

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 $\pm 75\text{p.p.m.}$ and 0.5% resistance tolerance
- AEC-Q200 tested

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
WK73R

Pulse Power
WG73

Low Resistance
WK73S
WU73

High Power
WK73R (HP)
WK73S (HP)

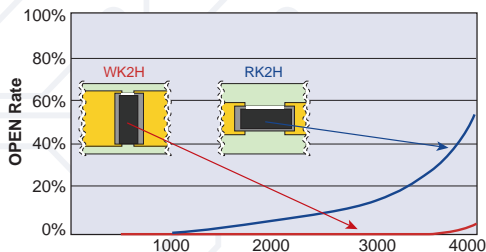
Anti-Sulfur
WK73R-RT (HP)
WK73S-RT (HP)

Thin Film
WN73H

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



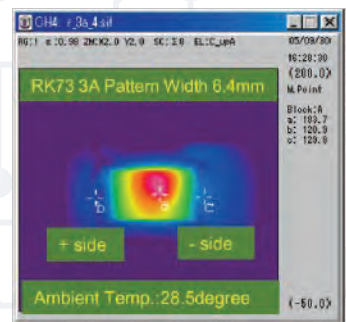
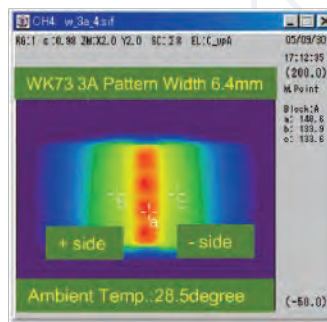
Wide Terminal Type (WK73)
Heat Dissipation Image



Nominal Terminal Type (RK73)
Heat Dissipation Image



Chip Size and Power Rating



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	0.33W ¹	70°C	125°C	±100	—	10 - 1M	10 - 1M	75V	100V	-55°C to +155°C
WK73R1J	0.5W ¹	70°C	125°C	±100	—	10 - 1M	10 - 1M	150V	200V	
WK73R2A	0.75W ¹	70°C	125°C	±100	—	20.5k - 1M	22k - 1M	200V	400V	
	1.0W ¹	70°C	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	70°C	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			
WK73R3A	1.5W	70°C	125°C	±100	—	10 - 330k	10 - 330k	200V	400V	
				±200	—	332k - 1M	360k - 1M			
	2.0W ¹	70°C	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

¹ If you want to use at rated power use derating curves based on the 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 = $\sqrt{\text{Power rating} \times \text{resistance value}}$ or max. working voltage, whichever is lower

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	1.0W ¹	70°C	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	0.75W	70°C	125°C	±100	430m - 9.76	430m - 9.76	430m - 9.1	
				±200	—	30m - 422m	30m - 390m	
				±800	—	—	10m - 27m	
	1.0W ¹	70°C	115°C	±100	430m - 9.76	430m - 9.76	430m - 9.1	
				±200	—	30m - 422m	30m - 390m	
				±800	—	—	10m - 27m	
WK73S2H	1.0W	70°C	125°C	±100	—	220m - 9.76	220m - 9.1	
				±200	—	27m - 215m	27m - 200m	
				±800	—	—	10m - 24m	
WK73S2J	1.0W	70°C	100°C	±100	—	240m - 9.76	240m - 9.1	
				±200	—	33m - 237m	33m - 220m	
				±800	—	—	10m - 30m	
WK73S3A	1.5W	70°C	125°C	±100	—	360m - 9.76	360m - 9.1	
				±200	—	33m - 357m	33m - 330m	
				±300	—	22m - 32.4m	22m - 30m	
	2.0W ¹	70°C	115°C	±100	—	360m - 9.76	360m - 9.1	
				±200	—	33m - 357m	33m - 330m	
				±300	—	22m - 32.4m	22m - 30m	
				±800	—	—	10m - 20m	

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

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)	Resistance Range (Ω) E-24, 25m, 50m	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	70°C	95°C	±100	10m~12m	F: ±1%	-55°C to +155°C
				±75	13m~27m		
				±100	30m~100m		

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

Applications & Ratings

High Power

WK73R/WK73S: Power rating of 1.5 to 3 Watt

Thick Film

WK73R

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			
WK73R2B15	1.5W ¹	70°C	95°C	±100	10 - 9.76k	10 - 9.76k	10 - 9.1k	200V	400V	-55°C to +155°C
WK73R2H2	2.0W ¹	70°C	95°C	±100	—	10 - 430k	10 - 430k	200V	400V	
				±200	—	432k - 1M	470k - 1M			
WK73R3A3	3.0W ¹	70°C	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
¹ If you want to use at rated power use derating curves based on the terminal part temperature

Thick Film Current Sense

WK73S

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	
WK73S2B15	1.5W ¹	70°C	95°C	±100	430m - 9.76	430m - 9.76	430m - 9.1	-55°C to +155°C
				±200	—	30m - 422m	30m - 390m	
				±800	—	—	10m - 27m	
WK73S2H2	2.0W ¹	70°C	95°C	±100	—	220m - 9.76	220m - 9.1	
				±200	—	27m - 215m	27m - 200m	
				±800	—	—	10m - 24m	
WK73S3A3	3.0W ¹	70°C	95°C	±100	—	360m - 9.76	360m - 9.1	
				±200	—	33m - 357m	33m - 330m	
				±300	—	22m - 32.4m	22m - 30m	
				±800	—	—	10m - 20m	

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

Applications & Ratings

Anti-Sulfur

WK73R-RT/WK73S-RT: 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 (Ω)		Maximum Working Voltage	Maximum Overload Voltage	Operating Temperature Range			
					F±1% E-24 • E-96	J±5% E-24						
WK73S2A	1.0W ¹	70°C	125°C	±100	1 ~ 9.76	1 ~ 9.1	200V	400V	-55°C to +155°C			
WK73R2A	0.75W ¹	70°C	125°C	±100	20.5k ~ 1M	22k ~ 1M						
	1.0W ¹	70°C	125°C	±100	10 ~ 20k	10 ~ 20k						
WK73S2B	0.75W	70°C	125°C	±100	1 ~ 9.76	1 ~ 9.1						
	1.0W ¹	70°C	115°C	±100	1 ~ 9.76	1 ~ 9.1						
WK73R2B	0.75W	70°C	125°C	±100	10 ~ 9.76k	10 ~ 9.1k						
				±200	10k ~ 1M	10k ~ 1M						
	1.0W ¹	70°C	115°C	±100	10 ~ 9.76k	10 ~ 9.1k						
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						
WK73S3A	1.5W	70°C	125°C	±100	1 ~ 9.76	1 ~ 9.1	200V	400V	-55°C to +155°C			
	2.0W ¹	70°C	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	70°C	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

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

WK73R-RT (HP)/WK73S-RT (HP): Power rating of 1.5 to 3 Watt

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
					F±1% E-24 • E-96	J±5% E-24			
WK73S2B15R	1.5W ¹	70°C	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			
WK73R2B15R	1.5W ¹	70°C	95°C	±100	10 ~ 9.76k	10 ~ 9.1k			
				±150	0.2 ~ 0.976	0.2 ~ 0.91			
WK73S2H2R	2.0W ¹	70°C	95°C	±100	10 ~ 430k	10 ~ 430k	200V	400V	
				±200	432k - 1M	470k - 1M			
WK73R2H2R	2.0W ¹	70°C	95°C	±100	1 ~ 9.76	1 ~ 9.1			
				±200	10 ~ 330k	10 ~ 330k			
WK73S3A3R	3.0W ¹	70°C	95°C	±100	10 ~ 330k	10 ~ 330k	200V	400V	
WK73R3A3R	3.0W ¹	70°C	95°C	±200	332k - 1M	360k - 1M			

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

Applications & Ratings

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			Maximum Working Voltage	Maximum Overload Voltage	Operating Temperature Range
					B: ±0.1%	C: ±0.25%	D: ±0.5%			
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 = $\sqrt{\text{Power rating} \times \text{resistance value}}$ 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