KOA SPEER ELECTRONICS, INC.

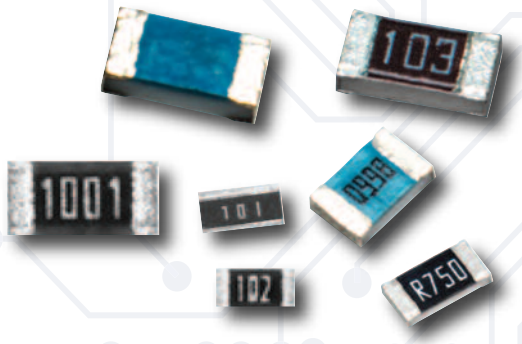
Anti-Sulfuration Chip Resistors

RT Series

A Complete Family of Anti-Sulfur Resistors

Features

- Excellent anti-sulfuration characteristics due to use of high sulfuration-proof inner top electrode material
- Excellent heat resistance and environmental resistance by applying metal glaze thick film to resistive film
- Products meet EU RoHS requirements. EU RoHS regulation is not intended for Pb-Glass contained electrode, resistor element and glass
- Suitable for both flow and reflow soldering
- AEC-Q200 Qualified
- Passes ASTM-B809 anti-sulfuration testing



Applications

- Car Electronics
- Industrial Equipment
- Power Supply
- Agriculture
- Winery Equipment
- Vulcanization of Rubber
- Mining Equipment
- Oil and Gas Industry

KOA Speer Anti-Sulfur Lineup

General Purpose
RK73B-RT
RK73H-RT
* Added 1F/1H
RK73Z-RT
(Jumper)

High Precision
RK73G-RT
RS73-RT **NEW**

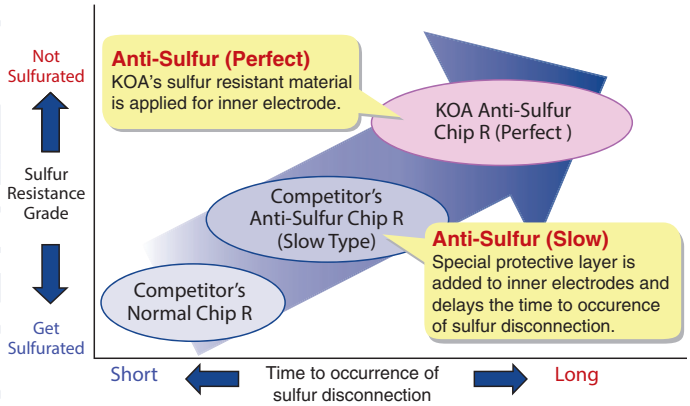
High Power Wide Terminal
WR73-RT (WK73R-RT, WK73S-RT)
WK73R-RT **NEW**
(Higher Power)
WK73S-RT **NEW**
(Higher Power)

Anti-Surge
SG73-RT
SG73S/P-RT **NEW**
(High Precision)

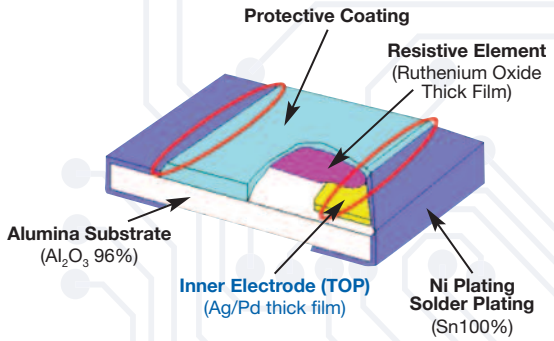
High Voltage
HV73-RT
HV73V-RT **NEW**

Current Sense
SR73-RT

Anti-Sulfur Performance Comparison



Structural Chart of Flat Chip Resistor (Standard)



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Applications & Ratings

General Purpose

RK73B-RT & RK73H-RT

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (ppm/°C) Max.	Resistance Range RK73H D±0.5% E24, E96	RK73H F±1% E24, E96[2]	RK73B G±2% E24	RK73B J±5% E24	Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
1F	0.03W	70°C	—	±200	—	100kΩ - 2MΩ[2]	100kΩ - 1MΩ	100kΩ - 10MΩ	20V	30V	-55°C to +125°C
				±250		10Ω - 91kΩ[2]	10Ω - 91kΩ	10Ω - 91kΩ			
				0 - +300		—	1Ω - 9.1Ω	1Ω - 9.1Ω			
1H	0.05W		125°C	±200	100Ω - 100kΩ	100Ω - 1MΩ	—	100 - 1M	25V	50V	-55°C to +155°C
				±300	—	10Ω - 97.6Ω		10Ω - 91Ω			
1E	0.1W			±100	100Ω - 1MΩ	10Ω - 1MΩ	—	—	75V	100V	
				±200	—	1.02MΩ - 10MΩ	10Ω - 10MΩ	1Ω - 10MΩ			
1J	0.1W			±100	1.02kΩ - 1MΩ	1.02kΩ - 1MΩ	—	—			
				±200	—	1.02MΩ - 10MΩ	1.1kΩ - 10MΩ	1.1kΩ - 10MΩ			
	0.125W			±100	100Ω - 1kΩ	10Ω - 1kΩ	—	—			
				±200	—	—	10Ω - 1kΩ	1Ω - 1kΩ			
2A	0.25W			±100	100Ω - 1MΩ	10Ω - 1MΩ	—	—	150V	200V	
				±200	—	1.02MΩ - 10MΩ	10Ω - 10MΩ	1Ω - 10MΩ			
2B	0.25W			±100	100Ω - 1MΩ	10Ω - 1MΩ	—	—	200V	400V	
				±200	—	1.02MΩ - 10MΩ	10Ω - 10MΩ	1Ω - 10MΩ			
2E	0.5W			±100	100Ω - 1MΩ	10Ω - 1MΩ	—	—			
				±200	—	—	10Ω - 1MΩ	1Ω - 1MΩ			
W2H	0.75W			±100	10Ω - 1MΩ	10Ω - 1MΩ	—	—			
				±200	—	1 - 9.76 1.02MΩ - 10MΩ	1Ω - 10MΩ	1Ω - 10MΩ			
W3A	1W			±100	10Ω - 1MΩ	10Ω - 1MΩ	—	—			
				±200	—	1.02MΩ - 10MΩ	10Ω - 10MΩ	1Ω - 10MΩ			
W3A2	2W[3]		95°C	±100	10Ω - 1MΩ	10Ω - 1MΩ	—	—			
				±200	—	1.02MΩ - 10MΩ	10Ω - 10MΩ	1Ω - 10MΩ			

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

[2]The nominal resistance value for RK73H1F (F:±1%) is E24

RK73Z-RT

Part Designation	Rated Ambient Temperature	Rated Terminal Part Temperature	Resistance	Current Rating	Maximum Overload Current	Operating Temperature Range
1H	+70°C	+125°C	100mΩ max.	0.5A	1A	-55°C to +155°C
1E	+70°C	+125°C	50mΩ max.	1A	2A	
1J						
2A	+70°C	+125°C	50mΩ max.	2A	5A	
2B						
2E					10A	
W2H						
W3A						

Applications & Ratings

High Precision

RK73G-RT

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (X 10^{-6}/K)	Resistance Range E-24, E-96 (C±0.25%)	Resistance Range E-24, E-96 (D±0.5%)	Resistance Range E-24, E-96 (F±1%)	Maximum Working Voltage	Maximum Overload Voltage	Operating Temperature Range
RK73G1E (0402)	1/10W (.10W)	+70°C	+125°C	±50	—	30Ω - 1MΩ	30Ω - 1MΩ	50V	100V	-55°C to +155°C
RK73G1J (0603)	1/10W (.10W)				100Ω - 1MΩ			75V	150V	
RK73G2A (0805)	1/8W (.125W)							150V	200V	
RK73G2B (1206)	1/4W (.25W)							200V	400V	

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

RS73-RT

	Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (X 10^{-6}/K)	Resistance Range (Ω) *2 B±0.1% E-24, E-96	C±0.25% E-24, E-96	D±0.5% E-24, E-96	F±1% E-24, E-96	Maximum Working Voltage	Maximum Overload Voltage	Operating Temperature Range
	RS73F1J	.2W	85°C	+125°C	±25*1	100 - 1M	100 - 1M	100 - 1M	100 - 1M	100V	150V	-55°C to +155°C
	RS73G1J				±50							
NEW	RS73F2A	.25W			±25*1	10 - 3M	10 - 6.8M	10 - 10M	10 - 10M	150V	300V	
NEW	RS73G2A				±50							
NEW	RS73F2B	.33W			±25*1	10 - 1M	10 - 1M	10 - 10M	10 - 10M	200V	400V	
NEW	RS73G2B				±50							

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

*1 Measurement Temperature: +25°C/+125°C. Cold T.C.R. (-55°C/+25°C) is -50~+25x10^{-6}/K

*2 Please inquire about E192

High Power Wide Terminal

WK73-RT (WK73R-RT, WK73S-RT)

	Part Designation	Power Rating	Rated Ambient Temperature	Rated Terminal Part Temperature	T.C.R. (X 10^{-6}/K)	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
NEW	WK73S2A	1.0W[1]	—	125°C	±100	1 ~ 9.76	1 ~ 9.1	200V	400V	-55°C to +155°C
NEW	WK73R2A	0.75W	—	125°C	±100	20.5k ~ 1M	22k ~ 1M			
		1.0W[1]	—	125°C	±100	10 ~ 20k	10 ~ 20k			
	WK73S2B	0.75W	70°C	115°C	±100	1 ~ 9.76	1 ~ 9.1			
		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			
					±200	10k ~ 1M	10k ~ 1M			
		1.0W[1]	—	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	
					±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	
	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	
		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 = $\sqrt{\text{Power rating x resistance value}}$ or max. working voltage, whichever is lower

[1] When using Power Rating, please use the derating curves based on the terminal part temperature on the right side of the graph located on the previous page.

Applications & Ratings

Anti-Surge

SG73-RT

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (ppm/°C) Max.	Resistance Range K: ±10% M: ±20% E-12	Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
SG73 1J (0603)	0.1W	70°C	125°C	±400	1Ω - 8.2Ω	50V	100V	-55°C to +155°C
				±200	10Ω - 1MΩ			
SG73 2A (0805)	0.125W	70°C	125°C	±400	1Ω - 8.2Ω	150V	200V	
				±200	10Ω - 1MΩ			
SG73 2B (1206)	0.33W	70°C	125°C	±400	1Ω - 8.2Ω	200V	400V	
				±200	10Ω - 1MΩ			
SG73 2E (1210)	0.50W	70°C	125°C	±400	1Ω - 8.2Ω			
				±200	10Ω - 1MΩ			
SG73 W2H (2010)	0.75W	70°C	125°C	±400	1Ω - 8.2Ω			
				±200	10Ω - 1MΩ			
SG73 W3A (2512)	1W	70°C	125°C	±400	1Ω - 8.2Ω			
				±200	10Ω - 1MΩ			

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

SG73P-RT & SG73S-RT

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (ppm/°C) Max.	Resistance Range D: ±0.5% E-24, E-96	F: ±1% E-24, E-96	G: ±2% E-24	J: ±5% E-24	Max. Working Voltage	Maxi. Overload Voltage	Oper. Temp. Range
SG73P 1E	0.125W	70°C	125°C	±200	100Ω - 1MΩ	10Ω - 1MΩ	10Ω - 10MΩ	1Ω - 10MΩ	75V	100V	-55°C to +155°C
	0.2W*2		105°C								
SG73P 1J	0.2W	70°C	135°C	±100*1					150V	200V	
	0.33W*2		125°C								
SG73P 2A	0.25W	70°C	125°C	±200					400V	600V (800V)*3	
	0.5W*2		100°C								
SG73P 2B	0.33W	70°C	125°C	±200					200V	400V	
	0.75W*2		105°C								
SG73P 2E	0.5W	70°C	125°C	±200							
	0.75W*2		110°C								
SG73P 2E1	1.0W*2	70°C	95°C	±200							
SG73S 1E	0.125W	70°C	125°C	±200	100Ω - 1MΩ	10Ω - 1MΩ	10Ω - 10MΩ	1Ω - 10MΩ	75V	100V	-55°C to +155°C
	0.2W*2		105°C								
SG73S 1J	0.2W	70°C	135°C	±100*1					150V	200V	
	0.33W*2		125°C								
SG73S 2A	0.25W	70°C	125°C	±200					400V	600V (800V)*3	
	0.5W*2		100°C								
SG73S 2B	0.33W	70°C	125°C	±200					200V	400V	
	0.75W*2		105°C								
SG73S 2E	0.5W	70°C	125°C	±200							
	0.75W*2		110°C								
SG73S 2E1	1.0W*2	70°C	95°C	±200							

*1 Cold T.C.R. (-55°C ~ +25°C) is ±150x10^{-6}/K *2 If you want to use the rated power of *2, *3 please reference below.
*3 Applies when power rating is 0.4W or lower.

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

Applications & Ratings

High Voltage

HV73-RT

Part Designation	Power Rating @ 70°C	T.C.R. (ppm/°C) Max.	Resistance Range (Ω) E-24/E-96 (D±0.5%)	E-24/E-96 (F±1%)	E-24 (G±2%)	E-24 (J±5%)	Maximum Working Voltage	Maximum Overload Voltage (D.C.)*	Rated Terminal Part Temp.	Operating Temp. Range
1J	0.1W	±100**	—	10k - 10M	10k - 10M	10k - 10M	350V	500V*	80°C	-55°C to +155°C
2A	0.25W	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	400V	800V*	85°C	
		±200	—	—	—	11M - 51M				
2B	0.25W	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	500V	1000V*	100°C	
		±200	—	—	—	11M - 51M				
2H	0.5W	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	2000V (D.C.)	3000V*	90°C	
		±200	—	—	—	11M - 51M				
3A	1W	±100	43k - 1M	43k - 10M	43k - 10M	43k - 10M	3000V (D.C.)	4000V*	105°C	
		±200	—	10.2M - 20M	11M - 20M	11M - 51M				

* Max. Overload Voltage is specified by D.C. Voltage ** Cold T.C.R. of 1.1MΩ~10MΩ is +200x10^{-6}/K

HV73V-RT

Part Designation	Power Rating @ 70°C	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (ppm/°C) Max.	Resistance Range (Ω) E-24/E-96 (D±0.5%)	E-24/E-96 (F±1%)	E-24 (G±2%)	E-24 (J±5%)	Max. Working Voltage	Max. Overload Voltage (D.C.)*	Oper. Temp. Range
HV73V1J	0.1W	70°C	80°C	±100**	—	10k - 10M	10k - 10M	10k - 10M	350V	500V*	-55°C to +155°C
HV73V2A	0.25W	70°C	100°C	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	400V	800V*	
				±200	—	—	—	11M - 51M			
HV73V2B	0.25W	70°C	100°C	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	800V	1000V*	
				±200	—	—	—	11M - 51M			

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

* Maximum Overload Voltage is specified by D.C. voltage ** Cold T.C.R. (-55°C ~ +25°C) of 1.02MΩ ~ 10MΩ is +200x10^{-6}/K

Applications & Ratings

Current Sense

SR73-RT

Part Designation	Power Rating	Rated Ambient Temperature	Rated Terminal Part Temp.	T.C.R. (ppm/°C) Max.	Resistance Range			Operating Temperature Range
					F (±1%) E-24, E-96[1]	G (±2%) E-24	J (±5%) E-24	
SR731ERT (0402)	0.166W	70°C	125°C	±200	1Ω - 10Ω	1Ω - 10Ω	1Ω - 10Ω	-55°C to +155°C
SR731JRT (0603)	0.2W	70°C	125°C	±200	0.2Ω - 10Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
				±300	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	
SR732ART (0805)	0.33W	70°C	125°C	±100	0.47Ω - 10Ω	—	—	
				±200	0.2Ω - 0.43Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
				±250	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	
	0.5W*	70°C	105°C	±100	0.47Ω - 10Ω	—	—	
				±200	0.2Ω - 0.43Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
				±250	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	
SR732BRT (1206)	0.33W	70°C	125°C	±100	0.47Ω - 10Ω	—	—	
				±200	0.2Ω - 0.43Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
				±250	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	
	0.5W*	70°C	110°C	±100	0.47Ω - 10Ω	—	—	
				±200	0.2Ω - 0.43Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
				±250	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	
SR732ERT (1210)	0.5W	70°C	125°C	±100	0.43Ω - 10Ω	—	—	
				±200	0.2Ω - 0.39Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
				±250	—	—	0.1Ω - 0.18Ω	
	0.66W*	70°C	110°C	±100	0.43Ω - 10Ω	—	—	
				±200	0.2Ω - 0.39Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
				±250	—	—	0.1Ω - 0.18Ω	

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

[1] The nominal resistance for SR731E (F:±1%), SR731J, 2A, 2B (0.1~0.43) and SR732E (0.1~0.39) is E-24 only

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