

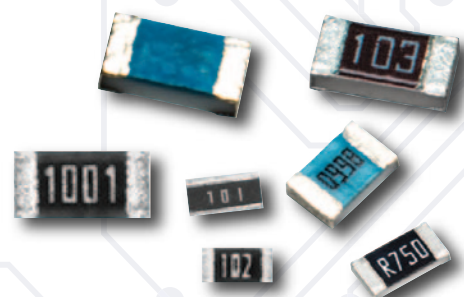
A Complete Family of Anti-Sulfur Resistors

Features

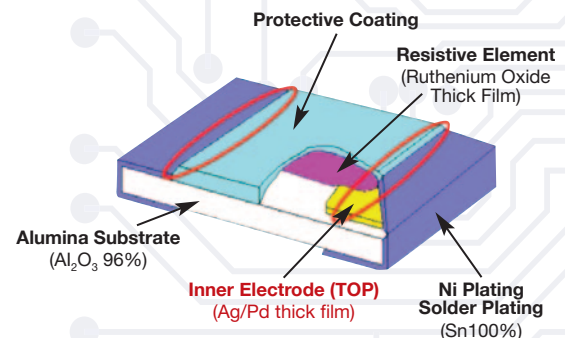
- Excellent anti-sulfuration characteristics due to use of high sulfuration-proof inner top electrode material
- Excellent heat resistance and environmental resistance by applying metal glaze thick film to resistive film
- Products meet EU RoHS requirements. EU RoHS regulation is not intended for Pb-Glass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



Structural Diagram of Standard Flat Chip Resistor



KOA Speer Anti-Sulfur Lineup

General Purpose

RK73B-RT
RK73H-RT
RK73Z-RT

High Precision

RK73G-RT
RS73-RT

High Power Wide Terminal

WK73R-RT
WK73S-RT
(Includes Higher Power versions)

Anti-Surge

SG73-RT
SG73S/P-RT
(High Precision)

High Voltage

HV73-RT
HV73V-RT

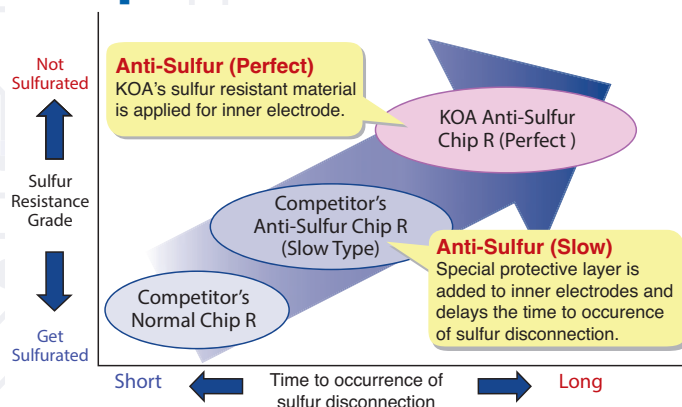
Current Sense

SR73-RT

High Temperature

HSG73P-RT **NEW**

Anti-Sulfur Performance Comparison



Chip Resistor Disconnected by Sulfuration

Needle Crystals of Silver Sulfide (Ag_2S)



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					10A	
2E						
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			Maximum Working Voltage	Maximum Overload Voltage	Operating Temperature Range
					E-24, E-96 (C±0.25%)	E-24, E-96 (D±0.5%)	E-24, E-96 (F±1%)			
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)				75V			150V		
RK73G2A (0805)	1/8W (.125W)				150V			200V		
RK73G2B (1206)	1/4W (.25W)				200V			400V		

Rated voltage = $\sqrt{\text{Power rating} \times \text{resistance value}}$ 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*2				Maximum Working Voltage	Maximum Overload Voltage	Operating Temperature Range
					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			
RS73F1E (0402)	.125W	85°C	+125°C	±25*1	300Ω - 100kΩ	300Ω - 1MΩ	300Ω - 1MΩ	300Ω - 1MΩ	75V	100V	-55°C to +155°C
RS73G1E (0402)				±50							
RS73F1J (0603)	.2W			±25*1	10Ω - 1MΩ	10Ω - 1MΩ	10Ω - 1MΩ	10Ω - 1MΩ	100V	150V	
RS73G1J (0603)				±50							
RS73F2A (0805)	.25W			±25*1	10Ω - 3MΩ	10Ω - 6.8MΩ	10Ω - 10MΩ	10Ω - 10MΩ	150V	300V	
RS73G2A (0805)				±50							
RS73F2B (1206)	.33W			±25*1	10Ω - 5.1MΩ	10Ω - 5.1MΩ			200V	400V	
RS73G2B (1206)				±50							

Rated voltage = $\sqrt{\text{Power rating} \times \text{resistance value}}$ 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 E-192

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 in the terminal part temperature" in the beginning of the catalog.

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)		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	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	115°C	±100	1 ~ 9.76	1 ~ 9.1			
	1.0W ¹	70°C	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	70°C	115°C	±200	10k ~ 1M	10k ~ 1M			
				±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			
WK73S3A	1.5W	70°C	125°C	±100	1 ~ 9.76	1 ~ 9.1	200V	400V	
	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 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.

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

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 = $\sqrt{\text{Power rating} \times \text{resistance value}}$ 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				Max. Working Voltage	Maxi. Overload Voltage	Oper. Temp. Range
					D: ±0.5% E-24, E-96	F: ±1% E-24, E-96	G: ±2% E-24	J: ±5% E-24			
SG73P 1E	0.125W 0.2W*2	70°C	125°C 105°C	±200	100Ω - 1MΩ	10Ω - 1MΩ	10Ω - 10MΩ	1Ω - 10MΩ	75V	100V	-55°C to +155°C
SG73P 1J	0.2W 0.33W*2	70°C	135°C 125°C	±100*1					150V	200V	
	SG73P 2A	0.25W 0.5W*2	70°C	125°C 100°C					±200	400V	
SG73P 2B		0.33W 0.75W*2	70°C	125°C 105°C					±200	200V	
	SG73P 2E	0.5W 0.75W*2	70°C	125°C 110°C					±200		
SG73P 2E1		1.0W*2	70°C	95°C					±200		
SG73S 1E	0.125W 0.2W*2	70°C	125°C 105°C	±200					100Ω - 1MΩ	10Ω - 1MΩ	
	SG73S 1J	0.2W 0.33W*2	70°C	135°C 125°C	±100*1	150V	200V				
SG73S 2A		0.25W 0.5W*2	70°C	125°C 100°C	±200	400V	600V (800V)*3				
	SG73S 2B	0.33W 0.75W*2	70°C	125°C 105°C	±200	200V	400V				
SG73S 2E		0.5W 0.75W*2	70°C	125°C 110°C	±200						
	SG73S 2E1	1.0W*2	70°C	95°C	±200						

*¹ Cold T.C.R. (-55°C ~ +25°C) is $\pm 150 \times 10^{-6}/K$ *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 = $\sqrt{\text{Power rating} \times \text{resistance value}}$ 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)				Maximum Working Voltage	Maximum Overload Voltage (D.C.)*	Rated Terminal Part Temp.	Operating Temp. Range
			E-24/E-96 (D±0.5%)	E-24/E-96 (F±1%)	E-24 (G±2%)	E-24 (J±5%)				
1J	0.1W	±100**	—	10k - 10M	10k - 10M	10k - 10M	350V	500V*	125°C	-55°C to +155°C
2A	0.25W	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	400V	800V*	125°C	
		±200	—	—	—	11M - 51M				
2B	0.25W	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	500V	1000V*	125°C	
		±200	—	—	—	11M - 51M				
2H	0.5W	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	2000V (D.C.)	3000V*	125°C	
		±200	—	—	—	11M - 51M				
3A	1W	±100	43k - 1M	43k - 10M	43k - 10M	43k - 10M	3000V (D.C.)	4000V*	125°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.	T.C.R. (ppm/°C) Max.	Resistance Range (Ω)				Max. Working Voltage	Max. Overload Voltage (D.C.)*	Rated Terminal Part Temp.	Oper. Temp. Range
				E-24/E-96 (D±0.5%)	E-24/E-96 (F±1%)	E-24 (G±2%)	E-24 (J±5%)				
HV73V1J	0.1W	70°C	±100**	—	10k - 10M	10k - 10M	10k - 10M	350V	500V*	125°C	-55°C to +155°C
HV73V2A	0.25W	70°C	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	400V	800V*	125°C	
			±200	—	—	—	11M - 51M				
HV73V2B	0.25W	70°C	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	800V	1000V*	125°C	
			±200	—	—	—	11M - 51M				

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

¹ The nominal resistance value for SR731E (1Ω~10Ω), SR731J, 2A, 2B (0.1Ω~0.43Ω) and SR732E (0.1Ω~0.39Ω) is in E24

High Temperature

HSG73P-RT **NEW**

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (x10 ⁻⁶ /K) Max.	Resistance Range		Maximum Working Voltage	Maximum Overload Voltage
					F: ±1% E24	J: ±5% E24		
HSG73P1E (0402)	0.125W	70°C	125°C	±200	10Ω~1MΩ	1Ω~10MΩ	75V	100V
	0.2W ^{*1}	70°C	105°C					
HSG73P1J (0603)	0.2W	70°C	135°C	±200	10Ω~1MΩ	1Ω~10MΩ	150V	200V
	0.33W ^{*1}	70°C	125°C					
HSG73P2A (0805)	0.25W	70°C	125°C	±200	10Ω~1MΩ	1Ω~10MΩ	200V	400V
	0.5W ^{*1}	70°C	100°C					
HSG73P2B (1206)	0.33W	70°C	125°C	±200	10Ω~1MΩ	1Ω~10MΩ	200V	400V
	0.75W ^{*1}	70°C	105°C					

Operating Temperature Range : -55°C ~ +175°C

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

^{*1} If you use at the rated power, please keep the condition that the terminal of the resistor is below the rated terminal part temperature.