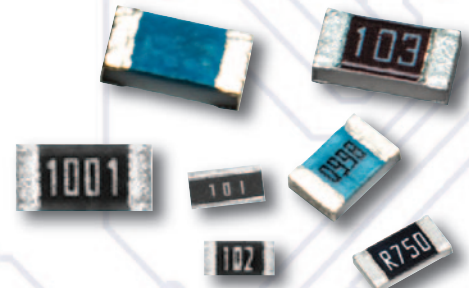


A Complete Family of Anti-Sulfur Resistors

Features

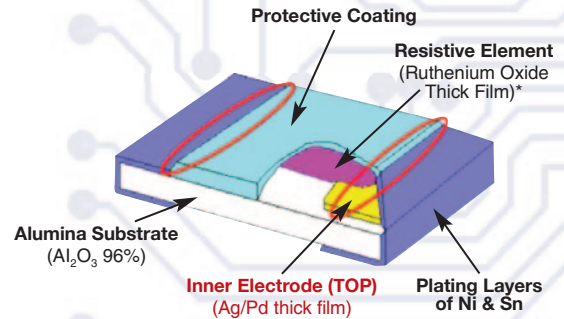
- Excellent anti-sulfuration characteristics due to use of high sulfuration-proof inner top electrode material
- Excellent heat resistance and environmental resistance by applying metal glaze thick film to resistive film
- Products meet EU RoHS requirements. EU RoHS regulation is not intended for Pb-Glass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



Applications

- Automotive 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

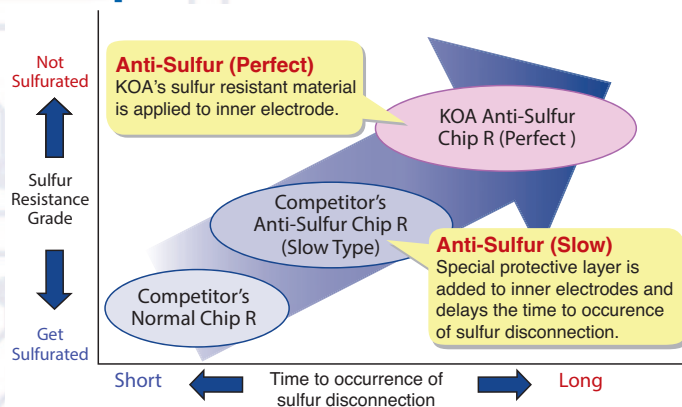
Current Sense

SR73-RT*

High Temperature

HSG73P-RT

Anti-Sulfur Performance Comparison



Chip Resistor Disconnected by Sulfuration



* The resistive element of the SR73-RT does not contain ruthenium oxide

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				Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
					RK73H		RK73B				
					D±0.5% E24, E96	F±1% E24, E96 ¹	G±2% E24	J±5% E24			
RK731F (01005)	0.03W	70°C	125°C	±200	—	100kΩ - 2MΩ	100kΩ - 1MΩ	100kΩ - 10MΩ	20V	30V	-55°C to +125°C
				±250		10Ω - 91kΩ	10Ω - 91kΩ	10Ω - 91kΩ			
				0 - +300		—	1Ω - 9.1Ω	1Ω - 9.1Ω			
RK731H (0201)	0.05W			±200	100Ω - 100kΩ	100Ω - 1MΩ	—	100 - 1M	25V	50V	
±300	—			10Ω - 97.6Ω	10Ω - 91Ω						
RK731E (0402)	0.1W			±100	100Ω - 1MΩ	10Ω - 1MΩ	—	—	75V	100V	
RK731J (0603)	0.1W			±200	—	1.02MΩ - 10MΩ	10Ω - 10MΩ	1Ω - 10MΩ			
				±100	1.02kΩ - 1MΩ	1.02kΩ - 1MΩ	—	—			
	0.125W			±200	—	1.02MΩ - 10MΩ	1.1kΩ - 10MΩ	1.1kΩ - 10MΩ			
				±100	100Ω - 1kΩ	10Ω - 1kΩ	—	—			
RK732A (0805)	0.25W			±100	100Ω - 1MΩ	10Ω - 1MΩ	—	—			
±200	—			1.02MΩ - 10MΩ	10Ω - 10MΩ	1Ω - 10MΩ					
RK732B (1206)	0.25W	±100	100Ω - 1MΩ	10Ω - 1MΩ	—	—	200V	400V			
RK732E (1210)	0.5W	±200	—	1.02MΩ - 10MΩ	10Ω - 10MΩ	1Ω - 10MΩ					
		±100	100Ω - 1MΩ	10Ω - 1MΩ	—	—					
	0.75W	±200	—	—	10Ω - 1MΩ	1Ω - 1MΩ					
		±100	10Ω - 1MΩ	10Ω - 1MΩ	—	—					
RK73W2H (2010)	0.75W	±200	—	1 - 9.76 1.02MΩ - 10MΩ	1Ω - 10MΩ	1Ω - 10MΩ					
RK73W3A (2512)	1W	±100	10Ω - 1MΩ	10Ω - 1MΩ	—	—					
RK73W3A2 (2512)	2W ²	95°C	±200	—	1.02MΩ - 10MΩ	10Ω - 10MΩ	1Ω - 10MΩ				
			±100	10Ω - 1MΩ	10Ω - 1MΩ	—	—				

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

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

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.

RK73Z-RT

Part Designation	Rated Ambient Temperature	Rated Terminal Part Temperature	Resistance	Current Rating	Maximum Surge Current	Operating Temperature Range
RK73Z1H (0201)	+70°C	+125°C	100mΩ max.	0.5A	1A	-55°C to +155°C
RK73Z1E (0402)				1A	2A	
RK73Z1J (0603)						
RK73Z2A (0805)				2A	5A	
RK73Z2B (1206)			10A			
RK73Z2E (1210)						
RK73ZW2H (2010)						
RK73ZW3A (2512)						

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)	.10W	+70°C	+125°C	±50	—	30Ω - 1MΩ	30Ω - 1MΩ	50V	100V	-55°C to +155°C
RK73G1J (0603)	.10W				75V			150V		
RK73G2A (0805)	.125W				150V			200V		
RK73G2B (1206)	.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	10Ω - 10MΩ	10Ω - 10MΩ	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."

Applications & Ratings

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 (0508)	1.0W ¹	70°C	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	22k ~ 1M						
	1.0W ¹	70°C	125°C	±100	10 ~ 20k	10 ~ 20k						
WK73S2B (0612)	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 (0612)	0.75W	70°C	125°C	±100	10 ~ 9.76k	10 ~ 9.1k						
				±200	10k ~ 1M	10k ~ 1M						
				±100	10 ~ 9.76k	10 ~ 9.1k						
WK73S2H (1020)	1.0W	70°C	125°C	±100	1 ~ 9.76	1 ~ 9.1				200V	400V	-55°C to +155°C
WK73R2H (1020)	1.0W	70°C	125°C	±150	0.2 ~ 0.976	0.2 ~ 0.91						
				±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	-55°C to +155°C			
	2.0W ¹	70°C	115°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						
				±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.

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."

Higher Power

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

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						
WK73S2B15 (0612)	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						
WK73R2B15 (0612)	1.5W ¹	70°C	95°C	±100	10 ~ 9.76k	10 ~ 9.1k						
				±150	0.2 ~ 0.976	0.2 ~ 0.91						
WK73S2H2 (1020)	2.0W ¹	70°C	95°C	±100	1 ~ 9.76	1 ~ 9.1				200V	400V	-55°C to +155°C
				±150	10 ~ 430k	10 ~ 430k						
WK73R2H2 (1020)	2.0W ¹	70°C	95°C	±100	432k - 1M	470k - 1M						
				±200	10 ~ 330k	10 ~ 330k						
WK73S3A3 (1225)	3.0W ¹	70°C	95°C	±100	1 ~ 9.76	1 ~ 9.1	200V	400V	-55°C to +155°C			
				±100	10 ~ 330k	10 ~ 330k						
WK73R3A3 (1225)	3.0W ¹	70°C	95°C	±200	332k - 1M	360k - 1M						
				±100	10 ~ 330k	10 ~ 330k						

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.

Please refer to the derating curves based on the terminal temperature.

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
SG731J (0603)	0.1W	70°C	125°C	±400 ±200	1Ω - 8.2Ω 10Ω - 1MΩ	50V	100V	-55°C to +155°C
SG732A (0805)	0.125W	70°C	125°C	±400 ±200	1Ω - 8.2Ω 10Ω - 1MΩ	150V	200V	
SG732B (1206)	0.33W	70°C	125°C	±400 ±200	1Ω - 8.2Ω 10Ω - 1MΩ	200V	400V	
SG732E (1210)	0.50W	70°C	125°C	±400 ±200	1Ω - 8.2Ω 10Ω - 1MΩ			
SG73W2H (2010)	0.75W	70°C	125°C	±400 ±200	1Ω - 8.2Ω 10Ω - 1MΩ			
SG73W3A (2512)	1W	70°C	125°C	±400 ±200	1Ω - 8.2Ω 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							
SG73P1E (0402)	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				
SG73P1J (0603)	0.2W 0.33W*2	70°C	135°C 125°C	±100*1					150V	200V					
SG73P2A (0805)	0.25W 0.5W*2	70°C	125°C 100°C	±200					400V	600V (800V)*3					
SG73P2B (1206)	0.33W 0.75W*2	70°C	125°C 105°C	±200					200V	400V					
SG73P2E (1210)	0.5W 0.75W*2	70°C	125°C 110°C	±200											
SG73P2E1 (1210)	1.0W*2	70°C	95°C	±200											
SG73S1E (0402)	0.125W 0.2W*2	70°C	125°C 105°C	±200									75V	100V	-55°C to +155°C
SG73S1J (0603)	0.2W 0.33W*2	70°C	135°C 125°C	±100*1									150V	200V	
SG73S2A (0805)	0.25W 0.5W*2	70°C	125°C 100°C	±200									400V	600V (800V)*3	
SG73S2B (1206)	0.33W 0.75W*2	70°C	125°C 105°C	±200									200V	400V	
SG73S2E (1210)	0.5W 0.75W*2	70°C	125°C 110°C	±200											
SG73S2E1 (1210)	1.0W*2	70°C	95°C	±200											

*1 Cold T.C.R. (-55°C ~ +25°C) is $\pm 150 \times 10^{-6} / \text{K}$

*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.

*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	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (ppm/°C) Max.	Resistance Range (Ω)				Maximum Working Voltage	Maximum Overload Voltage (D.C.)*	Operating Temperature Range
					E-24/E-96 (D±0.5%)	E-24/E-96 (F±1%)	E-24 (G±2%)	E-24 (J±5%)			
HV731J (0603)	0.1W	70°C	125°C	±100**	—	10k - 10M	10k - 10M	10k - 10M	350V	500V*	-55°C to +155°C
HV732A (0805)	0.25W	70°C	125°C	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	400V	800V*	
				±200	—	—	—	11M - 51M			
HV732B (1206)	0.25W	70°C	125°C	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	800V	1000V*	
				±200	—	—	—	11M - 51M			
HV732H (2010)	0.5W	70°C	125°C	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	2000V (D.C.)	3000V*	
				±200	—	—	—	11M - 51M			
HV733A (2512)	1W	70°C	125°C	±100	43k - 1M	43k - 10M	43k - 10M	43k - 10M	3000V (D.C.)	4000V*	
				±200	—	10.2M - 20M	11M - 20M	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

HV73V-RT

Part Designation	Power Rating @ 70°C	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (ppm/°C) Max.	Resistance Range (Ω)				Maximum Working Voltage	Maximum Overload Voltage (D.C.)*	Operating Temperature Range
					E-24/E-96 (D±0.5%)	E-24/E-96 (F±1%)	E-24 (G±2%)	E-24 (J±5%)			
HV73V1J (0603)	0.1W	70°C	125°C	±100**	—	10k - 10M	10k - 10M	10k - 10M	350V	500V*	-55°C to +155°C
HV73V2A (0805)	0.25W	70°C	125°C	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	400V	800V*	
				±200	—	—	—	11M - 51M			
HV73V2B (1206)	0.33W	70°C	125°C	±100	100k - 1M	100k - 10M	100k - 10M	100k - 10M	800V	1200V*	
				±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	
SR731E (0402)	0.166W	70°C	125°C	±200	1Ω - 10Ω	1Ω - 10Ω	1Ω - 10Ω	-55°C to +155°C
SR731J (0603)	0.2W	70°C	125°C	±200	0.2Ω - 10Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
SR732A (0805)	0.33W	70°C	125°C	±300	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	
				±100	0.47Ω - 10Ω	—	—	
				±200	0.2Ω - 0.43Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
SR732A (0805)	0.5W*	70°C	105°C	±250	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	
				±100	0.47Ω - 10Ω	—	—	
				±200	0.2Ω - 0.43Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
SR732B (1206)	0.33W	70°C	125°C	±250	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	
				±100	0.47Ω - 10Ω	—	—	
				±200	0.2Ω - 0.43Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
SR732B (1206)	0.5W*	70°C	110°C	±250	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω	
				±100	0.47Ω - 10Ω	—	—	
				±200	0.2Ω - 0.43Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
SR732E (1210)	0.5W	70°C	125°C	±200	0.2Ω - 0.39Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
				±250	—	—	0.1Ω - 0.18Ω	
				±100	0.43Ω - 10Ω	—	—	
SR732E (1210)	0.66W*	70°C	110°C	±200	0.2Ω - 0.39Ω	0.2Ω - 10Ω	0.2Ω - 10Ω	
				±250	—	—	0.1Ω - 0.18Ω	
				±100	0.43Ω - 10Ω	—	—	

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

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.