KOA SPEER ELECTRONICS, INC.

Current Sense/Shunts

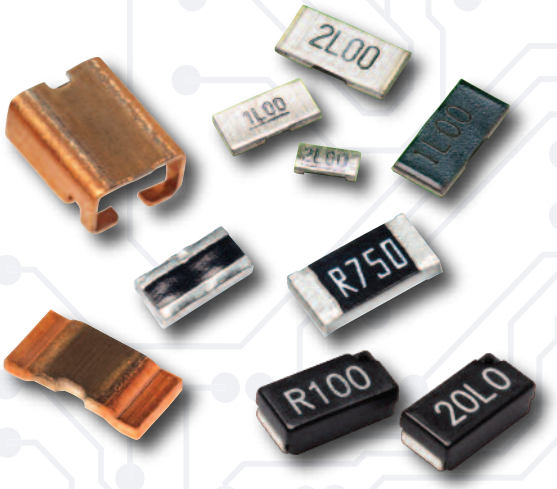
A Complete Family of Low Resistance Resistors

Features

- SMD type of small size, low resistance resistor for current detection
- Low height suitable for use of small equipment such as mobile phone
- AEC-Q200 Qualified
- High reliability and performance with low T.C.R.

Applications

- Transportation
- Alternative Energy
- Power Supply
- Telecommunication
- Military/Aerospace
- Medical Diagnostic Equipment



KOA Speer High Precision Lineup

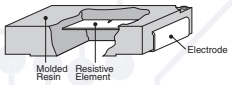
Molded
Size: 2010-4527
Resistance Range: 5m-200mΩ
Power Rating: 0.75-7W
SL SLW
SL07 TSL
SLN
SLP

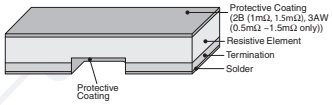
Metal Plate
Size: 0402-2512
Resistance Range: 0.5m-120mΩ
Power Rating: 0.25-5W
TLR BLR
TLRZ CSR
TLRH
LR72 A, B, C

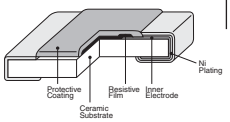
Thick Film
Size: 0201-2512
Resistance Range: 0.1-1MΩ
Power Rating: 0.125-5W
SR73 SR73-RT
SLR1 **NEW** UR73
UR73V **NEW**

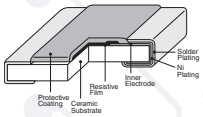
Wide Terminal
Size: 0508-2512
Resistance Range: 10m-1MΩ
Power Rating: 0.125-5W
WK73R, S
WK73R, S-RT
WU73

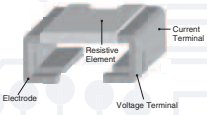
Power Shunts
Size: 0508-2512
Resistance Range: 50μ-4mΩ
Power Rating: 3-50W
PSF4 PSL2
PSG4 HS
PSJ2





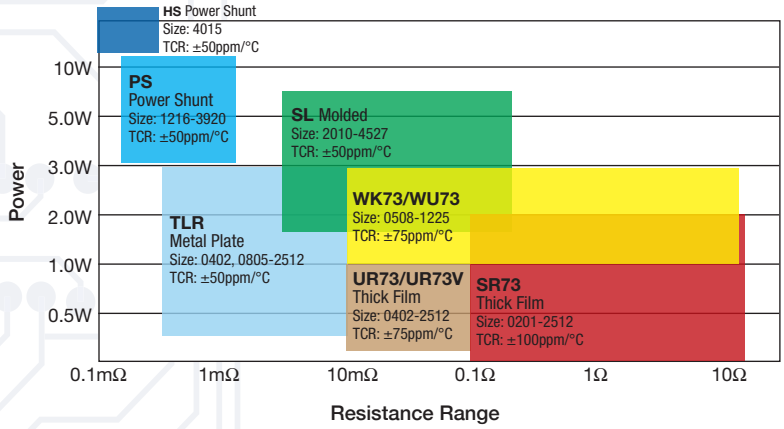




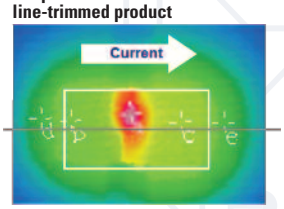


Current Sense/Power Shunt Performance Comparison

KOA Current Sense Resistor Lineup

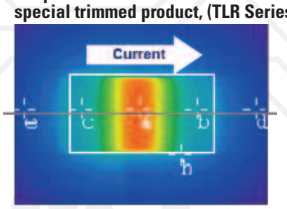


Temperature distribution of a line-trimmed product



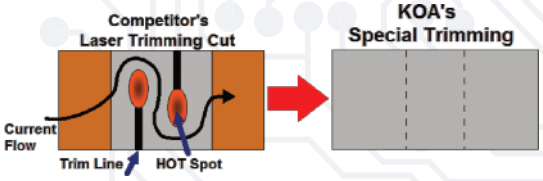
Hot spot is created in the center - close to the trimming cut

Temperature distribution of a special trimmed product, (TLR Series)



Hot spot is created symmetrically to the central axis. Resulting in better heat distribution for resistance stability

KOA's Metal Plate LARGE Pulse Capability Due to NO Trim Lines



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Applications & Ratings

Molded

SLZ, SL07, TSL1, SL1, SL2, SLN2, SL3: Zero ohm- current rating 44A and low profile type are available

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temperature	Resistance Range (Ω)*				T.C.R. (ppm/°C) Max.	Operating Temp. Range
				D: ±0.5% E24,E96***	F: ±1% E24,E96***	G: ±2% E24	J: ±5% E24		
SL07	0.75W	70°C	125°C	—	5m - 100m	—	5m - 100m	0~200: R<11mΩ 0~150: R=>11mΩ	-55°C to +180°C
TSL1	1W		125°C	10m - 100m	5m - 100m	—	5m - 100m	±180: R<15mΩ ±100: R=>15mΩ	
SL1	1W		125°C	10m - 102m	5m - 102m	3m, 4m	5m - 100m	±180: R<15mΩ ±100: R=>15mΩ	
SL1 (TCR±50ppm)	1W		125°C	34.8m - 200m	34.8m - 200m	—	36m - 200m	±50ppm	
SL1 (TCR±75ppm)	1W		125°C	20m - 300m	20m - 300m	—	20m - 300m	±75ppm	
SL2	2W		125°C	10m ~ 360m	5m ~ 360m	3m, 4m	3m ~ 360m	±180: R<11mΩ ±100: R=>11mΩ	
SLN2	2W		105°C	5m - 200m	5m - 200m	—	5m - 200m	±110: R<10mΩ ±75: R=>10mΩ	
SL3	3W		125°C:R≤100mΩ 90°C:R≥110mΩ	10mΩ - 100mΩ	5mΩ - 100mΩ	—	5mΩ - 100mΩ	±180: R=<10mΩ ±100: R=>11mΩ	
SLZ1**	—		—	0.5mΩ Max.	0.5mΩ Max.	0.5mΩ Max.	0.5mΩ Max.	4000 Max.	

* 3m, 4m, 5m, 6m, 7m, 8m, 9m also available inside each resistance range
** SLZ1: Current rating: 44A
*** SL07 and SL1 (T.C.R.: ±50/±75 ppm, 102mΩ=<R=<200mΩ) offer only E24 series

SLW07, SLW1, SLN3, SLN5: Features a special electrode shape that easily absorbs thermal expansion and shrinkage stress

Part Designation	Power Rating	Resistance Range (Ω)*			T.C.R. (ppm/°C) Max.	Rated Terminal Part Temperature	Operating Temperature Range
		D: ±0.5% E24, E96***	F: ±1% E24, E96***	J: ±5% E24			
SLW07	1W	—	5m - 100m		0~200: R=<10mΩ 0~150: R=>11mΩ	125°C	-55°C to +180°C
SLW1	1.5W	10m - 100m	5m - 100m		±180: R=<13mΩ ±100: R=>15mΩ ±75: 20m=<R=<100mΩ ±50: 34.8m=<R=<100mΩ	120°C	
SLN3	3W	5m - 110m			±110: R<10mΩ ±75: R=>10mΩ	105°C	
SLN5	7W (5W)**	3m - 200m		—	±110: R<10mΩ ±75: R=>10mΩ	70°C (120°C)**	-65°C to +180°C

* 5m, 6m, 7m, 8m, 9mΩ also available inside resistance range
** In case the rated terminal part temperature of 120°C, the rated power shall be 5W
*** SLW07 offers only E24 series

SLP: High-precision- T.C.R ±50x10^{-6}/K

Part Designation	Power Rating	T.C.R. (ppm/°C) Max.	Resistance* Range (Ω) E24 • E96	Resistance Tolerance	Rated Terminal Part Temp.	Operating Temperature Range
SLP 2H	1W	±50	10m - 100m	D: 0.5% F: 1%	110°C and less	-65°C to +170°C
SLP 2HW	2W	±50	10m - 40m		70°C and less	
SLP 3A	1W	±50	10m - 100m		110°C and less	
SLP 3AW	2W	±50	10m - 40m		70°C and less	

* Resistance value outside the E-series are available in 5mΩ steps (10m, 15m, 20m etc.)

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Applications & Ratings

Metal Plate

TLR2A: High reliability and performance with T.C.R ±100x10^{-6}/K

Part Designation	Power Rating	Current Rating	T.C.R. (ppm/°C) Max.	Standard Resistance (Ω)	Resistance Tolerance	Rated Terminal Part Temperature	Connection Temperature	Operating Temperature Range
TLR2A	1W	—	±100	2m, 3m, 4m, 5m, 6m, 7m, 8m, 9m, 10m	F: ±1%	105°C	—	-65°C to +155°C

TLR-2B, 2H, 3AW: Ultra-low TCR (+50ppm/°C) and ultra-low resistance (0.5mΩ-20mΩ)

Part Designation	Power Rating	Rated Ambient Temperature	Rated Terminal Part Temperature	T.C.R. (ppm/°C) Max.*	Standard Resistance (Ω)	Resistance Tolerance	Operating Temperature Range
TLR2B	1/2W (.5W)	70°C	105°C	±50	2m,3m,4m,5m,6m,7m,8m, 9m,10m,11m,12m,13m, 15m,16m,18m,20m	F: ±1%	-65°C to +155°C** -65°C to +170°C**
				±75	1m,1.5m,2m,3m,4m,5m, 6m,7m,8m,9m,10m,11m, 12m,13m,15m,16m,18m,20m		
TLR2H	1W	70°C	105°C	±50	1m,2m,3m,4m,5m, 6m,7m,8m,9m,10m	F: ±1%	-65°C to +155°C** -65°C to +170°C**
				±75			
TLR3AW	2W	70°C	105°C	±50	2m,3m,4m,5m, 6m,7m,8m,9m,10m	F: ±1%	-65°C to +155°C**
				±75	0.5m,0.68m,0.75m,0.82m, 1m,1.5m,2m*,3m,4m, 5m,6m,7m,8m,9m,10m		
				±150			-65°C to +170°C**

TLR-2BW, 2HW, 3AP, 3APS: Metal alloy that offers superior corrosion and heat resistance

Part Designation	Power Rating	T.C.R. (ppm/°C) Max.**	Standard Resistance (Ω)	Resistance Tolerance	Rated Terminal Part Temperature	Operating Temperature Range
TLR2BW	1W	±50	2m,3m,4m,5m,6m,7m,8m, 9m,10m,11m,12m,13m, 15m,16m,18m,20m	F: ±1%	+120°C and less	-65°C to +170°C
		±75	0.5m,1m,1.5m,2m,3m,4m,5m, 6m,7m,8m,9m,10m,11m,12m, 13m,15m,16m,18m,20m			
TLR2BP	1.5W	±50	2m,3m,4m,5m,6m,7m,8m,9m,10m	F: ±1%	+110°C and less	-65°C to +170°C
			11m,12m,13m,15m,16m,18m,20m		+100°C and less	
		±75	0.5m,1m,1.5m,2m,3m,4m, 5m,6m,7m,8m,9m,10m		+110°C and less	
			11m,12m,13m,15m,16m,18m,20m		+100°C and less	
TLR2HW	2W	±50	0.5m,1m,2m,2.5m,3m,4m,5m, 6m,7m,8m,9m,10m	F: ±1%	+120°C and less	-65°C to +170°C
		±75				
TLR3AP	3W	±50	2m,3m,4m,5m, 6m,7m,8m,9m,10m	F: ±1%	0.5m ~ 8m: +110°C and less	-65°C to +170°C
		±75	0.5m,0.68m,0.75m, 0.82m,1m,1.5m,2m,3m,4m, 5m,6m,7m,8m,9m,10m		9m, 10m: +90°C and less	
	5W (**New**)	±50	2m,3m,4m	F: ±1%	+110°C and less	-65°C to +170°C
		±75	1m,2m,3m,4m			
TLR3APS	3W	±50, ±75	2m,3m	F: ±1%	+110°C and less	-65°C to +170°C

TLRH: Carrier metal plate inside, resistor of high radiation of heat structure (3AW, 3AP)

Part Designation	Power Rating	T.C.R. (x10^{-6}/K)	Resistance Range (Ω) F: ±1% (E12)	Tolerance	Rated Terminal Part Temperature	Operating Temperature Range
TLRH 2A	0.25W	±75	56m~100m	F: ±1%	+105°C	-65°C~+155°C
	0.33W		33m ~ 50m			
	0.50W		12m ~ 27m			
TLRH 3AW	2.0W	±75	10m~22m			-65°C~+170°C
		±50	24m~270m			
TLRH 3AP	4.0W	±50	40m, 47m, 50m, 56m~120m			
	5.0W	±50	18m, 20m, 22m, 25m~39m		85°C	
		±75	6m, 7m, 8m, 9m, 10m, 12m			

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Applications & Ratings

TLRZ: Low height suitable for use of small equipment such as mobile phone

Part Designation	Current Rating	Standard Resistance (Ω)	Rated Terminal Part Temperature	Operating Temperature Range
TLRZ1E	10A	0.5m max.	105°C and less	-55°C to +170°C
TLRZ1J	26A	0.2m max.	105°C and less	
TLRZ2A	31.6A	0.2m max.	105°C and less	
TLRZ2B	50A	0.2m max.	105°C and less	

BLR: Suitable to detect large current due to ultra low resistances

Part Designation	Power Rating	T.C.R. (ppm/°C) Max.	Resistance Range*	Resistance Tolerance	Rated Ambient Temperature	Operating Temperature Range
BLR1L	1W	±100	25m, 50mΩ	J: ±5% K: ±10%	+70°C	-40°C to +180°C
BLR2L	2W		8m, 12m, 13m, 16m, 17.5m, 20m, 22m, 25mΩ			
BLR3L	15W**					

CSR: Four-Terminal

Part Designation	Power Rating	T.C.R. (ppm/°C) Max.	Resistance Range E-12	Resistance Tolerance	Rated Ambient Temperature	Operating Temperature Range
CSR1	1W	±50	5mΩ - 50mΩ	D: ±0.5%,F: ±1%	+70°C	-55°C to +125°C
CSR2	2W			F: ±1%		

LR72A, B, C: Extremely low resistance and high precision

Part Designation	Power Rating*	T.C.R. (ppm/°C) Max.	Standard Resistance**	Resistance Tolerance	Rated Ambient Temperature	Operating Temperature Range
LR72A	1/2W	±100	2.5mΩ, 5mΩ, 8mΩ	J: ±5%	+70°C	-40°C to +180°C
LR72B	1/4W		3mΩ			
LR72C	1W	±350	2mΩ, 3mΩ		+85°C	-40°C to +155°C

* Rated power in case of glass epoxy resin (FR-4) is used for the substrate material
** Please contact factory for custom made resistance values

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Applications & Ratings

Thick Film

SR73: Low-ohm 0.5%, 1%, 2%, 5% tolerance

Part Designation*	Power Rating @ 70°C	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (ppm/°C) Max.	Resistance Range			
					E-24, E-96 (D±0.5%)	E-24, E-96 (F±1%)**	E-24 (G±2%)	E-24 (J±5%)
SR731H (0201)	0.1W	70°C	—	0 ~ +400	—	1Ω - 10Ω**	—	0.27Ω - 10Ω
				0 ~ +500		—		0.18Ω - 0.24Ω
SR731E (0402)	1/6W (.166W)	70°C	125°C	±200	—	0.51Ω - 10Ω**	0.51Ω - 10Ω	0.51Ω - 10Ω
				±300	—	0.2Ω - 0.47Ω**	0.2Ω - 0.47Ω	0.2Ω - 0.47Ω
				±500	—	0.1Ω - 0.18Ω**	0.1Ω - 0.18Ω	0.1Ω - 0.18Ω
SR731J (0603)	1/5W (.2W)	70°C	125°C	±200	—	1.02Ω - 10Ω	1.1Ω - 10Ω	1.1Ω - 10Ω
	New 1/4W (.25W)	70°C	125°C	±200	—	0.1Ω - 1Ω	0.1Ω - 1Ω	0.1Ω - 1Ω
SR732A (0805)	1/3W (.33W)	70°C	125°C	±100	0.15Ω - 10Ω	0.1Ω - 10Ω	—	—
				±200	—	—	0.1Ω - 10Ω	0.1Ω - 10Ω
				±500	—	—	—	0.051Ω - 0.091Ω
				±800	—	—	—	0.030Ω - 0.047Ω
	1/2W (.5W[1])	—	105°C	±100	0.15Ω - 10Ω	0.1Ω - 10Ω	—	—
				±200	—	—	0.1Ω - 10Ω	0.1Ω - 10Ω
				±500	—	—	—	0.051Ω - 0.091Ω
				±800	—	—	—	0.030Ω - 0.047Ω
SR732B (1206)	1/3W (.33W)	70°C	125°C	±100	0.15Ω - 10Ω	0.1Ω - 10Ω	—	—
				±200	—	—	0.1Ω - 10Ω	0.1Ω - 10Ω
				±500	—	—	—	0.056Ω - 0.091Ω
				±800	—	—	—	0.030Ω - 0.051Ω
	1/2W (.5W[1])	—	110°C	±100	0.15Ω - 10Ω	0.1Ω - 10Ω	—	—
				±200	—	—	0.1Ω - 10Ω	0.1Ω - 10Ω
				±500	—	—	—	0.056Ω - 0.091Ω
				±800	—	—	—	0.030Ω - 0.051Ω
SR732E (1210)	1/2W (.5W)	70°C	125°C	±100	—	0.1Ω - 10Ω	—	—
				±200	—	—	0.1Ω - 10Ω	0.047Ω - 10Ω
				±500	—	—	—	0.036Ω - 0.043Ω
				±1000	—	—	—	0.024Ω - 0.033Ω
	2/3W (.66W[1])	—	110°C	±100	—	0.1Ω - 10Ω	—	—
				±200	—	—	0.1Ω - 10Ω	0.047Ω - 10Ω
				±500	—	—	—	0.036Ω - 0.043Ω
				±1000	—	—	—	0.024Ω - 0.033Ω
SR732H/W2H (2010)	3/4W (.75W)	70°C	125°C	±100	—	0.1Ω - 10Ω	—	—
				±200	—	—	0.1Ω - 10Ω	0.1Ω - 10Ω
				±500	—	—	—	0.056Ω - 0.091Ω
				±800	—	—	—	0.033Ω - 0.051Ω
SR733A/W3A (2512)	1W	70°C	125°C	±100	—	0.1Ω - 10Ω	—	—
				±200	—	—	0.1Ω - 10Ω	0.1Ω - 10Ω
				±500	—	—	—	0.056Ω - 0.091Ω
				±800	—	—	—	0.039Ω - 0.051Ω

* Parentheses indicate EIA package size codes. ** 1H, 1E (F: ±1%) E-24 values only. Operating Temp: -55C to +125°C (SR731H only), -55°C to +150°C

SR73 High Power: High accuracy and current detection in power supplies, motor circuits, etc.

Part Designation*	Power Rating @ 70°C	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (ppm/°C) Max.	Resistance Range			
					E-24, E-96 (D±0.5%)	E-24, E-96 (F±1%)	E-24 (G±2%)	E-24 (J±5%)
SR733A2/W3A2 (2512)	2W	—	95°C	±100	—	0.1Ω - 10Ω	—	—
				±200	—	—	0.1Ω - 10Ω	0.1Ω - 10Ω
				±500	—	—	—	0.056Ω - 0.091Ω
				±800	—	—	—	0.039Ω - 0.051Ω

* Parentheses indicate EIA package size codes. Operating Temp: -55°C to +150°C

SLR1: Excellent heat cycle, resistance range 301m-1MΩ **NEW**

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temperature	Resistance Range (Ω)			T.C.R. ($X10^{-6}$/K)	Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
				D: ±0.5% E24, E96	F: ±1% E24, E96	J: ±5% E24				
SLR1	1W	70°C	90°C	301m - 1M	301m - 1M	330m - 1M	±100	200V	400V	-55°C to +180°C

Rated voltage = $\sqrt{\text{Power Rating X Resistance Value}}$ or Max. working voltage, whichever is lower

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Applications & Ratings

SR73-RT: Anti-sulfuration, high reliability and performance with resistance tolerance ±1.0, T.C.R. ±100x10^{-6}/K

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*	—	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*	—	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*	—	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

UR73: Very low resistance, high precision reliability

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, 25mΩ, 50mΩ	
UR73D1E	1/8W (.125W)	70°C	—	±100	30mΩ - 100mΩ	-55°C to +125°C
				±500	24mΩ - 27mΩ	
UR73D1J	1/4W (.25W)	70°C	80°C	±100	47mΩ - 100mΩ	
				±200	30mΩ - 43mΩ	
				±300	10mΩ - 27mΩ	
UR73D2A	1/3W (.33W)	70°C	90°C	±250	10mΩ - 30mΩ	
UR732A	1/3W (.33W)	70°C	100°C	±100	47mΩ - 100mΩ	
				±250	33mΩ - 43mΩ	
UR73D2B	1/2W (.5W)	70°C	85°C	±200	10mΩ - 27mΩ	
UR732B	1/2W (.5W)	70°C	85°C	±100	47mΩ - 100mΩ	
				±200	30mΩ - 43mΩ	
UR73D2H	3/4W (.75W)	70°C	90°C	±250	10mΩ - 30mΩ	
				±100	33mΩ - 100mΩ	
UR73D3A	1W (1W)	70°C	95°C	±250	10mΩ - 30mΩ	
				±100	33mΩ - 100mΩ	

Rated voltage = $\sqrt{P \cdot R}$

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Applications & Ratings

UR73V: High reliability and performance with T.C.R ±75x10^{-6}/K **NEW**

Part Designation	Power* Rating	Rated Ambient Temperature	Rated Terminal Temperature	T.C.R. (X10^{-6}/K)	Resistance Range (Ω) E24 & 25m, 50m	Resistance Tolerance	Operating Temperature Range
UR73V 2A	0.5W	70°C	100°C	±75	39m~100m	F: ±1%	-55°C to +155°C
UR73VD 2A	0.5W	70°C	100°C	±75	15m~36m		
				0~+150	12m~13m		
				0~+250	10m~11m		
UR73V 2B	0.5W	70°C	125°C	±75	33m~75m		
				±100	30m, 82m~100m		
	New 1W**	—	95°C	±75	33m~75m		
				±100	30m, 82m~100m		
UR73VD 2B	0.5W	70°C	125°C	0~+250	10m~11m		
				±75	12m~27m		
	New 1W**	—	95°C	0~+250	10m, 11m		
				±75	12m~27m		

* Rated voltage = $\sqrt{\text{Power Rating X Resistance Value}}$

** Please keep the resistor operating according to the derating curve of the terminal part temperature based on the specified power rating.

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Applications & Ratings

Wide Terminal

WK73R: High reliability and performance with T.C.R ±100x10^{-6}/K, resistance tolerance ±0.5%, 0.33-2W

Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (X 10^{-6}/K)	Resistance Range (Ω) D±0.5% E-24/E-96	F±1% E-24/E-96	J±5% E-24	Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
WK73R1E	0.33W[1]	—	125°C	±100	—	10 -1M	10 - 1M	75V	100V	-55°C to +155°C
WK73R1J	0.5W[1]	—	125°C	±100	—	10 - 1M	10 - 1M	150V	200V	
WK73R2A	0.75W[1]	—	125°C	±100	—	20.5k - 1M	22k - 1M	200V	400V	
	1.0W[1]	—	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]	—	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			
WK73R2J	1.0W	70°C	100°C	±100	—	10 - 510k	10 - 510k	200V	400V	
				±200	—	511k - 1M	560k - 1M			
WK73R3A	1.5W	70°C	125°C	±100	—	10 - 330k	10 - 330k	200V	400V	
				±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

WK73R High Power: High reliability and performance with T.C.R ±100x10^{-6}/K, resistance tolerance ±0.5%, 1.5-3W

Part Designation	Power Rating	Rated Terminal Part Temp.	T.C.R. (X 10^{-6}/K)	Resistance Range (Ω) D±0.5% E-24/E-96	F±1% E-24/E-96	J±5% E-24	Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
WK73R2B15	1.5W	95°C	±100	10 - 9.76k	10 - 9.76k	10 - 9.1k	200V	400V	-55°C to +155°C
WK73R2H2	2.0W	95°C	±100	—	10 - 430k	10 - 430k	200V	400V	
			±200	—	432k - 1M	470k - 1M			
WK73R3A3	3.0W	95°C	±100	—	10 - 330k	10 - 330k	200V	400V	
			±200	—	332k - 1M	360k - 1M			

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

WK73S: High reliability and performance with T.C.R ±100x10^{-6}/K, resistance tolerance ±0.5%, 1.0-2W

	Part Designation	Power Rating	Rated Ambient Temp.	Rated Terminal Part Temp.	T.C.R. (X 10^{-6}/K)	Resistance Range (Ω) D±0.5% E-24/E-96	F±1% E-24/E-96	J±5% E-24	Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
NEW	WK73S2A	1.0W[1]	—	125°C	±100	—	1 - 9.76	1 - 9.1	200V	400V	-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	±800	—	—	10m - 27m	200V	400V	
					±200	—	30m - 422m	30m - 390m			
					±100	430m - 9.76	430m - 9.76	430m - 9.1			
		1.0W[1]	—	115°C	±800	—	—	10m - 27m			
					±200	—	30m - 422m	30m - 390m			
					±100	430m - 9.76	430m - 9.76	430m - 9.1			
	WK73S2H	1.0W	70°C	125°C	±800	—	—	10m - 24m	200V	400V	
					±200	—	27m - 215m	27m - 200m			
					±100	—	220m - 9.76	220m - 9.1			
	WK73S2J	1.0W	70°C	100°C	±800	—	—	10m - 30m	200V	400V	
					±200	—	33m - 237m	33m - 220m			
					±100	—	240m - 9.76	240m - 9.1			
	WK73S3A	1.5W	70°C	125°C	±800	—	—	10m - 20m	200V	400V	
					±300	—	22m - 32.4m	22m - 30m			
					±200	—	33m - 357m	33m - 330m			
					±100	—	360m - 9.76	360m - 9.1			
		2.0W[1]	—	115°C	±800	—	—	10m - 20m			
					±300	—	22m - 32.4m	22m - 30m			
					±200	—	33m - 357m	33m - 330m			
					±100	—	360m - 9.76	360m - 9.1			

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

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Applications & Ratings

WK73S High Power: High reliability and performance with T.C.R ±100x10^{-6}/K, resistance tolerance ±0.5%, 1.5-3W

Part Designation	Power Rating	Rated Terminal Part Temp.	T.C.R. (X 10^{-6}/K)	Resistance Range (Ω) D±0.5% E-24/E-96	F±1% E-24/E-96	J±5% E-24	Maximum Working Voltage	Maximum Overload Voltage	Operating Temp. Range
WK73S2B15	1.5W	95°C	±100	430m - 9.76	430m - 9.76	430m - 9.1	200V	400V	-55°C to +155°C
			±200	—	30m - 422m	30m - 390m			
			±800	—	—	10m - 27m			
WK73S2H2	2.0W[1]	95°C	±100	—	220m - 9.76	220m - 9.1	200V	400V	
			±200	—	27m - 215m	27m - 200m			
			±800	—	—	10m - 24m			
WK73S3A3	3.0W	95°C	±100	—	360m - 9.76	360m - 9.1	200V	400V	
			±200	—	33m - 357m	33m - 330m			
			±300	—	22m - 32.4m	22m - 30m			
			±800	—	—	10m - 20m			

Rated voltage = √Power rating x resistance value or max. working voltage, whichever is lower

WK73R-RT, WK73S-RT: Excellent anti-sulfuration characteristic due to using high sulfuration-proof inner top electrode material

	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	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			
NEW		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 = √Power rating x resistance value or max. working voltage, whichever is lower

WU73: High reliabilty and performance with T.C.R ±75x10^{-6}/K, resistance tolerance ±1%

Part Designation	Power Rating	Rated Ambient Temperature	Rated Terminal Part Temperature	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	—	95°C	±100	10m~12m	F: ±1%	-55°C to +155°C
				±75	13m~27m		
				±100	30m~100m		

Rated voltage = √Power rating x resistance value

Applications & Ratings

Power Shunts

PSF4, PSG4: Correcter electric current detection is possible to 4-terminal construction

Part Designation	Power Rating (Current Rating)	T.C.R. (ppm/°C) Max.	Resistance Range	Resistance Tolerance	Rated Terminal Part Temperature	Operating Temperature Range
PSG4	10W (141A)	±50	0.5mΩ	F: ±1%	75°C	-65°C to +175°C
	8W (89A)		1mΩ			
PSF4	5W (100A)	±50	0.5mΩ	F: ±1%	130°C	
	3W (54A)		1mΩ			

PSJ2, PSL2: Ultra low resistance, suitable for large surrent sensing

Part Designation	Power Rating (Current Rating)	T.C.R. (ppm/°C) Max.	Resistance Range	Resistance Tolerance	Rated Terminal Part Temperature	Operating Temperature Range
PSJ2	12W (244A)	±200	0.2mΩ	F: ±1%	75°C	-65°C to +175°C
	10W (141A)	±100	0.5mΩ			
	8W (89A)	±75	1mΩ			
	6W (54A)	±75	2mΩ			
	5W (41A)	±50	3mΩ			
	5W (35A)	±50	4mΩ			
PSL2	NEW 9W (212A)	250±100	0.2mΩ	F: ±1%	75°C	-65°C to +175°C
	8W (163A)	±175	0.3mΩ			
	8W (126A)	±115	0.5mΩ			

HS: Excellent T.C.R achieved (50±25x10^{-6}/K), Ultra low resistance, suitable for large current sensing

Part Designation	Power Rating*3	T.C.R. (X 10^{-6}/K)	Resistance Range (Ω)	Rated Terminal Part Temp.	Operating Temp. Range
HSAN2P4022M5 HSAN2P8022M8	**New** 50W (1000A)	75±50	50μ	105°C	-65°C to +175°C
HSAN2P4015M5 HSBN2P8018M8	36W (600A)	50±25	100μ		
HSAN2P4015M5	18W (300A)		200μ		

*3 A power rating shall be guaranteed with a method shown in the item (: Performance)

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Current Sense Selection Guide

Category	KOA	Panasonic	Rohm	SEI	TT Electronics	Vishay	Yageo
Metal Plate	TLR/TLRH/SL	ERJ-MS ERJ-M1W	PMR/PSR	CSM/CSNL CSR/CSRN CSRF/CSS CSSH	ULR/LRC/LRF LR/ LRMA	WSL/WSL_18/ WSLP/WSR	PR/PA/PE
Thick Film	SR73/UR73	ERJ (low ohm)	MCR/UCR	CSR/CSRN	LRCS/LVC	RCWE/RCWL RCWP	RL/PT
Wide Termination	WK73	ERJA/ERJB	LTR	CSRN1225	WHPC/LRF3W SC3	RCL CRCW1218	RC1218
Power Shunt	PS/HS		PSR	HCSK		WSL/WSLP WSK	

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