Power Metal Strip® Resistors, High Power, Surface-Mount, 4-Terminal



FEATURES

- 4-terminal design
- Ideal for all types of current sensing, voltage division and pulse applications
- Proprietary processing technique produces extremely low resistance values
- Sulfur resistance by construction that is unaffected by high sulfur environments
- Durable with all-welded construction
- All welded construction
- Solid metal nickel-chrome or manganese-copper resistive element with low TCR (< 20 ppm/°C)
- Low thermal EMF (< 3 µV/°C)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE Available

GREEN (5-2008) Available

LINKS TO ADDITIONAL RESOURCES

3D Models | Design Tools | Videos | Calculators

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	SIZE	POWER RATING $P_{70\,°C}$ W	RESISTANCE VALUE RANGE Ω				WEIGHT (typical) g/1000 pieces
			TOL. ± 0.1 %	TOL. ± 0.25 %	TOL. ± 0.5 %	TOL. ± 1.0 %	
WSK1206...18	1206	0.5	0.04 to 0.05	0.02 to 0.05	0.01 to 0.05	0.01 to 0.05	16

Notes

- Part marking: due to resistor size limitation, parts will be marked with only the resistance value
- Resistance values are available per WSL decade table (www.vishay.com/doc?30117)

GLOBAL PART NUMBER INFORMATION

Global Part Numbering Example: WSK1206R0150FEA (visit www.vishay.net Vishay Dale parts numbering manual for all options)

W	S	K	1	2	0	6	R	0	1	5	0	F	E	A	1	8

GLOBAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING CODE (1)	SPECIAL
WSK1206	**R** = decimal **R0100** = 0.01 Ω	**B** = ± 0.1 % **C** = ± 0.25 % **D** = ± 0.5 % **F** = ± 1.0 %	**EA** = lead (Pb)-free, tape / reel **EK** = lead (Pb)-free, bulk	**18** = "high power" option

Notes

- Per PCN-DR-00009-2022-REV-0, WSL marking will be removed effective March 1st, 2023

(1) Packaging code: EB (lead (Pb)-free) and TB (tin / lead) are non-standard packaging codes designating 1000 piece reels. These non-standard packaging codes are identical to our standard EA (lead (Pb)-free) and TA (tin / lead), except that they have a package quantity of 1000 pieces

For technical questions, contact: ww2bresistors@vishay.com

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TECHNICAL SPECIFICATIONS		
PARAMETER	**UNIT**	**RESISTOR CHARACTERISTICS**
Component temperature coefficient (including terminal) (1)	ppm/°C	± 35
Element TCR (2)	ppm/°C	< 20
Operating temperature range	°C	-65 to +170
Maximum working voltage (3)	V	$(P \times R)^{1/2}$

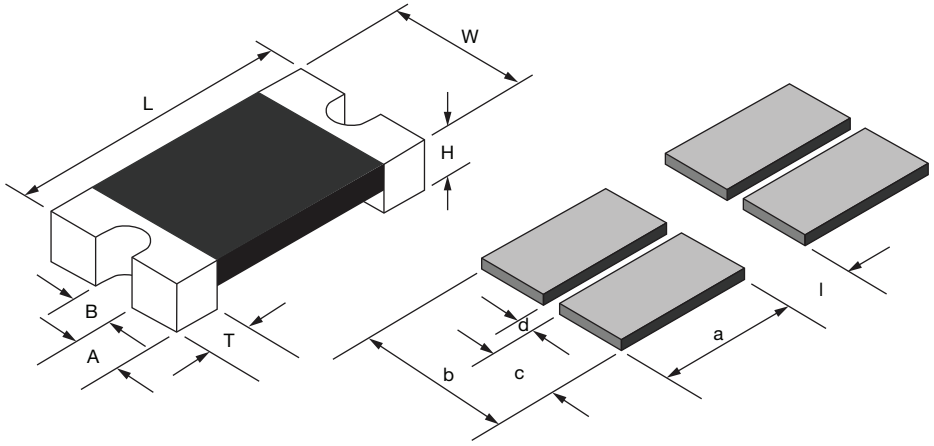
Notes

(1) Component TCR - total TCR that includes the TCR effects of the resistor element and the copper terminal

(2) Element TCR - only applies to the alloy used for the resistor element; refer to item 1 in the construction illustration on the following page

(3) Maximum working voltage - the WSL is not voltage sensitive, but is limited by power / energy dissipation and is also not ESD sensitive

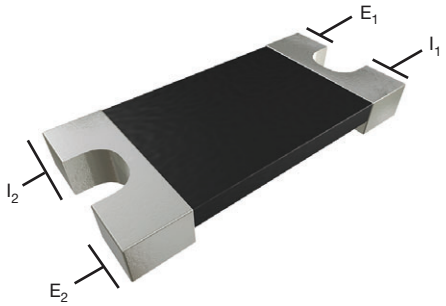
DIMENSIONS



MODEL	DIMENSIONS in inches (millimeters)					
	L	**W**	**H**	**T**	**A**	**B**
WSK1206...18	0.126 ± 0.010 (3.20 ±0.254)	0.063 ± 0.010 (1.60 ± 0.254)	0.025 ± 0.010 (0.635 ± 0.254)	0.020 ± 0.010 (0.508 ± 0.254)	0.023 ± 0.010 (0.584 ± 0.254)	0.018 ± 0.010 (0.457 ± 0.254)

MODEL	SOLDER PAD DIMENSIONS in inches (millimeters)				
	a	**b**	**c**	**d**	**l**
WSK1206...18	0.040 (1.01)	0.070 (1.778)	0.030 (0.762)	0.01 (0.254)	0.070 (1.778)

ELECTRICAL CONNECTION



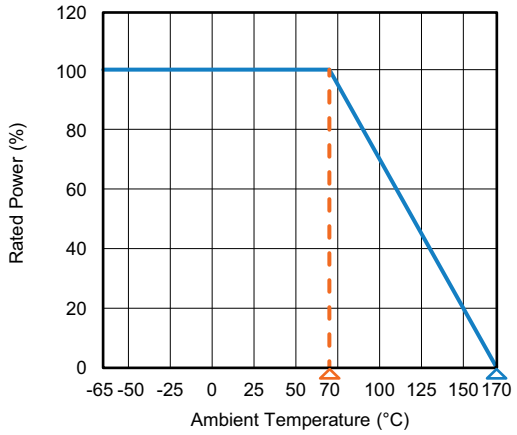
Notes

- E_1 and E_2: voltage sense connections
- I_1 and I_2: current connection

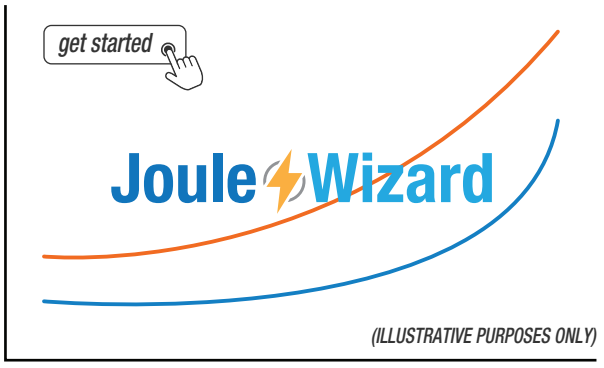
For technical questions, contact: ww2bresistors@vishay.com

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DERATING



PULSE CAPABILITY



www.vishay.com/en/resistors/joulewizard/

PERFORMANCE		
TEST	**CONDITIONS OF TEST**	**TEST LIMITS**
Thermal shock	-55 °C to +150 °C, 1000 cycles, 15 min at each extreme	± (0.5 %) Δ*R*
Short time overload	Refer to link for short time overload performance and pulse capability; www.vishay.com/en/resistors/power-metal-strip-calculator/	± (0.5 %) Δ*R*
Low temperature operation	-65 °C for 45 min	± (0.5 %) Δ*R*
High temperature exposure	1000 h at +170 °C	± (1.0 %) Δ*R*
Bias humidity	+85 °C, 85 % RH, 10 % bias, 1000 h	± (0.5 %) Δ*R*
Mechanical shock	100 *g*'s for 6 ms, 5 pulses	± (0.5 %) Δ*R*
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	± (0.5 %) Δ*R*
Load life	1000 h at +70 °C, 1.5 h "ON", 0.5 h "OFF"	± (1.0 %) Δ*R*
Resistance to solder heat	+260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± (0.5 %) Δ*R*
Moisture resistance	MIL-STD-202, method 106, 0 % power, 7b not required	± (0.5 %) Δ*R*

Note

- Contact ww2bresistors@vishay.com for application specific performance requirements or qualification data. Typical performance is better than stated test limits

PACKAGING				
MODEL	**REEL**			
	TAPE WIDTH	**DIAMETER**	**PIECES/REEL**	**CODE**
WSK1206...18	8 mm/embossed plastic	178 mm / 7"	4000	EA

Notes

- Embossed carrier tape per EIA-481
- Wirewound, Metal Film, and Power Metal Strip® Packaging (www.vishay.com/doc?20051)

LINKS TO RELATED DOCUMENTS	
SELECTOR GUIDE	
Overview of Automotive Grade Products	www.vishay.com/doc?49924
TECHNICAL NOTES	
SMD Current Sense: AEC-Q200 vs. Vishay Qualification	www.vishay.com/doc?30416
MIL-PRF vs. AEC-Q200: Do You Know What You Are Getting?	www.vishay.com/doc?11000
WHITE PAPER	
Thermal Management for Surface-Mount Devices	www.vishay.com/doc?30380
Temperature Coefficient of Resistance for Current Sensing	www.vishay.com/doc?30405

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