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
- Durable with all-welded construction
- Sulfur resistance by construction that is unaffected by high sulfur environments
- Solid metal nickel-chrome or manganese-copper resistive element with low TCR (< 20 ppm/°C)
- All welded construction
- 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	1206	0.25	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		

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	(Dash number) (up to 2 digits) From **1** to **99** as applicable

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

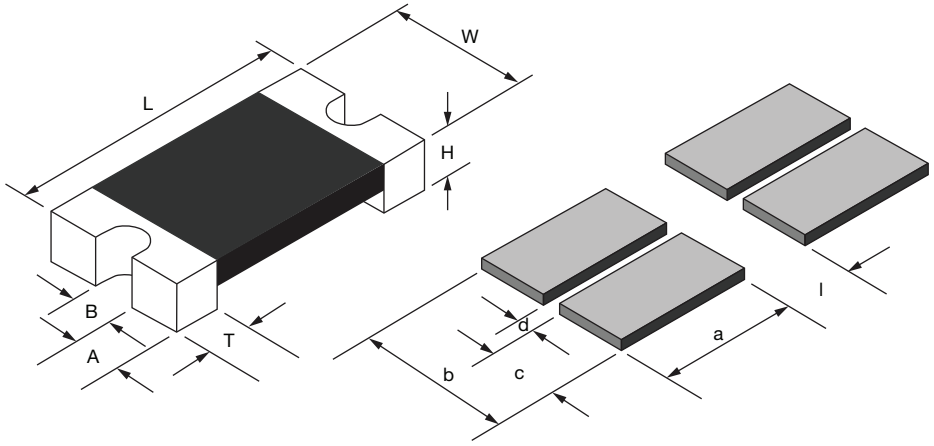
For technical questions, contact: ww2bresistors@vishay.com

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

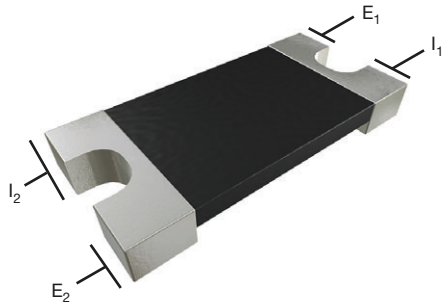
DIMENSIONS



MODEL	DIMENSIONS in inches (millimeters)					
	L	**W**	**H**	**T**	**A**	**B**
WSK1206	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	0.040 (1.01)	0.070 (1.778)	0.030 (0.762)	0.01 (0.254)	0.070 (1.778)

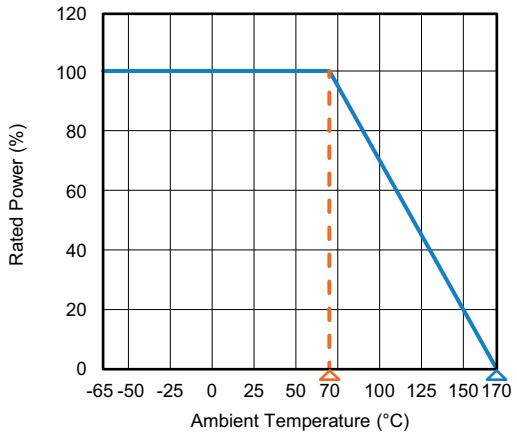
ELECTRICAL CONNECTION



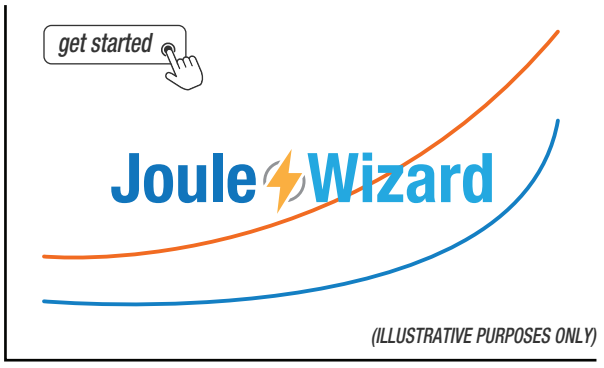
Notes

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

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	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

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.