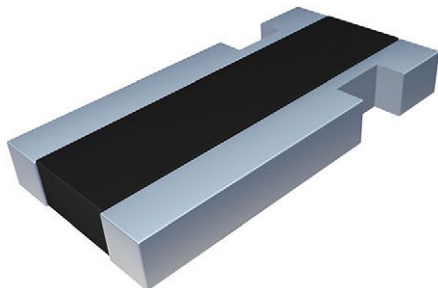


Power Metal Strip® Resistors, High Power, Surface-Mount, 4-Terminal



LINKS TO ADDITIONAL RESOURCES



3D Models



Design Tools



Videos



Calculators

FEATURES

- 4-terminal design
- All welded construction of the Power Metal Strip® resistors are ideal for all types of current sensing, voltage division, and pulse applications
- Proprietary processing technique produces low resistance values
- Solid metal nickel-chrome and manganese-copper alloy resistive element with low TCR (< 20 ppm/°C)
- Sulfur resistance by construction that is unaffected by high sulfur environments
- Very low inductance 0.5 nH to 5 nH
- Low thermal EMF (< 3 µV/°C)
- AEC-Q200 qualified ⁽¹⁾
- PATENT(S): www.vishay.com/patents
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE
GRADE


Available


RoHS*
Available

HALOGEN
FREE

Available

GREEN
(5-2008)

Available

Notes

- * This datasheet provides information about parts that are RoHS-compliant and / or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details
- ⁽¹⁾ Flame retardance test may not be applicable to some resistor technologies

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	SIZE	POWER RATING $P_{70^{\circ}\text{C}}$ W	TOLERANCE $\pm \%$	RESISTANCE VALUE RANGE ⁽¹⁾ Ω	WEIGHT (typical) g/1000 pieces
WSKW0612	0612	1.0	1.0, 5.0	0.5m to 5m	8.5

Notes

- Qualified to AEC-Q200 rev. D
- ⁽¹⁾ Other values may be available, contact factory

GLOBAL PART NUMBER INFORMATION

Global Part Numbering Example: WSKW06121L000FEA (visit www.vishay.net Vishay Dale parts numbering manual for all options)

W	S	K	W	0	6	1	2	1	L	0	0	0	F	E	A		
GLOBAL MODEL (8 digits)								RESISTANCE VALUE ⁽¹⁾ (5 digits)		TOLERANCE CODE (1 digit)		PACKAGING CODE ⁽²⁾ (2 digits)		SPECIAL ⁽³⁾ (up to 2 digits)			
WSKW0612								L = mΩ L5000 = 0.0005 Ω 5L000 = 0.005 Ω		F = $\pm 1.0 \%$ J = $\pm 5.0 \%$		EA = lead (Pb)-free, tape / reel EK = lead (Pb)-free, bulk		(dash number) from 1 to 99 as applicable			

Notes

- Per PCN-DR-00009-2022-REV-0, WSL marking will be removed effective March 1st, 2023
- ⁽¹⁾ WSL marking (www.vishay.com/doc?30327)
- ⁽²⁾ Packaging code: EB (lead (Pb)-free) are non-standard packaging codes designating 1000 piece reels. These non-standard packaging codes are identical to our standard EA (lead (Pb)-free), except that they have a package quantity of 1000 pieces
- ⁽³⁾ Follow link for customization capabilities: www.vishay.com/doc?48163

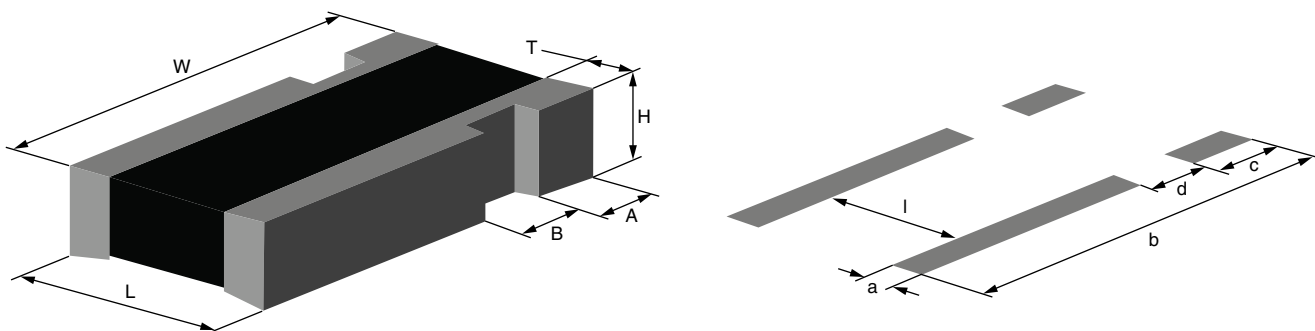
PATENT(S): www.vishay.com/patents

This Vishay product is protected by one or more United States and international patents.

TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	RESISTOR CHARACTERISTICS
Component temperature coefficient (including terminal) ⁽¹⁾ TCR measured from -55 °C to 150 °C	ppm/°C	-300 / +50 for 0.5 mΩ to 0.99 mΩ
		± 150 for 1 mΩ and 2 mΩ
		± 75 for 3 mΩ to 5 mΩ
Element TCR ⁽²⁾	ppm/°C	< 20
Operating temperature range	°C	-65 to +170
Maximum working voltage ⁽³⁾	V	$(P \times R)^{1/2}$

Notes

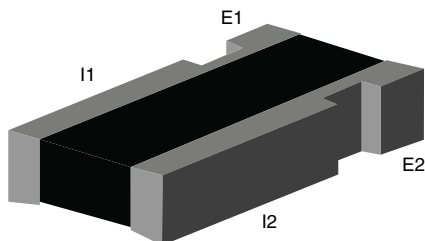
- (1) Component TCR - total TCR that includes the TCR effects of the resistor element and the copper terminal
- (2) Element TCR - only applies to the alloy used for the resistor element
- (3) Maximum working voltage - the WSL is not voltage sensitive, but is limited by power / energy dissipation and is also not ESD sensitive

DIMENSIONS

Note

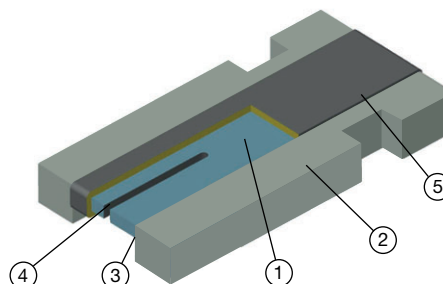
- Surface-mount solder profile recommendations: www.vishay.com/doc?31052

MODEL	DIMENSIONS in inches (millimeters)					
	L	W	H	T	A	B
WSKW0612	0.060 ± 0.010 (1.50 ± 0.254)	0.120 ± 0.010 (3.05 ± 0.254)	0.018 ± 0.010 (0.457 ± 0.254)	0.015 ± 0.010 (0.381 ± 0.254)	0.020 ± 0.005 (0.51 ± 0.127)	0.020 ± 0.005 (0.51 ± 0.127)

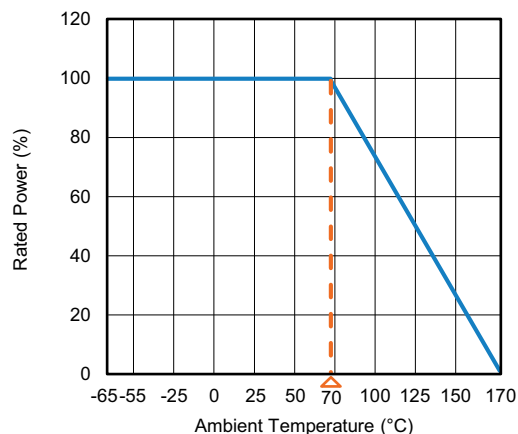
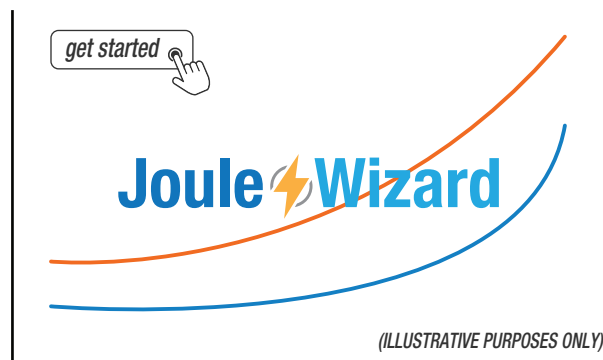
MODEL	SOLDER PAD DIMENSIONS in inches (millimeters)				
	a	b	c	d	l
WSKW0612	0.040 (1.01)	0.135 (3.43)	0.030 (0.762)	0.015 (0.381)	0.030 (0.76)

4 TERMINAL KELVIN CONNECTIONS

Notes

- E1 and E2: voltage sense connection
- I1 and I2: current connection

CONSTRUCTION OUTLINE

Notes

- Resistive element
- Terminal: solid copper and element with 100 % Sn finish
- Terminal to element weld
- Laser calibration
- High temperature encapsulant: siliconized polyester coating material

DERATING

PULSE CAPABILITY

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

PERFORMANCE			
TEST	CONDITIONS OF TEST	TEST LIMITS	TYPICAL
Thermal shock	-55 °C to +150 °C, 1000 cycles, 15 min at each extreme	± 1.0 %	0.20 %
Short time overload	Refer to link for short time overload performance and pulse capability; www.vishay.com/en/resistors/power-metal-strip-calculator/	± 1.0 %	0.20 %
Low temperature storage	-65 °C for 24 h	± 0.5 %	0.1 % (24 h)
High temperature exposure	2000 h at +170 °C	± 1.0 %	± 0.2 %
Bias humidity	+85 °C, 85 % RH, 10 % bias, 1000 h	± 0.5 %	0.20 %
Mechanical shock	100 g's for 6 ms, 5 pulses	± 0.5 %	0.01 %
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	± 0.5 %	0.01 %
Load life	2000 h at +70 °C, 1.5 h "ON", 0.5 h "OFF"	± 1.0 %	-0.20 %
Resistance to solder heat	+260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± 0.5 %	0.05 %
Moisture resistance	MIL-STD-202, method 106, 0 % power, 7b not required	± 1.0 %	0.01 %

Note

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

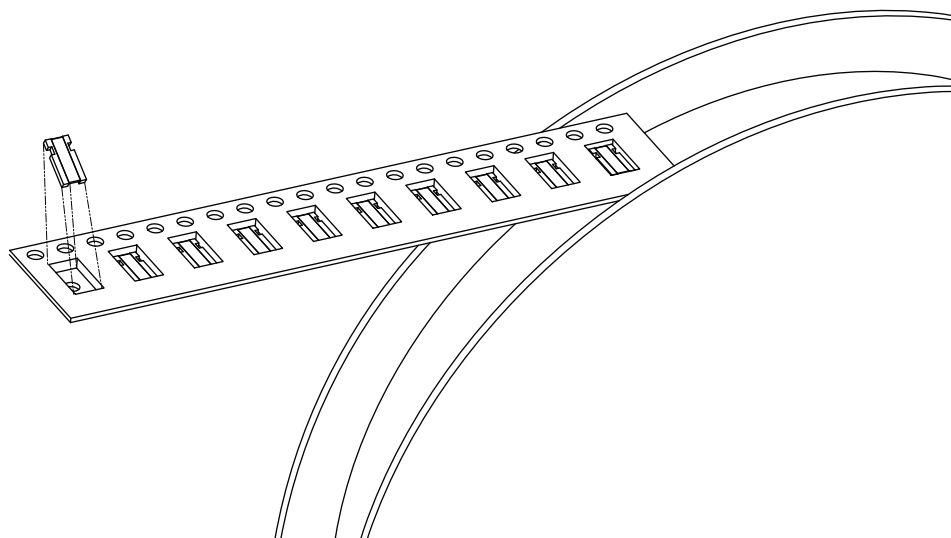
PACKAGING ⁽¹⁾				
MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSKW0612	8 mm / embossed plastic	178 mm / 7"	4000	EA

Notes

- Embossed carrier tape per EIA-481
- ⁽¹⁾ Additional packaging details at www.vishay.com/doc?20051



REEL ORIENTATION



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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