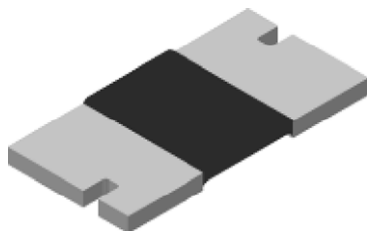


Power Metal Strip® Resistors, Low Value (Down to 0.0005 Ω), Surface-Mount, 4-Terminal



LINKS TO ADDITIONAL RESOURCES



3D Models



Design Tools



Videos



Calculators

FEATURES

- 4-terminal design allows for 1 % tolerance down to 0.0005 Ω and 0.5 % tolerance down to 0.001 Ω
- 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 extremely low resistance values (down to 0.0005 Ω)
- Sulfur resistance by construction that is unaffected by high sulfur environments
- Solid metal nickel-chrome or manganese-copper alloy resistive element with low TCR (< 20 ppm/°C)
- Very low inductance 0.5 nH to 5 nH
- AEC-Q200 qualified ⁽¹⁾
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



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	RESISTANCE VALUE RANGE Ω			WEIGHT (typical) g/1000 pieces
			TOL. ± 0.1 %	TOL. ± 0.5 %	TOL. ± 1.0 %	
WSK2512	2512	1.0	0.01 to 0.2	0.001 to 0.2	0.0005 to 0.2	63.6

Notes

- Part marking: value, tolerance; due to resistor size limitations some resistance values will be marked with only the resistance value
- Qualified to AEC-Q200 rev. D

GLOBAL PART NUMBER INFORMATION

Global Part Numbering Example: WSK25125L000FTA (visit www.vishay.net Vishay Dale parts numbering manual for all options)

W	S	K	2	5	1	2	5	L	0	0	0	F	T	A		
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	--

GLOBAL MODEL

WSK2512

RESISTANCE VALUE ⁽¹⁾

L = mΩ *
R = decimal
5L000 = 0.005 Ω
R0100 = 0.01 Ω

* Use "L" for resistance values < 0.01 Ω

TOLERANCE CODE

B = ± 0.1 %
D = ± 0.5 %
F = ± 1.0 %

PACKAGING CODE ⁽²⁾

EA = lead (Pb)-free, tape / reel
EK = lead (Pb)-free, bulk
TA = tin / lead, tape / reel (R86)
BA = tin / lead, bulk (B43)

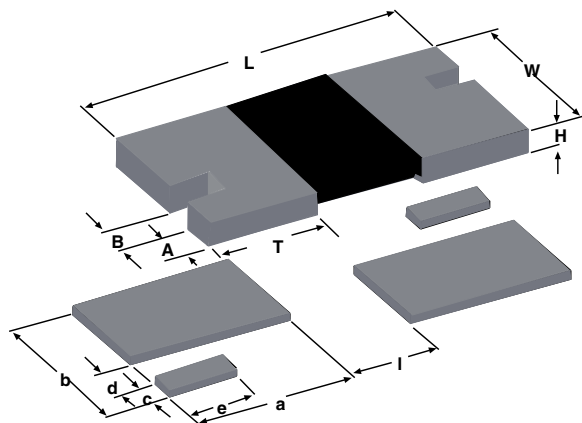
SPECIAL

(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⁾ WSL marking (www.vishay.com/doc?30327)
- ⁽²⁾ 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

TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	RESISTOR CHARACTERISTICS
Temperature coefficient	ppm/°C	± 350 for 0.5 m Ω to 0.99 m Ω , ± 250 for 0.001 Ω to 0.0029 Ω , ± 75 for 0.003 Ω to 0.0049 Ω , ± 35 for 0.005 Ω to 0.2 Ω
Operating temperature range	°C	-65 to +170
Maximum working voltage	V	$(P \times R)^{1/2}$

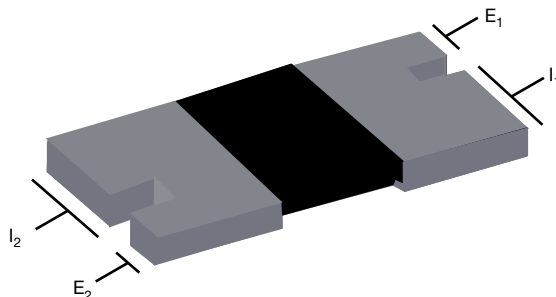
DIMENSIONS in inches (millimeters)

Notes

- 3D models available: www.vishay.com/doc?30323
- Surface-mount solder profile recommendations: www.vishay.com/doc?31052

MODEL	DIMENSIONS						
	RESISTANCE RANGE Ω	L	W	H	T	A	B
WSK2512	0.0005 to 0.00099	0.250 ± 0.010 (6.35 $\pm$ 0.254)	0.125 ± 0.010 (3.18 $\pm$ 0.254)	0.025 ± 0.010 (0.635 $\pm$ 0.254)	0.105 ± 0.010 [2.66 $\pm$ 0.254]	0.030 ± 0.010 (0.762 $\pm$ 0.254)	0.020 ± 0.010 (0.508 $\pm$ 0.254)
	0.001 to 0.0049				0.087 ± 0.010 (2.21 $\pm$ 0.254)		
	0.005 to 0.2				0.047 ± 0.010 (1.19 $\pm$ 0.254)		

MODEL	SOLDER PAD DIMENSIONS						
	RESISTANCE RANGE Ω	a	b	c	d	e	l
WSK2512	0.0005 to 0.0049	0.130 (3.30)	0.130 (3.30)	0.030 (0.76)	0.020 (0.51)	0.067 (1.70)	0.065 (1.65)
	0.005 to 0.2	0.090 (2.29)					0.145 (3.68)

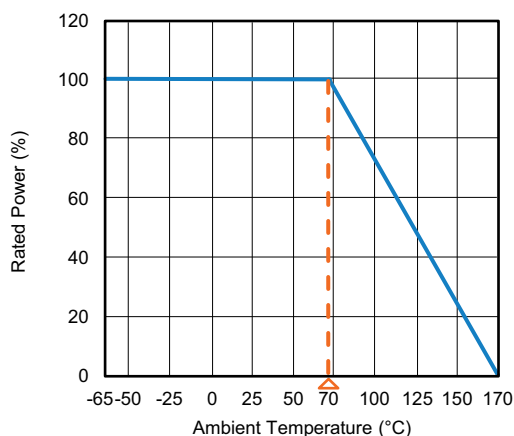
ELECTRICAL CONNECTION



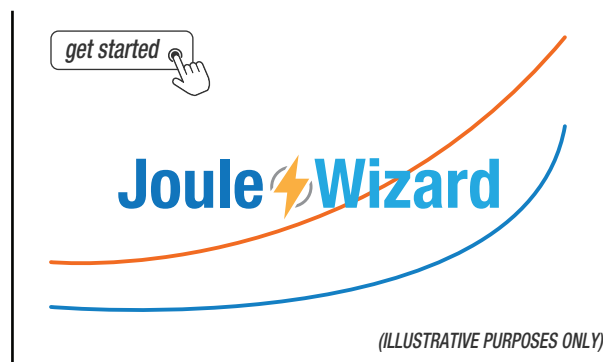
Notes

- E1 and E2: voltage sense connections
- I1 and I2: 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 % + 0.0005 Ω
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 % + 0.0005 Ω
Low temperature operation	-65 °C for 24 h	± 0.5 % + 0.0005 Ω
High temperature exposure	1000 h at +170 °C	± 1.0 % + 0.0005 Ω
Bias humidity	+85 °C, 85 % RH, 10 % bias, 1000 h	± 0.5 % + 0.0005 Ω
Mechanical shock	100 g's for 6 ms, 5 pulses	± 0.5 % + 0.0005 Ω
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	± 0.5 % + 0.0005 Ω
Load life	1000 h at rated power, +70 °C, 1.5 h "ON", 0.5 h "OFF"	± 1.0 % + 0.0005 Ω
Resistance to solder heat	+260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± 0.5 % + 0.0005 Ω
Moisture resistance	MIL-STD-202, method 106, 0 % power, 7a and 7b not required	± 0.5 % + 0.0005 Ω

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
WSK2512	12 mm / embossed plastic	178 mm / 7"	2000	EA

Notes

- Embossed carrier tape per EIA-481
- (1) Additional packaging details at 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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