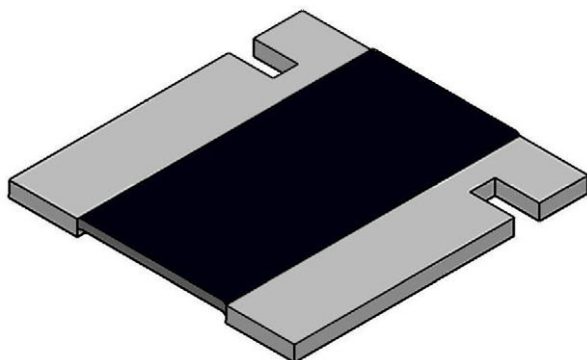


# Power Metal Strip® Resistors, Low Value (Down to 0.001 Ω), Surface-Mount, 4-Terminal



## LINKS TO ADDITIONAL RESOURCES



3D Models



Design Tools



Videos



Calculators

## FEATURES

- 4-terminal design allows for 0.5 % resistance 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 0.001 Ω)
- Sulfur resistance by construction that is unaffected by high sulfur environments
- Solid metal nickel-chrome alloy resistive element with low TCR (< 20 ppm/°C)
- Low thermal EMF (< 3 μV/°C)
- Very low inductance, 0.5 nH to 5 nH
- Excellent frequency response to 50 MHz
- AEC-Q200 qualified <sup>(1)</sup>
- PATENT(S): [www.vishay.com/patents](http://www.vishay.com/patents)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

AUTOMOTIVE  
GRADE

Pb-free  
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 ± %	RESISTANCE VALUE RANGE Ω	WEIGHT (typical) g/1000 pieces
WSL3637	3637	3.0	0.5 and 1.0	0.001 to 0.01	274.3

## Note

- Qualified to AEC-Q200 rev. D

## GLOBAL PART NUMBER INFORMATION

Global Part Numbering Example: WSL36375L000FEA (visit [www.vishay.net](http://www.vishay.net) Vishay Dale parts numbering manual for all options)

W S L 3 6 3 7 5 L 0 0 0 F E A

GLOBAL MODEL (7 digits)	RESISTANCE VALUE <sup>(1)</sup> (5 digits)	TOLERANCE CODE (1 digit)	PACKAGING CODE <sup>(2)</sup> (2 digits)	SPECIAL (2 digits)
WSL3637	$L = m\Omega$ $R = \text{decimal}$ $5L000 = 0.005 \Omega$ $R0100 = 0.01 \Omega$  * Use "L" for resistance values < 0.01 Ω	$D = \pm 0.5 \%$ $F = \pm 1.0 \%$	EA = lead (Pb)-free, tape / reel EK = lead (Pb)-free, bulk TA = tin / lead, tape/reel (R86) BA = tin / lead, bulk (B43)	(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](http://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

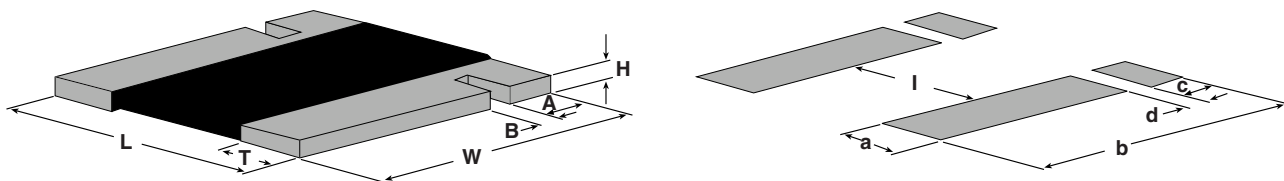
PATENT(S): [www.vishay.com/patents](http://www.vishay.com/patents)

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

## TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	RESISTOR CHARACTERISTICS
Temperature coefficient	ppm/°C	$\pm 50$ for 0.003 $\Omega$ to 0.010 $\Omega$
		$\pm 75$ for 0.001 $\Omega$ to 0.0029 $\Omega$
Element TCR	ppm/°C	< 20
Operating temperature range	°C	-65 to +170
Maximum working voltage	V	$(P \times R)^{1/2}$

## DIMENSIONS



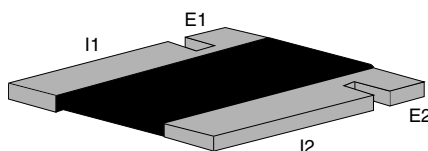
### Note

- 3D models available: [www.vishay.com/doc?30303](http://www.vishay.com/doc?30303)

MODEL	DIMENSIONS in inches (millimeters)						
	RESISTANCE RANGE ( $\Omega$ )	W	L	H	T	A	B
WSL3637	0.002 to 0.01	0.370 $\pm$ 0.010 (9.40 $\pm$ 0.254)	0.360 $\pm$ 0.010 (9.14 $\pm$ 0.254)	0.025 $\pm$ 0.010 (0.635 $\pm$ 0.254)	0.086 $\pm$ 0.010 (2.18 $\pm$ 0.254)	0.061 $\pm$ 0.010 (1.55 $\pm$ 0.254)	0.032 $\pm$ 0.010 (0.813 $\pm$ 0.254)
	0.001 to 0.0019				0.138 $\pm$ 0.010 (3.51 $\pm$ 0.254)		

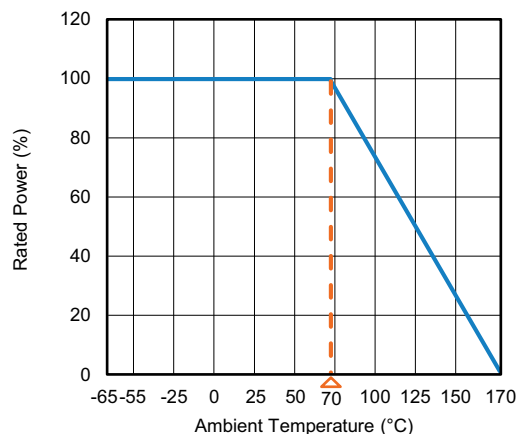
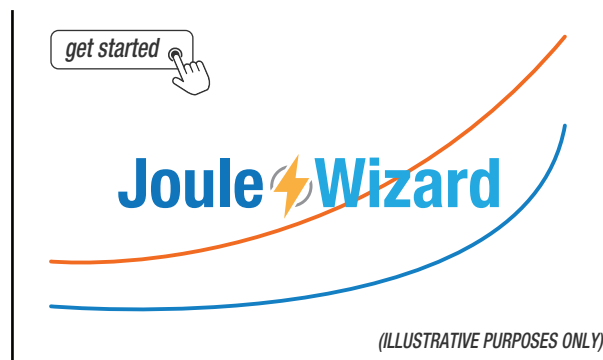
MODEL	SOLDER PAD DIMENSIONS in inches (millimeters)					
	RESISTANCE RANGE ( $\Omega$ )	a	b	c	d	l
WSL3637	0.002 to 0.01	0.116 (2.95)	0.390 (9.91)	0.066 (1.68)	0.024 (0.610)	0.178 (4.52)
	0.001 to 0.0019	0.168 (4.27)	0.390 (9.91)	0.066 (1.68)	0.024 (0.610)	0.074 (1.88)

## 4 TERMINAL KELVIN CONNECTIONS



### Notes

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

**DERATING**

**PULSE CAPABILITY**

[www.vishay.com/en/resistors/joulewizard/](http://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 %
Short time overload	5 x rated power for 5 s	± 0.5 %
Low temperature storage	-65 °C for 24 h	± 0.5 %
High temperature exposure	1000 h at +170 °C	± 1.0 %
Bias humidity	+85 °C, 85 % RH, 10 % bias, 1000 h	± 0.5 %
Mechanical shock	100 g's for 6 ms, 5 pulses	± 0.5 %
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	± 0.5 %
Load life	1000 h at rated power, +70 °C, 1.5 h "ON", 0.5 h "OFF"	± 1.0 %
Solder heat	+260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± 0.5 %
Moisture resistance	MIL-STD-202, method 106, 0 % power, 7a and 7b not required	± 0.5 %

**Note**

- Contact [ww2bresistors@vishay.com](mailto:ww2bresistors@vishay.com) for application specific performance requirements or qualification data. Typical performance is better than stated test limits

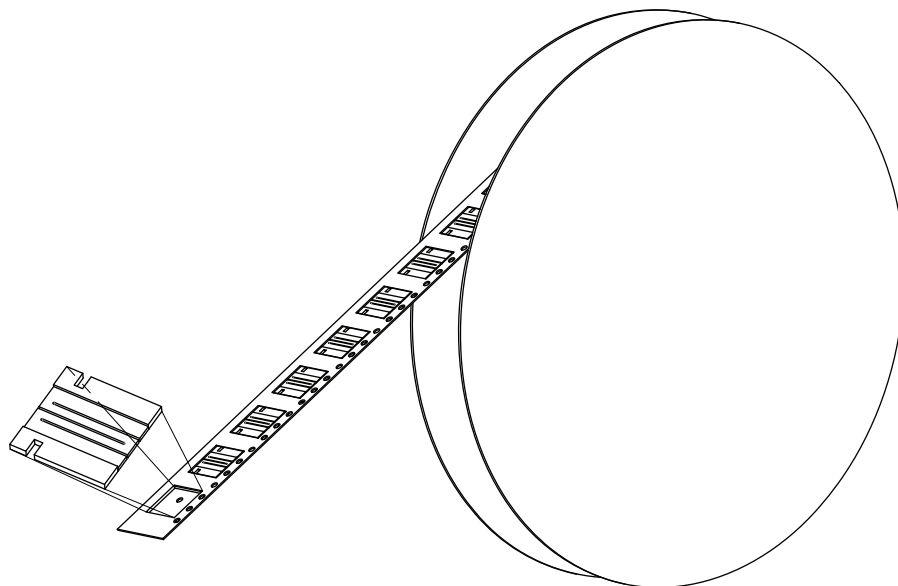
PACKAGING (1)				
MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSL3637	16 mm / embossed plastic	330 mm / 13"	4000	EA

**Notes**

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



## REEL ORIENTATION



### LINKS TO RELATED DOCUMENTS

#### SELECTOR GUIDE

Overview of Automotive Grade Products

[www.vishay.com/doc?49924](http://www.vishay.com/doc?49924)

#### TECHNICAL NOTES

SMD Current Sense: AEC-Q200 vs. Vishay Qualification

[www.vishay.com/doc?30416](http://www.vishay.com/doc?30416)

MIL-PRF vs. AEC-Q200: Do You Know What You Are Getting?

[www.vishay.com/doc?11000](http://www.vishay.com/doc?11000)

#### WHITE PAPER

Thermal Management for Surface-Mount Devices

[www.vishay.com/doc?30380](http://www.vishay.com/doc?30380)

Temperature Coefficient of Resistance for Current Sensing

[www.vishay.com/doc?30405](http://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.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. 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.