

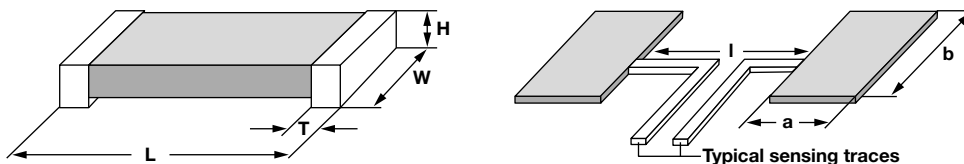


TECHNICAL SPECIFICATIONS						
PARAMETER	UNIT	WSL RESISTOR CHARACTERISTICS				
		WSL0603 <sup>(1)</sup>	WSL0805	WSL1206	WSL2010	WSL2512
Component temperature coefficient (including terminal) <sup>(2)</sup> TCR measured from -55 °C to +155 °C	ppm/°C	± 75 for 50 mΩ to 100 mΩ	± 75 for 7 mΩ to 500 mΩ			
		± 110 for 10 mΩ to 49 mΩ	± 110 for 5 mΩ to 6.9 mΩ			
		-	± 150 for 3 mΩ to 4.9 mΩ			
		-	± 275 for 1 mΩ to 2.9 mΩ			
		-	± 400 for 0.5 mΩ to 0.99 mΩ			
Element TCR <sup>(3)</sup>	ppm/°C	< 20				
Operating temperature range	°C	-65 to +170				
Maximum working voltage <sup>(4)</sup>	V	$(P \times R)^{1/2}$				

**Notes**

- (1) Consult factory for detailed TCR performance across temperature range associated with PCN-DR-00003-2020 for WSL0603. TCR performance is improved for +25 °C to +155 °C
- (2) Component TCR - total TCR that includes the TCR effects of the resistor element and the copper terminal
- (3) Element TCR - only applies to the alloy used for the resistor element; refer to item 1 in the construction illustration on the following page
- (4) Maximum working voltage - the WSL is not voltage sensitive, but is limited by power / energy dissipation and is also not ESD sensitive

**DIMENSIONS** in inches (millimeters)



**Notes**

- 3D models available: [www.vishay.com/doc?30306](http://www.vishay.com/doc?30306)
- Surface mount solder profile recommendations: [www.vishay.com/doc?31052](http://www.vishay.com/doc?31052)

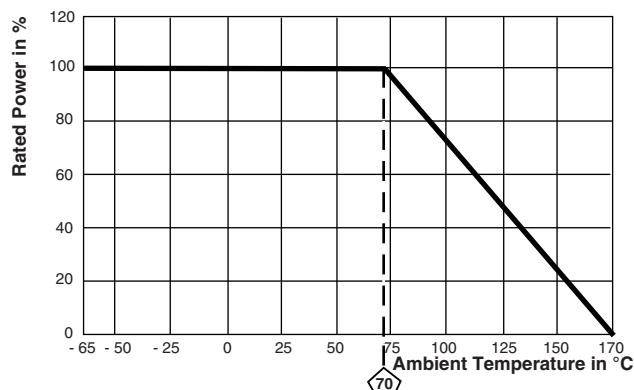
MODEL	RESISTANCE RANGE (Ω)	DIMENSIONS				SOLDER PAD DIMENSIONS			
		L	W	H	T	a	b	l	
WSL0603 <sup>(1)</sup>	0.01 to 0.1	0.060 ± 0.010 (1.52 ± 0.254)	0.030 ± 0.010 (0.76 ± 0.254)	0.016 ± 0.005 (0.406 ± 0.127)	0.015 ± 0.010 (0.381 ± 0.254)	0.040 (1.01)	0.040 (1.01)	0.020 (0.50)	
WSL0805	0.005 to 0.2	0.080 ± 0.010 (2.03 ± 0.254)	0.050 ± 0.010 (1.27 ± 0.254)	0.013 ± 0.005 (0.330 ± 0.127)	0.015 ± 0.010 (0.381 ± 0.254)	0.040 (1.02)	0.050 (1.27)	0.020 (0.50)	
WSL1206	0.0005 to 0.00099	0.126 ± 0.010 (3.20 ± 0.254)	0.063 ± 0.010 (1.60 ± 0.254)	0.025 ± 0.010 (0.635 ± 0.254)	0.041 ± 0.010 (1.04 ± 0.254)	0.089 (2.26)	0.076 (1.93)	0.023 (0.58)	
	0.001 to 0.0019				0.086 (2.18)	0.076 (1.93)	0.029 (0.74)		
	0.002 to 0.0059				0.025 ± 0.010 (0.635 ± 0.254)	0.070 (1.78)	0.076 (1.93)	0.061 (1.55)	
	0.006 to 0.20				0.020 ± 0.010 (0.508 ± 0.254)	0.065 (1.65)	0.076 (1.93)	0.071 (1.80)	
WSL2010	0.001 to 0.0069	0.200 ± 0.010 (5.08 ± 0.254)	0.100 ± 0.010 (2.54 ± 0.254)	0.025 ± 0.010 (0.635 ± 0.254)	0.058 ± 0.010 (1.47 ± 0.254)	0.093 (2.36)	0.120 (3.05)	0.055 (1.40)	
	0.007 to 0.5				0.020 ± 0.010 (0.508 ± 0.254)	0.055 (1.40)	0.120 (3.05)	0.130 (3.30)	
WSL2512	0.0005 to 0.00099	0.250 ± 0.010 (6.35 ± 0.254)	0.125 ± 0.010 (3.18 ± 0.254)	0.025 ± 0.010 (0.635 ± 0.254)	0.107 ± 0.010 (2.72 ± 0.254)	0.120 (3.05)	0.145 (3.68)	0.050 (1.27)	
	0.001 to 0.0049				0.087 ± 0.010 (2.21 ± 0.254)			0.125 (3.18)	
	0.005 to 0.0069				0.047 ± 0.010 (1.19 ± 0.254)			0.083 (2.11)	0.160 (4.06)
	0.007 to 0.5				0.030 ± 0.010 (0.762 ± 0.254)			0.065 (1.65)	0.125 (3.18)
WSL2816	0.002 to 0.00399	0.280 ± 0.010 (7.1 ± 0.254)	0.165 ± 0.010 (4.2 ± 0.254)	0.025 ± 0.010 (0.635 ± 0.254)	0.098 ± 0.010 (2.49 ± 0.254)	0.135 (3.43)	0.185 (4.7)	0.060 (1.52)	
	0.004 to 0.1				0.062 ± 0.010 (1.57 ± 0.254)			0.096 (2.45)	0.125 (3.20)

**Note**

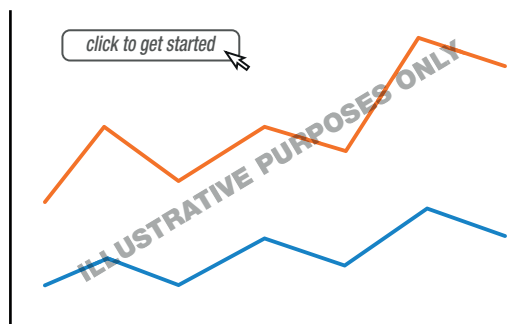
- (1) PCN-DR-00003-2020 changed terminal height for WSL0603 from 0.013" ± 0.005" for clad construction to 0.016" ± 0.005" for welded construction



**DERATING**



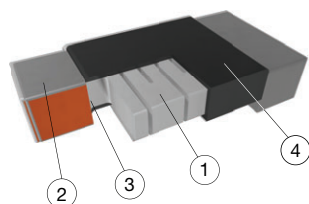
**PULSE CAPABILITY**



[www.vishay.com/resistors/power-metal-strip-calculator](http://www.vishay.com/resistors/power-metal-strip-calculator)

**WELDED CONSTRUCTION**

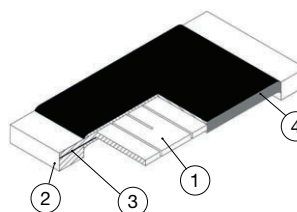
2816, 2512, 2010, 1206, 0603



- ① Resistive element: solid metal nickel-chrome or manganese-copper alloy resistive element with low TCR (< 20 ppm/°C)
- ② Plated terminal: solid copper, 100 % Sn (100 μ" min.) with 100 % Ni (20 μ" min.) under layer finish
- ③ Terminal / element weld
- ④ Silicone coating with ink print

**CLAD CONSTRUCTION**

0805



- ① Resistive element: Ni-Cr
- ② Terminal: solid copper, 100 % Sn (100 μ" min.) with 100 % Ni (20 μ" min.) under layer finish
- ③ Terminal to element weld
- ④ High temperature encapsulant: "siliconized polyester" coating material

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; <a href="http://www.vishay.com/resistors/power-metal-strip-calculator/">www.vishay.com/resistors/power-metal-strip-calculator/</a>	± 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

PACKAGING (1)				
MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSL0603	8 mm / punched paper	178 mm / 7"	5000	EA
WSL0805	8 mm / punched paper	178 mm / 7"	5000	EA
WSL1206	8 mm / embossed plastic	178 mm / 7"	4000	EA
WSL2010	12 mm / embossed plastic	178 mm / 7"	4000	EA
WSL2512	12 mm / embossed plastic	178 mm / 7"	2000	EA
WSL2816	12 mm / embossed plastic	178 mm / 7"	2000	EH

**Notes**

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



## **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.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## Vishay:

[WSL2010R5000FTA](#) [WSL2512R5110FTB](#) [WSL1206R2400FTB](#) [WSL1206R2500FTB](#) [WSL25122L000JTB](#)  
[WSL25125L000JTB](#) [WSL1206-18 .002 1%TR](#) [WSL120618 .0069 1%TR](#) [WSL1206R0100JEB](#) [WSL2010-18 .15](#)  
[1%R86](#) [WSL201018 .04 .5%R86](#) [WSL2512-18 .001 1%TR](#) [WSL2512R5100FEB](#) [WSL2512R0249FEB](#)  
[WSL2512R5100FEK](#) [WSL2816R0100FEA](#) [WSL2816R0120FEA](#) [WSL2816R0150FEA](#) [WSL2816R0190FEA](#)  
[WSL2816R0250FEA](#) [WSL2816R0300FEA](#) [WSL2816R0330FEA](#) [WSL2816R0400FEA](#) [WSL2816R0470FEA](#)  
[WSL2816R0600FEA](#) [WSL2816R0650FEA](#) [WSL2816R0680FEA](#) [WSL2816R0750FEA](#) [WSL2816R0800FEA](#)  
[WSL2816R0820FEA](#) [WSL1206R0820FTA](#) [WSL2512R0332FTA](#) [WSL2512R0510FTA](#) [WSL2010R0580FTA](#)  
[WSL2512R0120FTA](#) [WSL2512R0249FTA](#) [WSL0805R1200FTA](#) [WSL0805R0500FTG](#) [WSL25123L000JTA](#)  
[WSL1206R1700FTA](#) [WSL1206R0300FTA](#) [WSL2512R3300FTA](#) [WSL2010R4700FTA](#) [WSL2512R2320FTA](#)  
[WSL2512R0590FTA](#) [WSL2010R3320FTA](#) [WSL2010R0750FTA](#) [WSL2010R0170FTA](#) [WSL2512R4400FTA](#)  
[WSL25125L000JTA](#) [WSL2010R4990FTA](#) [WSL1206R0220FTA](#) [WSL2010R0240FTA](#) [WSL2010R2200FTA](#)  
[WSL2512R4990FTA](#) [WSL1206R0470FTA](#) [WSL25122L500JTA](#) [WSL1206R0680FTA](#) [WSL1206R1100FTA](#)  
[WSL2010R1700FTA](#) [WSL2512R0430FTA](#) [WSL2010R0470FTA](#) [WSL20108L000FTA](#) [WSL1206R0510FTA](#)  
[WSL2512R0294FTA](#) [WSL2512R1460FTA](#) [WSL2512R1210FTA](#) [WSL2512R4530FTA](#) [WSL2010R0680FTA](#)  
[WSL2512R1200FTA](#) [WSL2512R2700FTA](#) [WSL20107L500FTA](#) [WSL2010R2700FTA](#) [WSL2512R4000FTA](#)  
[WSL1206R0170FTA](#) [WSL2512R0680FTA](#) [WSL2512R5100FTA](#) [WSL2512R0221FTB](#) [WSL0805R1000FTB](#)  
[WSL1206R038FTB](#) [WSL2512R1540FBA](#) [WSL-0805 .01 1%TR](#) [WSL-1206 .05 1%TR](#) [WSL1206R0460FEB](#)  
[WSL1206R1100FEB](#) [WSL1206R1400FEB](#) [WSL1206R1600FEB](#) [WSL-2010 .01 1%TR](#) [WSL-2010 .02 1%TR](#) [WSL-](#)  
[2010 .04 1%TR](#) [WSL201018 .001 1%R86](#) [WSL201018 .0025 1%TR](#) [WSL2010-18 .003 1%TR](#) [WSL2010-18 .005](#)  
[1%TR](#) [WSL2010R1250FEB](#) [WSL-2512 .0025 1%TR](#) [WSL-2512 .004 1%TR](#) [WSL-2512 .009 1%TR](#) [WSL-2512 .01](#)  
[1%R86](#) [WSL-2512 .03 1%TR](#)