

# **WSL...18 High Power**

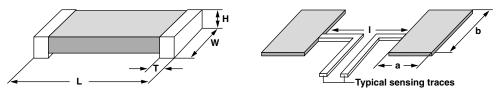
Vishay Dale

TECHNICAL SPECIFICATIONS								
	UNIT	RESISTOR CHARACTERISTICS						
PARAMETER		WSL060318 <sup>(1)</sup>	WSL0805 18	WSL1206 18	WSL2010 18	WSL2512 18	WSL2816 18	
	ppm/°C	$\pm$ 75 for 50 m $\Omega$ to 100 m $\Omega$	$\pm$ 75 for 7 m $\Omega$ to 500 m $\Omega$					
Component temperature coefficient (including terminal) (2) TCR measured from -55 °C to +155 °C		$\pm$ 110 for 10 m $\Omega$ to 49 m $\Omega$	$\pm$ 110 for 5 m $\Omega$ to 6.9 m $\Omega$					
		-	$\pm$ 150 for 3 m $\Omega$ to 4.9 m $\Omega$					
		-	$\pm$ 275 for 1 m $\Omega$ to 2.9 m $\Omega$					
		-	$\pm$ 400 for 0.5 m $\Omega$ to 0.99 m $\Omega$					
Element TCR (3)	ppm/°C	< 20						
Operating temperature range	°C	-65 to +170						
Maximum working voltage (4)	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...18. 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.vishav.com/doc?30307
- Surface mount solder profile recommendations: <a href="https://www.vishay.com/doc?31052">www.vishay.com/doc?31052</a>

MODEL	RESISTANCE RANGE ( $\Omega$ )	DIMENSIONS				SOLDER PAD DIMENSIONS		
WIODEL		L	W	Н	Т	а	b	I
WSL060318 <sup>(1)</sup>	0.01 to 0.1	$0.060 \pm 0.010$ (1.52 ± 0.254)	0.030 ± 0.010 (0.76 ± 0.254)	0.016 ± 0.005 (0.406 ± 0.127)	0.015 ± 0.005 (0.381 ± 0.127)	0.040 (1.01)	0.040 (1.01)	0.020 (0.50)
WSL080518	0.005 to 0.2	$0.080 \pm 0.010$ (2.03 ± 0.254)	0.050 ± 0.010 (1.27 ± 0.254)	0.013 ± 0.010 (0.330 ± 0.254)	0.015 ± 0.005 (0.381 ± 0.127)	0.040 (1.02)	0.050 (1.27)	0.020 (0.50)
WSL120618	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)
WSL201018	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)	$0.058 \pm 0.010$ (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)
WSL251218	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	0.050 (1.27)
	0.001 to 0.0049				0.087 ± 0.010 (2.21 ± 0.254)			
	0.005 to 0.0069				0.047 ± 0.010 (1.19 ± 0.254)	0.083 (2.11)	(3.68)	0.125 (3.18)
	0.007 to 0.04				0.030 ± 0.010 (0.762 ± 0.254)	0.065 (1.65)		0.160 (4.06)

#### Note

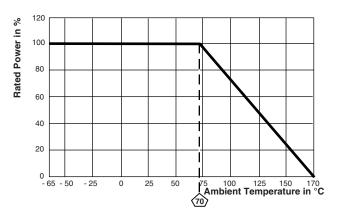
<sup>(1)</sup> PCN-DR-00003-2020 changed terminal height for WSL0603...18 from 0.013" ± 0.005" for clad construction to 0.016" ± 0.005" for welded construction



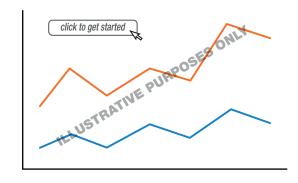
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### **DERATING**

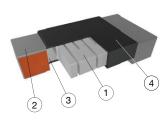


### **PULSE CAPABILITY**



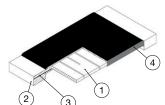
www.vishay.com/resistors/power-metal-strip-calculator

## **WELDED CONSTRUCTION 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
- (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	$\pm$ 0.5 % + 0.0005 $\Omega$			
Short time overload	Refer to link for short time overload performance and pulse capability; www.vishay.com/resistors/power-metal-strip-calculator/	$\pm$ 0.5 % + 0.0005 $\Omega$			
Low temperature storage	-65 °C for 24 h	± 0.5 % + 0.0005 Ω			
High temperature exposure	1000 h at + 170 °C	$\pm$ 1.0 % + 0.0005 $\Omega$			
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	$\pm$ 0.5 % + 0.0005 $\Omega$			
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	$\pm$ 0.5 % + 0.0005 $\Omega$			
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	$\pm$ 0.5 % + 0.0005 $\Omega$			

PACKAGING (1)								
MODEL		REEL						
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE				
WSL060318	8 mm / punched paper	178 mm / 7"	5000	EA				
WSL080518	8 mm / punched paper	178 mm / 7"	5000	EA				
WSL120618	8 mm / embossed plastic	178 mm / 7"	4000	EA				
WSL201018	12 mm / embossed plastic	178 mm / 7"	4000	EA				
WSL251218	12 mm / embossed plastic	178 mm / 7"	2000	EA				

### Notes

- Embossed carrier tape per EIA-481
- (1) Additional packaging details at <a href="https://www.vishay.com/doc?20051">www.vishay.com/doc?20051</a>



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