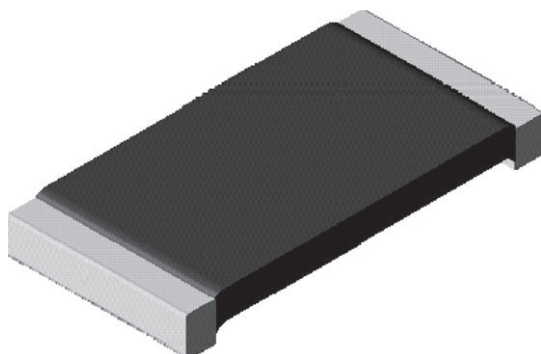


# Power Metal Strip® Resistors, Very High Power (1 W), Low Value (Down to 0.005 Ω), Surface-Mount



## FEATURES

- Very high power to foot print size ratio (1 W in 0805 / 2 W in 1206 package)
- All welded construction of the Power Metal Strip® resistors is ideal for all types of current sensing, voltage division and pulse applications
- Proprietary processing technique produces extremely low resistance values (down to 0.005 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
- Excellent frequency response to 50 MHz
- Low thermal EMF (< 3 μV/°C)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

## LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

[Design Tools](#)

[Videos](#)

## STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	SIZE	POWER RATING $P_{70^{\circ}\text{C}}$ W	TOLERANCE ± %	RESISTANCE VALUE RANGE Ω	WEIGHT (typical) g/1000 pieces
WSLP0805...18	0805	1.0	1.0, 5.0	0.005 to 0.01	4.8
WSLP1206...18	1206	2.0	1.0, 5.0	0.005 to 0.012	16.2

### Note

- “Thermal Management for Surface-Mount Devices” white paper: [www.vishay.com/doc?30380](http://www.vishay.com/doc?30380)

## GLOBAL PART NUMBER INFORMATION

Global Part Numbering Example: WSLP0805R0100FEA18

W S L P 0 8 0 5 R 0 1 0 0 F E A 1 8

GLOBAL MODEL (8 digits)	RESISTANCE VALUE <sup>(1)</sup> (5 digits)	TOLERANCE CODE (1 digit)	PACKAGING CODE <sup>(2)</sup> (2 digits)	<b>SPECIAL</b> <sup>(3)</sup> (up to 2 digits)
WSLP0805 WSLP1206	L = mΩ* R = decimal 5L000 = 0.005 Ω R0100 = 0.01 Ω  * Use “L” for resistance values < 0.01 Ω	F = ± 1.0 % J = ± 5.0 %	EA = lead (Pb)-free, tape / reel EK = lead (Pb)-free, bulk pack	18 = “high power” option

### 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)); WSL decade values ([www.vishay.com/doc?30117](http://www.vishay.com/doc?30117))
- (2) EB (lead (Pb)-free) is a non-standard packaging code designated for 1000 piece reels. The non-standard packaging code is identical to our standard EA (lead (Pb)-free), except that it has a package quantity of 1000 pieces
- (3) Follow link for customization capabilities: [www.vishay.com/doc?48163](http://www.vishay.com/doc?48163)

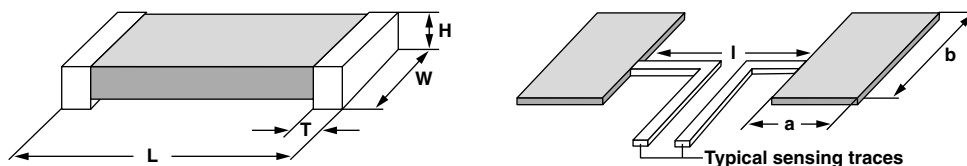
## TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	RESISTOR CHARACTERISTICS
Temperature coefficient <sup>(1)</sup>	ppm/°C	± 110 for 5 mΩ to 6.9 m
		± 75 for 7 mΩ to 12 mΩ
Element TCR <sup>(2)</sup>	ppm/°C	< 20
Operating temperature range	°C	-65 to +170
Maximum working voltage <sup>(3)</sup>	V	$(P \times R)^{1/2}$

### Notes

- “Temperature Coefficient of Resistance for Current Sensing” white paper: [www.vishay.com/doc?30405](http://www.vishay.com/doc?30405)
- (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; refer to item 1 in the construction illustration on the following page
- (3) Maximum working voltage - the WSL is not voltage sensitive, but is limited by power / energy dissipation and is also not ESD sensitive

## DIMENSIONS



### Notes

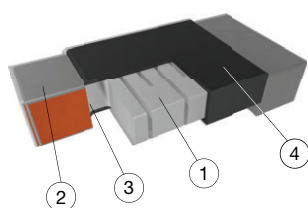
- 3D models available: [www.vishay.com/doc?30306](http://www.vishay.com/doc?30306)
- Surface-mount solder profile recommendations: [www.vishay.com/doc?31052](http://www.vishay.com/doc?31052)

MODEL	RESISTANCE RANGE (Ω)	DIMENSIONS in inches (millimeters)				SOLDER PAD DIMENSIONS in inches (millimeters)		
		L	W	H	T	a	b	l
WSP0805...18 <sup>(1)</sup>	0.005 to 0.01	0.080 ± 0.010 (2.03 ± 0.254)	0.050 ± 0.010 (1.27 ± 0.254)	0.016 ± 0.005 (0.406 ± 0.127)	0.015 ± 0.010 (0.381 ± 0.254)	0.040 (1.02)	0.050 (1.27)	0.020 (0.50)
WSP1206...18	0.001 to 0.0019	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)	0.062 (1.57)	0.070 (1.78)	0.030 (0.76)
	0.002 to 0.0059				0.025 ± 0.010 (0.635 ± 0.254)			
	0.006 to 0.012				0.020 ± 0.010 (0.508 ± 0.254)			

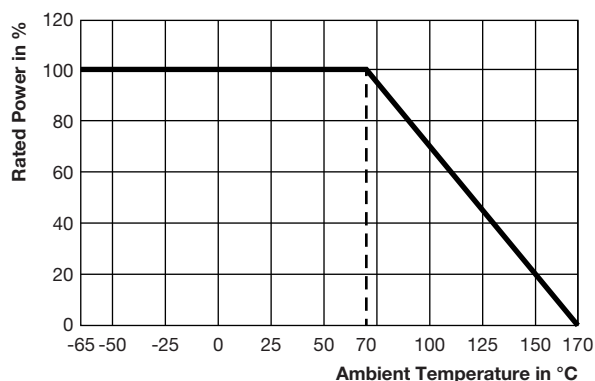
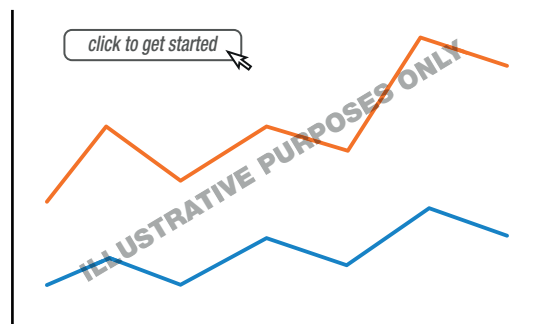
### Note

- (1) PCN-DR-000023-2021-REV-1 changed terminal height for WSP0805 from 0.013" ± 0.005" for clad construction to 0.016" ± 0.005" for welded construction

## WELDED CONSTRUCTION



- 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

**DERATING**

**PULSE CAPABILITY**

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

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	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>	± 1.0 %
Low temperature operation	-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 70 °C, 1.5 h "ON", 0.5 h "OFF"	± 1.0 %
Resistance to 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, 7b not required	± 0.5 %

PACKAGING				
MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSLP0805...18	8 mm / punched paper	178 mm / 7"	5000	EA
WSLP1206...18	8 mm / punched paper	178 mm / 7"	4000	EA

**Notes**

- Embossed carrier tape per EIA-481-2
- Additional packaging details at [www.vishay.com/doc?20051](http://www.vishay.com/doc?20051)



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