WSHP2818



Vishay Dale

Power Metal Strip[®] Resistors, High Power (10 W), Low Value (down to 0.001 Ω), Surface Mount



DESIGN TOOLS (click logo to get started) **3D** Models Available

FEATURES

- Improved thermal management incorporated into design
- 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
- Very low inductance (< 5 nH)
- Solid metal nickel-chrome or manganesecopper alloy resistive element with low TCR (< 20 ppm/°C)
 FREE GREEN (5-2008)
- Low thermal EMF (< 3 μV/°C)
- AEC-Q200 qualified ⁽¹⁾
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

Notes

- Follow link to Overview of Automotive Grade Products for more details: <u>www.vishay.com/doc?49924</u>
- ⁽¹⁾ Flame retardance test may not be applicable to some resistor technologies

STANDARD ELECTRICAL SPECIFICATIONS					
GLOBAL MODEL	SIZE	POWER RATING P70 °C		VALUE RANGE ର	WEIGHT (typical)
		Ŵ	Tol. ± 0.5 %	Tol. ± 1.0 %	g/1000 pieces
WSHP2818	2818	10 (1)	0.010 to 0.1	0.001 to 0.1	167.8

Note

(1) The WSHP2818 is rated at 10 W with maximum surface temperature of 200 °C based on 70 °C ambient temperature

GLOBAL PART	GLOBAL PART NUMBER INFORMATION				
Global Part Numberin	g: WSHP2818R1000FEA (\	/isit <u>www.vishay.net</u> Vishay	/ Dale parts numbering manual for all	options)	
W S H	W S H P 2 8 1 8 R 1 0 0 F E A .				
GLOBAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING CODE ⁽¹⁾	SPECIAL	
(8 digits)	(5 digits)	(1 digit)	(2 digits)	(up to 2 digits)	
WSHP2818	$\mathbf{L} = \mathbf{m} \Omega^*$	D = ± 0.5 %	EA = lead (Pb)-free, tape/reel	(dash number)	
	R = decimal	F = ± 1.0 % EK = lead (Pb)-free, bulk		from 1 to 99 as	
	4L000 = 0.004 Ω R0100 = 0.01 Ω			applicable	
	H0100 = 0.0122				
	* Use "L" for resistance				
	values < 0.01 Ω				

Note

⁽¹⁾ 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

AUTOMOTIVE GRADE

> **RoHS** COMPLIANT

HALOGEN

www.vishay.com

WSHP2818

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TECHNICAL SPECIFICATIONS	
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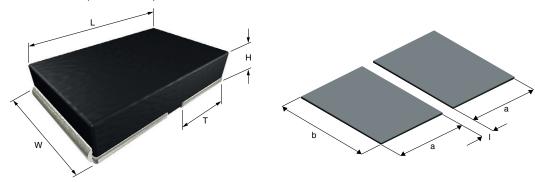
PARAMETER	UNIT	RESISTOR CHARACTERISTICS
Component temperature coefficient (including terminal) (1)	nnm/°C	\pm 200 $^{(4)}$ for 1 m Ω to 5.99 m Ω
Component temperature coencient (including terminal) (*	ppm/°C	\pm 75 $^{(4)}$ for 6 m Ω to 100 m Ω
Element TCR ⁽²⁾	ppm/°C	< 20
Inductance	nH	< 5
Operating temperature range	°C	-65 to +170
Maximum working voltage ⁽³⁾	V	(P/R) ^{1/2}

Notes

- (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 WSHP is not voltage sensitive, but is limited by power / energy dissipation and is also not ESD sensitive

(4) Typical TCR is positive, for more details contact factory

DIMENSIONS in inches (millimeters)

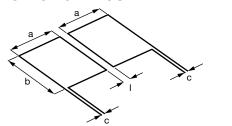


Notes

- 3D models available: www.vishay.com/doc?30349
- Surface mount solder profile recommendations: <u>www.vishay.com/doc?31052</u>

RESISTANCE		DIMENSIONS			SOLDER PAD DIMENSIONS			
MODEL	RANGE Ω	L	w	н	т	а	b	I
WSHP2818	0.001 to 0.1	0.280 ± 0.010 (7.1 ± 0.25)	0.180 ± 0.010 (4.6 ± 0.25)	0.059 ± 0.010 (1.50 ± 0.25)	0.125 ± 0.010 (3.18 ± 0.25)	0.138 (3.5)	0.200 (5.1)	0.024 (0.61)

TYPICAL SENSING LAYOUT



а	b	С	I
0.138	0.210	0.020	0.024
(3.51)	(5.33)	(0.51)	(0.61)

- a	f
b	a
	d

SENSING WITH VIA LAYOUT (best performance)

а	b	d	е	f	I
0.143	0.210	0.026	0.105	Ø 0.020	0.024
(3.63)	(5.33)	(0.66)	(2.67)	(0.50)	(0.61)

Note

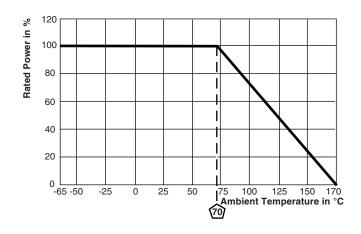
• Sensing locations are based on the construction of the part; terminals are wrapped from the outside to underneath. These options place the sensing location nearest the temperature stable resistance element, which minimizes contact resistance and optimizes TCR





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DERATING



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	4x rated power for 5 s	± 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			
MODEL	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE	
WSHP2818	16 mm/embossed plastic	330 mm / 13"	3500	EA	

Notes

• Embossed carrier tape per EIA-481

• Additional packaging details at <u>www.vishay.com/doc?20051</u>

ADDITIONAL RESOURCES			
<u>Video</u> : Power Metal Strip Short Time Overload	www.vishay.com/videos/resistors/power-metal-strip174-resistor-short-time-overload-product-demo		



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