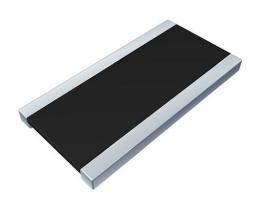


www.vishay.com

Vishay Dale

Power Metal Strip® Resistors, Wide Terminal, Low Inductance (< 1 nH), Surface-Mount

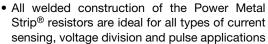


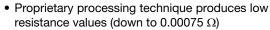
LINKS TO ADDITIONAL RESOURCES

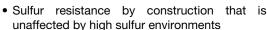




 Wide side terminal construction that yields high power to foot print size ratio (2 W in 1020 and 1 W in 0612 package)







- Very low inductance < 1 nH
- Low thermal EMF (< 3 µV/°C)
- AEC-Q200 qualified (1)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

FEATURES









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

STANDARD ELECTRICAL SPECIFICATIONS					
GLOBAL MODEL	SIZE	POWER RATING P _{70 °C} W	TOLERANCE ± %	RESISTANCE VALUE RANGE Ω	WEIGHT (typical) g/1000 pieces
WSL0612	0612	1.0	1.0, 5.0	0.75m to 5m	8.5
WSL1020	1020	2.0	0.5, 1.0, 5.0	1m to 6m	38.74

GLOBAL PART NUMBER INFORMATION Global Part Numbering Example: WSL10206L000FEA (visit www.vishay.net Vishay Dale parts numbering manual for all options) W S 0 0 6 0 **GLOBAL MODEL** RESISTANCE VALUE (1) **TOLERANCE CODE** PACKAGING CODE (2) SPECIAL (3) (7 digits) (5 digits) (1 digit) (2 digits) (up to 2 digits) WSL0612 $\mathbf{L} = \mathbf{m}\Omega^*$ $D = \pm 0.5 \%$ EA = lead (Pb)-free, tape / reel (dash number) WSL1020 **1L000** = 0.001Ω $F = \pm 1.0 \%$ From 1 to 99 as **2L000** = 0.002Ω $J = \pm 5.0 \%$ applicable **3L000** = 0.003Ω **4L000** = 0.004Ω 5L000 = 0.005 Ω**6L000** = 0.006Ω Use "**L**" for resistance values < 0.01 Ω

Notes

- (1) WSL marking (www.vishay.com/doc?30327); WSL decade values (www.vishay.com/doc?30117)
- 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

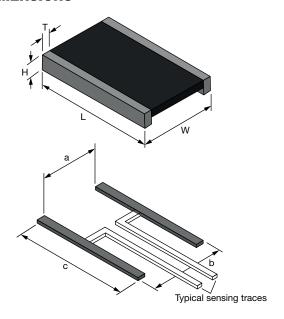
Vishay Dale

TECHNICAL SPECIFICATIONS				
PARAMETER	UNIT	RESISTOR CHARACTERISTICS		
PARAMETER	ONII	WSL0612	WSL1020	
Component temperature coefficient	ppm/°C	+250 $^{(4)}$ for 0.75 m Ω and 1.9 m Ω	< 50	
(including terminal) (1)		+150 $^{(4)}$ for 2 m Ω to 6 m Ω		
Element TCR (2)	ppm/°C	< 20		
Operating temperature range	°C	-65 to +170		
Maximum working voltage (3)	V	$(P \times R)^{1/2}$		

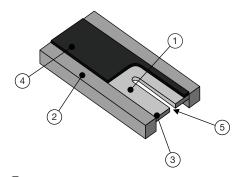
Notes

- (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 WSL 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



WELDED CONSTRUCTION



- Resistive element: nickel-chrome or manganese-copper alloy with low TCR (< 20 ppm/°C)
- 2 Terminal: solid copper with 100 % Sn finish 100 % Sn (100 μ" min.) with 100 % Ni (20 μ" min.) under layer finish
- (3) Terminal / element weld (electron beam weld)
- 4 High temperature encapsulant: "siliconized polyester" coating material
- (5) Laser calibration

Notes

- 3D models available: <u>www.vishay.com/doc?30348</u>
- Surface mount solder profile recommendations: www.vishay.com/doc?31052

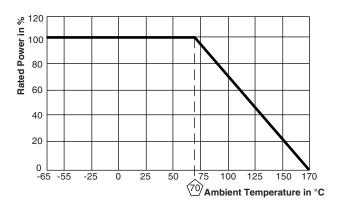
MODEL	DIMENSIONS in inches (millimeters)			
	L	W	Н	Т
WSL0612	0.120 ± 0.005	0.060 ± 0.005	0.018 ± 0.010	0.015 ± 0.010
	(3.05 ± 0.127)	(1.50 ± 0.127)	(0.457 ± 0.254)	(0.381 ± 0.254)
WSL1020	0.200 ± 0.005	0.100 ± 0.005	0.025 ± 0.005	0.022 ± 0.008
	(5.08 ± 0.127)	(2.54 ± 0.127)	(0.635 ± 0.127)	(0.558 ± 0.203)

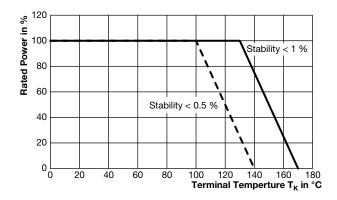
MODEL -	SOLDER PAD DIMENSIONS in inches (millimeters)			
	а	b	c	
WSL0612	0.030	0.078	0.134	
	(0.76)	(1.98)	(3.40)	
WSL1020	0.039	0.138	0.222	
	(1.00)	(3.50)	(5.65)	

www.vishay.com

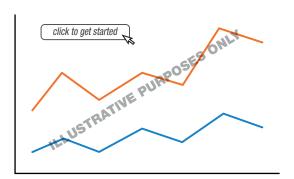
Vishay Dale

DERATING





PULSE CAPABILITY



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

PERFORMANCE				
TEST	TEST CONDITIONS OF TEST			
Thermal shock	-55 °C to +150 °C, 1000 cycles, 15 min at each extreme	± 0.5 %		
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
WSL0612	8 mm / embossed plastic	178 mm / 7"	4000	EA
WSL1020	12 mm / embossed plastic	178 mm / 7"	4000	EA

Notes

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



Legal Disclaimer Notice

Vishay

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.

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.