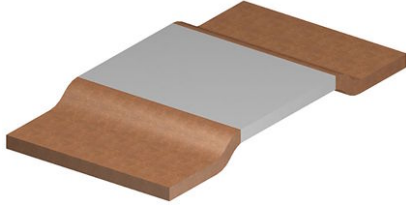


## Power Metal Strip® Resistors, Low Value (Down to 0.0003 Ω), Surface-Mount



### DESIGN SUPPORT TOOLS AVAILABLE



### FEATURES

- Power Metal Strip® all-welded construction is ideal for all types of current sensing, voltage division, and pulse applications
- Solid metal nickel-chrome, manganese-copper, or manganese-copper-tin alloy resistive element with low TCR (< 20 ppm/°C)
- Proprietary processing technique produces extremely low resistance values, down to 0.0003 Ω
- Sulfur resistance by construction that is unaffected by high sulfur environments
- Very low inductance (< 2 nH)
- Low thermal EMF (< 3 μV/°C)
- AEC-Q200 qualified <sup>(1)</sup>
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

 AUTOMOTIVE  
GRADE

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

### Notes

- Follow link to “Overview of Automotive Grade Products” for more details: [www.vishay.com/doc?49924](http://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 $P_{70^\circ\text{C}}$ <sup>(1)</sup> W	POWER RATING $P_{100^\circ\text{C}}$ <sup>(2)</sup> W	TOLERANCE %	RESISTANCE VALUE RANGE Ω	RESISTANCE VALUES CURRENTLY AVAILABLE <sup>(3)</sup> Ω	WEIGHT (typical) g/1000 pieces
WSLF2512	2512	6.0	3.0	1.0, 5.0	0.3m to 0.5m	0.3m, 0.5m	258
	2512	5.0	3.0	1.0, 5.0	1m to 2m	1m, 1.3m, 2m	212
	2512	4.0	2.0	1.0, 5.0	3m	3m	267

### Notes

- Part marking: no part marking on these parts
- (1) See “Ambient Temperature Derating” on next page, Fig. 1
- (2) See “Terminal Temperature Derating” on next page, Fig. 2
- (3) Other values may be available, contact factory

GLOBAL PART NUMBER INFORMATION																	
Global Part Numbering: WSLF25121L000FEA (WSLF2512, 0.001 Ω, ± 1 %) (visit <a href="http://www.vishay.net">www.vishay.net</a> Vishay Dale parts numbering manual for all options)																	
W	S	L	F	2	5	1	2	1	L	0	0	0	F	E	A		
GLOBAL MODEL (8 digits) <b>WSLF2512</b>			RESISTANCE VALUE (5 digits) <b>L</b> = mΩ <b>L5000</b> = 0.0005 Ω <b>1L000</b> = 0.0010 Ω			TOLERANCE CODE (1 digit) <b>F</b> = ± 1.0 % <b>J</b> = ± 5.0 %		PACKAGING CODE <sup>(1)</sup> (2 digits) <b>EA</b> = lead (Pb)-free, tape/reel <b>EK</b> = lead (Pb)-free, bulk				SPECIAL <sup>(2)</sup> (2 digits) Reserved for future specials					

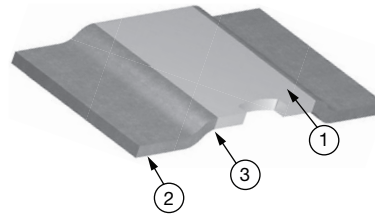
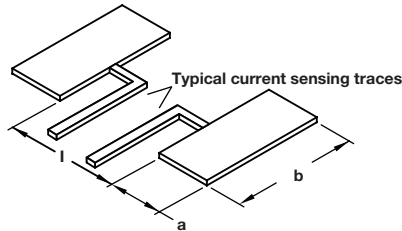
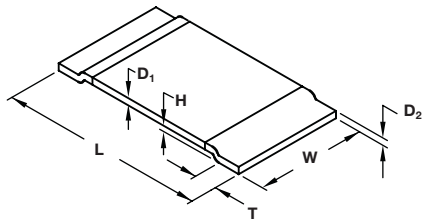
### Notes

- (1) Packaging code: EB (lead (Pb)-free) are non-standard packaging codes designating 1000 piece reels. These non-standard packaging codes are identical to our standard EA (lead (Pb)-free), except that they have a package quantity of 1000 pieces
- (2) Follow link for customization capabilities: [www.vishay.com/doc?48163](http://www.vishay.com/doc?48163)

TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	WSLF RESISTOR CHARACTERISTICS
Component temperature coefficient (including terminal) <sup>(1)</sup> TCR measured from -55 °C to 150 °C	ppm/°C	± 200 for 0.3 mΩ and 0.5 mΩ
		± 170 for 1.0 m
		± 70 for 2 mΩ and 3 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**

- (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
- (3) 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)


- 1) Resistive element: element material used is dependent on resistance value. Refer to Element Material in table
- 2) Terminal: solid copper
- 3) Terminal / element weld

**Notes**

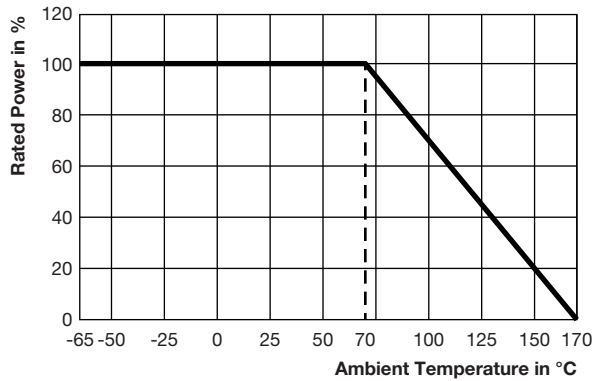
- 3D models available: [www.vishay.com/doc?30335](http://www.vishay.com/doc?30335)
- Surface mount solder profile recommendations: [www.vishay.com/doc?31052](http://www.vishay.com/doc?31052)

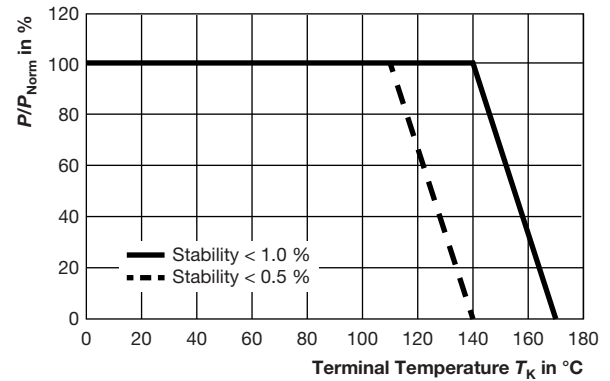
MODEL	DIMENSIONS				SOLDER PAD DIMENSIONS		
	L	W	H	T	a	b	l
WSLF2512	0.250 ± 0.006 (6.35 ± 0.15)	0.120 ± 0.008 (3.02 ± 0.2)	0.0138 ± 0.0012 (0.35 ± 0.03)	0.045 - 0.016 (1.14 - 0.4)	0.71 (1.80)	0.13 (3.40)	0.13 (3.40)

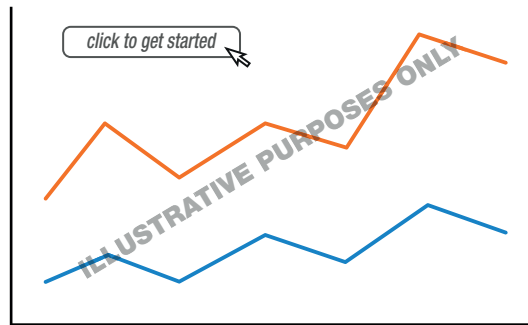
GLOBAL MODEL	RESISTANCE VALUE (mΩ)	THERMAL RESISTANCE (°C/W)	THICKNESS in Inches (millimeters)		ELEMENT MATERIAL
			D <sub>1</sub>	D <sub>2</sub>	
WSLF2512	0.3	3.8	0.040 (1.02)	0.040 (1.02)	Mn-Cu-Sn
	0.5	6.7	0.033 (0.84)	0.033 (0.84)	Mn-Cu
	1.0	12.1	0.017 (0.43)	0.017 (0.43)	Mn-Cu
	1.3	14.6	0.013 (0.33)	0.013 (0.33)	Mn-Cu
	2.0	17.1	0.028 (0.71)	0.028 (0.71)	Ni-Cr
	3.0	18.2	0.019 (0.48)	0.019 (0.48)	Ni-Cr

**Note**

- (1) The full power rating of Power Metal Strip resistors are dependent upon the ability of the circuit board to dissipate the heat energy created in the resistance element. It is recommended to follow common design practices for power semiconductors that ensure the junction temperature is maintained within thermal limits by using large pad surfaces, thermal vias, heavier copper weights, internal layers as well as other thermal spreading features. The Thermal resistance values provided function in the same manner as junction to terminal temperature

**DERATING**

 Fig. 1 - Ambient Temperature Derating  
 ( $P_{70\text{ °C}}$  of Standard Electrical Specification Table)

**DERATING - TERMINAL TEMPERATURE**

 Fig. 2 -  $P_{100\text{ °C}}$  Rated Power;  
 of Standard Electrical Specification Table  
 Example L5000

**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, 2000 cycles, 15 min at each extreme	± 0.5 %
Short time overload	5x rated power for 5 s	± 0.5 %
Low temperature storage	-65 °C for 24 h	± 0.1 %
High temperature exposure	2000 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	± 0.2 %
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	± 0.2 %
Load life	2000 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, 7a and 7b not required	± 0.1 %

PACKAGING (1)				
MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSLF2512	12 mm/embossed plastic	330 mm / 13"	4000	EA

**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.

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.

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)