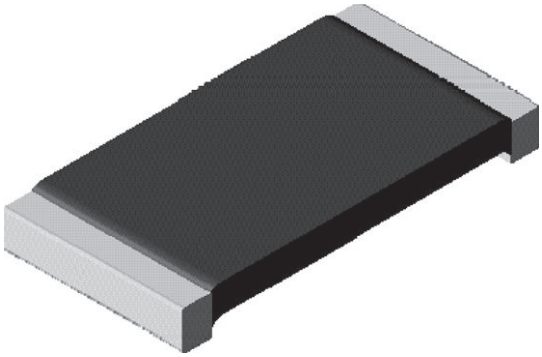
Power Metal Strip® Resistors High Temperature (275 °C), High Power (1 W), Low Value (Down to 0.01 Ω), Surface-Mount



LINKS TO ADDITIONAL RESOURCES

3D Models | Design Tools | Videos

FEATURES

- 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
- Sulfur resistance by construction that is unaffected by high sulfur environments
- Specially selected and stabilized materials allow for high temperature derating (to +275 °C) and high power ratings (2 x standard WSL rating)
- Solid metal nickel-chrome alloy resistive element with low TCR (< 20 ppm/°C)
- Very low inductance (< 5 nH)
- Low thermal EMF (< 3 µV/°C)
- AEC-Q200 qualified (1)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

Notes

- 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
- "SMD Current Sense: AEC-Q200 vs. Vishay Qualification" technical note: www.vishay.com/doc?30416

(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
WSLT2010...18	2010	1.0	± 0.5 and ± 1.0	0.01 to 0.50	38.9

Note

- "Thermal Management for Surface-Mount Devices" white paper: www.vishay.com/doc?30380

GLOBAL PART NUMBER INFORMATION

GLOBAL PART NUMBERING: WSLT2010R0100FEA18 (visit www.vishay.net Vishay Dale parts numbering manual for all options)

W	S	L	T	2	0	1	0	R	0	1	0	0	F	E	A	1	8

GLOBAL MODEL	RESISTANCE VALUE (1)	TOLERANCE CODE	PACKAGING CODE (2)	SPECIAL
WSLT2010	**R** = decimal **R0100** = 0.01 Ω	**D** = ± 0.5 % **F** = ± 1.0 %	**EA** = lead (Pb)-free, tape/reel **EK** = lead (Pb)-free, bulk	**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)

(2) Packaging code: EB (lead (Pb)-free) and TB (tin / lead) are non-standard packaging codes that designate 1000 piece reel quantities. These non-standard packaging codes are identical to our standard EA (lead (Pb)-free) and TA (tin / lead), except that they have a package quantity of 1000 pieces

TECHNICAL SPECIFICATIONS		
PARAMETER	**UNIT**	**RESISTOR CHARACTERISTICS**
Component temperature coefficient (including terminal) (1) measured from -55 °C to +150 °C	ppm/°C	± 75
Element TCR (2)	ppm/°C	< 20
Operating temperature range	°C	-65 to +275
Maximum working voltage (3)	V	$(P \times R)^{1/2}$

Notes

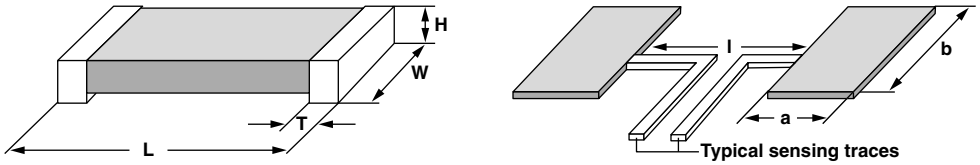
- "Temperature Coefficient of Resistance for Current Sensing" white paper: www.vishay.com/doc?30405

(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 in inches (millimeters)

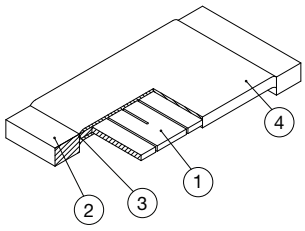


Notes

- 3D models available: www.vishay.com/doc?30339
- Surface-mount solder profile recommendations: www.vishay.com/doc?31052

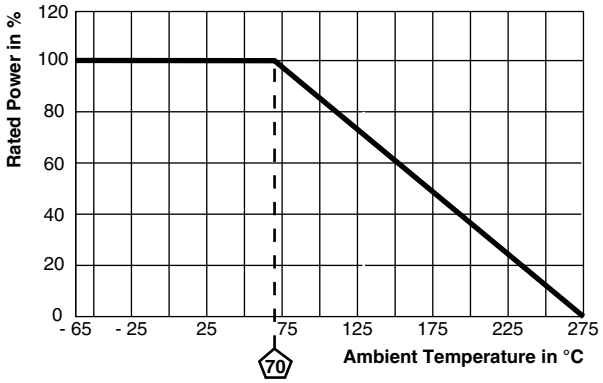
MODEL	DIMENSIONS				SOLDER PAD DIMENSIONS		
	L	W	H	T	a	b	l
WSLT2010...18	0.200 ± 0.010 (5.08 ± 0.254)	0.100 ± 0.010 (2.54 ± 0.254)	0.025 ± 0.010 (0.635 ± 0.254)	0.020 ± 0.010 (0.508 ± 0.254)	0.055 (1.40)	0.120 (3.05)	0.130 (3.30)

WELDED CONSTRUCTION 2010

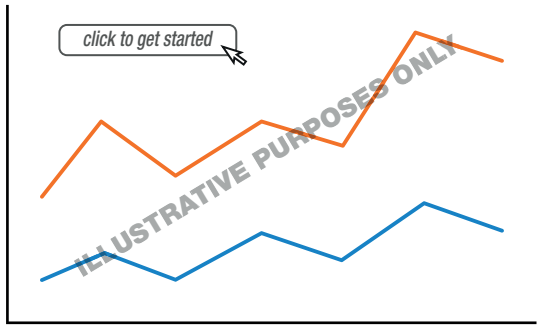


1) Resistive element: solid metal nickel-chrome or manganese-copper alloy resistive element with low TCR (< 20 ppm/°C)
2) Terminal: Solid copper, 100 % Sn (200 µ" min.) with 100 % Ni (40 µ" min.) under layer finish
3) Terminal / element weld
4) Silicone coating with ink print

DERATING



PULSE CAPABILITY



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

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	5 x rated power for 5 s	± 0.5 %
Low temperature operation	-65 °C for 24 h	± 0.5 %
High temperature exposure	1000 h at +275 °C	± 2.0 %
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 at 70 °C	1000 h, 1.5 h "ON", 0.5 h "OFF"	± 1.0 %
Load life at 150 °C	1000 h, 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	± 1.0 %

PACKAGING (1)				
MODEL	**REEL**			
	TAPE WIDTH	**DIAMETER**	**PIECES/REEL**	**CODE**
WSLT2010...18	12 mm / embossed plastic	178 mm / 7"	4000	EA

Notes

- Embossed carrier tape per EIA-481

(1) Additional packaging details at www.vishay.com/doc?20051

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