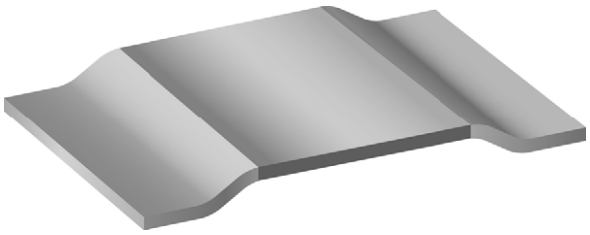
Power Metal Strip® Resistors, High Temperature (275 °C), Low Value (down to 0.0002 Ω), Surface Mount



FEATURES

- Ideal for all types of current sensing, voltage division and pulse applications including switching and linear power supplies, instruments, power amplifiers
- Proprietary processing technique produces extremely low resistance values, down to 0.0002 Ω
- Specially selected and stabilized materials allow for high temperature derating (to +275 °C)
- All welded construction
- Solid metal iron-chrome or manganese-copper alloy resistive element with low TCR (< 20 ppm/°C)
- Very low inductance (< 5 ηH)
- Low thermal EMF (< 3 μV/°C)
- AEC-Q200 qualified available (1)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE Available

Pb-free

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

Note

(1) Flame retardance test may not be applicable to some resistor technologies.

DESIGN TOOLS (click logo to get started)

3D Models Available

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	SIZE	POWER RATING $P_{70\,°C}$ W	TOLERANCE %	RESISTANCE VALUE RANGE Ω	RESISTANCE VALUES CURRENTLY AVAILABLE (1) Ω	WEIGHT (typical) g/1000 pieces
WSLT3921	3921	3.0	1.0, 5.0	0.2m to 4m	0.2m, 0.5m, 1m, 2m, 3m, 4m	281
WSLT5931	5931	5.0	1.0, 5.0	0.3m to 3m	0.3m, 0.5m, 1m, 2m, 3m	398

Notes

- Part marking: No part marking on these parts

(1) Other values may be available, contact factory

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	RESISTOR CHARACTERISTICS
Component temperature coefficient (including terminal) (1)	ppm/°C	± 175 for 0.2 mΩ and 0.5 mΩ
		± 75 for 1 mΩ to 4 mΩ
Element TCR (2)	ppm/°C	< 20
Operating temperature range	°C	-65 to +275
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

GLOBAL PART NUMBER INFORMATION

Global Part Numbering: WSLT39212L000FEA (WSLT3921, 0.002 Ω, ± 1 %)

(visit www.vishay.net Vishay Dale parts numbering manual for all options)

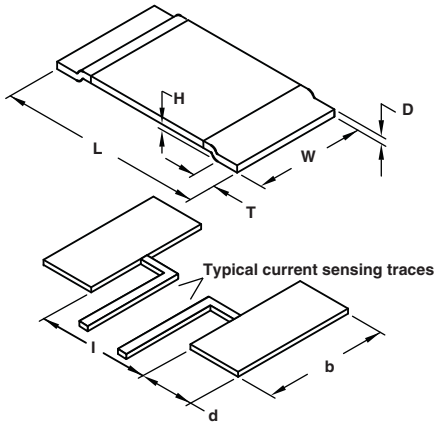
W	S	L	T	3	9	2	1	2	L	0	0	0	F	E	A		

GLOBAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING CODE (1)	SPECIAL
WSLT3921 **WSLT5931**	**L** = mΩ **2L000** = 0.002 Ω	**F** = ± 1.0 % **J** = ± 5.0 %	**EA** = lead (Pb)-free, tape/reel **EK** = lead (Pb)-free, bulk	Reserved for future specials

Note

(1) Packaging code: EB (lead (Pb)-free) and TB (tin / lead) are non-standard packaging codes designating 1000 piece reels. 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

DIMENSIONS



MODEL	DIMENSIONS in inches (millimeters)			
	L	W	H	T
WSLT3921	0.394 ± 0.010 (10.0 ± 0.254)	0.205 ± 0.010 (5.20 ± 0.254)	0.020 (0.5)	0.080 ± 0.010 (2.00 ± 0.254)
WSLT5931	0.591 ± 0.010 (15.0 ± 0.254)	0.305 ± 0.010 (7.75 ± 0.254)	0.020 (0.5)	0.157 ± 0.010 (4.00 ± 0.254)

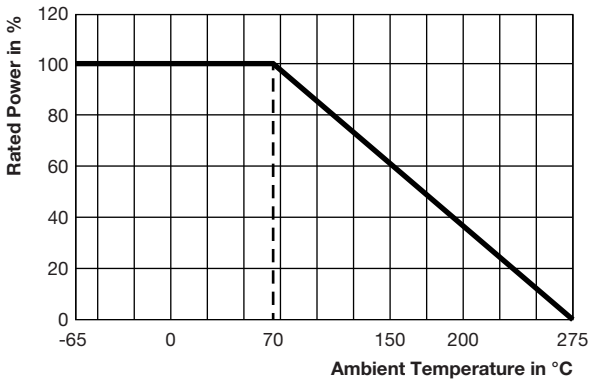
MODEL	SOLDER PAD DIMENSIONS in inches (millimeters)		
	d	b	l
WSLT3921	0.106 ± 0.010 (2.70 ± 0.254)	0.244 ± 0.010 (6.20 ± 0.254)	0.220 ± 0.005 (5.60 ± 0.13)
WSLT5931	0.205 ± 0.010 (5.20 ± 0.254)	0.344 ± 0.010 (8.75 ± 0.254)	0.220 ± 0.005 (5.60 ± 0.13)

Note

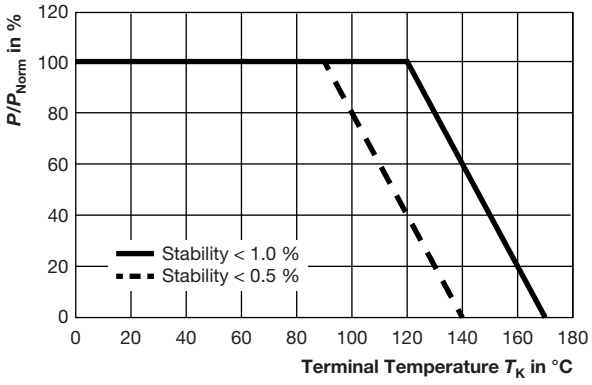
- 3D models available at www.vishay.com/ppg?30136

GLOBAL MODEL	RESISTANCE VALUE (mΩ)	"D" THICKNESS (Inches)	ELEMENT MATERIAL
WSLT3921	0.2	0.0560	Mn-Cu
WSLT3921	0.5	0.0300	Mn-Cu
WSLT3921	1.0	0.0150	Mn-Cu
WSLT3921	2.0	0.0270	Fe-Cr
WSLT3921	3.0	0.0170	Fe-Cr
WSLT3921	4.0	0.0130	Fe-Cr
WSLT5931	0.3	0.0300	Mn-Cu
WSLT5931	0.5	0.0180	Mn-Cu
WSLT5931	1.0	0.0330	Fe-Cr
WSLT5931	2.0	0.0155	Fe-Cr
WSLT5931	3.0	0.0105	Fe-Cr

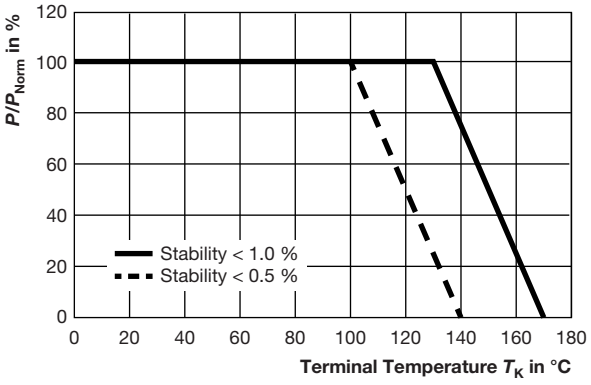
DERATING - AMBIENT TEMPERATURE



DERATING - TERMINAL TEMPERATURE



Example: WSLT3921 0.0005 Ω



Example: WSLT5931 0.0005 Ω

PERFORMANCE		
TEST	**CONDITIONS OF TEST**	**TEST LIMITS**
Thermal shock	-55 °C to +150 °C, 1000 cycles, 15 min at each extreme	± (1.0 % + 0.0005 Ω) Δ*R*
Short time overload	5x rated power for 5 s	± (0.5 % + 0.0005 Ω) Δ*R*
Low temperature storage	-65 °C for 24 h	± (0.5 % + 0.0005 Ω) Δ*R*
High temperature exposure	1000 h at +275 °C	± (1.0 % + 0.0005 Ω) Δ*R*
Bias humidity	+85 °C, 85 % RH, 10 % bias, 1000 h	± (0.5 % + 0.0005 Ω) Δ*R*
Mechanical shock	100 *g*'s for 6 ms, 5 pulses	± (0.5 % + 0.0005 Ω) Δ*R*
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	± (0.5 % + 0.0005 Ω) Δ*R*
Load life	1000 h at +70 °C, 1.5 h "ON", 0.5 h "OFF"	± (1.0 % + 0.0005 Ω) Δ*R*
Resistance to solder heat	+260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± (0.5 % + 0.0005 Ω) Δ*R*
Moisture resistance	MIL-STD-202, method 106, 0 % power, 7a and 7b not required	± (0.5 % + 0.0005 Ω) Δ*R*

PACKAGING				
MODEL	**REEL**			
	TAPE WIDTH	**DIAMETER**	**PIECES/REEL**	**CODE**
WSLT3921	16 mm/embossed plastic	330 mm/13"	3000	EA
WSLT5931	24 mm/embossed plastic	330 mm/13"	1500	EA

Note

- Embossed carrier tape per EIA-481

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