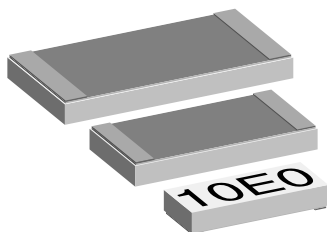


## Power Metal Strip® Flip Chip (Extended Range)

### Patents Pending



#### FEATURES

- SMD alternative for low power leaded wirewound resistors
- Excellent stability in different environmental conditions (< 0.5 % change in resistance)
- Superior overload and pulse handling capability as compared to thin film (as much as 2 x better)
- Low TCR, down to  $\pm 15$  ppm/K
- Low noise: < 0.01  $\mu\text{V(rms)}/\text{Volt}$
- Voltage coefficient: < 0.00001 %/Volt (< 0.1 ppm/V)
- Very low inductance: < 0.08  $\mu\text{H}$

#### STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	SIZE INCH	POWER RATING $P_{70^\circ\text{C}}$	LIMITING ELEMENT VOLTAGE <sup>1)</sup> MAX $V_{\equiv}$	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE <sup>2)</sup> $\Omega$	E-SERIES
WSL1506E	1506	0.25	63	15, 25	0.5, 1	0R5 - 10K	96
WSL2010E	2010	0.5	100	15, 25	0.5, 1	0R5 - 10K	96
WSL2512E	2512	1.0	100	15, 25	0.5, 1	0R5 - 10K	96

- Ask about further value ranges, tighter tolerances and TCR's.

- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material

- 4-Digit Marking, according to MIL-PRF-55342 (except as noted in Ordering Information table), on top side

<sup>1)</sup> Rated voltage:  $\sqrt{P \times R}$

<sup>2)</sup> Contact factory using e-mail address at bottom of this page for resistance values available between 0R5 - 10R for 1506 and 0R5 - 100R for 2010 and 2512

#### TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	WSL1506E	WSL2010E	WSL2512E
Rated Dissipation at 70 °C	W	0.25	0.5	1.0
Limiting Element Voltage <sup>1)</sup>	V $\equiv$	63	100	100
Insulation Voltage (1 min)	Vdc/ac peak	200	200	200
Thermal Resistance	K/W	$\leq 220$ <sup>3)</sup>	$\leq 88$ <sup>3)</sup>	$\leq 65$ <sup>3)</sup>
Insulation Resistance	M $\Omega$	$> 10^6$		
Category Temperature Range	°C	- 55/+ 150		
Weight/1000 pcs	g	12	25	35

<sup>3)</sup> Depending on solder pad dimensions

#### PACKAGING

MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSL1506E	12 mm/Embossed Plastic	180 mm/7"	4000	EA
WSL2010E	12 mm/Embossed Plastic	180 mm/7"	4000	EA
WSL2512E	12 mm/Embossed Plastic	180 mm/7"	2000	EA

Embossed Carrier Tape per EIA-481-1.2

#### GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: WSL1506E10E0XEA

W S L 1 5 0 6 E 1 0 E 0 X E A

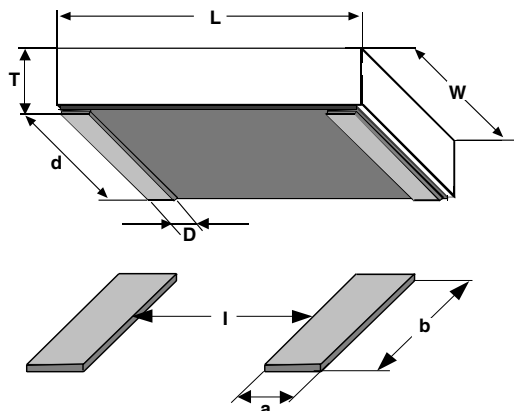
GLOBAL MODEL	RESISTANCE VALUE & TOLERANCE			TOLERANCE CODE	PACKAGING	SPECIAL
WSL1506E	Resistance	Multiplier	Symbol	E = $\pm 25$ ppm/K X = $\pm 15$ ppm/K	EA = Lead (Pb)-free, Tape/Reel EK = Lead (Pb)-free, Bulk  TA = Tape/Reel (R86) BA = Bulk (B43)	(Dash Number) (up to 2 digits) From 1-99 as applicable
	Tolerance ( $\pm$ )					
	0.5	X1	W			
	0.5	X1000	X			
	0.5	X1 000 000	Y			
	1.0	X1	D			
	1.0	X1000	E			
	1.0	X1 000 000	F			



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Vishay

**DIMENSIONS**

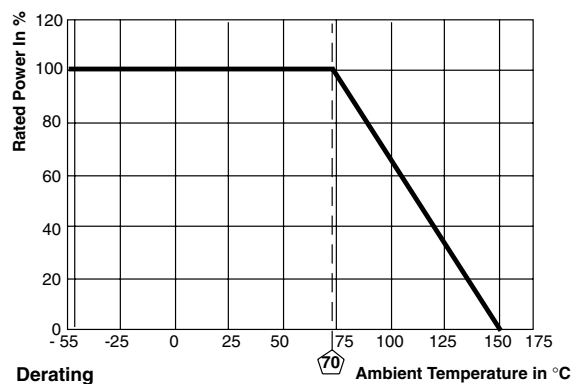
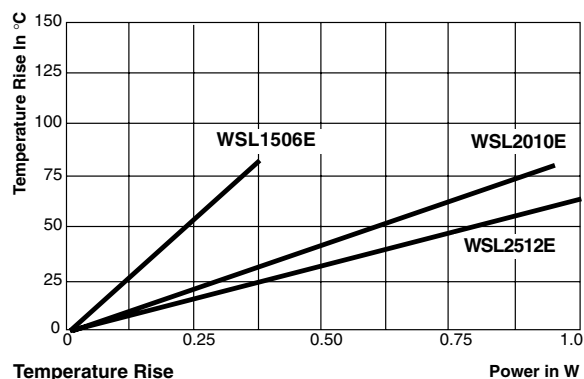
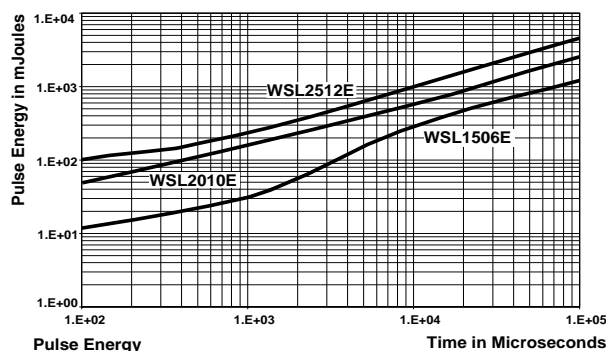


SIZE INCH	DIMENSIONS in inches [millimeters]				
	L	W	T <sub>max</sub>	D	d
1506	0.15 ± 0.005 [3.81 ± 0.13]	0.062 ± 0.003 [1.57 ± 0.08]	0.025 [0.64]	0.012 ± 0.003 [0.30 ± 0.08]	0.059 ± 0.003 [1.50 ± 0.08]
2010	0.200 ± 0.005 [5.08 ± 0.13]	0.100 ± 0.003 [2.54 ± 0.08]	0.025 [0.64]	0.020 ± 0.003 [0.51 ± 0.08]	0.097 ± 0.003 [2.46 ± 0.08]
2512	0.250 ± 0.005 [6.35 ± 0.13]	0.126 ± 0.003 [3.20 ± 0.08]	0.025 [0.64]	0.024 ± 0.003 [0.61 ± 0.08]	0.123 ± 0.003 [3.12 ± 0.08]

SIZE INCH	SOLDER PAD DIMENSIONS in inches [millimeters]		
	a	b	l
1506	0.015 [0.38]	0.062 [1.57]	0.118 [3.00]
2010	0.023 [0.58]	0.100 [2.54]	0.153 [3.89]
2512	0.027 [0.69]	0.126 [3.20]	0.196 [4.98]

**Pulse Energy Plot:**

This represents the energy in each of 50 pulses, with a 1 second rest between pulses, that it takes to shift the WSL....E resistance ± (0.50 % + 0.01 Ω).



**PERFORMANCE**

TEST	CONDITIONS OF TEST	TEST LIMITS
Thermal Shock	- 55 °C to + 150 °C, 100 cycles, 15 minutes at each extreme	± (0.20 % + 0.01 Ω)
Short Time Overload	5 x rated power for 5 seconds	± (0.20 % + 0.01 Ω)
Low Temperature Storage	- 65 °C for 24 hours	± (0.20 % + 0.01 Ω)
High Temperature Exposure	1000 hours at + 150 °C	± (0.50 % + 0.01 Ω)
Moisture Resistance	MIL-STD-202, Method 106, 0 % power, 7a and 7b not required	± (0.50 % + 0.01 Ω)
Load Life	1000 hours at rated power, + 70 °C, 1.5 hours "ON", 0.5 hours "OFF"	± (0.50 % + 0.01 Ω)
Vibration	MIL-STD-202, Method 204D	± (0.10 % + 0.01 Ω)
Mechanical Shock	100 G's for 6 milliseconds, 5 pulses	± (0.10 % + 0.01 Ω)
Resistance to Soldering Heat	+ 260 °C solder, 10 - 12 seconds dwell, 25 mm/second emergence	± (0.50 % + 0.01 Ω)



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