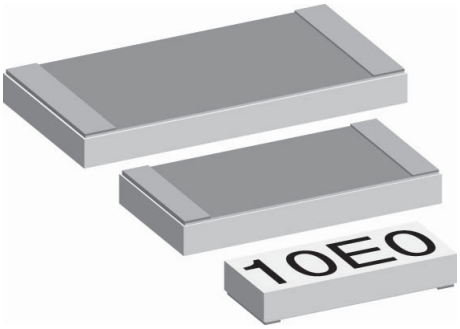
Power Metal Strip Flip Chip (Extended Range)
Patents Pending



FEATURES

- SMD alternative for low power leaded wirewound resistors
- Excellent stability in different environmental conditions
- Superior overload and pulse handling capability compared to thin film
- Low TCR
- Low noise: < 0.01µV(rms)/Volt
- Voltage coefficient: < 0.00001%/Volt (< 0.1ppm/V)
- Very low inductance: < 0.08µH

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE INCH	POWER RATING $P_{70°C}$	LIMITING ELEMENT VOLTAGE [1] MAX V≅	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE [2] Ω	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

[1] Rated voltage: $\sqrt{PxR}$

[2] 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 [1]	V≅	63	100	100
Insulation Voltage (1 min)	$V_{dc/ac\ peak}$	200	200	200
Thermal Resistance	K/W	≤ 220 [3]	≤ 88 [3]	≤ 65 [3]
Insulation Resistance	MΩ	> 10^6		
Category Temperature Range	°C	- 55 / + 150		
Weight / 1000pcs	g	12	25	35

[3] **Depending on solder pad dimensions**

PACKAGING

MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSL1506E	12mm/Embossed Plastic	180mm/7"	4000	R86
WSL2010E	12mm/Embossed Plastic	180mm/7"	4000	R86
WSL2512E	12mm/Embossed Plastic	180mm/7"	2000	R86

Embossed Carrier Tape per EIA-481-1.2

ORDERING INFORMATION

WSL1506E	10E0		X	TA
MODEL	RESISTANCE VALUE & TOLERANCE Ω & ± %		TC ± ppm/K	PACKAGING TA = R86 Blistertape
	Resistance Tolerance (±)	Multiplier	Symbol	E = ± 25ppm/K X = ± 15ppm/K
	0.5	X1	W	
	0.5	X1,000	X	
	0.5	X1,000,000	Y	The above part number is for a WSL1506E 10KΩ
	1.0	X1	D	± 1% ± 15ppm/K R86 resistor
	1.0	X1,000	E	
	1.0	X1,000,000	F	

For Technical Questions in Europe contact: ww1resistors@vishay.com
For Technical Questions in Americas/Asia contact: ww2bresistors@vishay.com

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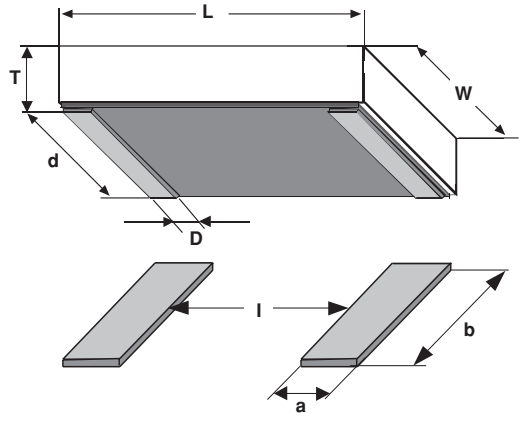
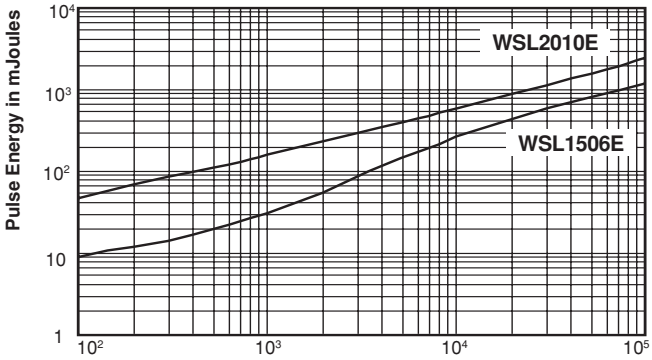
DIMENSIONS



SIZE	DIMENSIONS in inches [millimeters]				
INCH	L	W	T_{max}	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]

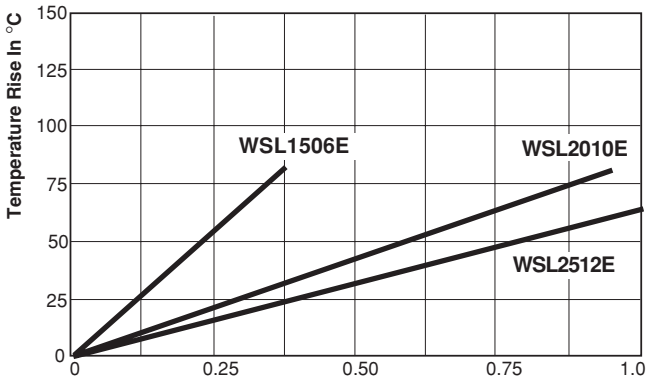
SIZE	SOLDER PAD RECOMMENDATIONS in inches [millimeters]		
INCH	a	b	l
1506	0.015 [0.38]	0.062 [1.57]	0.118 [3.00]
2010	0.023 [0.58]	0.100 [2.54]	0.153 [3.89]
2512	0.027 [0.69]	0.126 [3.20]	0.196 [4.98]



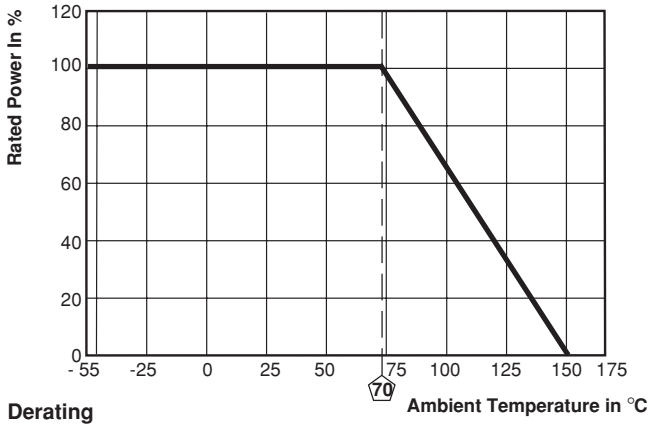
Pulse Energy

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% + 0.01Ω).



Temperature Rise



Derating

PERFORMANCE

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