

Polymer Enhanced Zener Diode Micro-Assemblies

PRODUCT: ZEN056V115A24LS

DOCUMENT: SCD27719 REV LETTER: B

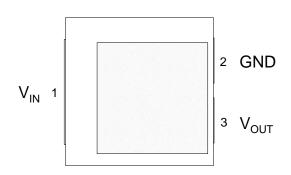
REV DATE: JULY 26,2016

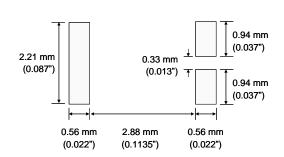
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CONFIGURATION INFORMATION

Pin Configuration (Top View)

Recommended Pad Dimensions

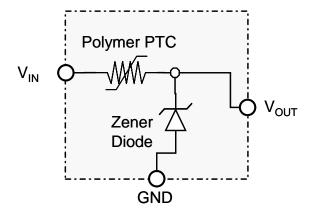




PIN DESCRIPTION

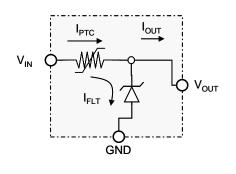
Pin Number	Pin Name	Pin Function
1	V _{IN}	V _{IN} . Protected input to Zener diode.
2	GND	GND
3	Vout	Vour. Zener regulated voltage output

BLOCK DIAGRAM



DEFINITION of TERMS

I _{PTC}	Current flowing through the PTC portion of the
	circuit
I _{FLT}	RMS fault current flowing through the diode
Іоит	Current flowing out the Vout pin of the device
Trip Event	A condition where the PTC transitions to a high
	resistance state, thereby significantly limiting IPTC
	and related currents, and significantly increasing
	the voltage drop between V _{IN} and V _{OUT} .
Trip	Time the PTC portion of the device remains both
Endurance	powered and in a tripped state.



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GENERAL SPECIFICATIONS

Operating Temperature -40° to +85°C Storage Temperature -40° to +85°C

ELECTRICAL CHARACTERISTICS^{1-3, 11} (Typical unless otherwise specified)

	V _z ⁴ (V)		I _{zt} ⁴	I _{HOLD} ⁵	Leakage Current		R Typ ⁶	R₁мах ⁷	V _{Int} Max ⁸ (V)		I _{FLT} Max ⁹		Tripped Power Dissipation ¹⁰ Max	
Min	Тур	Max	(Å)	[®] 20°C (A)	Test Voltage	Max Current (mA)		(Ohms)	V _{INT} Max (V)	Test Current (A)	I _{FLT} Max (A)	Test Voltage (V)	Value (W)	Test Voltage (V)
5.45	5.6	5.75	0.1	1.15	5.25	10	0.15	0.18	24V	3A	+10 -40	+24 -16V	1.0	24

- Note 1: Electrical characteristics determined at 25°C unless otherwise specified.
- Note 2:This device is intended for limited fault protection. Repeated trip events or extended trip endurance can degrade the device and may affect performance to specifications. Performance impact will depend on multiple factors including, but not limited to, voltage, trip current, trip duration, trip cycles, and circuit design. For details or ratings specific to your application contact Littelfuse Circuit Protection directly.
- Note 3:Specifications developed using 1.0 ounce 0.045" wide copper traces on dedicated FR4 test boards. Performance in your application may vary.
- Note $4:I_{zt}$ is the current at which V_z is measured ($V_z = V_{OUT}$). Additional V_z values are available on request.
- Note $5:I_{HOLD}$: Maximum steady state I_{PTC} (current entering or exiting the V_{IN} pin of the device) that will not generate a trip event at the specified temperature. Specification assumes I_{FLT} (current flowing through the Zener diode) is sufficiently low so as to prevent the diode from acting as a heat source. Testing is conducted with an "open" Zener.
- Note 6:R Typ: Resistance between V_{IN} and V_{OUT} pins during normal operation at room temperature.
- Note 7:R_{1Max}: The maximum resistance between V_{IN} and V_{OUT} pins at room temperature, one hour after 1st trip or after reflow soldering.
- Note 8:V_{INT} Max: V_{INT} Max relates to the voltage across the PPTC portion of the PolyZen device (V_{IN}-V_{OUT}). V_{INT} Max is defined as the voltage (V_{IN}-V_{OUT}) at which typical qualification devices (98% devices, 95% confidence) survived at least 100 trip cycles and 24hours trip endurance at the specified voltage (V_{IN}-V_{OUT}) and current (I_{PTC}). V_{INT} Max testing is conducted using a "shorted" load (V_{OUT} = 0V). V_{INT} Max is a survivability rating, not a performance rating.
- Note 9:IFLT Max: IFLT Max relates to the stead state current flowing through the diode portion of the PolyZen device in a fault condition, prior to a trip event. IFLT Max is defined as the current at which typical qualification devices (12 parts per lot from 3 lots) survived 100 test cycles. RMS fault currents above IFLT Max may permanently damage the diode portion of the PolyZen device. Testing is conducted with NO load connected to Vout, such that Iout = 0. "Test voltage" is defined as the voltage between VIN to GND and includes the PolyZen Diode drop. Specification is dependent on the direction of current flow through the diode. IFLT Max is a survivability rating, not a performance rating.
- Note 10:The power dissipated by the device when in the "tripped" state, as measured on Littelfuse test boards (see note 3). Note 11:Specifications based on limited qualification data and subject to change.

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PolyZenPolymer Enhanced Zener Diode **Micro-Assemblies**

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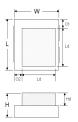
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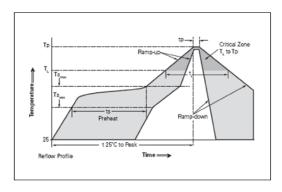
MECHANICAL DIMENSIONS



		Min	Typical	Max
Length	_	3.85 mm	4 mm	4.15 mm
Longui	_	(0.152")	(0.16")	(0.163")
Width	W	3.85 mm	4 mm	4.15 mm
VVIGUI	VV	(0.152")	(0.16")	(0.163")
Hoight	Н	1.4mm	1.7 mm	2.0 mm
Height	П	(0.055")	(0.067")	(0.081")
Length	Ld		3.0 mm	
Diode	La	-	(0.118")	-
Height	Hd		1.0 mm	
Diode	Diode		(0.039")	-
Offset	01		0.6 mm	
Oliset	Oi	-	(0.024")	-
Offset	O2		0.7 mm	
Oliset	02	=	(0.028")	-

SOLDER REFLOW RECOMMENDATIONS:

Classification Reflow Profiles							
Profile Feature	Pb-Free Assembly						
Average Ramp-Up Rate (Tsmax to Tp)	3° C/second max.						
Preheat							
Temperature Min (Tsmin)	150 °C						
 Temperature Max (Tsmax) 	200 °C						
Time (tsmin to tsmax)	60-180 seconds						
Time maintained above:							
Temperature (TL)	217 °C						
• Time (tL)	60-150 seconds						
Peak/Classification Temperature (Tp)	260 °C						
Time within 5 °C of actual Peak							
Temperature (tp)	20-40 seconds						
Ramp-Down Rate	6 °C/second max.						
Time 25 °C to Peak Temperature	8 minutes max.						





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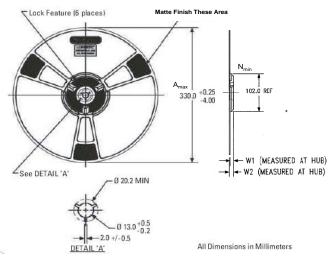
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PACKAGING

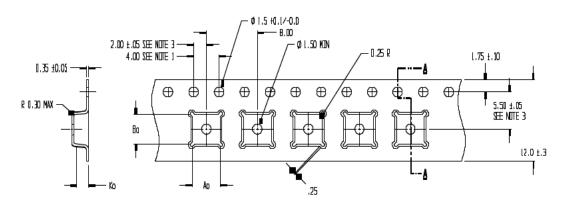
Packaging	Tape & Reel	Standard Box
ZEN056V115A24LS	3,000	15,000

Reel Dimensions for PolyZen Devices

$$A_{max} = 330$$
 $N_{min} = 102$
 $W_1 = 8.4$
 $W_2 = 11.1$



Taped Component Dimensions for PolyZen Devices





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NOTES:

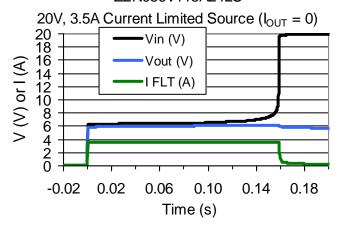
Aa = 4.35 I. 10 SPROCKET HOLE PITCH CLMULATIVE TOLERANCE ±0.2

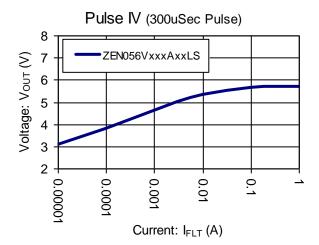
Bo = 4.35 2. CAMBER IN COMPLIANCE VITH EIA 481

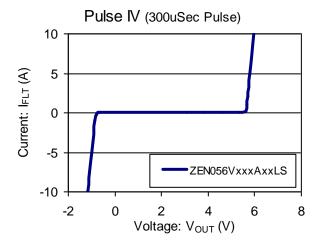
Ko = 2.30 3. POCKET POSITION RELATIVE TO SPROCKET HOLE MEASURED As true position of pocket, not pocket hole

TYPICAL CHARACTERISTICS

Typical Fault Response: ZEN056V115A24LS









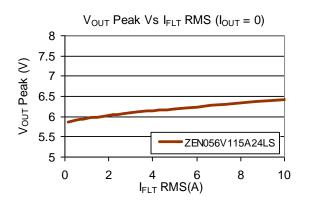
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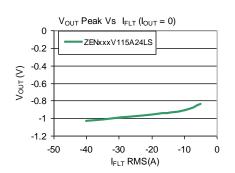
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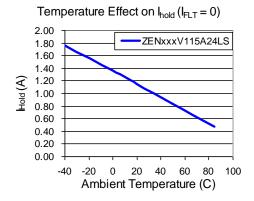
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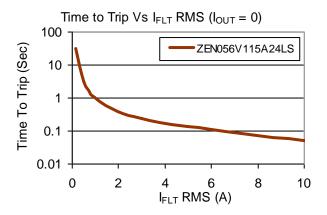
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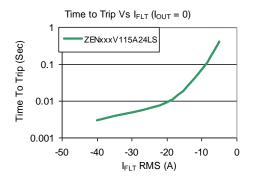
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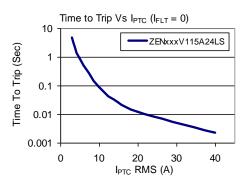














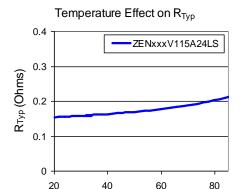
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Ambient Temperature (C)

Materials Information

ROHS Compliant

Directive 2002/95/EC Compliant **ELV Compliant**

Directive 2000/53/EC Compliant Pb-Free



Halogen Free*



* Halogen Free refers to: Br≤900ppm, Cl≤900ppm, Br+Cl≤1500ppm.

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