

PRODUCT: ZEN056V130A16YM

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CONFIGURATION INFORMATION





PIN DESCRIPTION

Pin Number	Pin Name	Pin Function
1	V _{IN}	V _{IN} . Device input
2	GND	GND
3	V _{OUT}	Vour. Zener regulated voltage output

MECHANICAL DIMMENSIONS



		Min	Тур	Max				
		mm						
			(in)					
Longth	А	3.00	3.20	3.40				
Lengin		(0.118)	(0.126)	(0.134)				
\\/;dtb	Б	2.30	2.50	2.70				
vvidtri	Б	(0.091)	(0.098)	(0.106)				
Hoight	6	1.10	1.20	1.30				
Height	C	(0.043)	(0.047)	(0.051)				

DEFINITION of TERMS

IPTC	Current flowing through the PTC portion of the
	circuit
IFLT	RMS fault current flowing through the diode
Ιουτ	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.
Trip	Time the PTC portion of the device remains in a
Endurance	high resistance state.







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GENERAL SPECIFICATIONS^{1-3, 12} (Typical unless otherwise specified)

ELECTRICAL CHARACTERISTICS

V ()	/z ⁴ V)	I++ ⁴	Leakage	Current			R _{TYP} ⁶ (Ohms)	R _{1Max} ⁷ (Ohms)	V _{INT} Max ⁸ (V)	
Min	Max	(A)	Test Voltage (V)	Max Current (mA)	@20ºC @60ºC (A) (A)	V _{INT} Max (V)			Test Current (A)	
5.35	5.85	0.01	5.25	10	1.3	1	0.11	0.16	14	3

MAXIMUM RATINGS

V _{IN} I	Max ⁹	I _{FLT} N	lax ¹⁰	Peak pulse current	ESD wit (IEC 610	ESD withstand (IEC 61000-4-2)		Temperature		I Power ation ¹¹ ax	
V _{IN} Max (V)	Test Current (A)	I _{FLT} Max (A)	Test voltage (V)	8/20 µs pulse (IEC 61000-4-5) (A)	Contact (KV)	Air (KV)	Operating (⁰C)	Storage (ºC)	Value (W)	Test Voltage (V)	
20	3	3	16	150	150	1/ 20	1/ 20	40 to 195	40 to 195	1.0	20
-14	-3	-40	-12	150	+/- 30	+/- 30	-40 10 +65	-40 10 +65	1.0	20	

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, load condition and circuit design. For details or ratings specific to your application contact Littlefuse Connectivity Circuit Protection Division 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 current (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: RTYP: Resistance between VIN and VOUT 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 first tripped event or after reflow soldering.

- Note 8: V_{INT} Max: V_{INT} Max is defined as the maximum voltage at which devices can be survived according to typical qualification process at the specified voltage and current. V_{INT} Max testing is conducted using a "shorted" load (V_{OUT} = 0 V). V_{INT} Max is a survivability rating, not a performance rating. For performance ratings, see Note 2.
- Note 9: V_{IN} Max: For practical application, Polyzen devices are polymer enhanced diode, it use the Polymer PTC technology to offer the diode resettable protection against continuous overvoltage fault events. V_{IN} Max is defined as the maximum voltage rating of the whole device at which devices can be survived according to typical qualification process at specified voltage and current. Testing conducted with no load connected to V_{OUT}. V_{IN} Max is a survivability rating, not a performance rating. For performance ratings, see Note 2.
- Note 10: IFLT Max: Maximum RMS fault current the device can withstand and remain resettable. Specification is dependent on the direction of current flow through the device. RMS fault currents above IFLT Max may permanently damage the PolyZen device. Specification assumes Iout = 0. Testing conducted with no load connected to Vout.
- Note 11: The power dissipated by the device when in the "tripped" state, as measured on Littelfuse test boards (see note 3).
- Note 12: Specifications based on limited qualification data and subject to change.



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RECOMMENDED PAD DIMENSIONS (mm)





RECOMMENDED PAD LAYOUT (mm)

RECOMMENDED SOLDER REFLOW PROFILE



Classification Reflow Profiles	
Profile Feature	Pb-Free Assembly
Average Ramp-up Rate (Ts Max to Tp)	3° C/second max
Average Ramp-down Rate (Tp to T_{L})	6° C/second max
Preheat	
• Temperature Min (Ts Min)	150° C
 Temperature Max (Ts Max) 	200° C
• Time (ts Preheat)	60-180 seconds
Time maintained above:	
• Temperature (T _L)	217° C
• Time (t _L)	60-150 seconds
Peak / Classification Temperature	
• Temperature (T _p)	260° C
Time within 5° C of actual peak	
• Time (t _p)	20-40 seconds
Time 25° C to peak Temperature	8 minutes max



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TYPICAL DEVICE CHARACTERISTICS Typical Fault Response: ZEN056V130A16YM 20V/3A Current Limited Source (IouT=0) 25 -Vin (V) -Vout (V) 20 -I FLT (A) V (V) or I (A) 15 10 5 0 0.00 0.05 0.10 0.15 Time (sec) Pulse I-V (300 µsec pulse) Pulse I-V (300 µsec pulse) 0.6 8.00 -ZEN056V130A16YM ZEN056V130A16YM 0.4 7.00 Voltage: Vour (V) 0.2 Current: I_{FLT} (A) 6.00 0.0 5.00 -0.2 4.00 -0.4 3.00 -0.6 2.00 0.0001 0.001 0.01 0.1 0.00001 -0.8 -2 0 2 3 5 6 7 -1 1 4 Current: IFLT (A) Voltage: Vout (V) Time to Trip vs. I_{FLT} (I_{OUT}=0) VPEAK VS. IFLT (IOUT=0) 6.5 100 ZEN056V130A16YM ZEN056V130A16YM 6.3 Time to Trip (sec) 10101 10 VPEAK (V) 6.1 5.9 5.7 5.5 2 0.01 0 3 4 5 1 0 2 3 5

1

IFLT (A)

4

IFLT (A)



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PACKAGING



TAPE DIMENSIONS (mm)

For Machine Re Including Draft Concentric Arou	terence Only and Radii und Bo	ever Tape	P P P P P P P P D D D D D D D D D D D D D	pitches cumulative rance on tape ±0.2	E (±0.008)		nm MAX. Alloi Non	wable Camber to be 1mm/100mm cumulative Over 250mm
SYMBOL	Ao	Во	Ko	Po	P1	P2	B1Max	
SPEC	2.90±0.10	3.55±0.10	1.27±0.10	4.00±0.10	4.00±0.10	2.00±0.05	4.35	
SYMBOL	Т	E1	F	Do	D1	w	D1Max	
SPEC	0.25±0.02	1.75±0.10	3.50±0.05	1.55±0.05	1.00±0.10	8.00±0.3	1.0	



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DEVICE MARKINGS INFORMATION



Markings	Vz	Hold current	Special code
0513F	5.6V	1.3A	F



MATERIALS INFORMATION





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









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