

PolyZen devices are polymer enhanced precision Zener diode micro-assemblies that help protect sensitive electronics from damage caused by inductive voltage spikes, voltage transients, incorrect power supplies and reverse bias.

The PolyZen micro-assembly incorporates a stable Zener diode for precise voltage clamping and a resistively non-linear, polymeric positive temperature coefficient (PPTC) layer that responds to either diode heating or overcurrent events by transitioning from a low to high resistance state.

PolyZen devices help provide resettable protection against multi-watt fault events and require only 0.7W power dissipation. In the event of sustained high power conditions, the PPTC element of the device “trips” to limit current and generate voltage drop. This functionality helps protect both the Zener and the follow-on electronics, effectively increasing the diode’s power handling capacity.



Benefits:

- Helps shield downstream electronics from overvoltage and reverse bias
- Trip events shut out overvoltage and reverse bias sources
- Analog nature of trip events minimize upstream inductive spikes
- Helps reduce design costs with single component placement and minimal heat sinking requirements

Features:

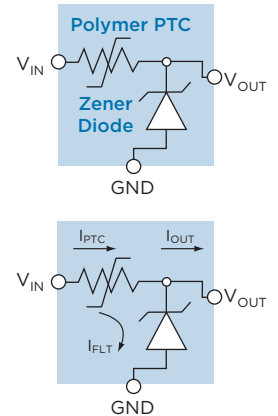
- Overvoltage transient suppression
- Hold currents up to 2.3A
- Time delayed, overvoltage trip
- Time delayed, reverse bias trip
- Power handling on the order of 30 watts
- Integrated device construction
- RoHS compliant

Applications:

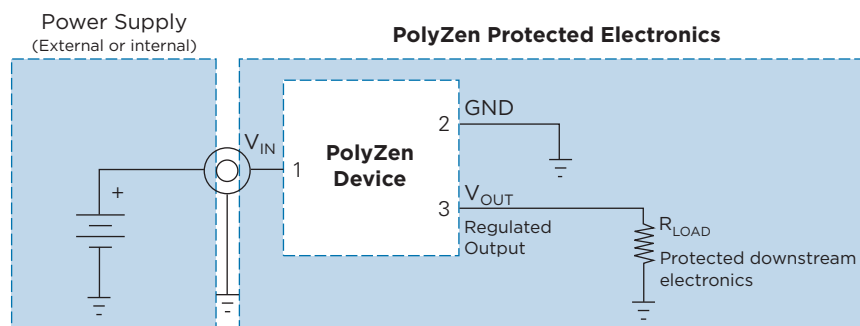
- Portable Media Players
- Global Positioning Systems
- Hard disk drive 5V & 12V bus protection
- Automotive peripheral input power protection
- DC power port protection
- Industrial handheld POS

Definition of Terms

V_z	Zener clamping voltage measured at current I_{zt} and 20°C.
I_{zt}	Test current at which V_z is measured.
I_{HOLD}	Maximum steady state current I_{PTC} that will not generate a trip event at the specified temperature. Ratings assume $I_{FLT} = 0A$.
R Typ	Typical resistance between V_{IN} and V_{OUT} pins when the device is at room temperature.
R_{1MAX}	The maximum resistance between V_{IN} and V_{OUT} pins, at room temperature, one hour after first trip or after reflow soldering.
I_{FLT}	Current flowing through the Zener diode.
$I_{FLT Max}$	Maximum RMS fault current the diode portion of the device can withstand and remain resettable; testing is conducted at rated voltage with no load connected to V_{OUT} .
$V_{INT Max}$	The voltage ($V_{IN} - V_{OUT}$ “post trip”) at which typical qualification devices (98% devices, 95% confidence) survived at least 100 trip cycles and 24 hours trip endurance when “tripped” at the specified voltage and current (I_{PTC}).
Trip Event	A condition where the PTC transitions to a high resistance state, thereby limiting I_{PTC} , and significantly increasing the voltage drop between V_{IN} and V_{OUT} .



Typical Application Block Diagram



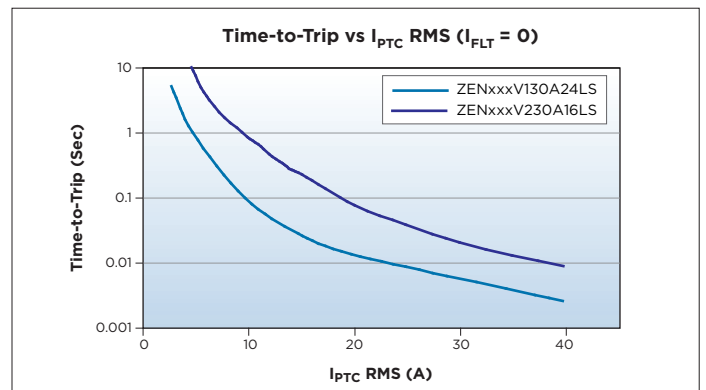
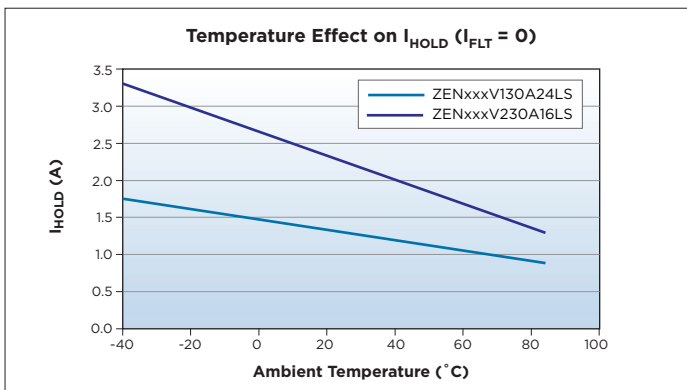
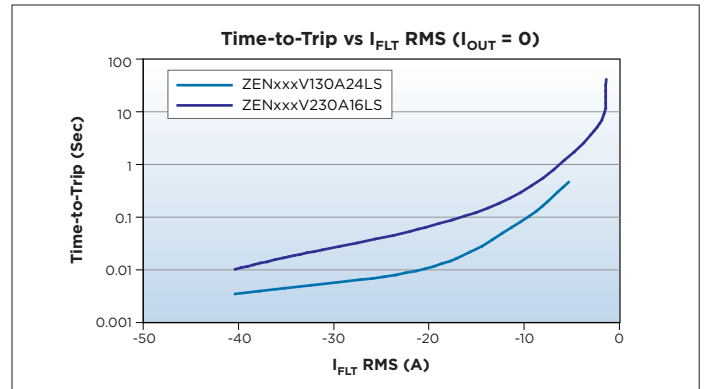
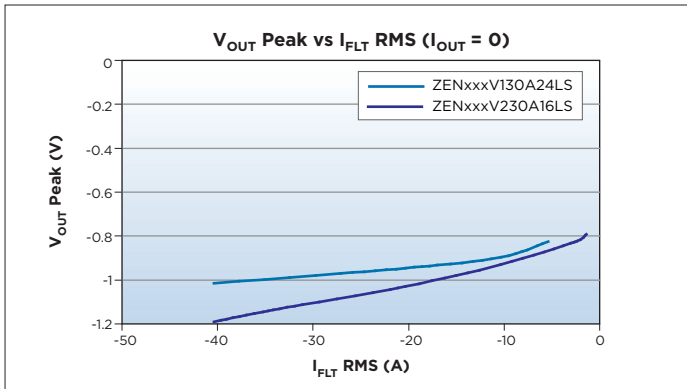
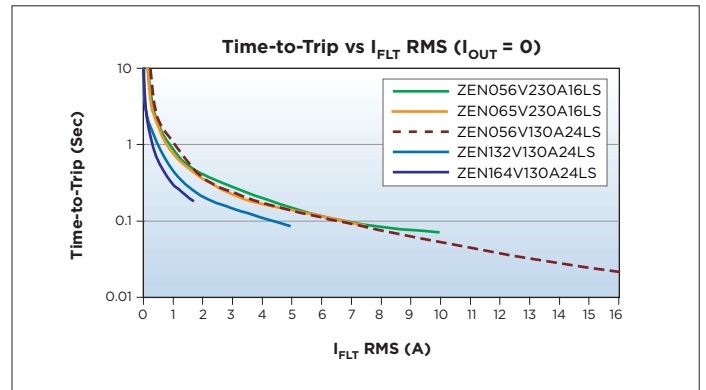
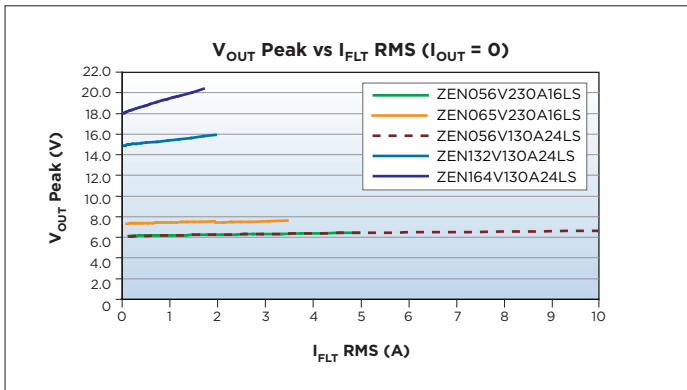
Electrical Characteristics

(Performance ratings @ 25°C unless otherwise specified)

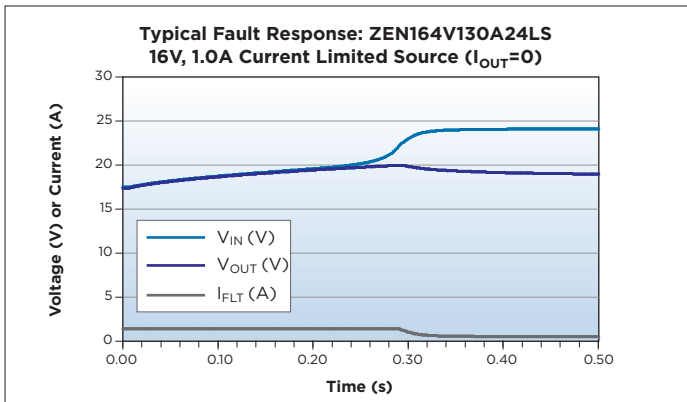
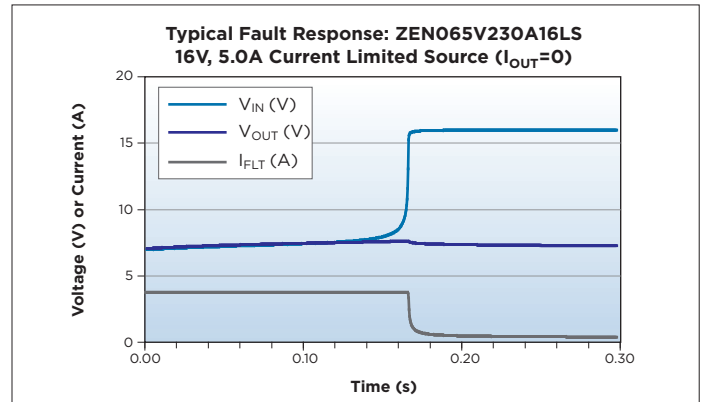
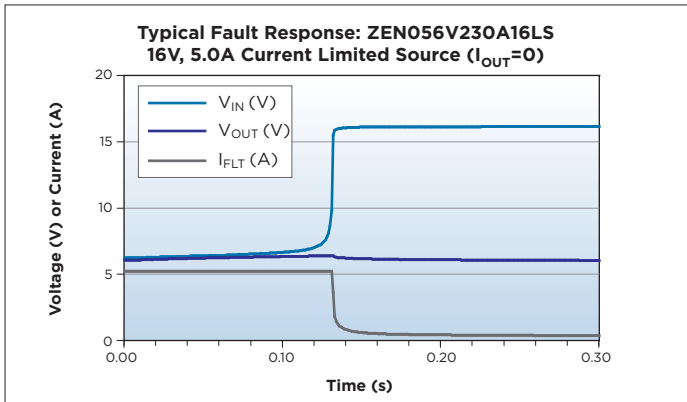
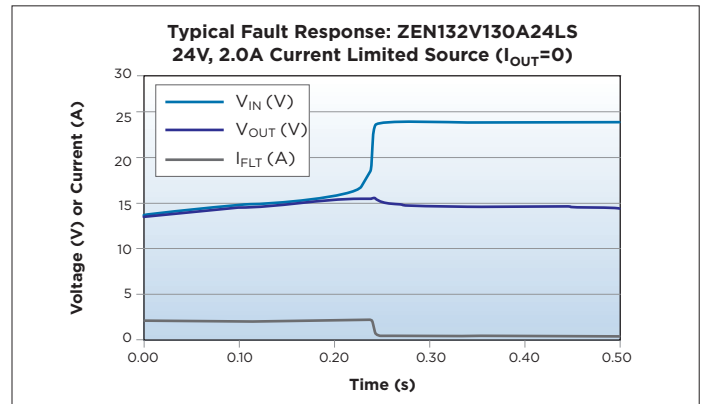
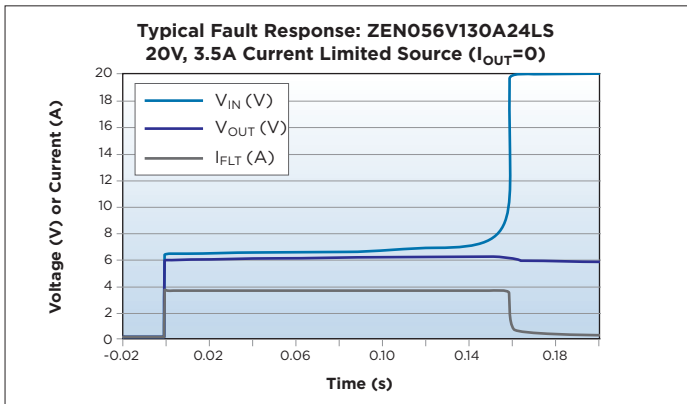
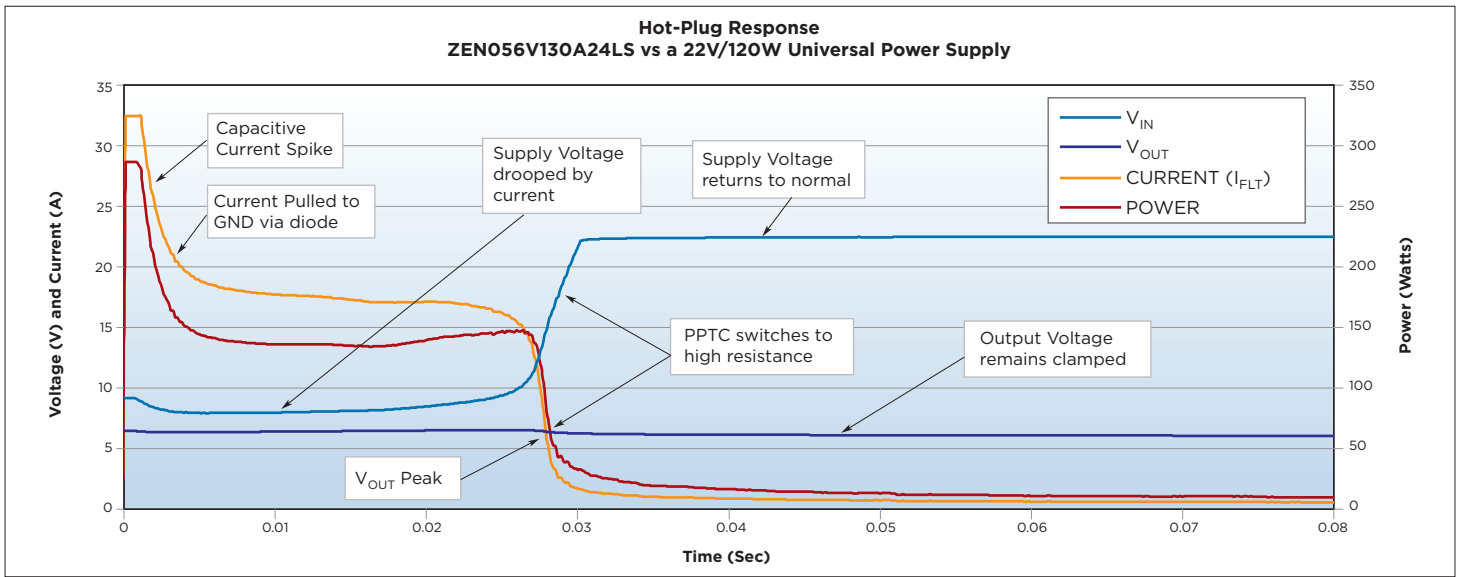
Part Number	V_z (V)				I_{Hold} @ 20°C (A)	R_{Typ} (Ohms)	R_{1Max} (Ohms)	$V_{Int Max}$		$I_{FLT Max}$		Power Dissipation (W)
	Min	Typ	Max	I_{Zt} (A)				$V_{Int Max}$ (V)	Test Current (A)	$I_{FLT Max}$ (A)	Test Voltage (V)	
ZEN056V130A24LS	5.45	5.6	5.75	0.1	1.3	0.12	0.16	24V	3A	+10/-40	+24/-16V	0.7
ZEN065V130A24LS	6.35	6.5	6.65	0.1	1.3	0.12	0.16	24V	3A	TBD/-40	+24/-16V	0.7
ZEN132V130A24LS	13.20	13.4	13.60	0.1	1.3	0.12	0.16	24V	3A	+2/-40	+24/-16V	0.7
ZEN164V130A24LS	16.10	16.4	16.60	0.1	1.3	0.12	0.16	24V	3A	+1.25/-40	+24/-16V	0.7
ZEN056V230A16LS	5.45	5.6	5.75	0.1	2.3	0.04	0.06	16V	5A	+5/-40	+16/-12V	0.7
ZEN065V230A16LS	6.35	6.5	6.65	0.1	2.3	0.04	0.06	16V	5A	+3.5/-40	+16/-12V	0.7
ZEN132V230A16LS	13.20	13.4	13.80	0.1	2.3	0.04	0.06	16V	5A	TBD/-40	+16/-12V	0.7

* Data is preliminary

Typical Performance Curves



Basic Operation Examples



General Characteristics

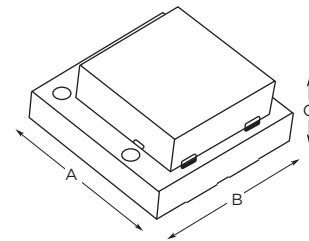
Operating Temperature Range	-40° to +85°C	
Storage Temperature	-40° to +85°C	
ESD Withstand	15KV	Human Body Model
Diode Capacitance	4200pF	Typical @ 1MHz, 1V RMS
Construction	RoHS compliant	

Packaging and Marking Information

Part Number	Bag Quantity	Tape & Reel Quantity	Standard Package
ZENxxxVyyyAzzLS	-	3,000	15,000

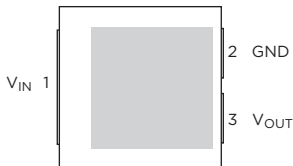
Mechanical Dimensions

	A		B		C	
	Min	Max	Min	Max	Min	Max
mm	3.85	4.15	3.85	4.15	1.5	2.1
inch	(0.150)	(0.163)	(0.152)	(0.163)	(0.059)	(0.083)

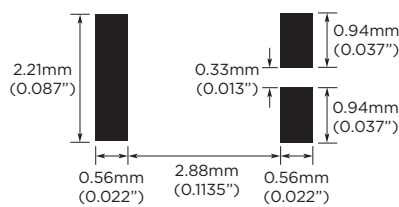


Configuration Information

Pin Configuration
(Top View)

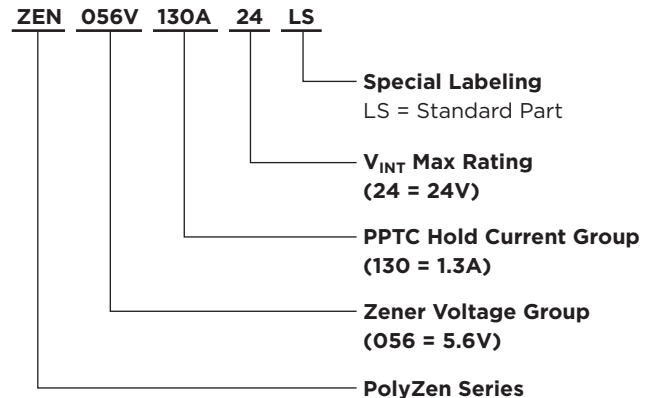


Pad Dimensions



Pin Number	Pin Name	Pin Function
1	V _{IN}	V _{IN} = Protected input to Zener diode
2	GND	GND = Ground
3	V _{OUT}	V _{OUT} = Zener regulated voltage output

Part Numbering System



RoHS compliant, ELV compliant

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