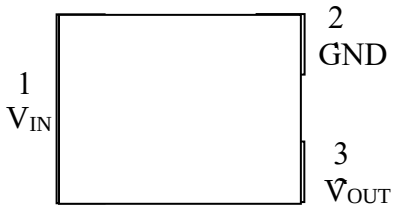
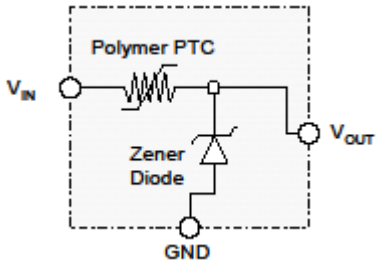
CONFIGURATION INFORMATION

Pin Configuration (Top View)



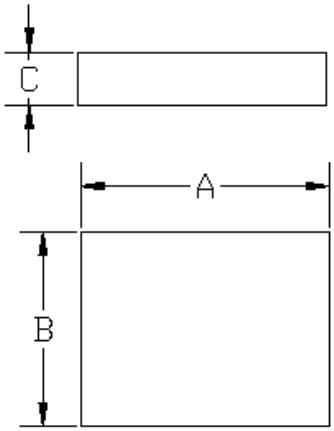
Block Diagram



PIN DESCRIPTION

Pin Number	Pin Name	Pin Function
1	V_{IN}	**V_{IN}.** Device input
2	GND	**GND**
3	V_{OUT}	**V_{OUT}.** Zener regulated voltage output

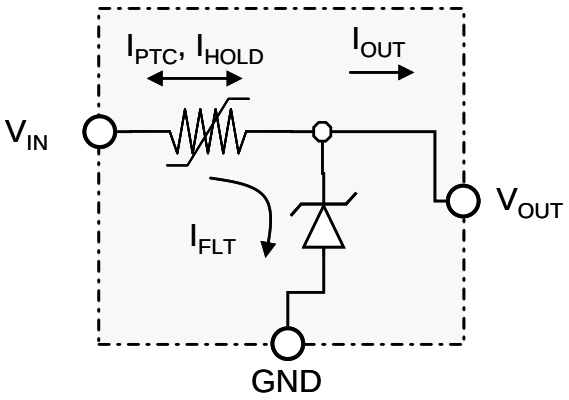
MECHANICAL DIMMENSIONS



		Min	Typ	Max
		mm (in)		
Length	A	3.00 (0.118)	3.20 (0.126)	3.40 (0.134)
Width	B	2.30 (0.091)	2.50 (0.098)	2.70 (0.106)
Height	C	1.10 (0.043)	1.20 (0.047)	1.30 (0.051)

DEFINITION of TERMS

I_{PTC}	Current flowing through the PTC portion of the circuit
I_{FLT}	RMS fault current flowing through the diode
I_{OUT}	Current flowing out the V_{OUT} pin of the device
Trip Event	A condition where the PTC transitions to a high resistance state, thereby significantly limiting I_{PTC} and related currents.
Trip Endurance	Time the PTC portion of the device remains in a high resistance state.



GENERAL SPECIFICATIONS[1-3, 12] (Typical unless otherwise specified)

ELECTRICAL CHARACTERISTICS

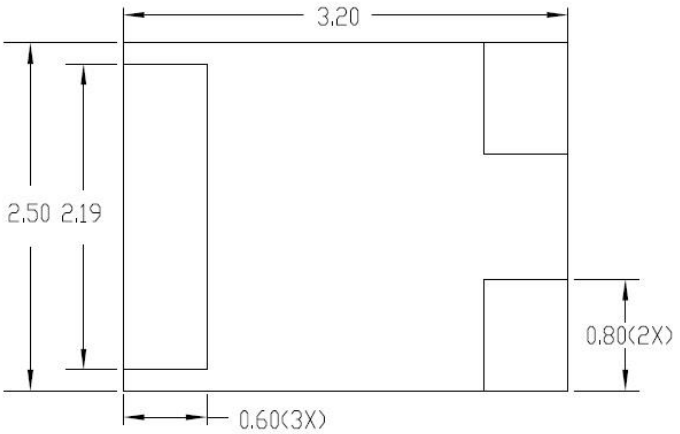
V_Z[4] (V)		I_{zt}[4] (A)	Leakage Current		I_{HOLD}[5] @20ºC (A)	I_{HOLD} @60ºC (A)	R_{TYP}[6] (Ohms)	R_{1Max}[7] (Ohms)	V_{INT} Max[8] (V)	
Min	Max		Test Voltage (V)	Max Current (mA)					V_{INT} Max (V)	Test Current (A)
5.35	5.85	0.01	5.25	10	1.3	1	0.11	0.16	14	3

MAXIMUM RATINGS

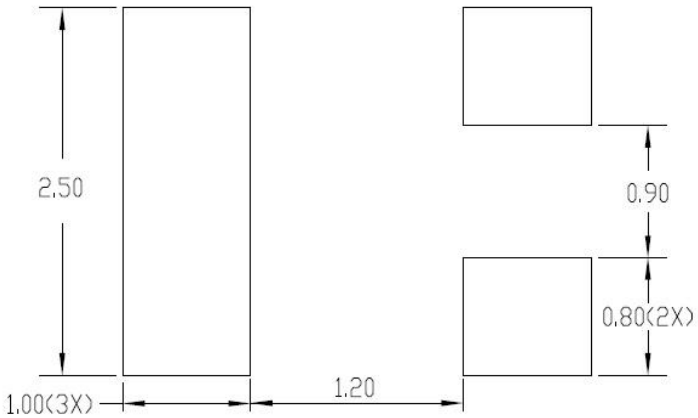
V_{IN} Max[9]		I_{FLT} Max[10]		Peak pulse current	ESD withstand (IEC 61000-4-2)		Temperature		Tripped Power Dissipation[11] Max	
V_{IN} Max (V)	Test Current (A)	I_{FLT} Max (A)	Test voltage (V)	8/20 µs pulse (IEC 61000-4-5) (A)	Contact (KV)	Air (KV)	Operating (ºC)	Storage (ºC)	Value (W)	Test Voltage (V)
20	3	3	16	150	+/- 30	+/- 30	-40 to +85	-40 to +85	1.0	20
-14	-3	-40	-12							

Note 1: Electrical characteristics determined at 25ºC 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 Littelfuse 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: 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 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: I_{FLT} 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 I_{FLT} Max may permanently damage the PolyZen device. Specification assumes I_{OUT} = 0. Testing conducted with no load connected to V_{OUT}.
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.

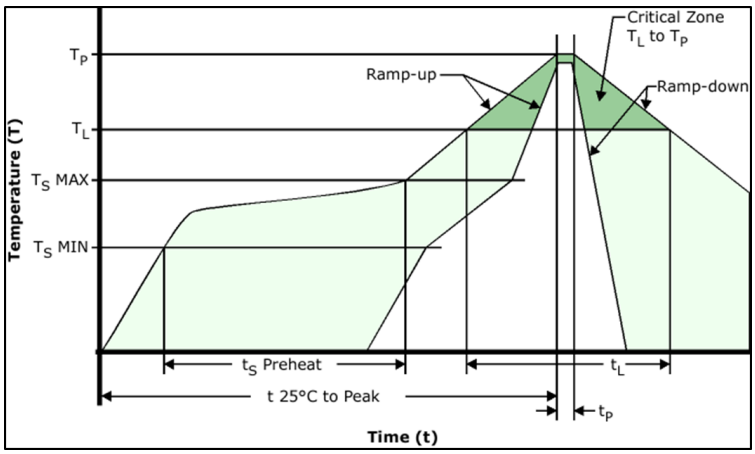
RECOMMENDED PAD DIMENSIONS (mm)



RECOMMENDED PAD LAYOUT (mm)

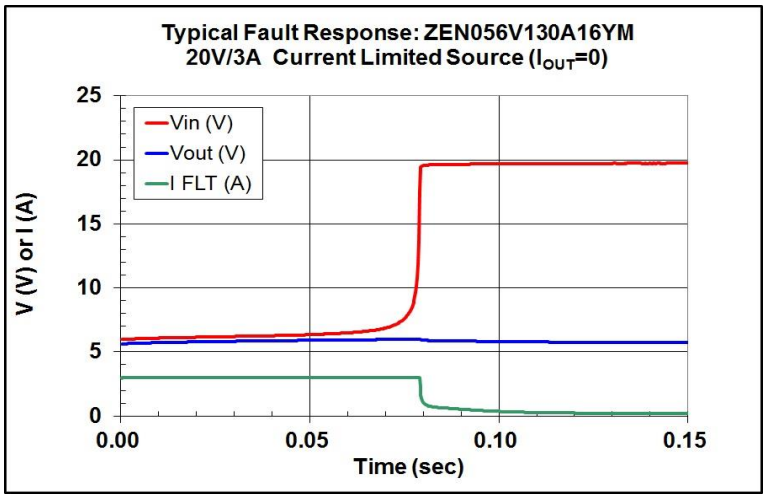


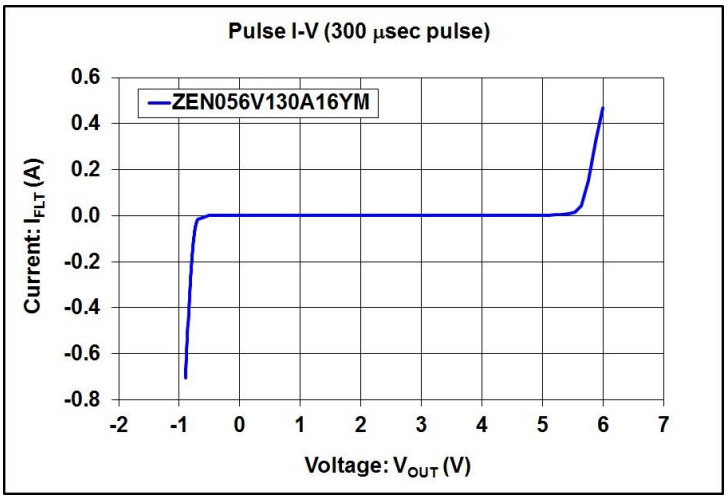
RECOMMENDED SOLDER REFLOW PROFILE

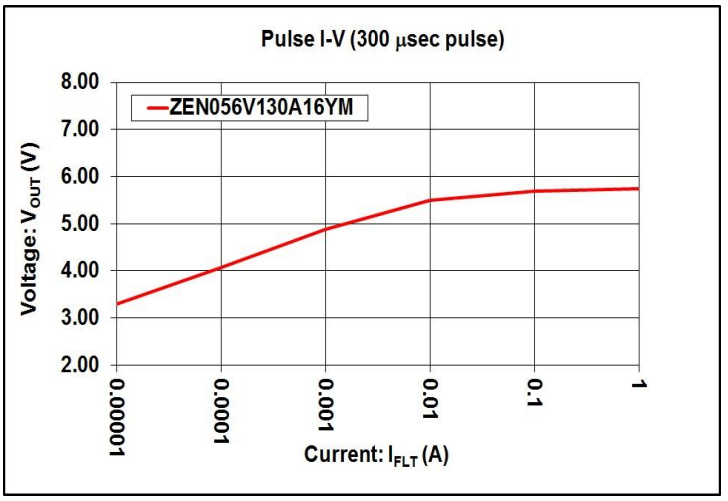


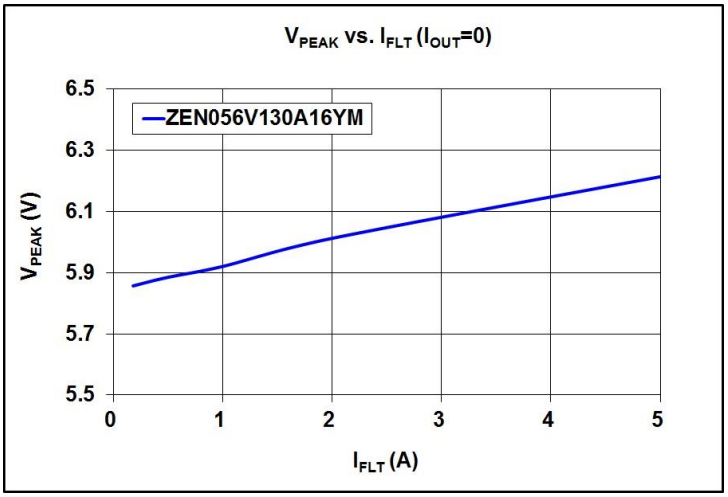
Classification Reflow Profiles	
Profile Feature	**Pb-Free Assembly**
Average Ramp-up Rate (Ts Max to Tp)	3° C/second max
Average Ramp-down Rate (Tp to T_L)	6° C/second max
Preheat	
• Temperature Min (Ts Min)	150° C
• Temperature Max (Ts Max)	200° C
• Time (ts Preheat)	60-180 seconds
Time maintained above:	
• 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

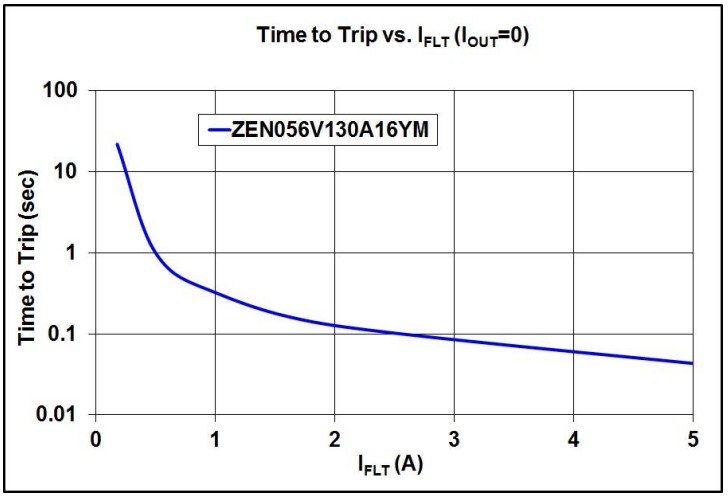
TYPICAL DEVICE CHARACTERISTICS

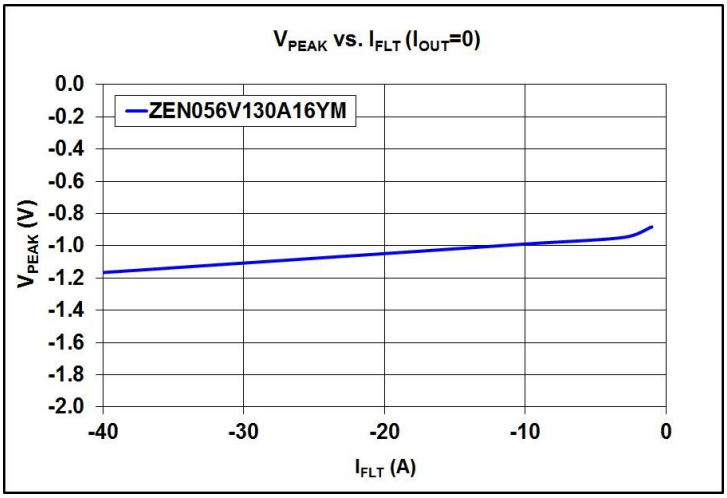


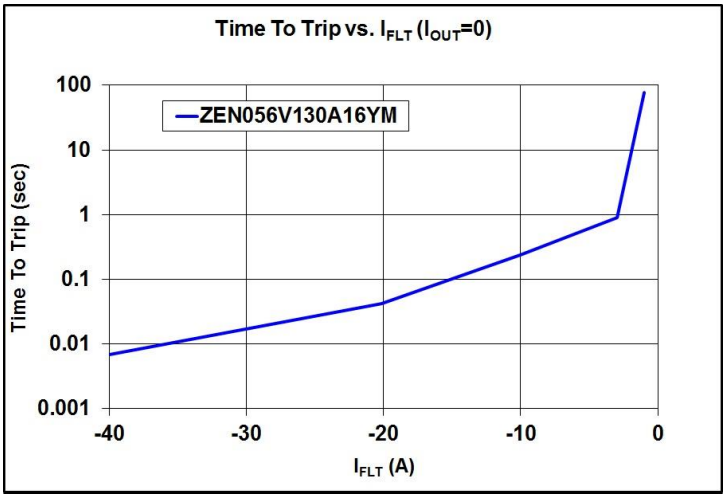


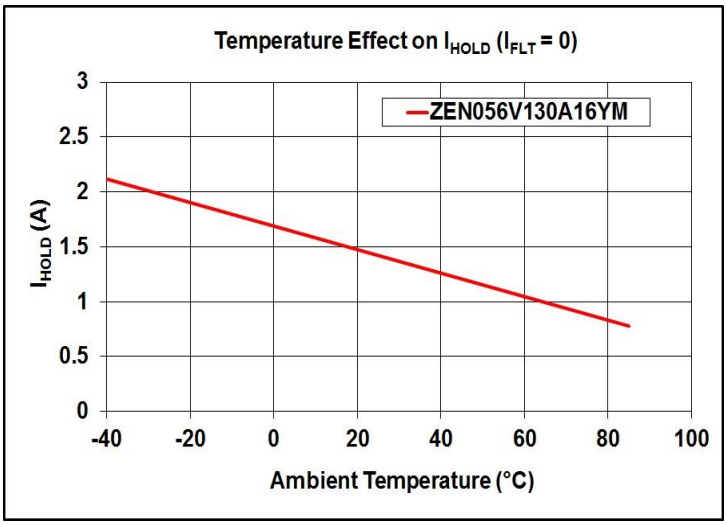


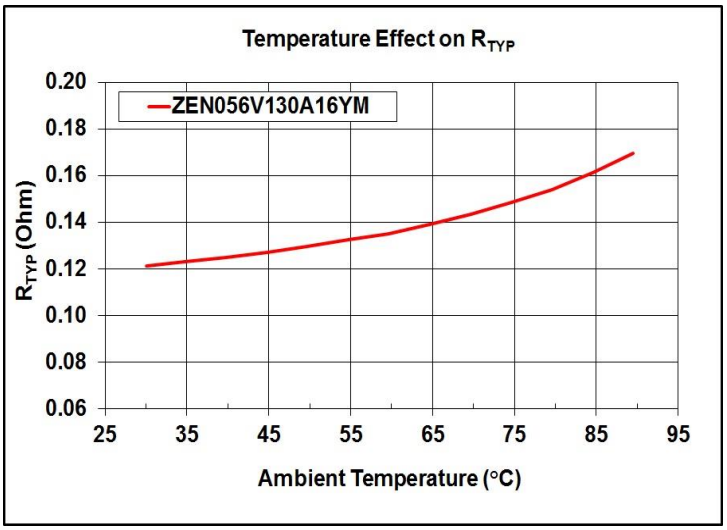


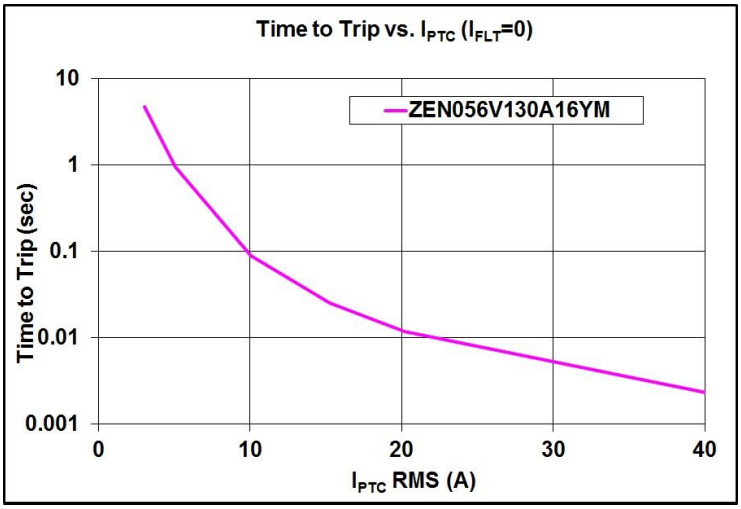








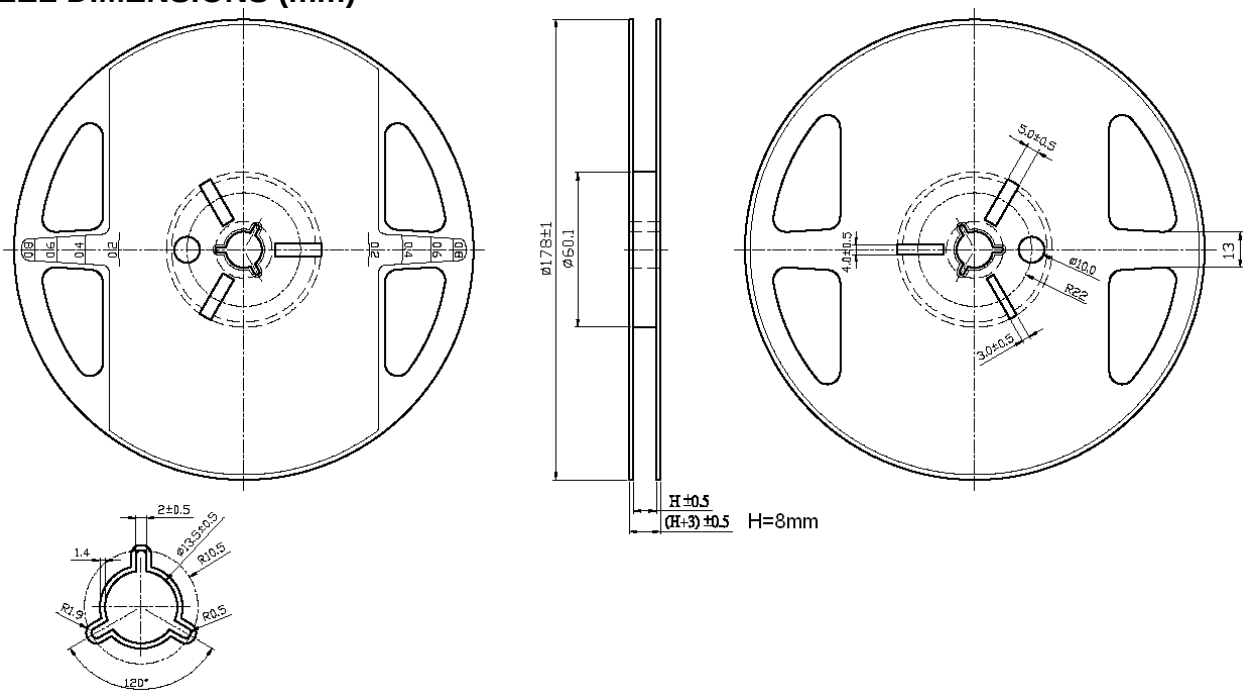




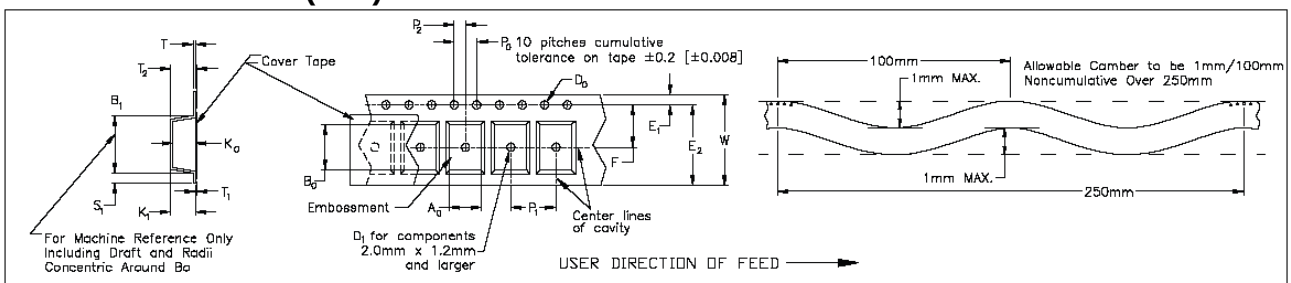
PACKAGING

Packaging	Tape & Reel	Standard Box
ZEN056V130A16YM	3,000	30,000

REEL DIMENSIONS (mm)

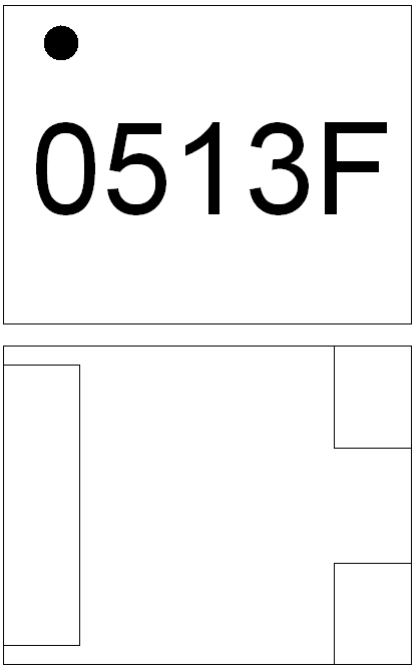


TAPE DIMENSIONS (mm)



SYMBOL	Ao	Bo	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	T	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

DEVICE MARKINGS INFORMATION



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

MATERIALS INFORMATION

ROHS Compliant
Directive 2002/95/EC Compliant

ELV Compliant
Directive 2000/53/EC Compliant

Pb-Free

Halogen Free*
HF

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