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October 2014

FESD05P30ZL
5 V, 30 pF Unidirectional ESD Protector

Features

- IEC61000-4-2, ±30 kV Contact, ±30 kV Air
- IEC61000-4-5, I_{PP} = 5 A (8/20 µs)
- Expanded Working Voltage, V_{RWM} = 5.0 V +10% =5.5 V
- Very Low Clamping Voltage, V_C =8.8 V at 5 A (Typical)
- Ultra Small SOD882 Package
- Fits Solder Pad of 0402 and DFN 2L
- RoHS Compliant and Halogen Free
- Qualified with IR Reflow and Wave Soldering

Applications

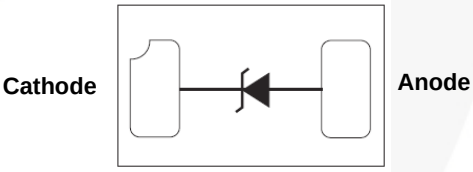
- Mobile and Portable Devices
- Space Constrained Systems
- USB 5 V Power Protections
- General-Purpose ESD Protection in 5 V Applications

Description

The FESD05P30ZL ESD protector offers break through size and clamping performance. The device is capable of suppressing up to 50 W of 8 x 20 µsec peak pulse power. It turns on at typical 6.5 V and clamp at 8.8 V in a 5 A surge. It responses fast and effective against to ESD/ Surge events.

The design has been specifically optimized for 5 V applications. It can be operated at 5 V with 10% tolerance. It is also RoHS compliant and Halogen Free.

All this capability is packed into a small, flat package, optimized for space constrained applications with similar XY dimensions to a industrial standard 0402 or SOD923. The FESDxZL family supports a max Z dimension of 0.5 mm. It is therefore specifically designed to support low clearance applications.



Ordering Information

Part Number	Top Mark	Package	Packing Method
FESD05P30ZL	A	SOD882	Tape and Reel

Absolute Maximum Ratings[1]

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter		Value	Unit
P_D	Total Power Dissipation		250	mW
ESD	Electrostatic Discharge Capability	IEC61000-4-2 Contact	±30	kV
		IEC61000-4-2 Air	±30	
T_J	Operating Junction Temperature Range		-55 to +150	°C
T_{STG}	Storage Temperature Range		-55 to +150	°C

Note:

1. All tests conducted at $T_A = T_J$ = 25°C unless otherwise noted.

Electrical Breakdown Characteristics[2], [3]

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{BR}	Breakdown Voltage	I_T = 1 mA	6.2			V
V_{RWM}	Reverse Standoff Voltage	$I_T \leq 1$ µA			5.5	V
I_R	Maximum Leakage	V_R = 5.0 V			0.5	µA

Notes:

2. All tests conducted at $T_A = T_J$ = 25°C unless otherwise noted.
3. I_T = 300 µsec square wave current pulse.

Surge Response Characteristics[4]

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
TLP Surge Response						
R_D	Dynamic Resistance	TLP, t_P = 100 ns, Cathode to Anode		0.31		Ω
8 x 20 µsec Exponential Current Surge Response						
I_{PP}	Test Surge Current	IEC61000-4-5, 8 x 20 µsec Current Surge		5		A
V_C	Clamping Voltage	I_{PP} = 5 A		8.8		V
R_D	Dynamic Resistance	Calculated at I_{PP}		0.47		Ω
P_{PPM}	Peak Pulse Power	Calculated (I_{PPM} x V_C)		50		W
C_J	Junction Capacitance	V_R = 0 V, f = 1 MHz		31	38	pF

Note:

4. All tests conducted at $T_A = T_J$ = 25°C unless otherwise noted.

Typical Performance Characteristics

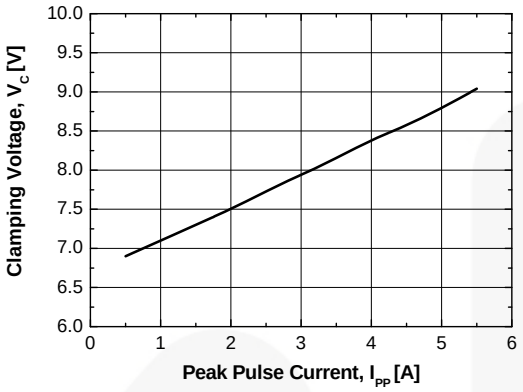


Figure 1. Clamping Voltage vs. Peak Pulse Current Power (8 x 20µs waveform)

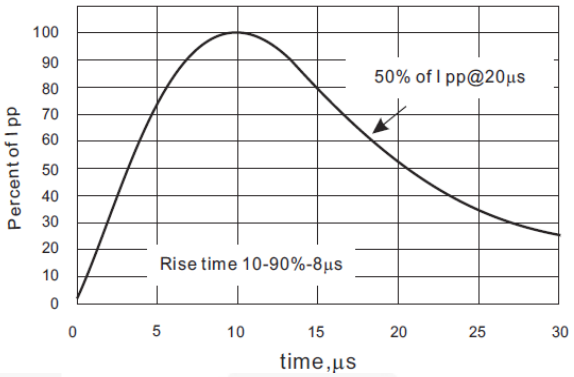


Figure 2. 8 x 20 µsec Pulse Waveform

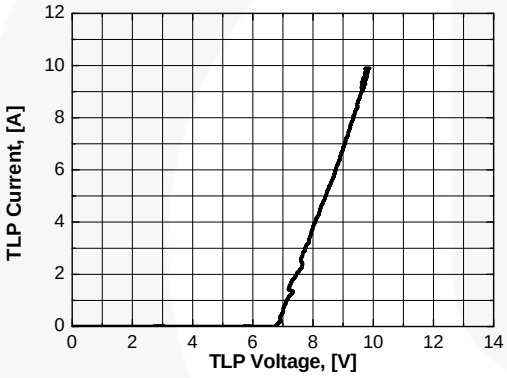


Figure 3. Transmission Line Pulsing (TLP) Plot

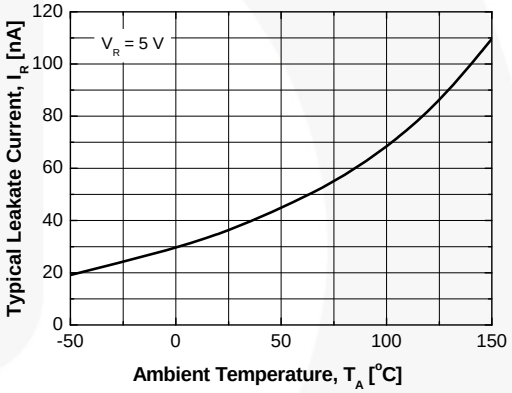


Figure 4. Leakage Current vs. Temperature

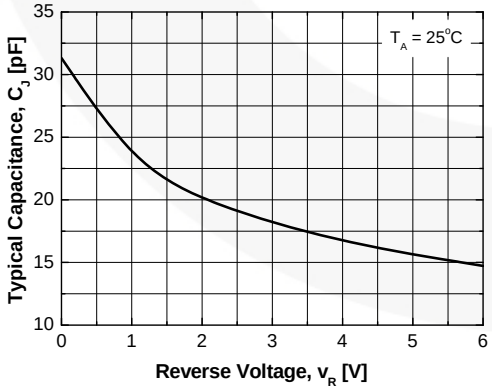
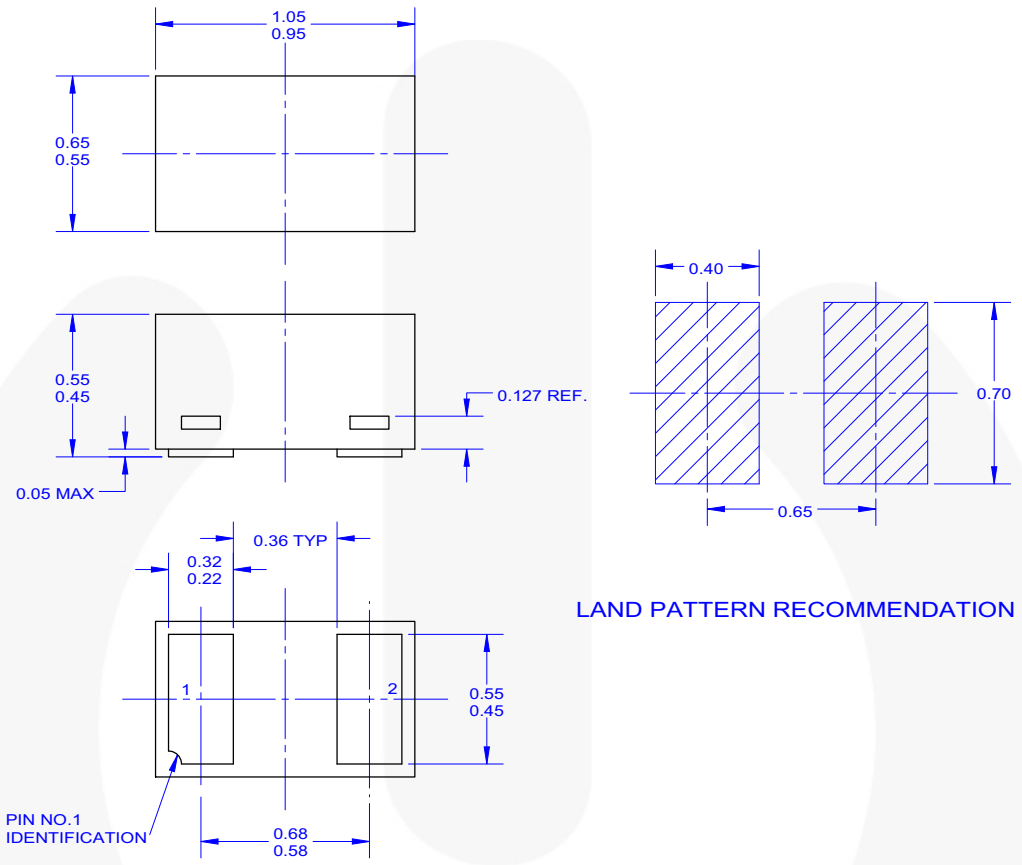


Figure 5. Typical Capacitance

Physical Dimension



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E) DRAWING NUMBER AND REVISION:MKT-SOD88202A REV1.

Figure 6. 2-LEAD, SOD882, 0.60 x 1.00 MM BODY, 0.65 MM PITCH

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