ECELCAD5VB

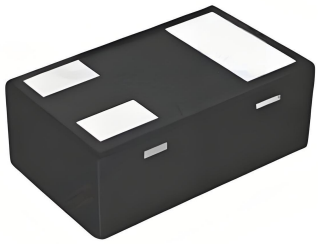
Low capacitance double bidirectional ESD protection diodes

The ECELCAD5VB device is characterized by their low capacitance, low operating and clamping voltages, and fast response time. This makes it ideal for use as board level protection of sensitive semiconductor components. The dual-junction common-anode design allows the user to protect two bidirectional lines.

It has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD(electrostatic discharge), CDE (Cable Discharge Events),and EFT (electrical fast transients).

Features

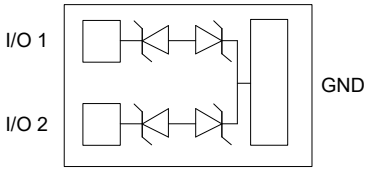
- Ultra small package(DFN1006) for use in portable electronics
- ESD protection of two lines
- Low leakage current
- Low clamping voltage
- Response Time is < 1 ns
- Working voltages :5V
- Solid-state silicon avalanche technology
- Device Meets MSL 1 Requirements
- ROHS compliant



DFN1006-3L

Main applications

- USB1.1/2.0 Data lines
- Industrial Controls
- Computers and peripherals
- Portable instrumentation
- Peripherals
- Notebook Computers
- Set-Top Box
- Projection TV
- Audio and video equipment
- Subscriber Identity Module (SIM) card protection



Ordering Information

Device	Qty per Reel	Reel Size
ECELCAD5VB	10000	7 Inch

Maximum ratings (Tamb=25℃ Unless Otherwise Specified)			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (tp=8/20μs waveform)	P_{PPP}	50	Watts
Peak pulse current (tp=8/20μs waveform)	I_{PP}	2	A
ESD Rating per IEC61000-4-2： Contact Air		8 15	KV
Lead Soldering Temperature	T_L	260 (10 sec.)	℃
Operating Temperature Range	T_J	-55 ~ 150	℃
Storage Temperature Range	T_{STG}	-55 ~ 150	℃

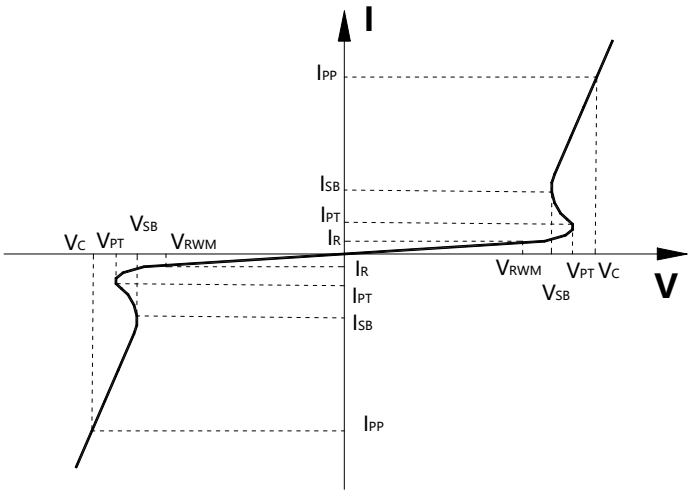
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

**Other voltages may be available upon request.*

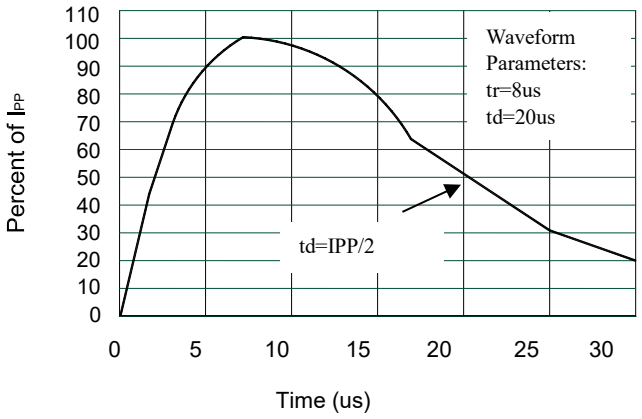
1. Non-repetitive current pulse, per Figure 1.

Electrical characteristics (Tamb=25℃ Unless Otherwise Specified)						
Symbol	**Parameter**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
V_{RWM}	Reverse Working Voltage	between I/O & GND pin			5.0	V
V_{PT}	Punch-Through Voltage	IT = 1mA, between I/O & GND pin	6.0		12	V
V_{SB}	Snap-Back Voltage	IT = 50mA, between I/O & GND pin	5.3		8.7	V
I_R	Reverse Leakage Current	V_{RWM} = 5V, between I/O & GND pin			100	nA
V_C	Clamping Voltage	I_{PP} = 2A, tp =8/20μs, any I/O pin to Ground		9.3	12	V
C_J	Junction Capacitance	V_R = 0V, f = 1MHz, between I/O & GND pin		2.8	3.0	pF
		V_R = 5V, f = 1MHz, between I/O & GND pin		1.7		pF
R_{dyn}	dynamic resistance	tp =8/20μs		1.4		Ω

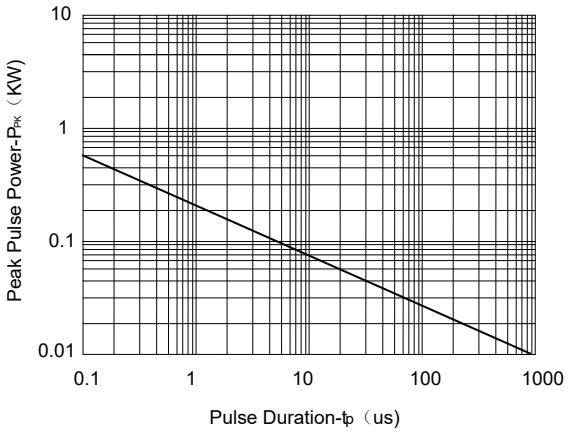
Symbol	Parameter
V_{RWM}	Working Peak Reverse Voltage
V_{PT}	Punch-Through Voltage@ I_{PT}
V_{SB}	Snap-Back Voltage@ I_{SB}
V_C	Clamping Voltage @ I_{PP}
I_T	Test Current
I_{RM}	Leakage current at V_{RWM}
I_{PP}	Peak pulse current
C_O	Off-state Capacitance
C_J	Junction Capacitance



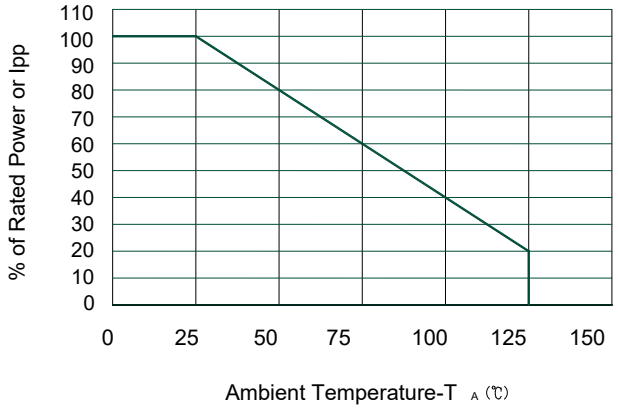
Typical electrical characterist applications



Pulse Waveform



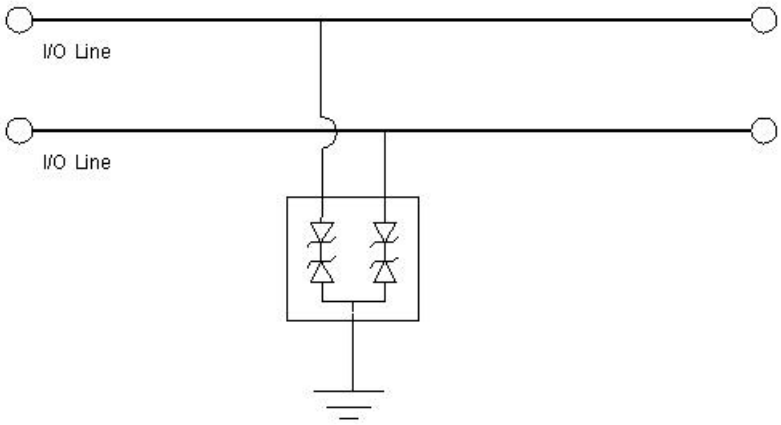
Non-Repetitive Peak Pulse Power vs. Pulse Time



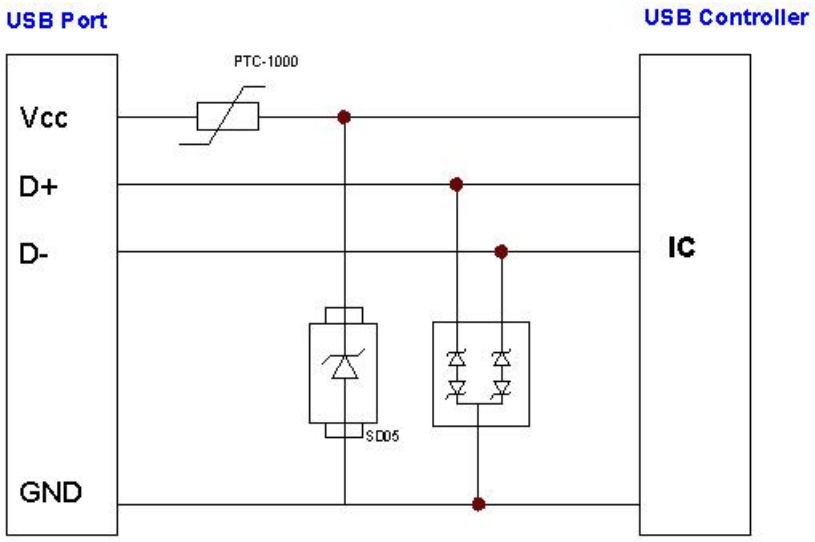
Power Derating Curve

Typical applications

The ECELCAD5VB is designed for the protection of up to two bidirectional data or signal lines from the damage caused by ESD and surge pulses. The device may be used on lines where the signal polarities are both, positive and negative with respect to ground.



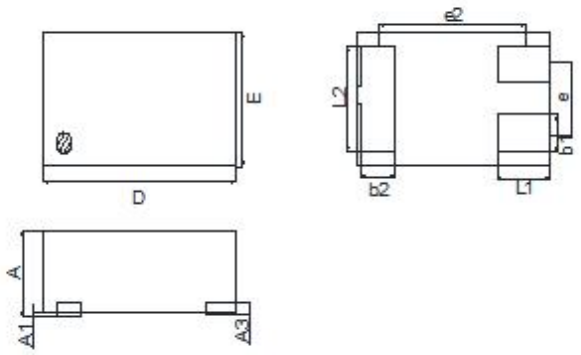
Two I/O Lines Bi-direction Protection



Two I/O Lines Bi-direction Protection

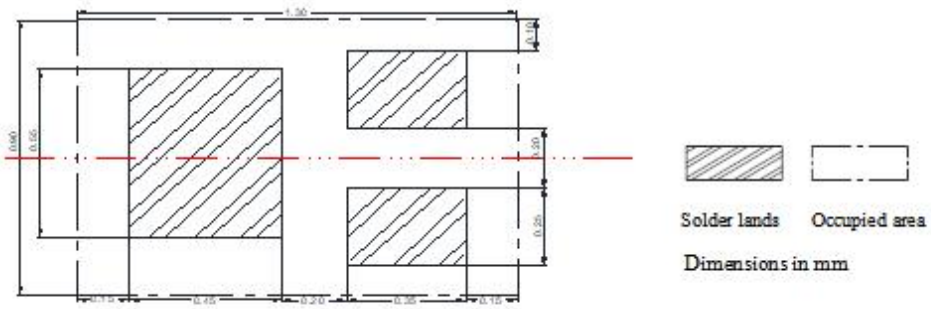
Package information

DFN1006-3L

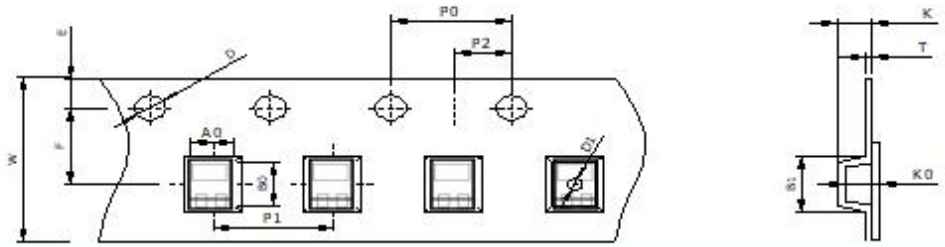


Dim	Millimeters	
	Min	Max
A	0.40	0.55
A1	0.01	0.10
A3	0.125REF	
D	0.95	1.05
E	0.55	0.65
b1	0.10	0.20
b2	0.20	0.30
L1	0.20	0.40
L2	0.40	0.60
e1	0.30	0.40
e2	0.675BSC	

Pad Layout



DFN1006-3L Reel Dim



Package	Chip Size (mm)	Pocket Size B0×A0×K0(mm)	Tape Width	Reel Diameter	Quantity Per Reel	P0	P1
DFN1006-3L	1.55×1.45×0.55	1.65×1.55×0.65	8mm	178mm(7")	10000	4mm	2mm
D0	D1	E	F	K	T	W	
1.5mm	-	1.75mm	3.5mm	0.60mm	0.3mm	8mm	