

## ECELCAB5VB

### Ultra-low Capacitance Bidirectional Micro Packaged TVS Diodes for ESD Protection

The ECELCAB5VB is designed with ECORE Punch-Through process TVS technology to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras and many other portable applications where board space comes at a premium. Also because of its low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed, USB 3.0 super speed, VGA, DVI, HDMI, eSATA and other high speed line applications.

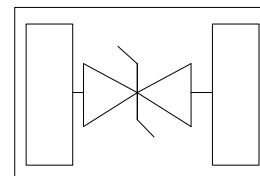
It has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD(electrostatic discharge), and EFT (electrical fast transients).

### Features

- Peak Power Dissipation – 80 W (8 x 20 us Waveform)
- Stand-off Voltage: 5.0 V
- Low capacitance (<0.5pF) for high-speed interfaces
- No insertion loss to 3.0GHz
- Replacement for MLV (0402)
- Protects I/O Port
- Low Clamping Voltage
- Low Leakage
- Low Capacitance
- Meets MSL 1 Requirements
- ROHS compliant
- **Solid-state Punch-Through TVS Process technology**



**DFN1006**



### Main applications

- High Speed Line :USB1.0/2.0/3.0/3.1, VGA, DVI, SDI,
- High Definition Multi-Media Interface (HDMI1.3/1.4/2.0)
- Serial and Parallel Ports
- Notebooks, Desktops, Servers
- Projection TV
- Cellular handsets and accessories
- Portable instrumentation
- Peripherals

### Protection solution to meet

- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)

### Ordering Information

Device	Marking	Qty per Reel	Reel Size
ECELCAB5VB	S	10000	7 Inch

Maximum ratings (Tamb=25°C Unless Otherwise Specified)			
Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8/20µs waveform)	P <sub>PPP</sub>	80	Watts
ESD Rating per IEC61000-4-2:	Contact	8	KV
	Air	15	
Lead Soldering Temperature	T <sub>L</sub>	260 (10 sec.)	°C
Operating Temperature Range	T <sub>J</sub>	-55 ~ 150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 ~ 150	°C
Lead Solder Temperature – Maximum (10 Second Duration)	T <sub>L</sub>	260	°C

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.

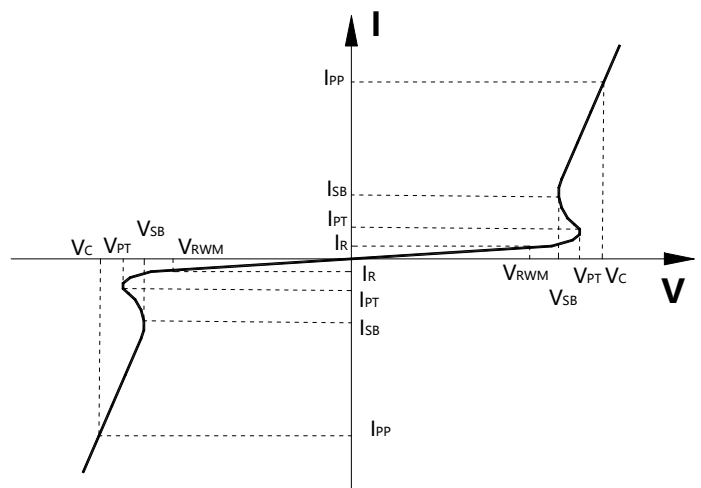
\*Other voltages may be available upon request.

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

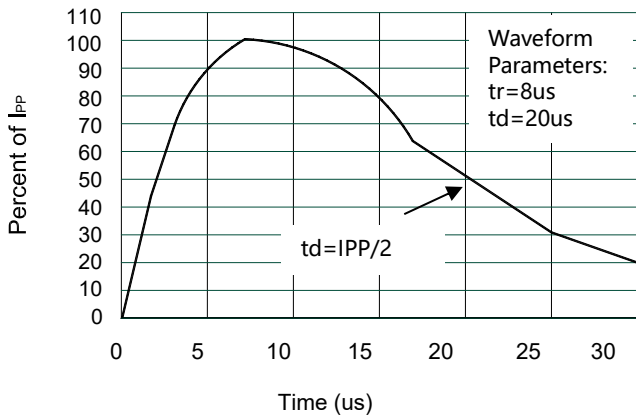
Electrical characteristics ( Tamb=25°C Unless Otherwise Specified)								
Device	V <sub>RWM</sub>	I <sub>R</sub> @ V <sub>RWM</sub>	V <sub>PT</sub> @ 1 mA		R <sub>dyn</sub>	V <sub>C</sub>	Capacitance	
			(Volts)		Ω	@ 1 A	@ V <sub>R</sub> = 0 V, 1 MHz (pF)	
	(V)	(µA)	Min	Max	Typ.	(V)	Typ	Max
ECELCAB5VB	5.0	1	6.0	10	1.4	15.0	0.3	0.5

Junction capacitance is measured in VR=0V,F=1MHz

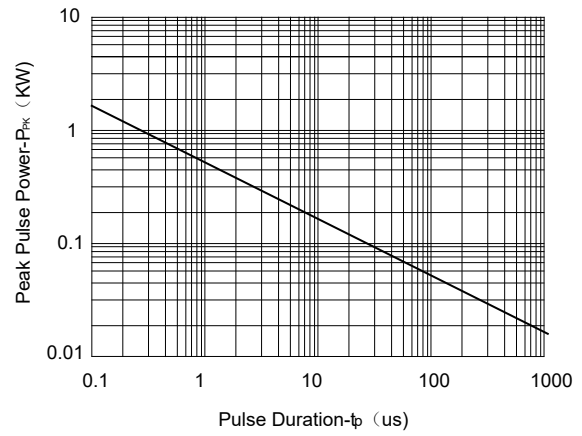
Symbol	Parameter
V <sub>RWM</sub>	Working Peak Reverse Voltage
V <sub>PT</sub>	Punch-Through Voltage@ I <sub>PT</sub>
V <sub>SB</sub>	Snap-Back Voltage@ I <sub>SB</sub>
V <sub>C</sub>	Clamping Voltage @ I <sub>PP</sub>
I <sub>T</sub>	Test Current
I <sub>RM</sub>	Leakage current at V <sub>RWM</sub>
I <sub>PP</sub>	Peak pulse current
C <sub>O</sub>	Off-state Capacitance
C <sub>J</sub>	Junction Capacitance



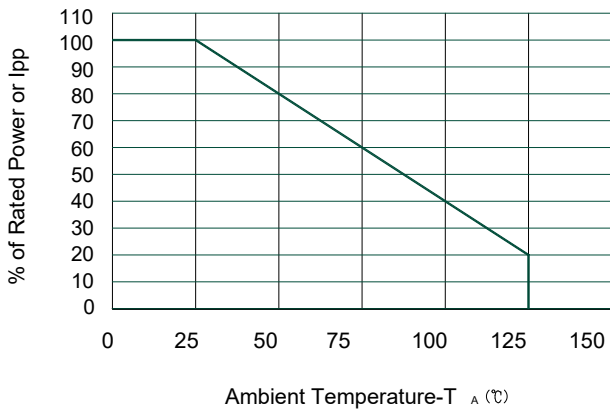
Typical electrical characterist applications



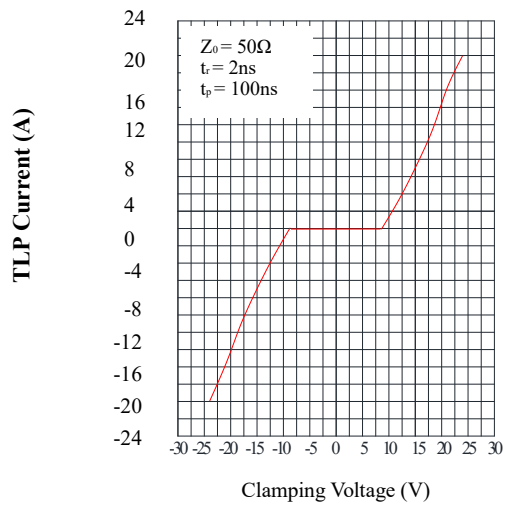
Pulse Waveform



Non-Repetitive Peak Pulse Power vs. Pulse Time



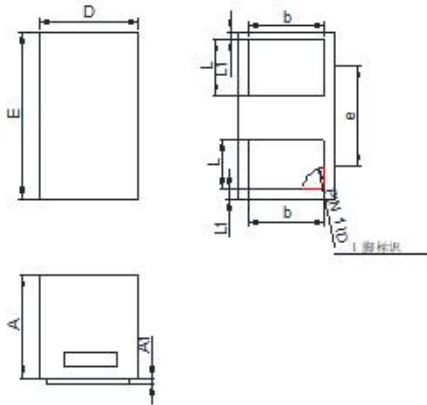
Power Derating Curve



TLP Measurement

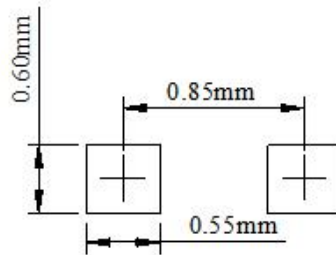
Package Information

DFN-1006

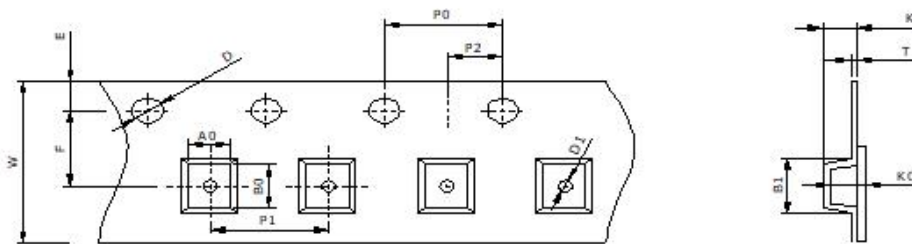


DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.30	0.50	0.012	0.020
A1	0.00	0.05	0.000	0.002
D	0.55	0.65	0.022	0.026
E	0.95	1.05	0.037	0.041
b	0.25	0.60	0.010	0.024
e	0.65TYP		0.026TYP	
L	0.15	0.35	0.006	0.014
L1	0.05REF		0.002REF	

Recommended Pad outline



DFN1006 Reel Dim



Package	Chip Size (mm)	Pocket Size B0×A0×K0(mm)	Tape Width	Reel Diameter	Quantity Per Reel	P0	P1
DFN1006	1.0×0.6×0.50	1.10×0.70×0.60	8mm	178mm(7")	5000/10000	4mm	4/2mm
D0	D1	E	F	K	T	W	
1.5mm	0.5mm	1.75mm	3.5mm	0.55mm	0.2mm	8mm	