

ECELCAB5VU

Ultra-Low Capacitance ESD Protection Diode

The ECELCAB5VU is an uni-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The ECELCAB5VU has an ultra-low capacitance with a typical value at 0.6pF, and complies with the IEC 61000-4-2 (ESD) with $\pm 25\text{kV}$ air and $\pm 20\text{kV}$ contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package. The small size, ultra-low capacitance and high ESD surge protection make ECELCAB5VU an ideal choice to protect cell phone, digital visual interfaces, HDMI, DVI, USB2.0, USB3.0, and other high speed ports.

Features

- Single-channel ESD protection
- Peak Power Dissipation – 80W (8 x 20 us Waveform)
- Protects I/O Port
- Ultralow capacitance 0.6pf
- Low Clamping Voltage
- Low Leakage
- Stand-off Voltage: 5.0V
- RoHS Compliant
- Meets MSL 1 Requirements
- Reliable silicon device avalanche breakdown Structure



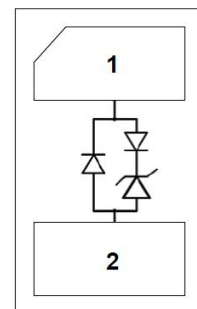
DFN1006

Main applications

- USB(2.0/3.0/3.1)
- Cell phone handsets and accessories
- Personal Digital Assistants (PDAs)
- Portable Instrumentation
- Digital Cameras
- MP3/MP4/PMP Players

Protection solution to meet

- IEC61000-4-2 (ESD) $\pm 20\text{ kV}$ (contact), $\pm 25\text{kV}$ (air)
- IEC61000-4-5 (Lightning) 5A (8/20us)



Ordering Information

Device	Package	Qty per Reel	Reel Size
ECELCAB5VU	DFN1006	10000	7 Inch

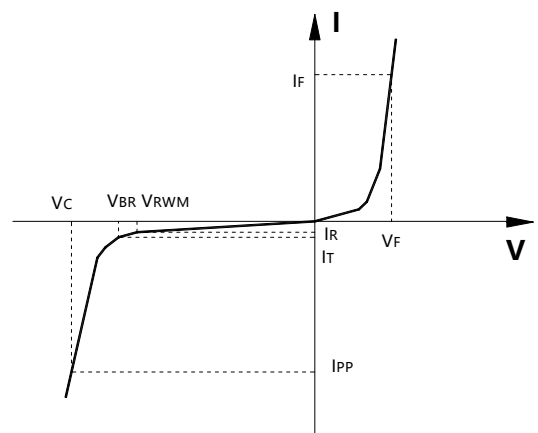
Maximum ratings (Tamb=25°C Unless Otherwise Specified)			
Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8/20µs waveform)	P _{PPP}	80	W
Peak Pulse Current (8/20µs)	I _{PP}	5	A
ESD Rating per IEC61000-4-2:	Contact Air	20	KV
		25	
Lead Soldering Temperature	T _L	260 (10 sec.)	°C
Operating Temperature Range	T _J	-55 ~ 125	°C
Storage Temperature Range	T _{STG}	-55 ~ 150	°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.

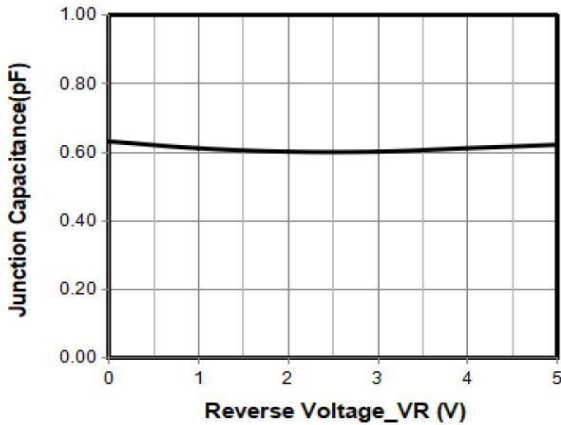
*Other voltages may be available upon request.

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			5.0	V	
Breakdown Voltage	V _{BR}	5.6			V	I _T = 1mA
Reverse Leakage Current	I _R			0.5	µA	V _{RWM} = 5.0V
Forward Voltage	V _F			1.2	V	I _F = 10mA
Clamping Voltage	V _C			10	V	I _{PP} = 1A (8 x 20µs pulse)
Clamping Voltage	V _C			16	V	I _{PP} = 5A (8 x 20µs pulse)
Junction Capacitance	C _J		0.6	0.8	pF	V _R = 0V, f = 1MHz

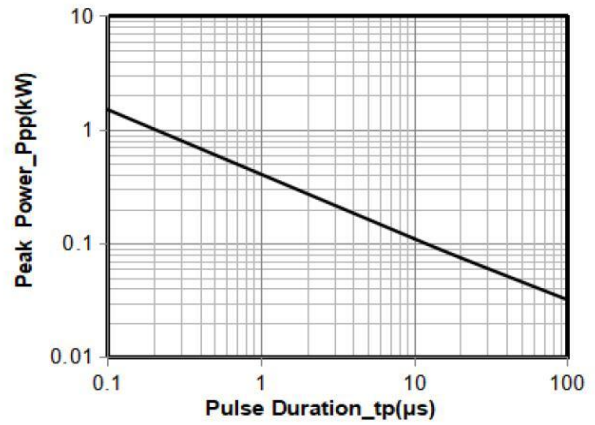
Symbol	Parameter
V _{RWM}	Working Peak Reverse Voltage
V _{BR}	Breakdown Voltage @ I _T
V _C	Clamping Voltage @ I _{PP}
I _T	Test Current
I _{RM}	Leakage current at V _{RWM}
I _{PP}	Peak pulse current
C _O	Off-state Capacitance
C _J	Junction Capacitance



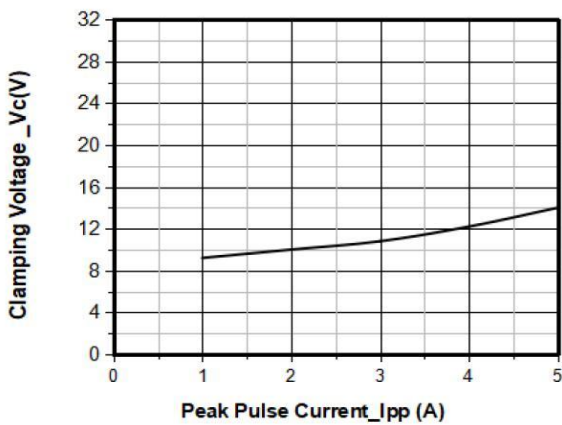
Typical electrical characterist applications



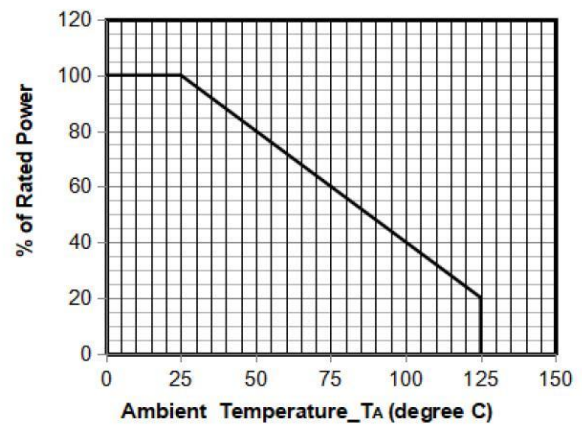
Junction Capacitance vs. Reverse Voltage



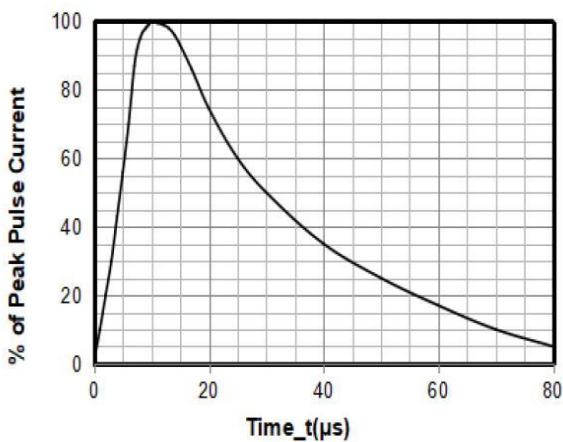
Peak Pulse Power vs. Pulse Time



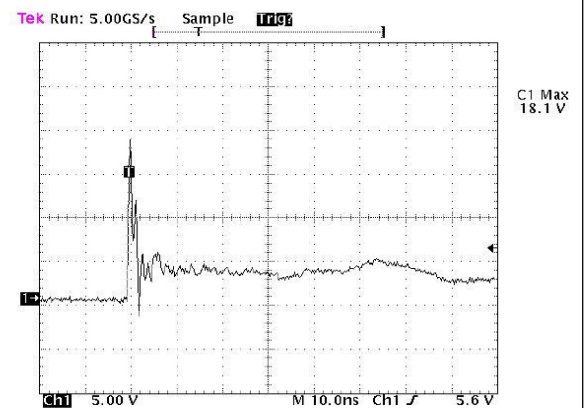
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform



Note: Data is taken with a 10x attenuator

ESD Clamping Voltage

8 kV Contact per IEC61000-4-2

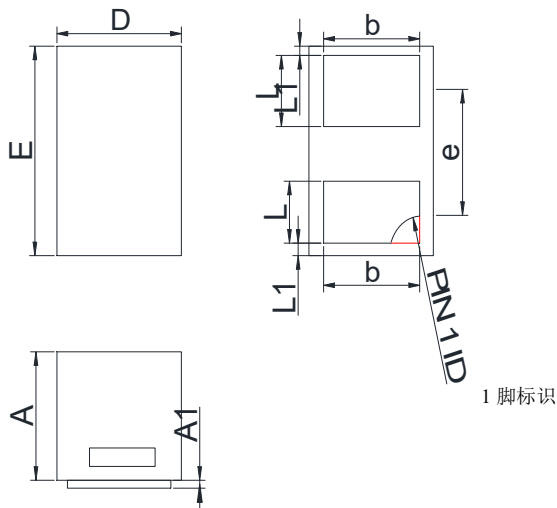
Package Information

DFN1006

Mechanical Data

Case:DFN1006

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters	
	Min	Max
A	0.30	0.50
A1	0.00	0.05
D	0.55	0.65
E	0.95	1.05
b	0.25	0.60
e	0.65TYP	
L	0.15	0.35
L1	0.05REF	

Recommended Pad outline

