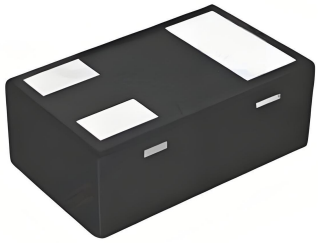
ECELCAD5VU

Ultra Low capacitance double Uni-directional ESD protection diodes

The ECELCAD5VU 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 ECELCAD5VU has an ultra-low capacitance with a typical value at 0.6pF, and complies with the IEC 61000-4-2 (ESD) with ±25kV air and ±20kV 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 ECELCAD5VU an ideal choice to protect cell phone, digital visual interfaces and other high speed ports. .

Features

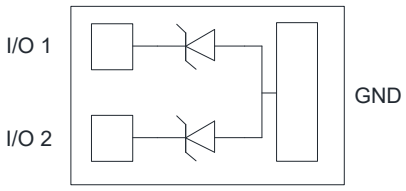
- Ultra small package(DFN1006) for use in portable electronics
- ESD protection of two lines
- Ultra Low leakage current
- Ultra low capacitance:0.5pF typical
- Working voltages :5.0V
- Solid-state silicon avalanche technology
- Device Meets MSL 1 Requirements
- ROHS compliant



DFN1006-3L

Main applications

- USB1.1/2.0/3.0/3.1 Data lines
- HDMI 2.0
- Industrial Controls
- Computers and peripherals
- Portable instrumentation
- Notebook Computers
- DVI
- Projection TV
- Audio and video equipment
- Subscriber Identity Module (SIM) card protection



Protection solution to meet

- IEC61000-4-2 (ESD)： ±25kV (air), ±20kV (contact)
- IEC61000-4-4 (EFT)：40A (5/50ns)

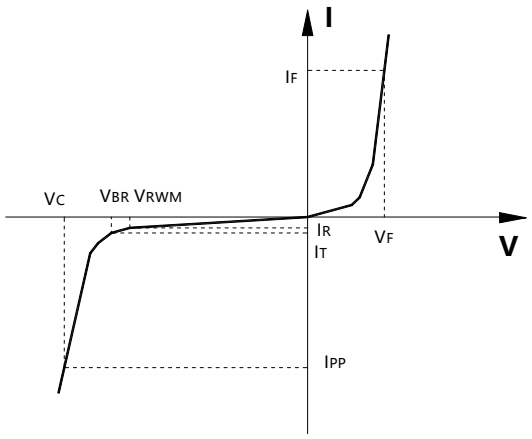
Ordering Information

Device	Qty per Reel	Reel Size
ECELCAD5VU	10000	7 Inch

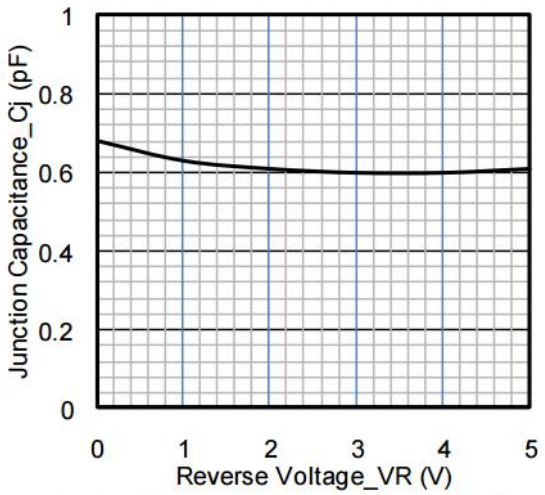
Maximum ratings (Tamb=25℃ Unless Otherwise Specified)			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (tp=8/20μs waveform)	P_{PPP}	75	Watts
Peak pulse current (tp=8/20μs waveform)	I_{PP}	5	A
ESD Rating per IEC61000-4-2： Contact Air		25 20	KV
Lead Soldering Temperature	T_L	260 (10 sec.)	℃
Operating Temperature Range	T_J	-55 ~ 125	℃
Storage Temperature Range	T_{STG}	-55 ~ 150	℃

Electrical characteristics (Tamb=25℃ Unless Otherwise Specified)						
Symbol	**Parameter**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
V_{RWM}	Reverse Working Voltage	any I/O pin to Ground			5.0	V
V_{BR}	Reverse Breakdown Voltage	I_T =1mA	6.0			V
I_{RM}	Reverse Leakage Current	V_{RWM} =5V			0.5	uA
V_C	Clamping Voltage	I_{PP}=1A, t_P=8/20μs;			10	V
		I_{PP}=5A, t_P=8/20μs;			15	V
C_J	Junction Capacitance	V_R = 0V, f = 1MHz between pin 1 and pin 2		0.4	0.6	pF
C_J	Junction Capacitance	V_R = 0V, f = 1MHz pin 1 or pin 2 to pin 3		0.8		pF

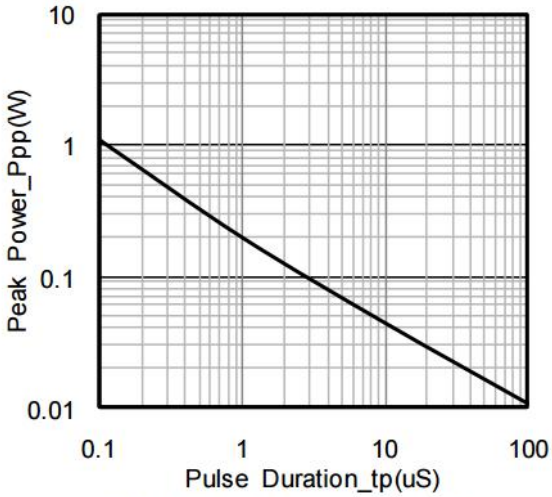
Symbol	Parameter
V_{RWM}	Working Peak Reverse Voltage
V_{BR}	Breakdown Voltage @ I_T
V_C	Clamping Voltage @ I_{PP}
I_T	Test Current
I_{RM}	Leakage current at V_{RWM}
I_{PP}	Peak pulse current
C_O	Off-state Capacitance
C_J	Junction Capacitance



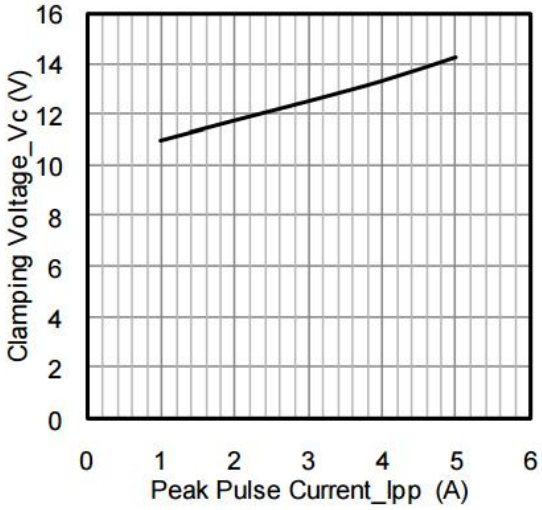
Typical electrical characterist applications



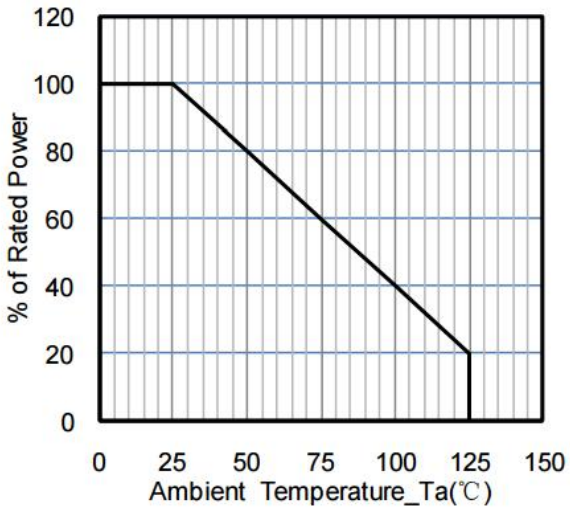
Junction Capacitance vs. Reverse Voltage



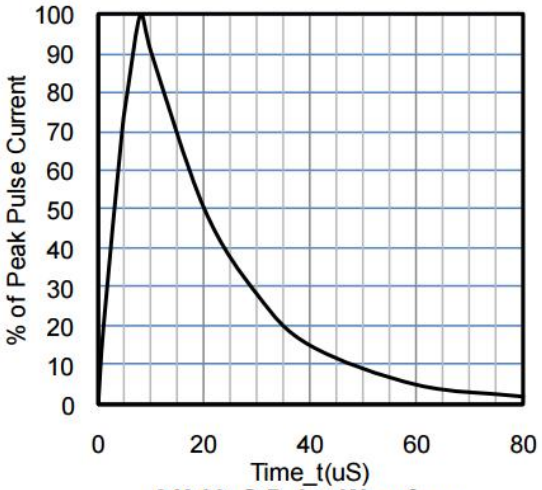
Peak Pulse Power vs. Pulse Time



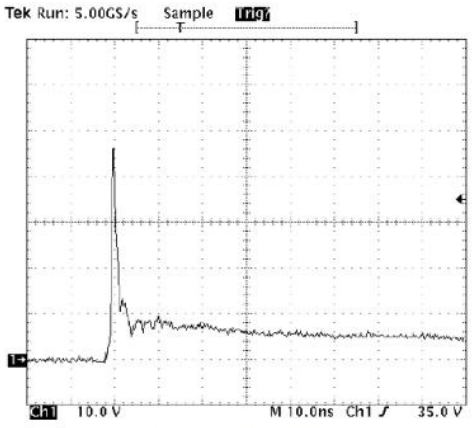
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20uS Pulse Waveform

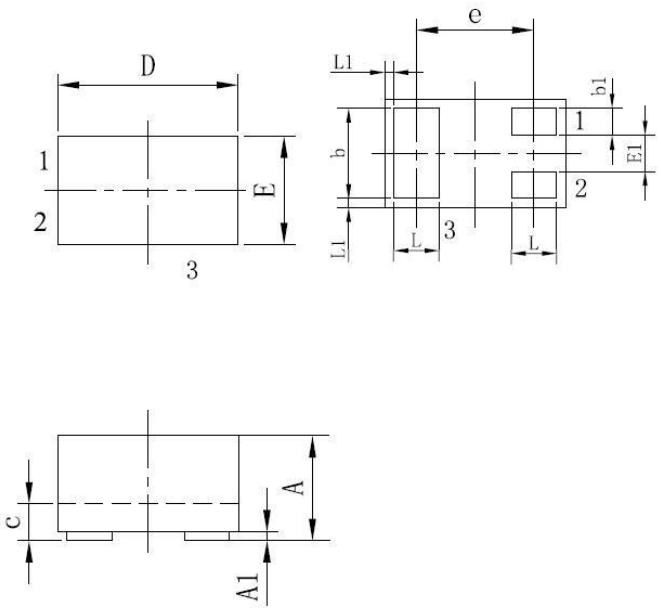


ESD Clamping Voltage

8 kV Contact per IEC61000−4−2

Package information

DFN1006-3L



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.45	0.50	0.55	0.018	0.020	0.022
b1	0.10	0.15	0.20	0.004	0.006	0.008
c	0.12	0.15	0.18	0.005	0.006	0.007
D	0.95	1.00	1.05	0.037	0.039	0.041
e	0.65 BSC			0.026 BSC		
E	0.55	0.60	0.65	0.022	0.024	0.026
E1	0.15	0.20	0.25	0.006	0.008	0.010
L	0.20	0.25	0.30	0.008	0.010	0.012
L1	0.05REF			0.002REF		