

ECELCJA50VU

Ultra Low Capacitance Array for USB3.0 ESD Protection

Features

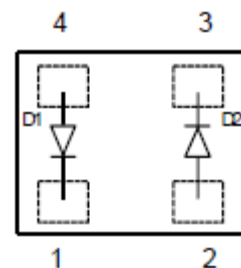
- Very low line capacitance:0.8pF @ 1GHz (0.4pF per diode)
- Ultra low series inductance:0.4nH per diode
- Working voltages : 50V
- Very low clamping voltage
- Ultra small leadless package 1.2*0.8*0.39mm
- Pb-free(RoHS compliant) package



Main applications

- For low RF signal levels without superimposed DC voltage :
e.g GPS, XM-Radio, Sirius, DVB, DMB, DAR, Remote Keyless Entry
- For high RF signal levels or low RF signal levels with superimposed DC voltage :e.g.HDMI,S-ATA,Gbit Ethernet

TSLP-4-7



Protection solution to meet

- IEC61000-4-2 (ESD) ±20kV (air), ±20kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 10A (8/20µs)

Ordering Information

Device	Marking	Qty per Reel	Reel Size
ECELCJA50VU	E8	15000	7 Inch

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

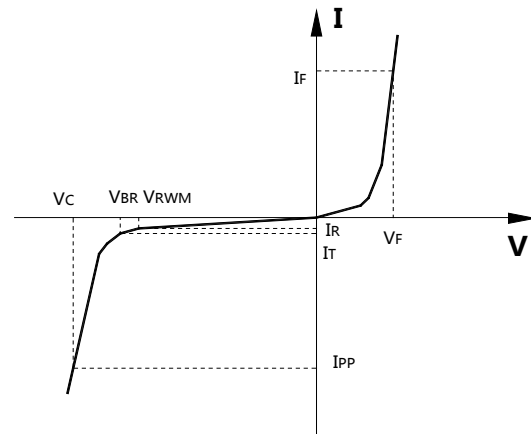
*Other voltages may be available upon request.

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

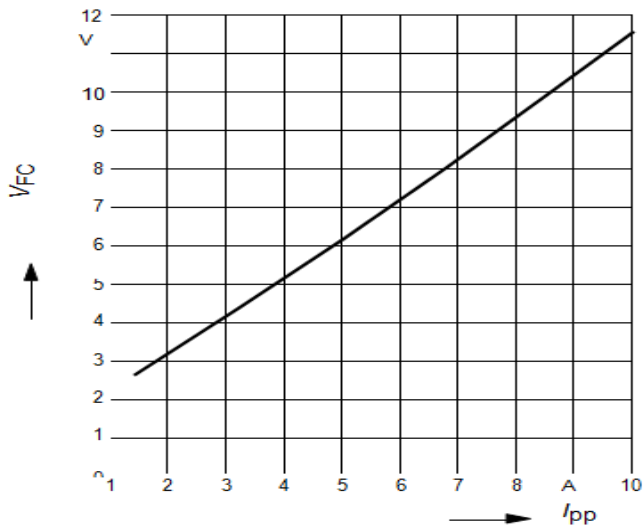
Electrical characteristics (Temp=25°C Unless Otherwise Specified)						
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V _{RWM}	Reverse Working Voltage	Any I/O to Ground			50	V
I _R	Reverse Leakage Current	V _{RWM} = 5V, Any I/O to Ground			100	nA
V _{FC}	Forward clamping voltage	I _{pp} =10A		12	15	V
L _S	Series inductance (per diode)			0.4		nH
C _T	Line capacitance	V _R = 0V, f = 1GHz		0.8		pF

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

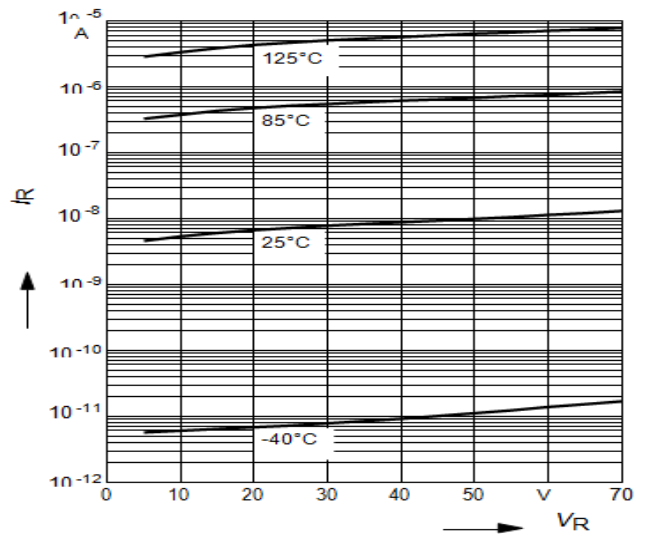
Symbol	Parameter
V _{RWM}	Working Peak Reverse Voltage
V _{BR}	Breakdown Voltage @ I _T
V _C	Clamping Voltage @ I _{PP}
I _T	Test Current
I _{RM}	Leakage current at V _{RWM}
I _{PP}	Peak pulse current
C _O	Off-state Capacitance
C _J	Junction Capacitance



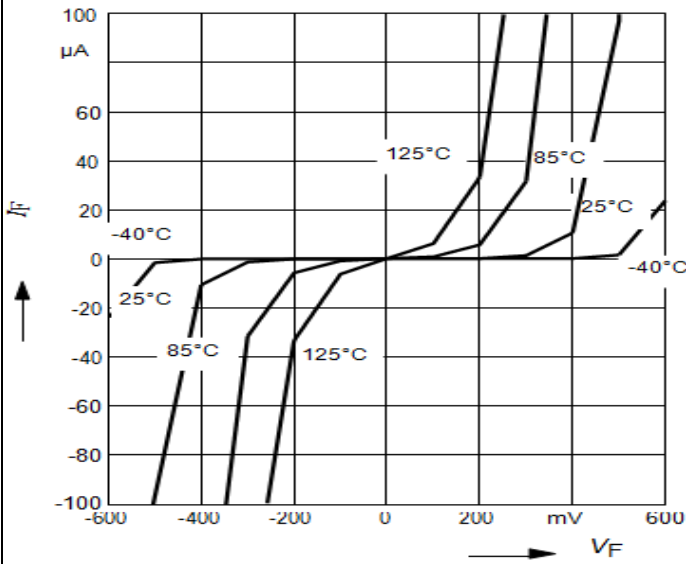
Typical electrical characterist applications



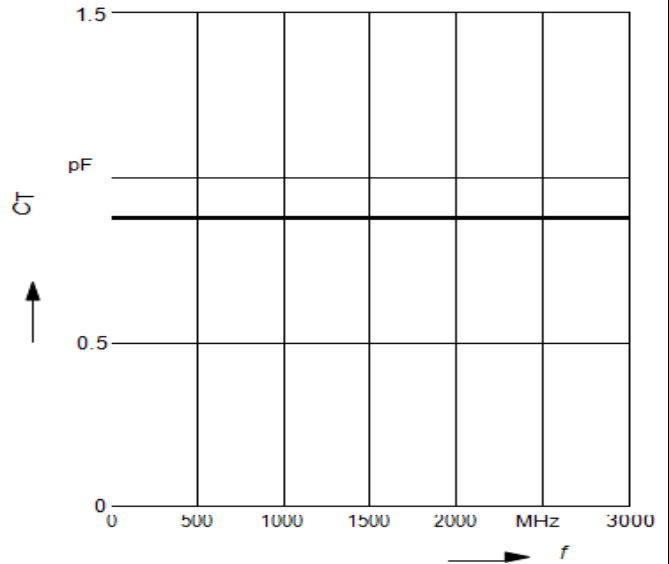
Forward clamping voltage $V_{FC}=f(I_{pp})$ $t_p=8/20\mu s$



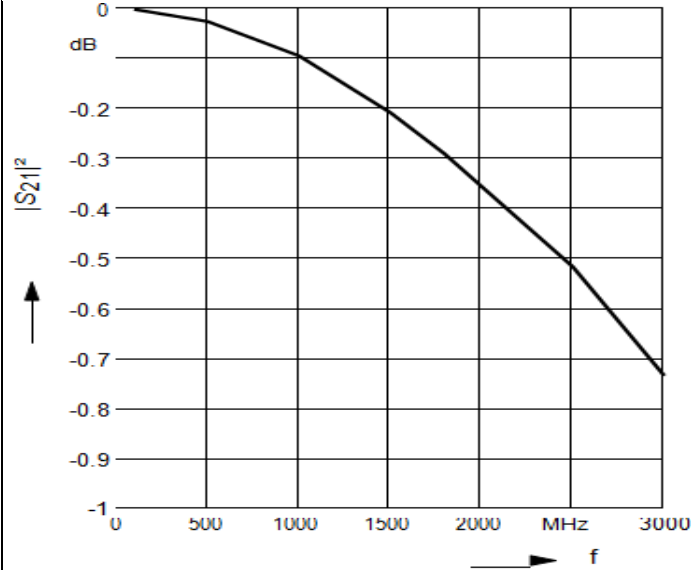
Reverse current $I_R=f(V_R)$ $T_A=Parameter$



Forward current $I_F=f(V_F)$ $T_A=Parameter$

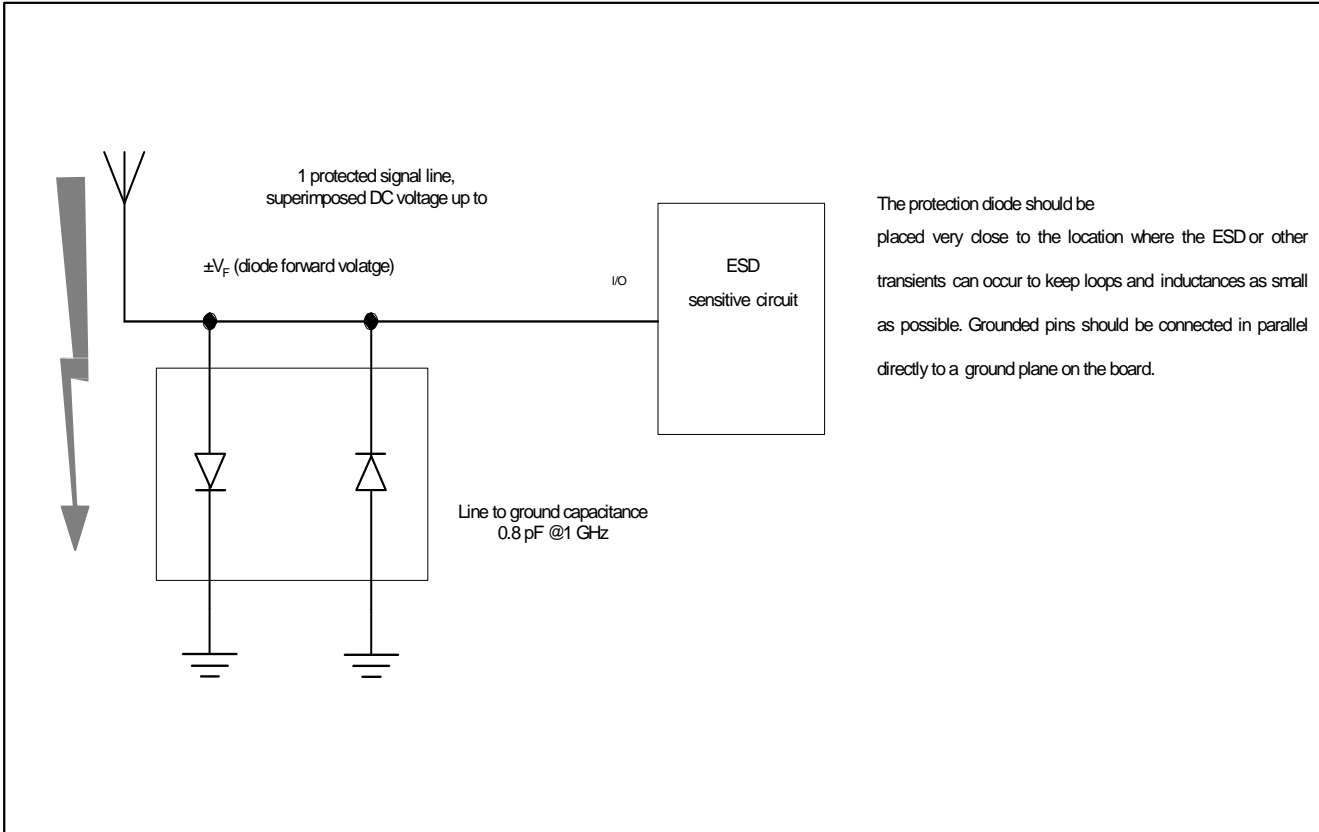


Line capacitance $C_T=f(f)$ $V_R=0V$

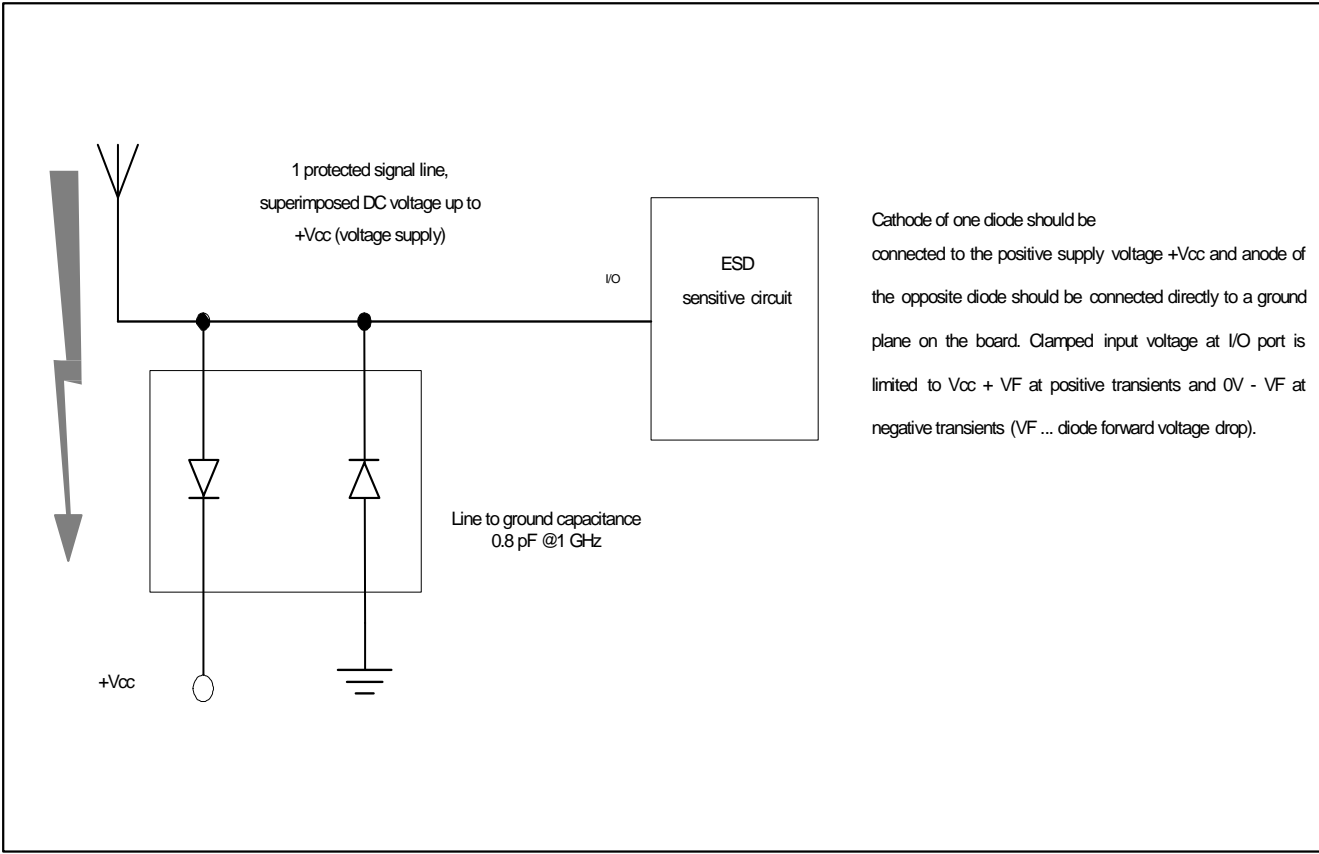


Insertion loss $I_L=- |S_{21}|^2=f(f)$ $V_R=0V, Z=50 \Omega$

Typical electrical characterist applications



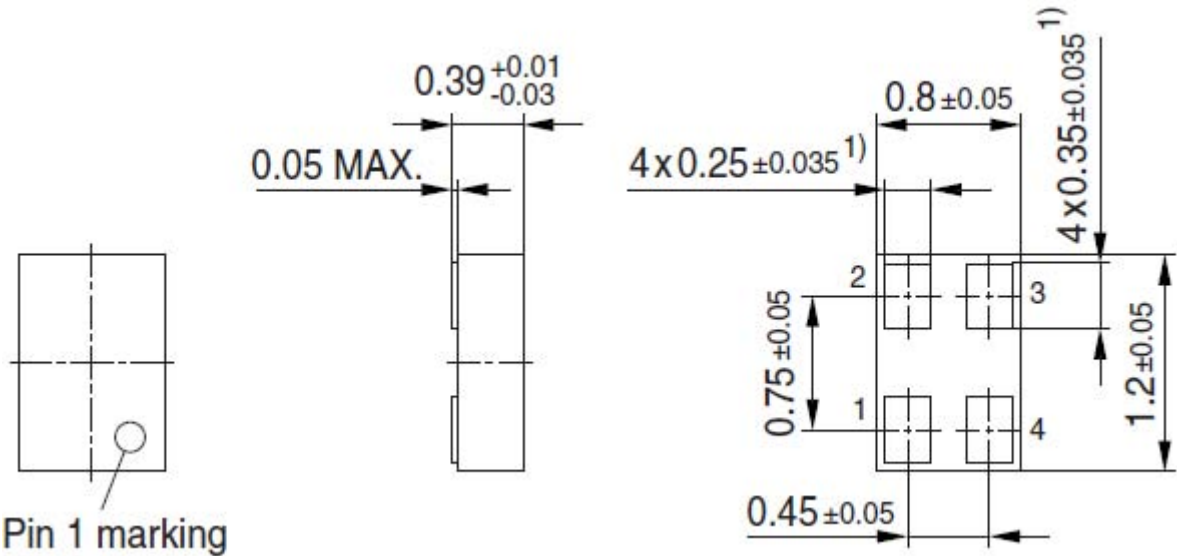
The protection diode should be placed very close to the location where the ESD or other transients can occur to keep loops and inductances as small as possible. Grounded pins should be connected in parallel directly to a ground plane on the board.



Cathode of one diode should be connected to the positive supply voltage $+V_{cc}$ and anode of the opposite diode should be connected directly to a ground plane on the board. Clamped input voltage at I/O port is limited to $V_{cc} + V_f$ at positive transients and $0V - V_f$ at negative transients (V_f ... diode forward voltage drop).

Package Information

TSLP-4-7



Recommended Pad outline

