ECELCBC5VU

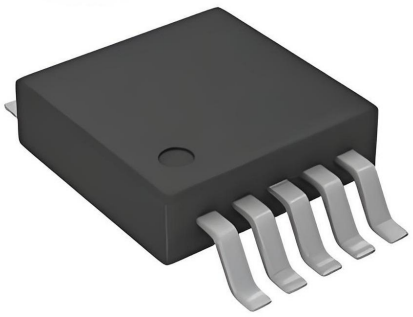
Ultra Low Capacitance Array for ESD Protection

The ECELCBC5VU provides a typical line to line capacitance of 0.30pF and low insertion loss up to 3GHz providing greater signal integrity making it ideally suited for USB 2.0 applications, such as Digital TVs, DVD players, Computing, set-top boxes and MDDI applications in mobile computing devices.

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

Features

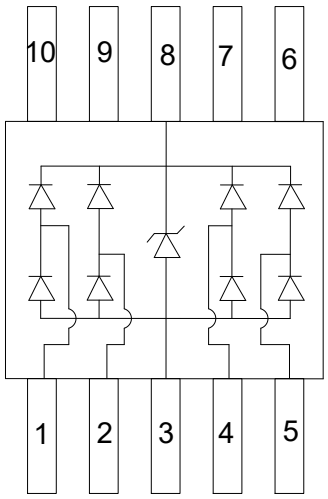
- Protects four I/O lines and one Vcc line
- Working voltages : 5V
- Low leakage current
- Low capacitance (<0.8pF) for high-speed interfaces
- No insertion loss to 3.0GHz
- Response Time is < 1 ns
- Meets MSL 1 Requirements
- Solid-state silicon avalanche technology
- ROHS compliant



MSOP-10

Main applications

- Digital Visual Interface (DVI)
- HDMI
- 10/100/1000 Ethernet
- USB 1.1/2.0/OTG
- IEEE 1394 Firewire Ports
- Projection TV Monitors and Flat Panel Displays
- Notebook Computers
- Set Top Box
- Projection TV



Protection solution to meet

- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 5A (8/20μs)

Ordering Information

Device	Qty per Reel	Reel Size
ECELCBC5VU	3000	7 Inch

Maximum ratings (Temp=25℃ Unless Otherwise Specified)			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (tp=8/20μs waveform)	P_{PPP}	150	Watts
Peak Pulse Current(tp=8/20μs waveform)	I_{PP}	5	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.

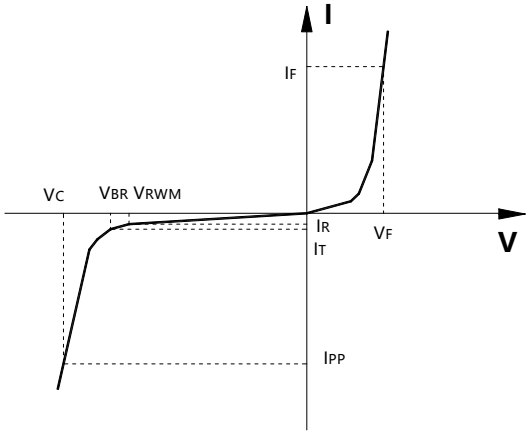
**Other voltages may be available upon request.*

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

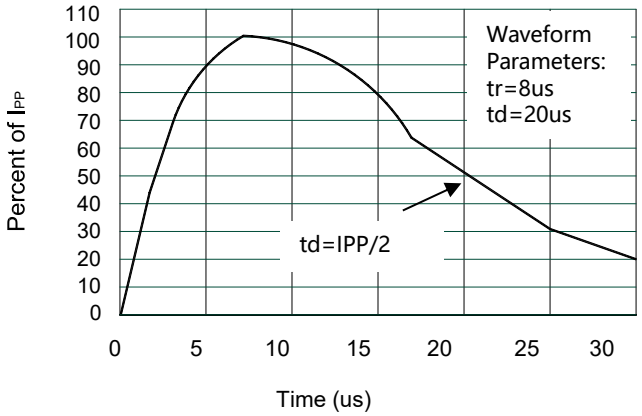
Electrical characteristics (Temp=25℃ Unless Otherwise Specified)						
Symbol	**Parameter**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
V_{RWM}	Reverse Working Voltage	Any I/O to Ground			5.0	V
V_{BR}	Reverse Breakdown Voltage	IT = 1mA, Any I/O to Ground	6.0			V
I_R	Reverse Leakage Current	V_{RWM} = 5V, Any I/O to Ground			1	μA
V_F	Diode Forward Voltage	IF = 15mA		0.85	1.2	V
V_C	Clamping Voltage	I_{PP} = 1A, tp =8/20μs, any I/O pin to Ground			15.5	V
		I_{PP} = 5A, tp =8/20μs, any I/O pin to Ground			25	V
I_{PP}	Peak Pulse Current	tp =8/20μs			5	A
C_J	Junction Capacitance	V_R = 0V, f = 1MHz, between I/O pins		0.30	0.45	pF
		V_R = 0V, f = 1MHz, any I/O pin to Ground		0.65	0.8	pF

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

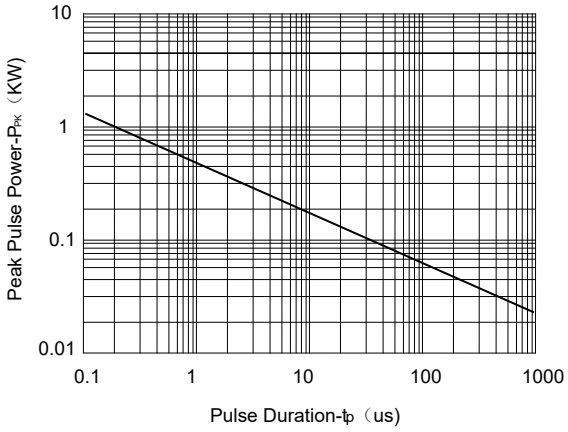
Symbol	Parameter
V_{RWM}	Working Peak Reverse Voltage
V_{BR}	Breakdown Voltage @ I_T
V_C	Clamping Voltage @ I_{PP}
I_T	Test Current
I_{RM}	Leakage current at V_{RWM}
I_{PP}	Peak pulse current
C_O	Off-state Capacitance
C_J	Junction Capacitance



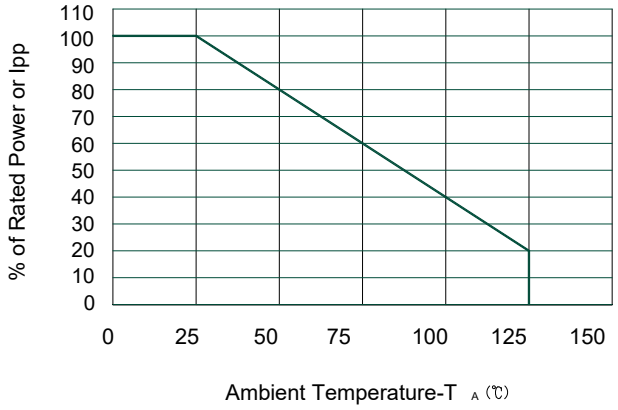
Typical electrical characterist applications



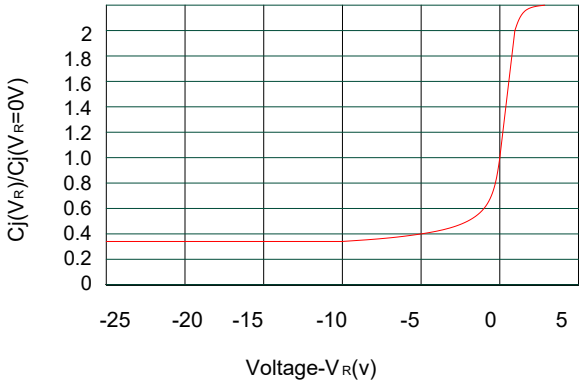
Pulse Waveform



Non-Repetitive Peak Pulse Power vs. Pulse Time



Power Derating Curve



Junction Capacitance vs. Reverse Voltage

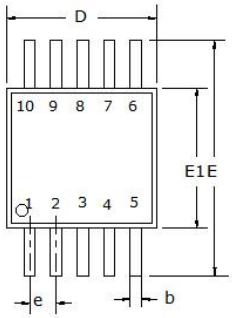
Package Information

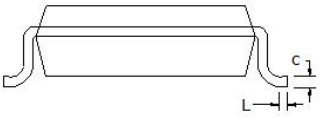
MSOP-10

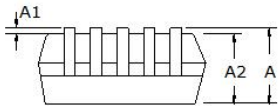
Mechanical Data

Case:MSOP-10

Case Material: Molded Plastic. UL Flammability







DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.180	0.280	0.007	0.011
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
E1	2.900	3.200	0.114	0.122
E	4.750	5.050	0.187	0.199
e	0.50(BSC)		0.020(BSC)	
L	0.400	0.800	0.016	0.031

Recommended Pad outline