

1. Description

The CSL05E2U is a low capacitance TVS (Transient Voltage Suppressor) array designed to protect high speed data interfaces. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD (Electrostatic Discharge).



2. Features

- IEC 61000-4-2 (ESD)
 - $\pm 10\text{kV}$ Contact Discharge
 - $\pm 15\text{kV}$ Air Discharge
- IEC 61000-4-5 (Lightning)
 - 4A (8/20 μs)
- IEC 61000-4-4 EFT Protection
 - 40A (5/50ns)
- Halogen free and RoHS compliant
- Protects two I/O lines
- Low clamping voltage
- Low capacitance
- Low leakage current

3. Mechanical Data

- USB 2.0
- HDMI 1.3 and HDMI 1.4
- SATA and eSATA
- PCI Express
- IEEE 1394
- Networks

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
CSL05E2U	SOT-23	R22	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5.Pin Configuration and Functions

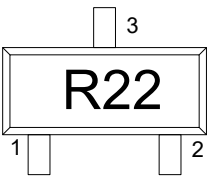
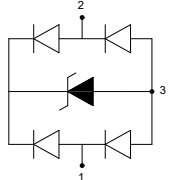
Pin	Name	Description	Outline	Circuit Diagram
1	IO	Connect to IO		
2	IO	Connect to IO		
3	GND	Connect to GND		

Table-2 Pin configuration

6. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20us)@25°C	P _{pk}	-	60	W
Peak pulse current (tp=8/20us)@25°C	I _{PP}		4	A
ESD (IEC61000-4-2 air discharge) @25°C	V _{ESD}	-	±15	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V _{ESD}	-	±10	kV
Junction temperature	T _J	-	125	°C
Operating temperature	T _{OP}	-40	125	°C
Storage temperature	T _{STG}	-55	150	°C
Lead temperature	T _L	-	260	°C

Table-3 Absolute Maximum rating

7. Electrical Characteristics

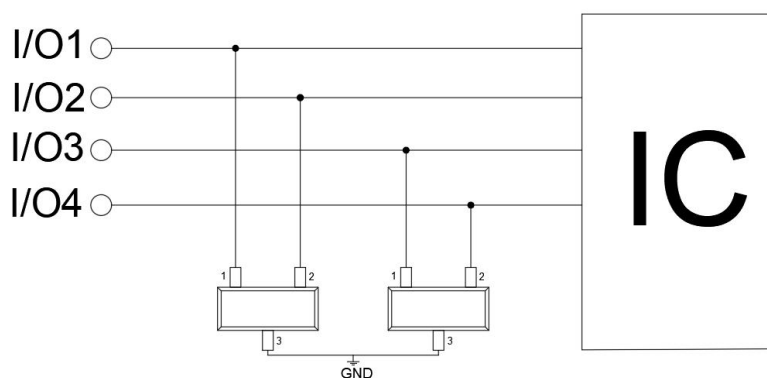
At TA = 25°C unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				5	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$	6			V
Reverse Leakage Current	I_R	$V_{RWM}=5V$			1	μA
Clamping Voltage	V_C	$I_{PP}=1A$; $t_p=8/20\mu s$		10		V
Clamping Voltage	V_C	$I_{PP}=4A$; $t_p=8/20\mu s$		15		V
Junction Capacitance	C_J	$V_R=0V$; $f=1MHz$		0.5		pF

Table-4 Electrical Characteristics

8. Typical Application

Typical Interface Application



9. Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Figure 1. Pulse rating curve

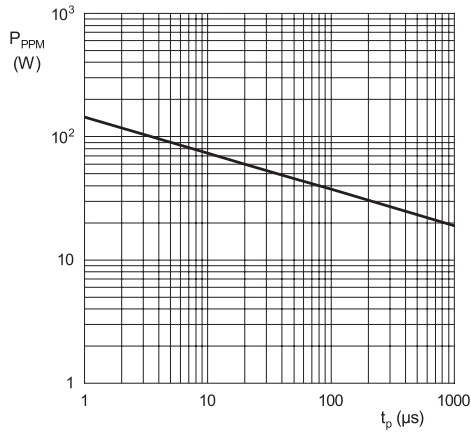


Figure 2 Peak pulse power derating curve

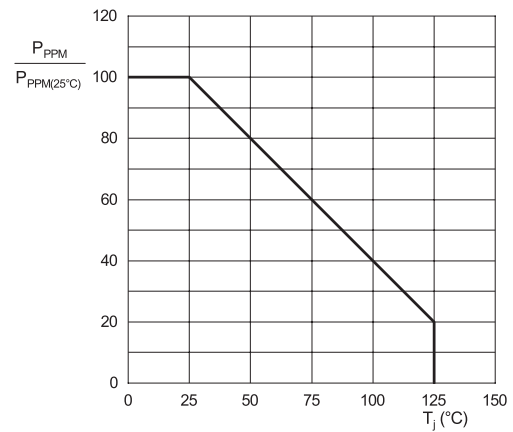


Figure 3 Pulse waveform

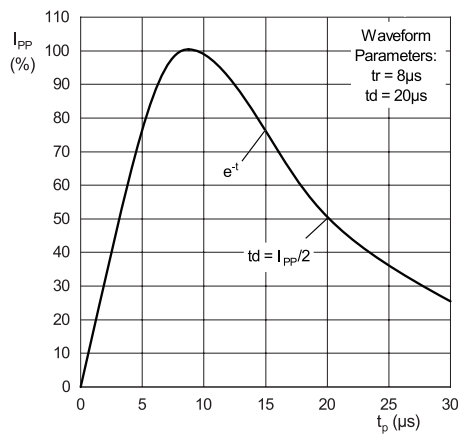


Figure 4 Clamping voltage vs Peak pulse current

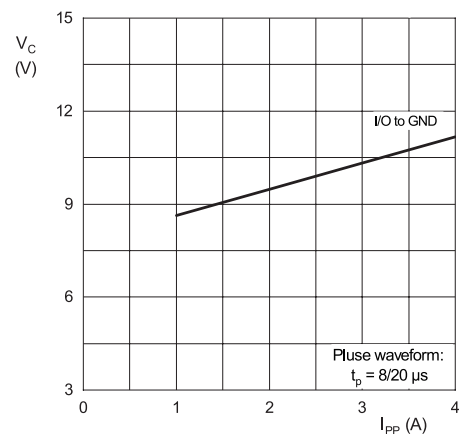


Figure 5 Capacitance vs Reverse voltage

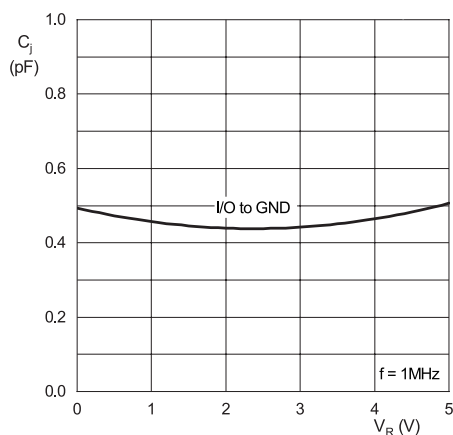
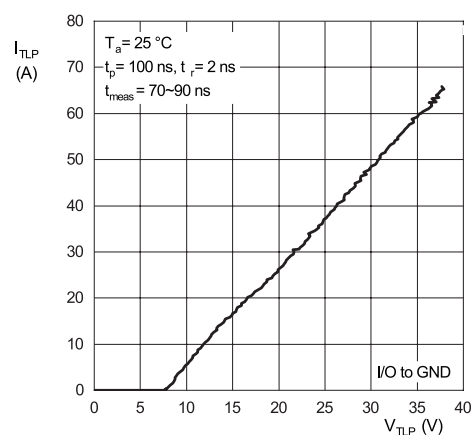
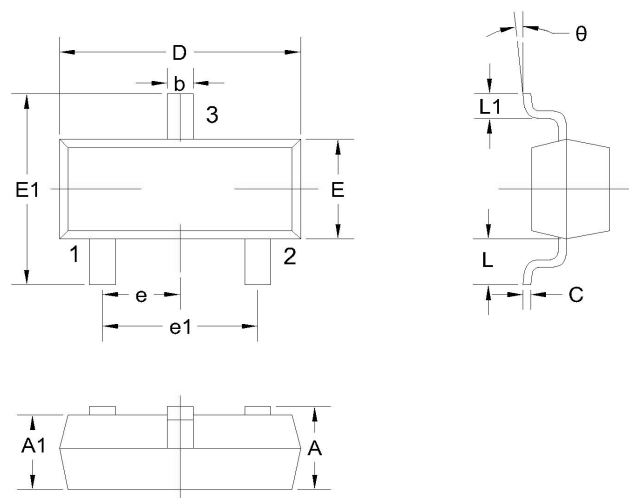


Figure 6 TLP I-V Curve



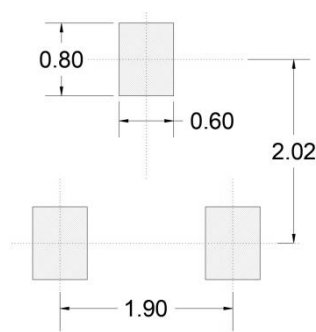
10.Dimension



Dimensions in Millimeters					
Symbol	Min.	Max.	Symbol	Min.	Max.
A	0.9	1.15	e1	1.80	2.00
A1	0.9	1.05	L	0.55REF	
b	0.30	0.50	L1	0.30	0.50
C	0.08	0.15	θ	0°	8°
D	2.80	3.00			
E	1.20	1.40			
E1	2.25	2.55			
e	0.95TYP				

Table-5 Product dimensions

11.Recommended Land Pattern



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only

12.Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	8-Nov-2021