

Description

The CSL05D4U is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time. The CSL05D4U suited for use in USB 2.0, Firewire, DVI, and Gigabit Ethernet Interfaces.



Mechanical Characteristics

- ◆ SOT-23-6L
- ◆ ROHS/ Compliant
- ◆ Halogen free
- ◆ Molding compound flammability rating: UL 94V-0
- ◆ Marking: Part number
- ◆ Packing: Tape and Reel per EIA 481

Features

- ◆ IEC 61000-4-2 (ESD)
 - ±12kV Contact Discharge
 - ±17kV Air Discharge
- ◆ IEC 61000-4-5 (Lightning)
 - 4.5A (8/20us)
- ◆ IEC 61000-4-4 EFT Protection
 - 40A (5/50ns)
- ◆ Protects 4 I/O lines and one Vcc line
- ◆ Low clamping voltage
- ◆ Low leakage current

Applications

- ◆ Projection TV & Monitors
- ◆ Digital Visual Interface (DVI)
- ◆ USB 2.0
- ◆ Set-top box
- ◆ IEEE 1394 Firewire Ports
- ◆ Notebooks & Handhelds
- ◆ Flat Panel Displays
- ◆ PCI Express

Pin Configuration

Pin	Name	Description	Outline	Circuit Diagram
1	IO1	Connect to I/O		
2	GND	Connect to GND		
3	IO2	Connect to I/O		
4	IO3	Connect to I/O		
5	Vcc	Connect to Vcc		
6	IO4	Connect to I/O		

Ordering Information

Part Number	Package	Marking	Packing	Reel Size
CSL05D4U	SOT-23-6L	.V05	3000/Tape & Reel	7 inch

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power ($t_p=8/20\mu\text{s}$)@ 25°C	P_{pk}	-	60	W
Peak pulse current ($t_p=8/20\mu\text{s}$)@ 25°C	I_{pp}		4.5	A
ESD (IEC61000-4-2 air discharge) @ 25°C	V_{ESD}	-	± 17	kV
ESD (IEC61000-4-2 contact discharge) @ 25°C	V_{ESD}	-	± 12	kV
Junction temperature	T_J	-	125	$^\circ\text{C}$
Operating temperature	T_{OP}	-40	125	$^\circ\text{C}$
Storage temperature	T_{STG}	-55	150	$^\circ\text{C}$
Lead temperature	T_L	-	260	$^\circ\text{C}$

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				5	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1\text{mA}$	6			V
Reverse Leakage Current	I_R	$V_{RWM}=5\text{V}$			1	μA
Clamping Voltage	V_C	$I_{pp}=1\text{A}$; $t_p=8/20\mu\text{s}$		9		V
Clamping Voltage	V_C	$I_{pp}=4.5\text{A}$; $t_p=8/20\mu\text{s}$		12		V
Junction Capacitance	C_J	I/O to GND; $V_R=0\text{V}$; $f=1\text{MHz}$		0.6		pF
Junction Capacitance	C_J	I/O to IO; $V_R=0\text{V}$; $f=1\text{MHz}$		0.3		pF

Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)

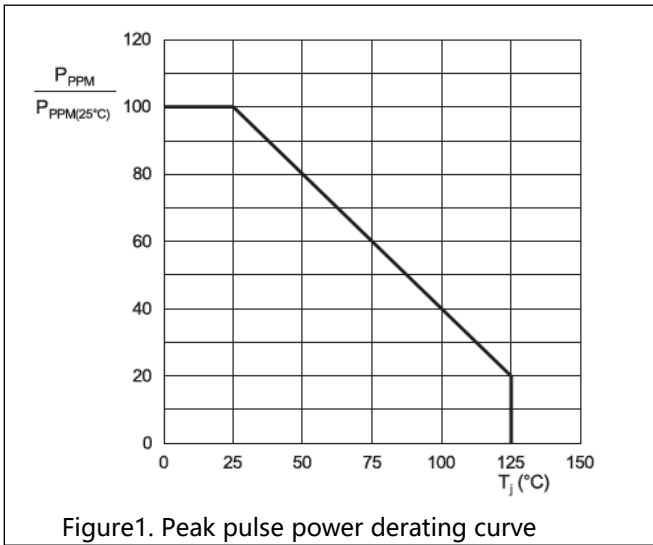


Figure1. Peak pulse power derating curve

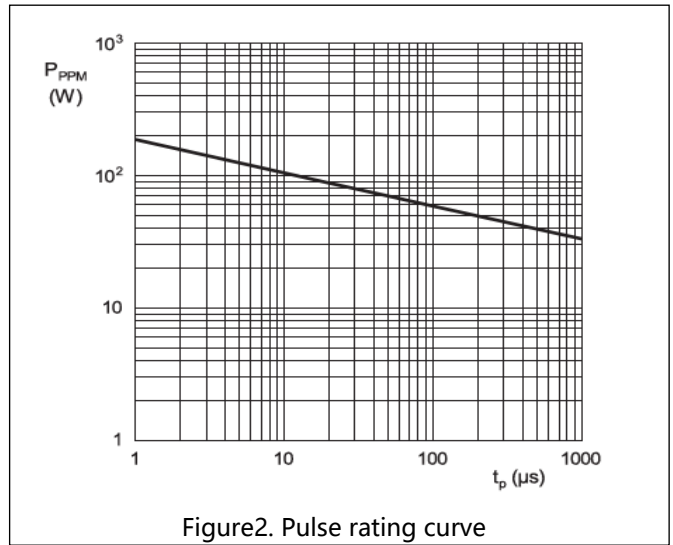


Figure2. Pulse rating curve

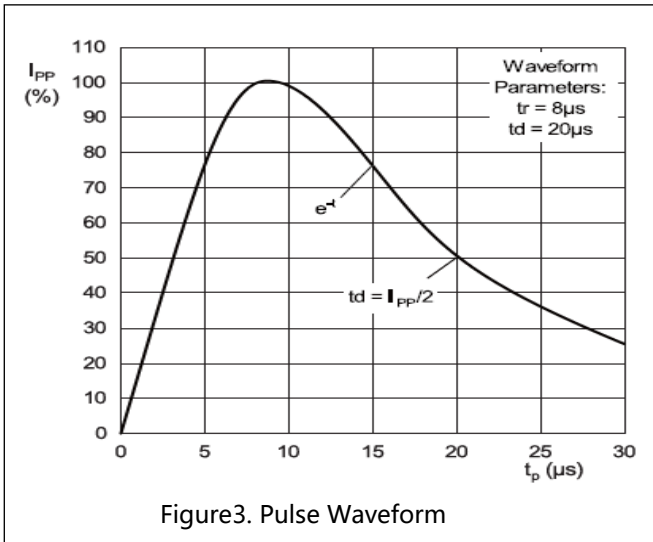


Figure3. Pulse Waveform

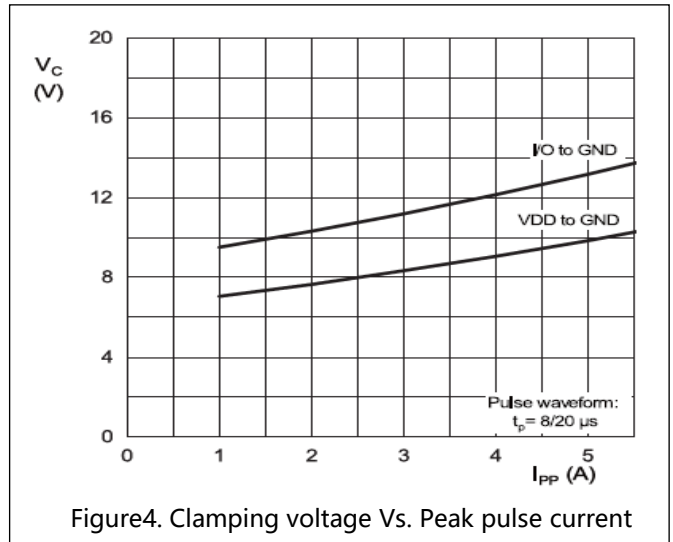


Figure4. Clamping voltage Vs. Peak pulse current

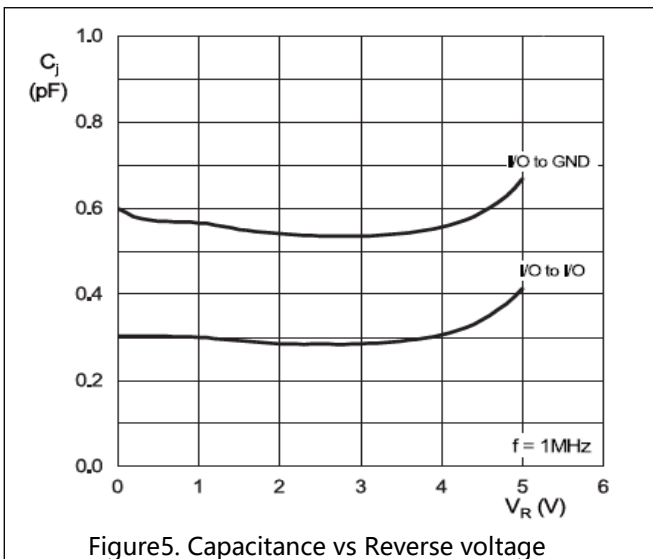


Figure5. Capacitance vs Reverse voltage

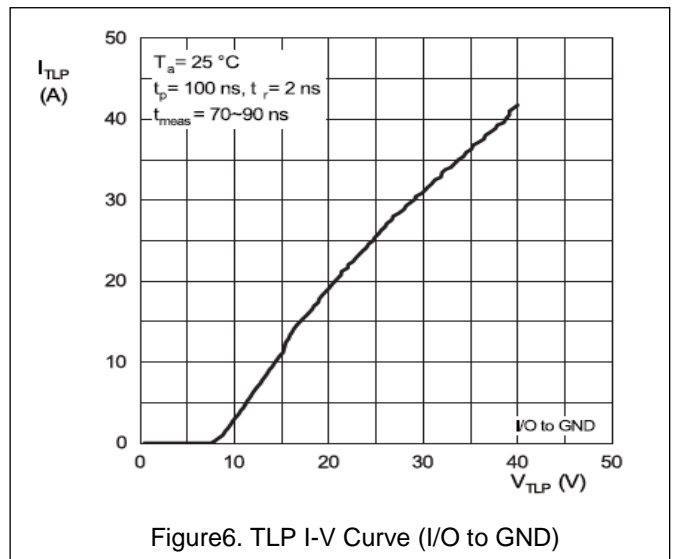
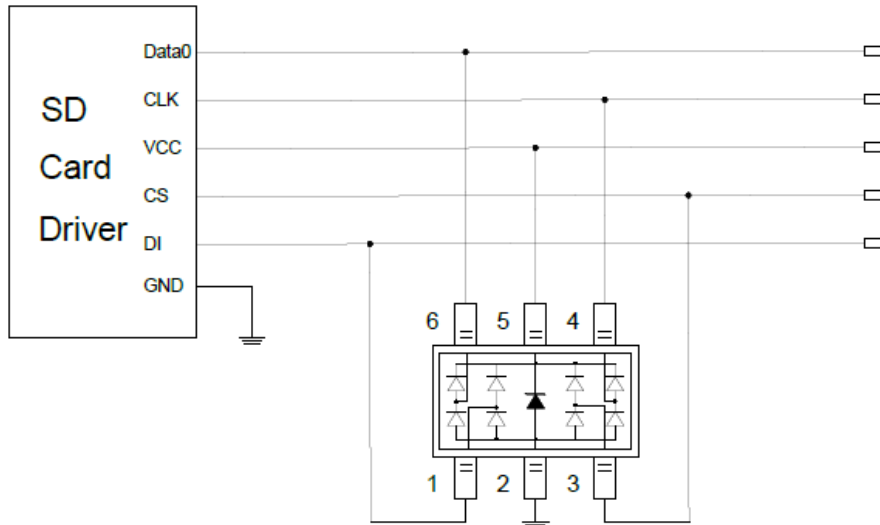


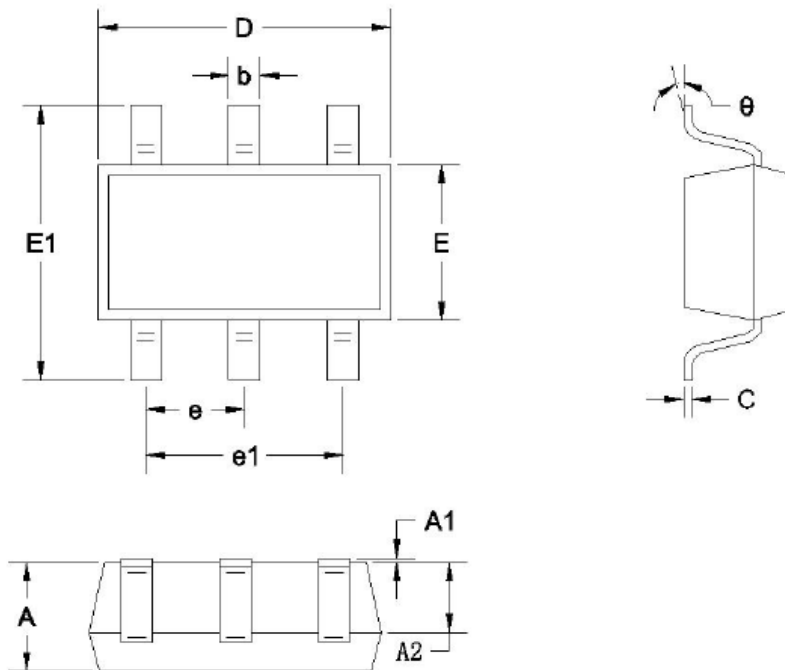
Figure6. TLP I-V Curve (I/O to GND)

Applications Information

Typical Interface application

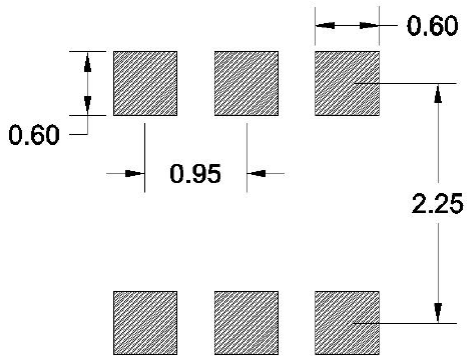


Package Outline Drawing



Dimensions in Millimeters							
Symbol		A	A1	A2	b	c	D
Spec	Min	1.050	0.000	1.050	0.300	0.100	2.820
	Max	1.250	0.100	1.150	0.500	0.200	3.020
Symbol		E	E1	e	e1	L	θ
Spec	Min	1.500	2.650	0.950BSC	1.800	0.300	0°
	Max	1.700	2.950		2.000	0.600	0°

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

Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	26-May-2022

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