SSCE12V12L1

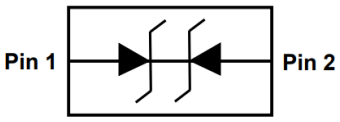
1-Line Ultra Low Capacitance Bi-directional TVS Diode

Description

The SSCE12V12L1 is a bi-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 SSCE12V12L1 has an ultra-low capacitance with a typical value at 0.3pF, and complies with the IEC 61000-4-2 (ESD) standard with ±25kV air and ±22kV contact discharge. It is assembled into an ultra-small 0.6x0.3x0.3mm lead-free DFN package. The small size, ultra-low capacitance and high ESD surge protection make SSCE12V12L1 an ideal choice to protect cell phone, digital video interfaces, HDMI, DVI, USB2.0, USB3.0, and other high-speed ports.

PIN configuration



Top View

Marking

Feature

- 100W peak pulse power (t_P = 8/20μs)
- DFN0603-2L Package
- Working voltage: 12V
- Low clamping voltage
- Low capacitance：0.3pF typical
- Low leakage current
- RoHS compliant
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±25kV
    - Contact discharge: ±22kV
  - – IEC61000-4-5 (Lightning) 3A (8/20μs)

Applications

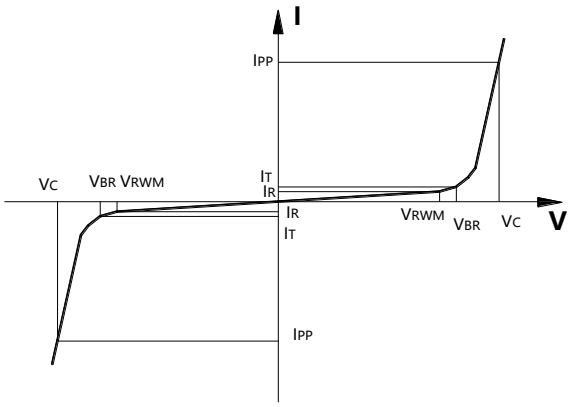
- DVI & HDMI Port Protection
- USB Ports
- SATA and eSATA
- Serial and Parallel Ports
- Display Ports
- MDDI Ports
- Notebooks, Desktops, Servers

Mechanical data

- Lead finish:100% matte Sn (Tin)
- Mounting position: Any
- Qualified max reflow temperature:260℃
- Device meets MSL 3 requirements
- Pure tin plating: 7 ~ 17 um
- Pin flatness: ≤3mil

Electronic Parameter

Symbol	Parameter
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
P_{PP}	Peak Pulse Power
C_J	Junction Capacitance



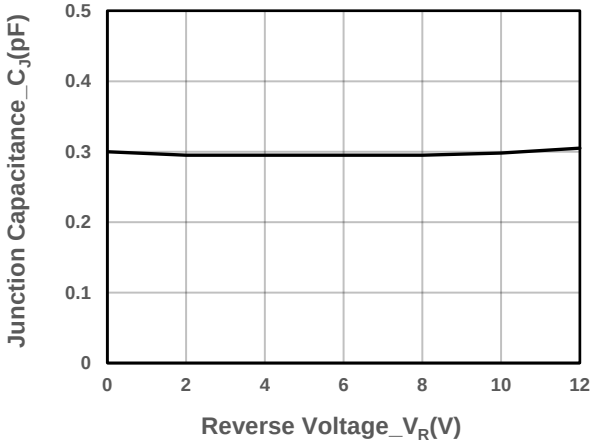
Absolute maximum rating (T_A=25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Peak Pulse Power（8/20μs）		P_{PP}	100	W
Peak Pulse Current（8/20μs）		I_{PP}	3	A
ESD Rating per IEC61000-4-2：	Contact	V_{ESD}	22	kV
	Air		25	
Storage Temperature		T_{STG}	-55/+150	℃
Operating Temperature		T_J	-55/+125	℃

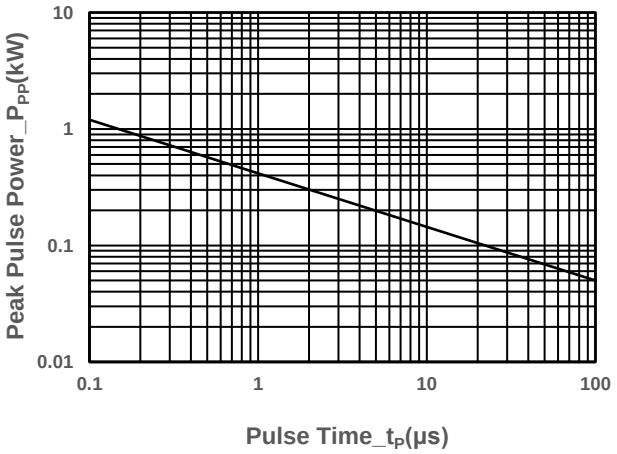
Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Reverse Working Voltage	V_{RWM}				12	V
Breakdown Voltage	V_{BR}	I_T = 1mA	13.3			V
Reverse Leakage Current	I_R	V_{RWM} = 12V			0.2	μA
Clamping Voltage	V_C	I_{PP} = 1A, t_P = 8/20μs			21	V
Clamping Voltage	V_C	I_{PP} = 3A, t_P = 8/20μs			33	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz		0.3	0.5	pF

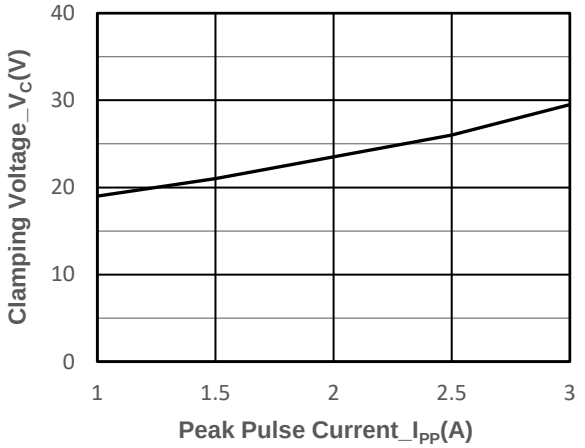
● Typical Performance Characteristics (T_A=25℃ unless otherwise noted)



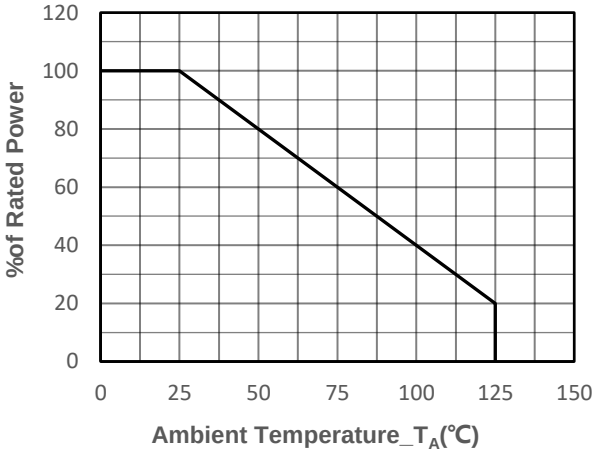
Junction Capacitance vs. Reverse Voltage



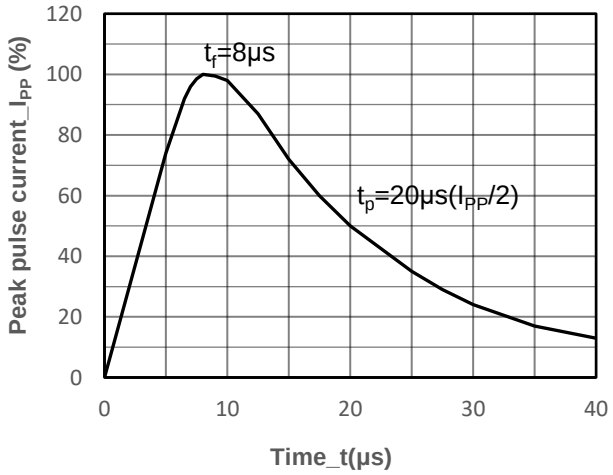
Peak Pulse Power vs. Pulse Time



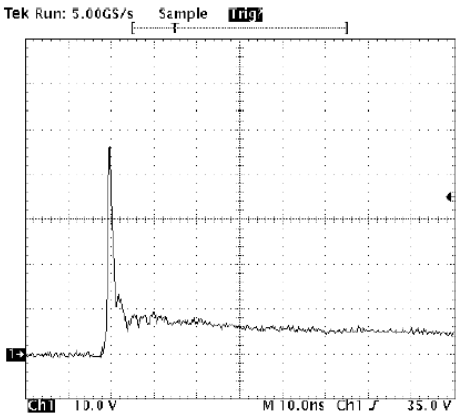
Clamping Voltage vs. Peak Pulse Current



Power derating vs. Ambient temperature



8/20μs Pulse Waveform



ESD Clamping Voltage

8 kV Contact per IEC61000−4−2

Package Information

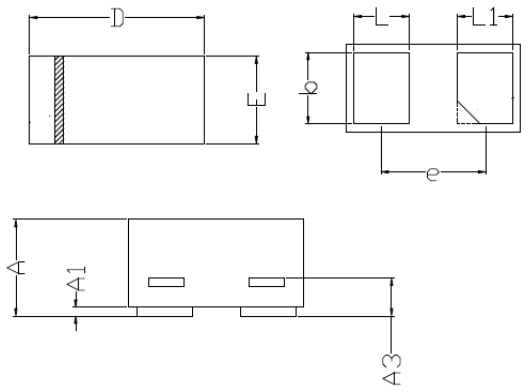
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE12V12L1	DFN0603-2L	15000	7 Inch

Mechanical Data

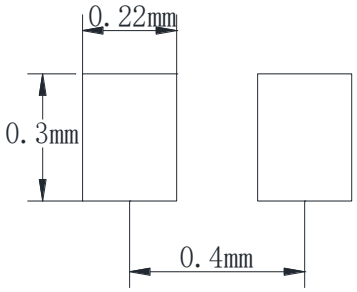
Case: DFN0603-2L

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters	
	Min	Max
A	0.230	0.330
A1	0.000	0.050
A3	0.102REF	
D	0.550	0.650
E	0.250	0.350
b	0.215	0.275
L	0.12	0.23
L1	0.12	0.23
e	0.40BSC	

Recommended Pad outline



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