SSCE5V082P1

Ultra-low Capacitance Bidirectional Micro Packaged TVS Diodes for ESD Protection

Description

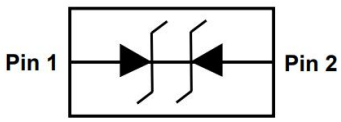
The SSCE5V082P1 is designed with SSC Punch-Through process TVS technology to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras and many other portable applications where board space comes at a premium. Also because of its low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed, USB 3.0 super speed, VGA, DVI, HDMI, SDI and other high speed line applications.

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

Feature

- 50W peak pulse power (tP = 8/20us)
- CSP0603-2L Package
- Working voltage: 5V
- Low clamping voltage
- Low capacitance(<0.25pF) for high-speed interfaces
- No insertion loss to 10.0GHz
- RoHS compliant
- Complies with following standards:
  -IEC61000-4-2(ESD) ±20kV(contact), ±20kV(air)
  -IEC61000-4-4 (EFT) 40A (5/50ns)
  -IEC61000-4-5 (Lightning) 9A (8/20us)

PIN configuration



CSP0603-2L

Marking

Applications

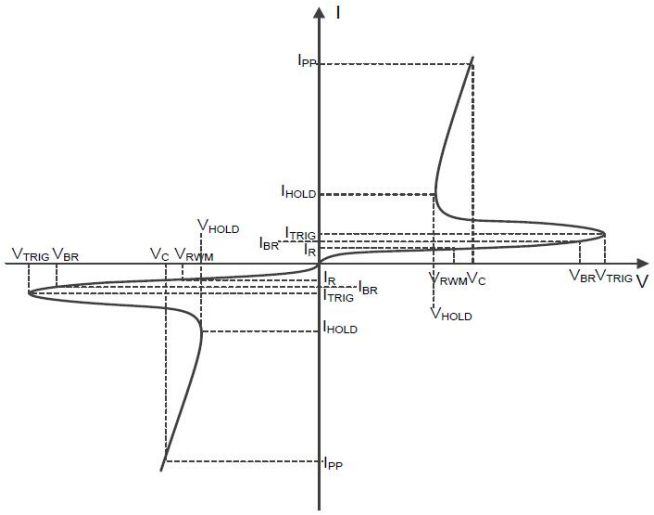
- High Speed Line: USB1.0/2.0/3.0/4.0, VGA, DVI, SDI
- High Definition Multi-Media Interface (HDMI1.3/1.4/2.0)
- Serial and Parallel Ports
- Notebooks, Desktops, Servers
- Projection TV
- Cellular handsets and accessories
- Portable instrumentation
- Peripherals

Mechanical data

- Lead finish:100% matte Sn (Tin)
- Mounting position: Any
- Qualified max reflow temperature:260℃
- Device meets MSL 1 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
V_{TRIG}	Reverse Trigger Voltage
V_{TRIG}	Reverse Trigger Current
V_{HOLD}	Reverse Holding Voltage
I_{HOLD}	Reverse Holding Current
C_J	Junction Capacitance



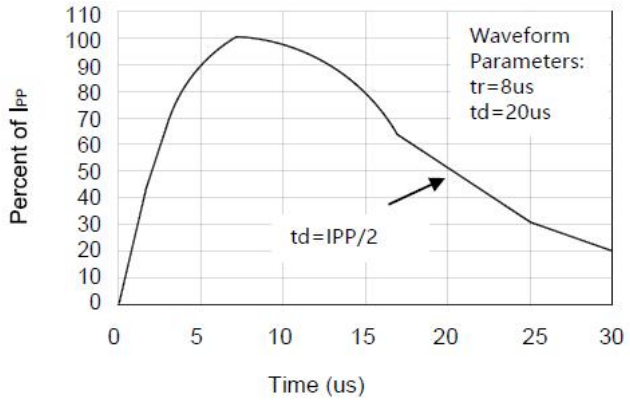
Absolute maximum rating @T_A=25℃

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20us)	P_{PP}	50	W
Peak Pulse Current (8/20us)	I_{PP}	9	A
ESD Rating per IEC61000-4-2: Contact Air	V_{ESD}	20 20	kV
Storage Temperature	T_{STG}	-55/+150	℃
Operating Temperature	T_J	-55/+150	℃
Lead Solder Temperature − Maximum (10 Second Duration)	T_L	260	℃

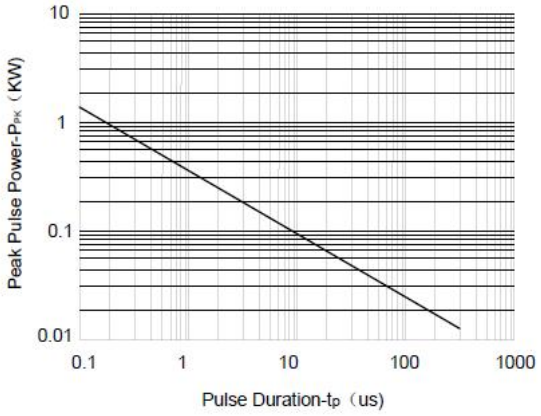
Electrical Characteristics @T_A=25℃

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Reverse Working Voltage	V_{RWM}			5	5.5	V
Breakdown Voltage	V_{BR}	I_T= 1mA	6	9.5		V
Reverse Leakage Current	I_R	V_{RWM} =5.5V			1	μA
Clamping Voltage	V_C	I_{PP} = 1A, t_P = 8/20us		3.2		V
Clamping Voltage	V_C	I_{PP}=9A, t_P = 8/20us		5.5	8	V
Clamping Voltage	V_{C2}	I_{PP}=16A, t_P = 100ns		6.5		V
Dynamic resistance	R_{DYN}			0.23		Ω
Junction Capacitance	C_J	V_R=1.0V, f = 1MHz		0.14	0.18	pF
		V_R=1.0V, f = 1GHz		0.13		pF

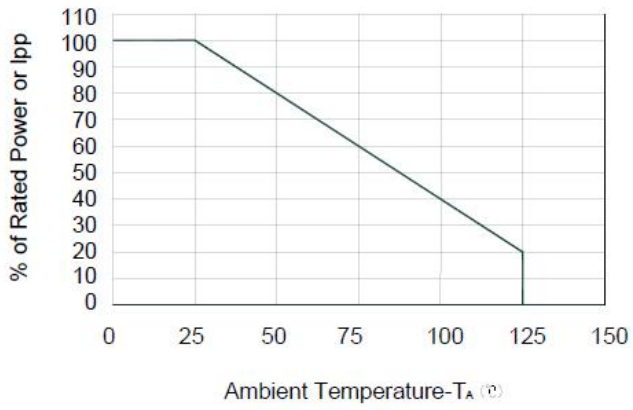
Typical Performance Characteristics



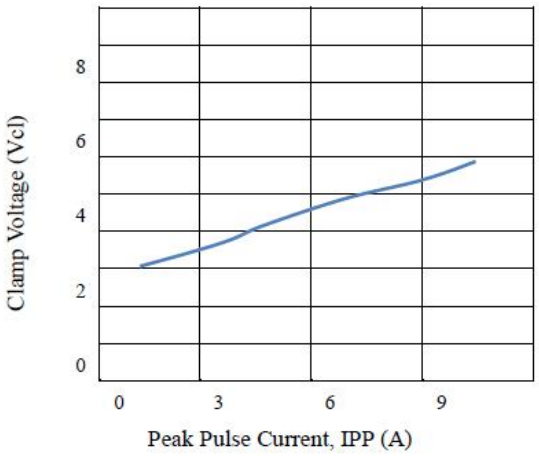
Pulse Waveform



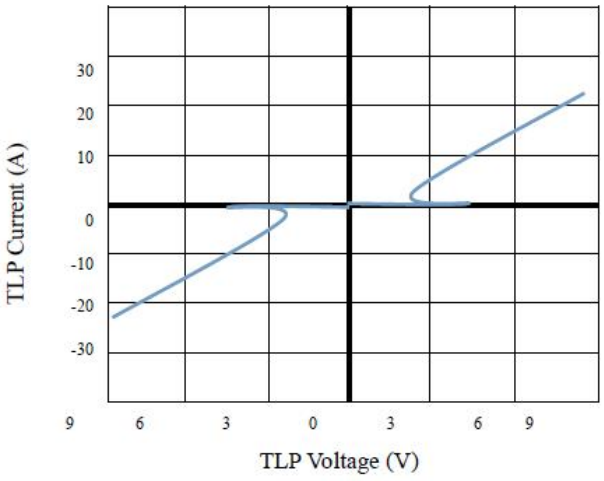
Non-Repetitive Peak Pulse Power vs. Pulse Time



Power Derating Curve



Clamping Voltage Vs Peak PulseCurrent(Ipp)



Clamping Voltage Vs Peak PulseCurrent(I_{TLP})

- **Package Information**

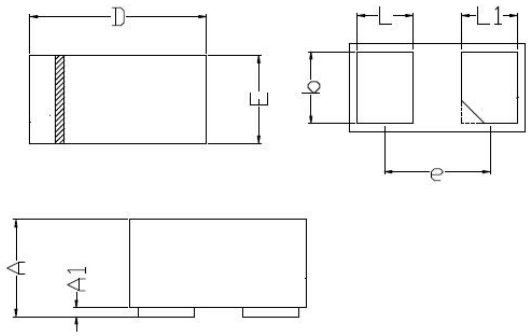
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCE5V082P1	CSP0603-2L	9000	7 Inch

Mechanical Data

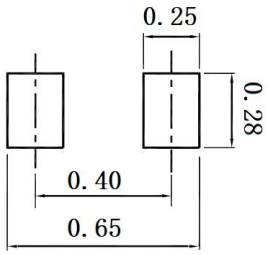
Case: CSP0603-2L

Case Material: Molded Plastic. UL Flammability

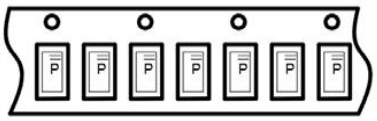


DIM	Millimeters	
	Min	Max
A	0.230	0.330
A1	0.000	0.050
A3	0.102REF	
D	0.550	0.650
E	0.250	0.350
b	0.220	0.270
L	0.120	0.170
L1	0.120	0.170
e	0.40BSC	

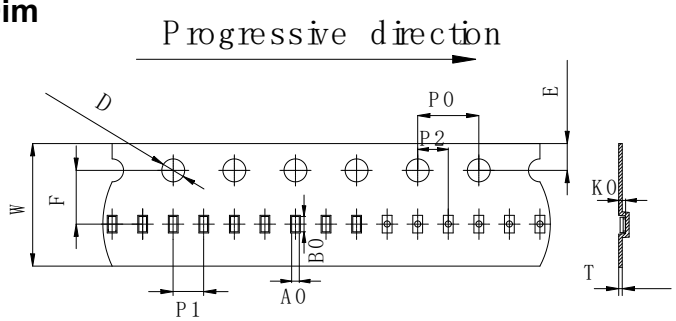
Recommended Pad outline



Device Orientation in Tape



CSP0603 Reel Dim



PACKAGE	W	E	F	P0	D	P2	P1	T	A0	B0	K0
CSP0603	8mm ±0.1	1.75mm ±0.1	3.5mm ±0.05	4mm ±0.1	1.5mm ±0.1	2mm ±0.05	2mm ±0.1	0.23mm ±0.02	0.34mm ±0.05	0.67mm ±0.05	0.4mm ±0.05

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