µClamp2011PW
Ultra Small µClamp®
1-Line, 20V ESD Protection

Description

µClamp® series of TVS arrays are designed to protect sensitive electronics from damage or latch-up due to ESD and surge. They feature large cross-sectional area junctions for conducting high transient currents. They offer desirable characteristics for board level protection including fast response time, low operating and clamping voltage, and no device degradation.

µClamp2011PW is in a DFN 1.0 x 0.6 x 0.55mm 2-Lead package. Each device will protect one line operating at 20 volts. It gives the designer the flexibility to protect single lines in applications where arrays are not practical. The combination of small size and high ESD surge capability makes them ideal for use in portable applications such as cellular phones, tablets, and notebook computers.

Features

- High ESD withstand voltage: ±27kV (air) and ±22kV (contact) per IEC 61000-4-2
- High lightning surge capability: 3A (tp=8/20µs) per IEC 61000-4-5
- Protects one line
- Low ESD clamping voltage
- Working voltage: ±20V
- Low maximum leakage current: 100nA
- Solid-state silicon-avalanche technology

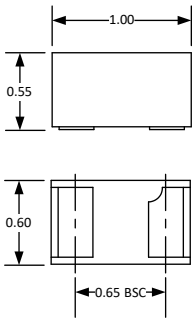
Mechanical Characteristics

- Package: DFN 1.0 x 0.6 x 0.55mm 2-Lead
- Halogen Free, RoHS/WEEE compliant
- Lead Finish: Pb-Free
- Marking: Marking code
- Packaging: Tape and Reel

Applications

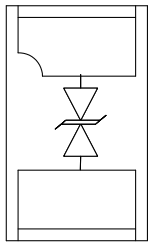
- Cellular Handsets & Accessories
- Notebook Computers
- Tablets
- Portable Instrumentation
- Peripherals

Package Dimension



Nominal Dimensions (mm)

Schematic & Pin Configuration



DFN 1.0 x 0.6 x 0.55mm 2-Lead (Bottom View)

Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power (tp = 8/20µs)	P_{PK}	110	W
Peak Pulse Current (tp = 8/20µs)	I_{PP}	3	A
ESD per IEC 61000-4-2 (Air)(1) ESD per IEC 61000-4-2 (Contact)(1)	V_{ESD}	±27 ±22	kV
Operating Temperature	T_{OP}	-40 to +85	^{O}C
Storage Temperature	T_{STG}	-55 to +150	^{O}C

Electrical Characteristics (T=25^{O}C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V_{RWM}				20	V
Reverse Breakdown Voltage	V_{BR}	I_t= 1 mA	22	24	28	V
Reverse Leakage Current	I_R	V_{RWM} = 20V			100	nA
Clamping Voltage	V_C	I_{PP} = 1A, tp = 8/20µs		29	31	V
		I_{PP} = 3A, tp = 8/20µs		35	37	
ESD Clamping Voltage(2)	V_C	I_{TLP}= 4A, tp = 0.2/100ns		29		V
		I_{TLP}=16A, tp = 0.2/100ns		35		
Dynamic Resistance(2),(3)	R_{DYN}	tp = 0.2/100ns		0.5		Ω
Junction Capacitance	C_J	V_R = 0V, f = 1MHz		10	13	pF

Notes:

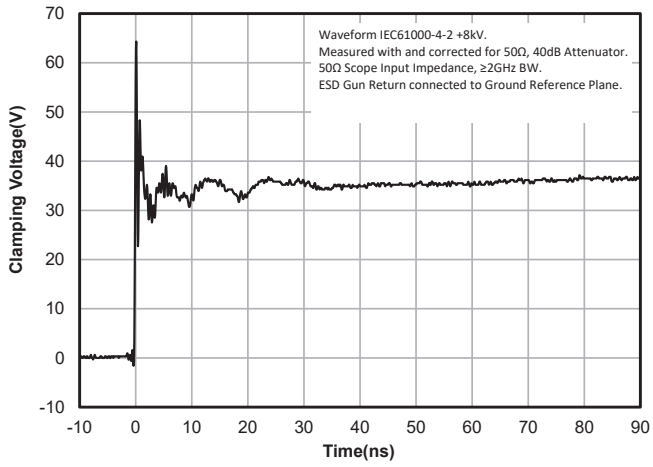
1) ESD gun return path connected to ESD ground plane.

2) Transmission Line Pulse Test (TLP) Settings: tp = 100ns, tr = 0.2ns, I_{TLP} and V_{TLP} averaging window: t1 = 70ns to t2 = 90ns.

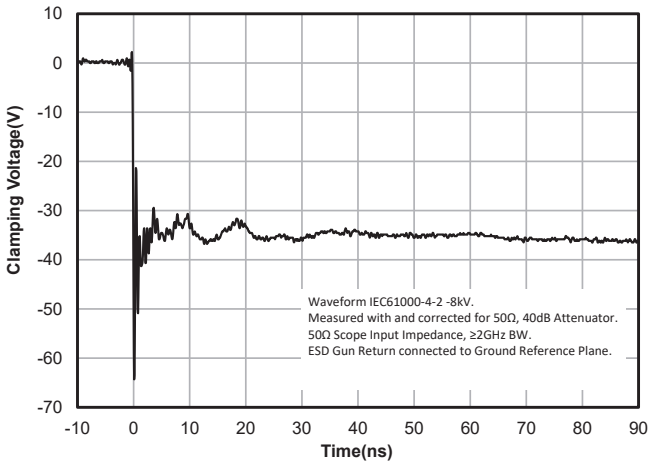
3) Dynamic resistance calculated from I_{TLP} = 4A to I_{TLP} = 16A

Typical Characteristics

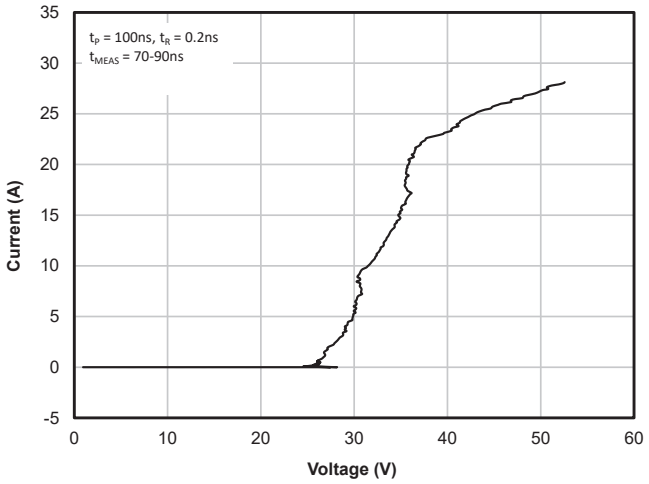
ESD Clamping (+8kV Contact per IEC 61000-4-2)



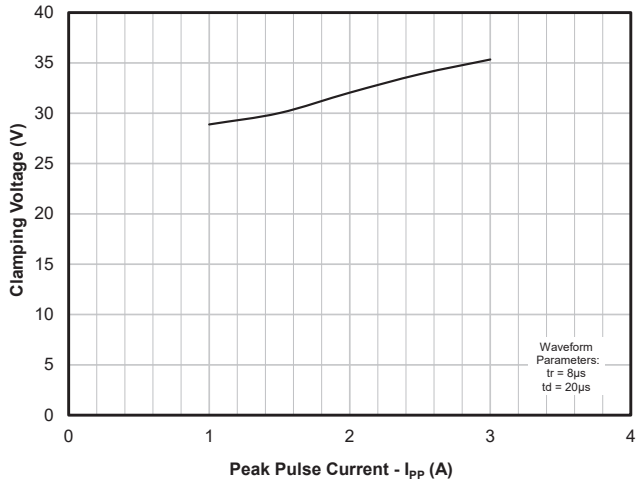
ESD Clamping (-8kV Contact per IEC 61000-4-2)



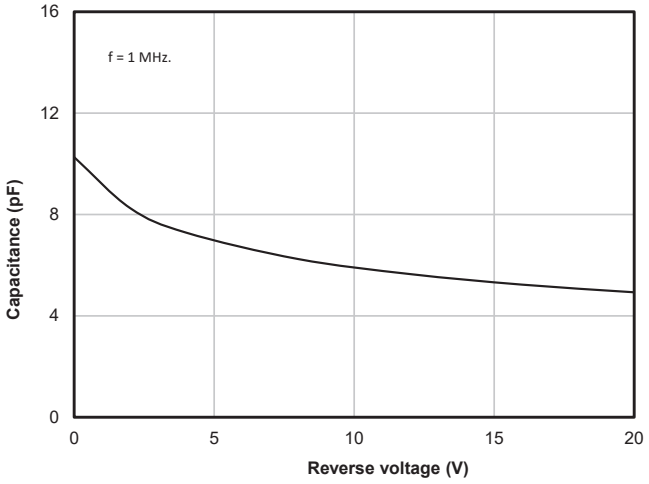
TLP Characteristic (Positive Pulse)



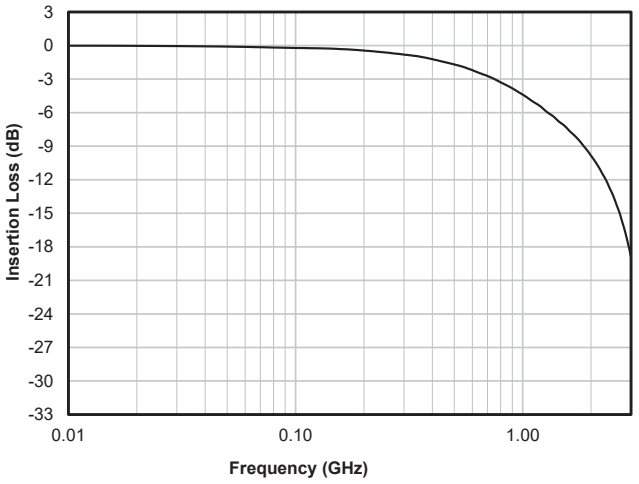
Clamping Voltage (tp=8/20µs)



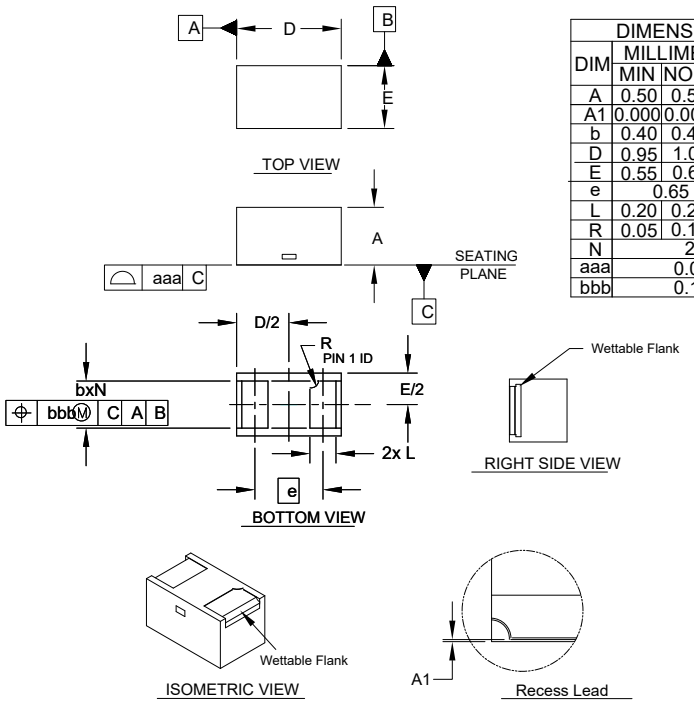
Capacitance vs. Reverse Voltage



Insertion Loss-S21



Outline Drawing - DFN 1.0 x 0.6 x 0.55mm 2-Lead

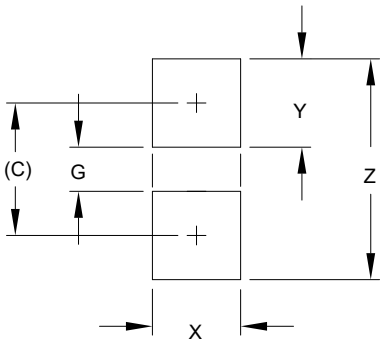


DIMENSIONS			
DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.50	0.55	0.60
A1	0.000	0.004	0.008
b	0.40	0.45	0.50
D	0.95	1.00	1.05
E	0.55	0.60	0.65
e	0.65 BSC		
L	0.20	0.25	0.30
R	0.05	0.10	0.15
N	2		
aaa	0.08		
bbb	0.10		

NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).

Land Pattern - DFN 1.0 x 0.6 x 0.55mm 2-Lead

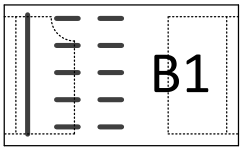


DIMENSIONS	
DIM	MILLIMETERS
C	(0.90)
G	0.30
X	0.60
Y	0.60
Z	1.50

NOTES:

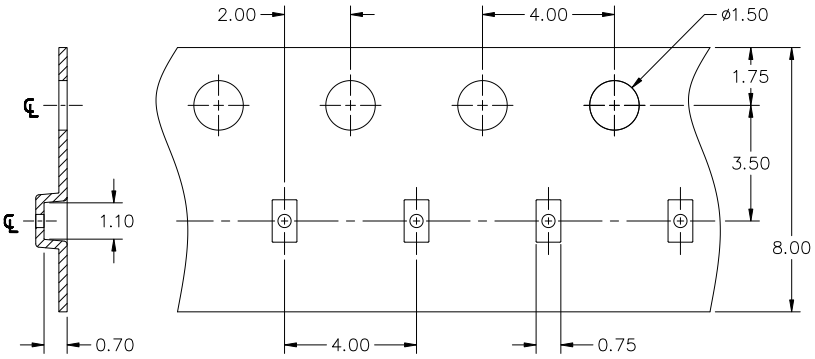
1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY. CONSULT YOUR MANUFACTURING GROUP TO ENSURE YOUR COMPANY'S MANUFACTURING GUIDELINES ARE MET.

Marking Code

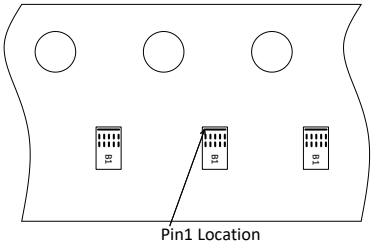


Notes:
1. Device is electrically symmetrical
2. Marking will also include line matrix date code
3. Bar indicates Pin 1 location

Tape and Reel Specification



Note: All dimensions are nominal dimensions in mm.



Ordering Information

Part Number	Qty per Reel	Reel Size
µClamp2011PW.C	3,000	7"

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Contact Information

Semtech Corporation
200 Flynn Road, Camarillo, CA 93012
Phone: (805) 498-2111, Fax: (805) 498-3804
www.semtech.com