µClamp1291PW

µClamp®

1-Line ESD and EOS Protection

Description

µClamp®series 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.

µClamp1291PW features good ESD protection characteristics highlighted by low typical dynamic resistance, low peak ESD clamping voltage, and high ESD withstand voltage (+/-30kV contact and air per IEC 61000-4-2).

µClamp1291PW is in a DFN 1.0 x 0.6 x 0.55mm 2-Lead package. The small package gives the designer the flexibility to protect single lines in applications where arrays are not practical

Features

- High ESD withstand Voltage: +/-30kV (Contact) & +/-30kV(Air) per IEC 61000-4-2
- Protects one I/O or power line
- Low ESD clamping voltage
- Working voltage: +12V
- Low leakage current
- Solid-state silicon-avalanche technology

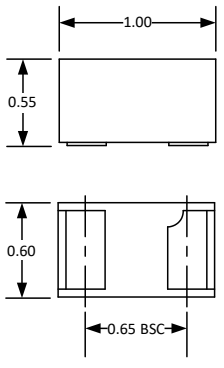
Mechanical Characteristics

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

Applications

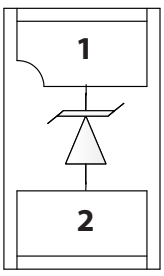
- Cellular Handsets & Accessories
- Notebooks & Handhelds
- Portable Instrumentation

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 (t_p = 8/20µs)	P_{PK}	240	W
Peak Pulse Current (t_p = 8/20µs)	I_{PP}	10	A
ESD per IEC 61000-4-2 (Contact)(1) ESD per IEC 61000-4-2 (Air)(1)	V_{ESD}	±30 ±30	kV
Operating Temperature	T_{OP}	-55 to +125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Characteristics (T=25°C unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V_{RWM}	Pin 1 to 2				12	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA, Pin 1 to 2		13.3	14.6	17.5	V
Forward Voltage	V_F	I_F = 10mA, Pin 2 to Pin 1		0.4	0.78	1.1	V
Reverse Leakage Current	I_R	V_{RWM} = 12V, Pin 1 to 2			<5	500	nA
Clamping Voltage	V_C	tp =8/20µs	I_{PP}=1A, Pin 1 to 2		15	18	V
			I_{PP}=8A, Pin 1 to 2		19.3	23	
			I_{PP}=10A, Pin 1 to 2		20.8	24	
ESD Clamping Voltage(2)	V_C	tp = 0.2/100ns (TLP), Pin 1 to 2	I_{TLP} = 4A		15.7		V
			I_{TLP} = 16A		19.1		
Dynamic Resistance(2),(3)	R_{DYN}	tp = 0.2/100ns (TLP), Pin 1 to 2			0.29		Ω
Junction Capacitance	C_J	V_R = 0V, f = 1MHz			75	90	pF

Notes:

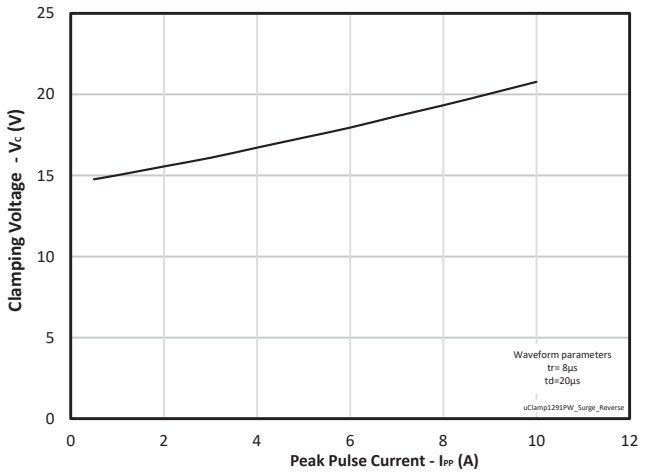
1) ESD gun return path connected to ESD ground plane.

2) Transmission Line Pulse Test (TLP) Settings: t_p = 100ns, t_r = 0.2ns, I_{TLP} and V_{TLP} averaging window: t_1 = 70ns to t_2 = 90ns.

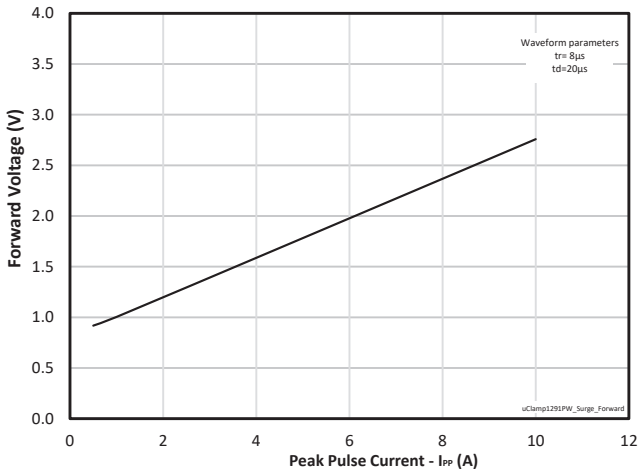
3) Dynamic resistance calculated from I_{TLP} = 4A to I_{TLP} = 16A

Typical Characteristics

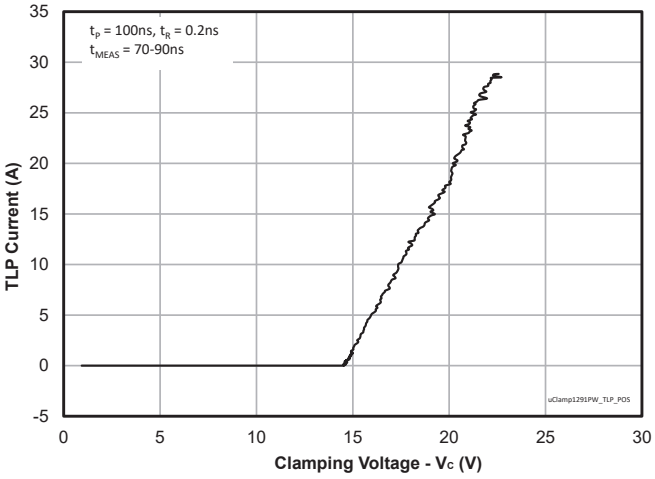
Clamping Voltage vs. Peak Pulse Current (t_p=8/20µs)



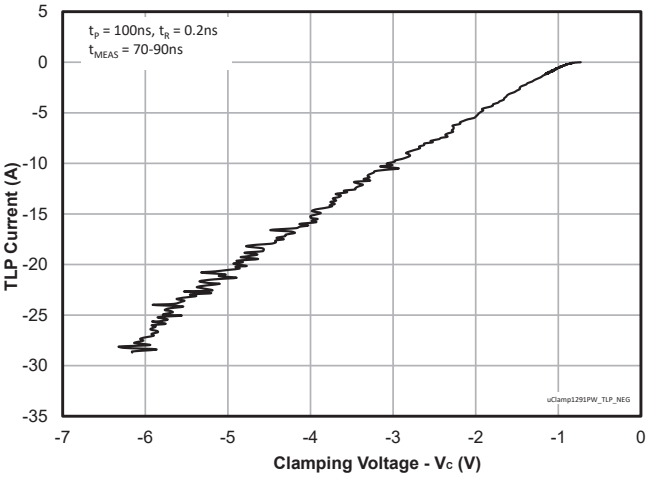
Forward Voltage vs. Peak Pulse Current (t_p=8/20µs)



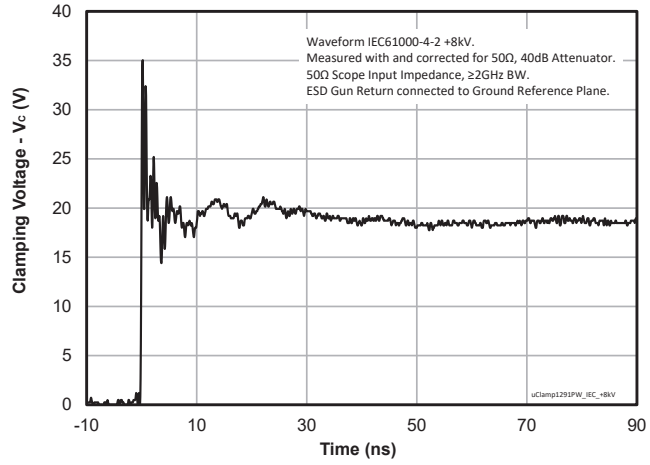
TLP Characteristic (Positive Pulse)



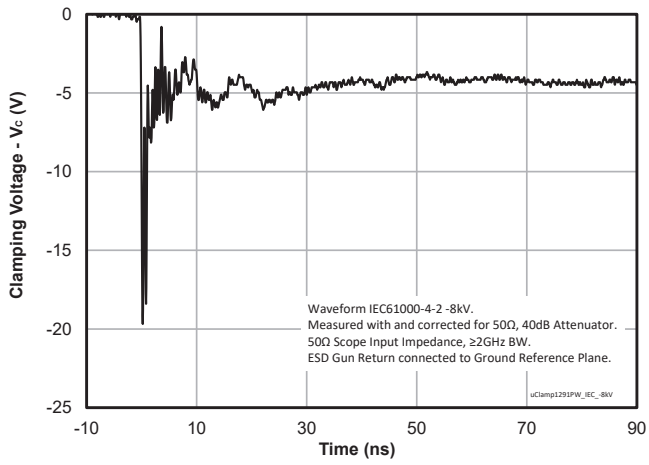
TLP Characteristic (Negative Pulse)



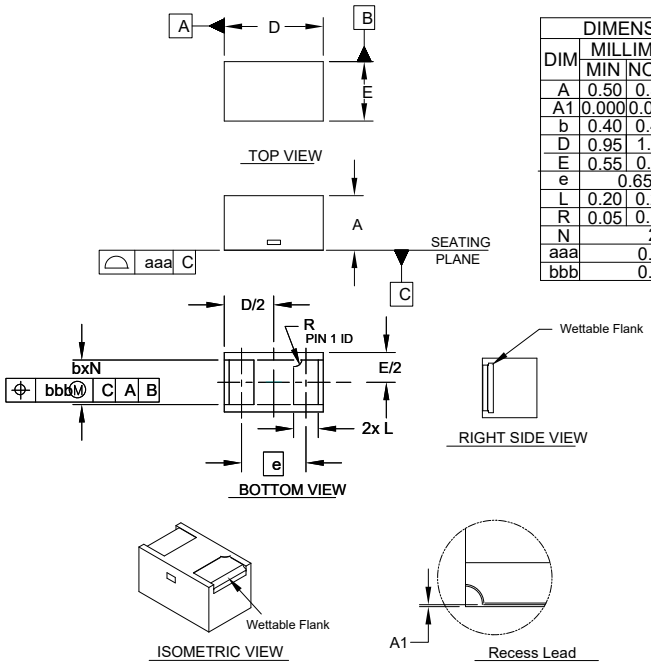
ESD Clamping (+8kV Contact per IEC 61000-4-2)



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



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

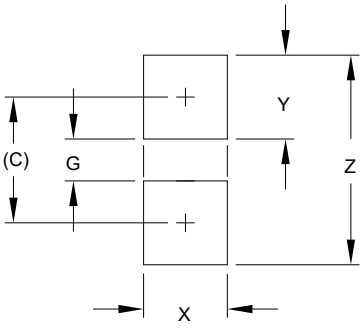


DIMENSIONS			
DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.50	0.55	0.60
A1	0.000	0.004	0.008
b	0.40	0.45	0.50
D	0.95	1.00	1.05
E	0.55	0.60	0.65
e	0.65 BSC		
L	0.20	0.25	0.30
R	0.05	0.10	0.15
N	2		
aaa	0.08		
bbb	0.10		

NOTES:

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

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

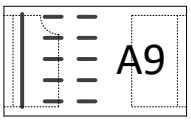


DIMENSIONS	
DIM	MILLIMETERS
C	(0.90)
G	0.30
X	0.60
Y	0.60
Z	1.50

NOTES:

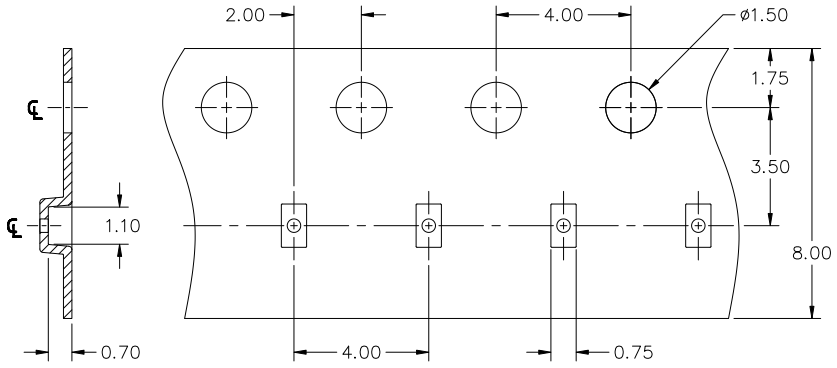
1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY.
   CONSULT YOUR MANUFACTURING GROUP TO ENSURE YOUR
   COMPANY'S MANUFACTURING GUIDELINES ARE MET.

Marking Code

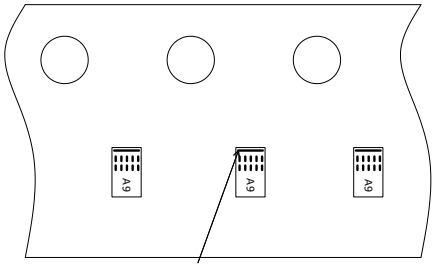


Notes:
1. Marking will also include line matrix date code
2. Bar indicates Pin 1 location

Tape and Reel Specification



Note: All dimensions are nominal dimensions in mm.



Pin1 Location
(Bar Toward Sprocket Holes)

Ordering Information

Part Number	Qty per Reel	Reel Size
µClamp1291PW.C	3,000	7 Inch

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