Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power (tp = 8/20μs)[1]	P_{pk}	1200 - 1500	Watts
ESD per IEC 61000-4-2 (Air)[2] ESD per IEC 61000-4-2 (Contact)[2]	V_{ESD}	+/- 30 +/- 30	kV
Operating Temperature	T_J	-40 to +125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

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

uClamp0571P

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}	Pin 1 to 2			5	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA Pin 1 to 2	6	7	9	V
Reverse Leakage Current	I_R	V_{RWM} = 5V, T=25°C Pin 1 to 2		<10	100	nA
Peak Pulse Current	I_{PP}	tp = 8/20μs Pin 1 to 2			80	A
Clamping Voltage	V_C	I_{PP} = 40A, tp = 8/20μs Pin 1 to 2			10	V
Clamping Voltage	V_C	I_{PP} = 80A, tp = 8/20μs Pin 1 to 2			15	V
Dynamic Resistance[3, 4]	R_{DYN}	tIp = 0.2 / 100ns		0.05		Ohms
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			675	pF

uClamp0871P

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}	Pin 1 to 2			8	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA Pin 1 to 2	9.5	11	13	V
Reverse Leakage Current	I_R	V_{RWM} = 8V, T=25°C Pin 1 to 2		<10	100	nA
Peak Pulse Current	I_{PP}	tp = 8/20µs Pin 1 to 2			65	A
Clamping Voltage	V_C	I_{PP} = 10A, tp = 8/20µs Pin 1 to 2			15	V
Clamping Voltage	V_C	I_{PP} = 65A, tp = 8/20µs Pin 1 to 2			23	V
Dynamic Resistance[3, 4]	R_{DYN}	tlp = 0.2 / 100ns		0.05		Ohms
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			475	pF

uClamp1071P

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}	Pin 1 to 2			10	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA Pin 1 to 2	12	13.5	15.5	V
Reverse Leakage Current	I_R	V_{RWM} = 10V, T=25°C Pin 1 to 2		<10	100	nA
Peak Pulse Current	I_{PP}	tp = 8/20µs Pin 1 to 2			60	A
Clamping Voltage	V_C	I_{PP} = 10A, tp = 8/20µs Pin 1 to 2			17	V
Clamping Voltage	V_C	I_{PP} = 60A, tp = 8/20µs Pin 1 to 2			25	V
Dynamic Resistance[3, 4]	R_{DYN}	tlp = 0.2 / 100ns		0.05		Ohms
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			350	pF

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

uClamp1271P

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	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	14	16	19	V
Reverse Leakage Current	I_R	V_{RWM} = 12V, T=25°C Pin 1 to 2		<10	100	nA
Peak Pulse Current	I_{PP}	tp = 8/20µs Pin 1 to 2			45	A
Clamping Voltage	V_C	I_{PP} = 10A, tp = 8/20µs Pin 1 to 2			22	V
Clamping Voltage	V_C	I_{PP} = 45A, tp = 8/20µs Pin 1 to 2			30	V
Dynamic Resistance[3, 4]	R_{DYN}	tlp = 0.2 / 100ns		0.05		Ohms
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			275	pF

uClamp1571P

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}	Pin 1 to 2			15	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA Pin 1 to 2	17.5	20	23	V
Reverse Leakage Current	I_R	V_{RWM} = 15V, T=25°C Pin 1 to 2		<10	100	nA
Peak Pulse Current	I_{PP}	tp = 8/20µs Pin 1 to 2			40	A
Clamping Voltage	V_C	I_{PP} = 10A, tp = 8/20µs Pin 1 to 2			25	V
Clamping Voltage	V_C	I_{PP} = 40A, tp = 8/20µs Pin 1 to 2			40	V
Dynamic Resistance[3, 4]	R_{DYN}	tlp = 0.2 / 100ns		0.05		Ohms
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			220	pF

uClamp1871P						
Parameter	**Symbol**	**Conditions**	**Minimum**	**Typical**	**Maximum**	**Units**
Reverse Stand-Off Voltage	V_{RWM}	Pin 1 to 2			18	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA Pin 1 to 2	20	22	25	V
Reverse Leakage Current	I_R	V_{RWM} = 18V, T=25°C Pin 1 to 2		<10	100	nA
Peak Pulse Current	I_{PP}	tp = 8/20µs Pin 1 to 2			35	A
Clamping Voltage	V_C	I_{PP} = 10A, tp = 8/20µs Pin 1 to 2			28	V
Clamping Voltage	V_C	I_{PP} = 35A, tp = 8/20µs Pin 1 to 2			45	V
Dynamic Resistance[3, 4]	R_{DYN}	tlp = 0.2 / 100ns		0.10		Ohms
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			225	pF

uClamp2271P						
Parameter	**Symbol**	**Conditions**	**Minimum**	**Typical**	**Maximum**	**Units**
Reverse Stand-Off Voltage	V_{RWM}	Pin 1 to 2			22	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA Pin 1 to 2	25.5	29	33.5	V
Reverse Leakage Current	I_R	V_{RWM} = 22V, T=25°C Pin 1 to 2		<10	100	nA
Peak Pulse Current	I_{PP}	tp = 8/20µs Pin 1 to 2			25	A
Clamping Voltage	V_C	I_{PP} = 10A, tp = 8/20µs Pin 1 to 2			40	V
Clamping Voltage	V_C	I_{PP} = 25A, tp = 8/20µs Pin 1 to 2			55	V
Dynamic Resistance[3, 4]	R_{DYN}	tlp = 0.2 / 100ns		0.10		Ohms
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			165	pF

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

uClamp2671P

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}	Pin 1 to 2			26	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA Pin 1 to 2	29	32	35	V
Reverse Leakage Current	I_R	V_{RWM} = 26V, T=25°C Pin 1 to 2		<10	100	nA
Peak Pulse Current	I_{PP}	tp = 8/20µs Pin 1 to 2			23	A
Clamping Voltage	V_C	I_{PP} = 10A, tp = 8/20µs Pin 1 to 2			50	V
Clamping Voltage	V_C	I_{PP} = 23A, tp = 8/20µs Pin 1 to 2			65	V
Dynamic Resistance[3, 4]	R_{DYN}	tlp = 0.2 / 100ns		0.15		Ohms
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			155	pF

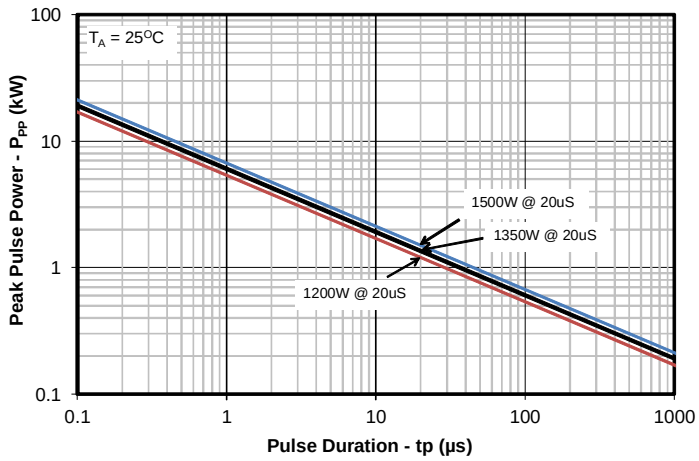
uClamp3671P

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}	Pin 1 to 2			36	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA Pin 1 to 2	37		44	V
Reverse Leakage Current	I_R	V_{RWM} = 36V, T=25°C Pin 1 to 2		<10	100	nA
Peak Pulse Current	I_{PP}	tp = 8/20µs Pin 1 to 2			18	A
Clamping Voltage	V_C	I_{PP} = 2A, tp = 1.2/50µs Pin 1 to 2			48	V
Clamping Voltage	V_C	I_{PP} = 18A, tp = 8/20µs Pin 1 to 2			80	V
Dynamic Resistance[3, 4]	R_{DYN}	tlp = 0.2 / 100ns		0.29		Ohms
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			150	pF

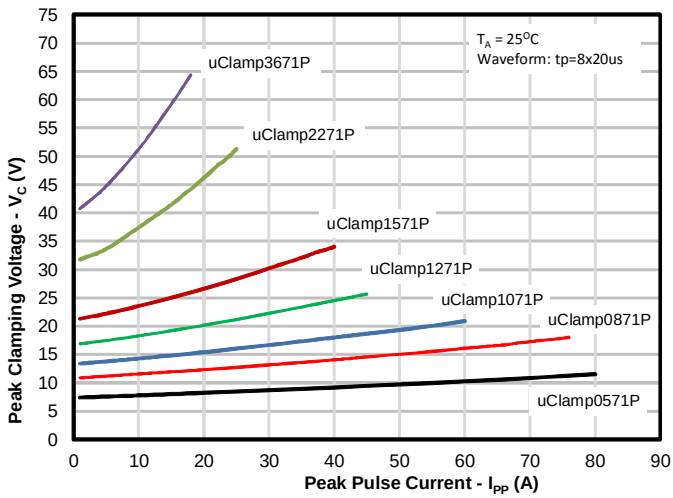
Notes
1)Peak Pulse Power = $Vc_{(max)}$ x $I_{PP\,(Max)}$ (tp = 8/20us)
2)ESD gun return path connected to ESD ground reference plane.
3)Transmission Line Pulse Test (TLP) Settings: t_p = 100ns, t_r = 0.2ns, I_{TLP} and V_{TLP} averaging window: t_1 = 70ns to t_2 = 90ns.
4) Dynamic resistance calculated from I_{TLP} = 4A to I_{TLP} = 16A

Typical Characteristics

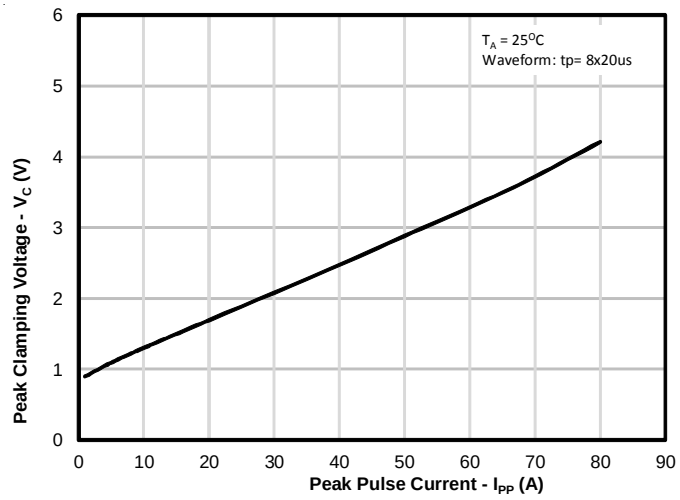
Non-Repetitive Peak Pulse Power vs. Pulse Time



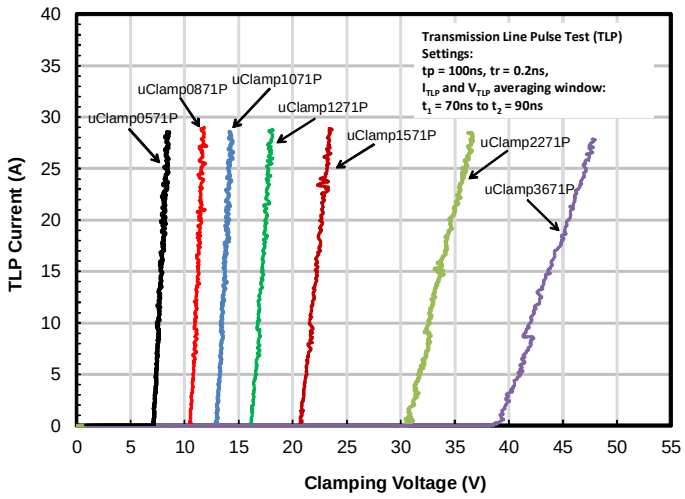
Clamping Voltage vs. Peak Pulse Current (tp=8/20us)



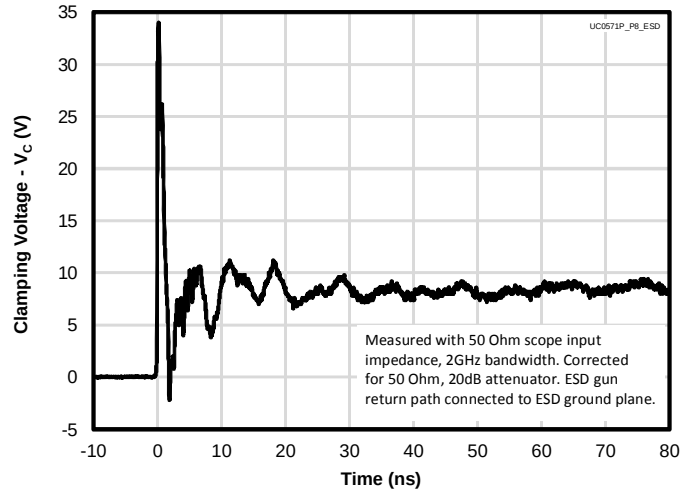
Forward Voltage vs. Peak Pulse Current (tp=8/20us)



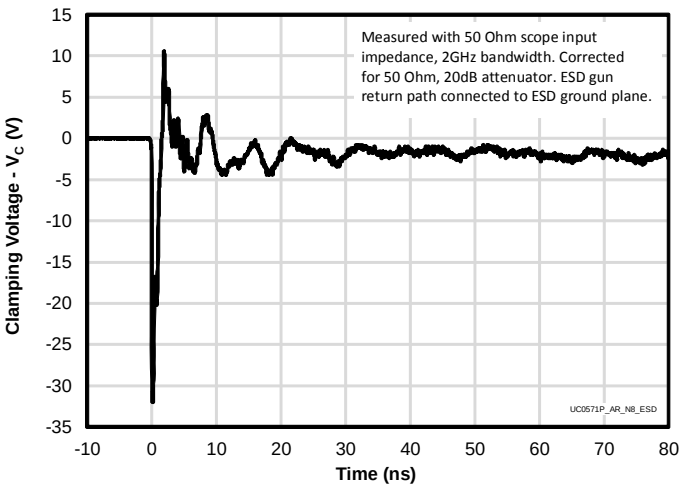
TLP Characteristic



ESD Clamping - uClamp0571P (+8kV Contact per IEC 61000-4-2)

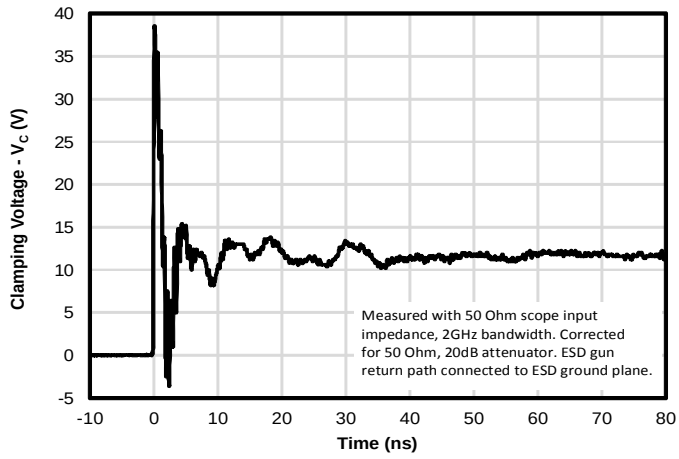


ESD Clamping - uClamp0571P (-8kV Contact per IEC 61000-4-2)

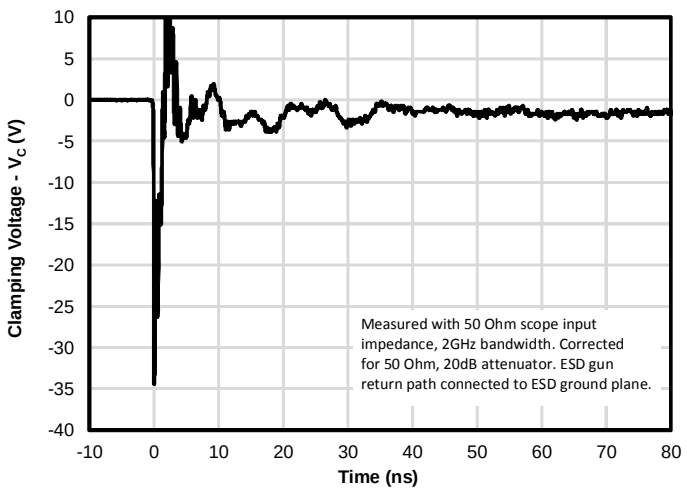


Typical Characteristics

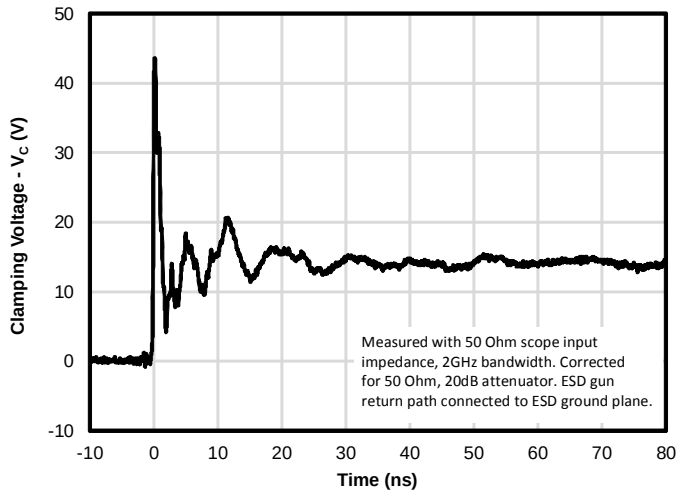
ESD Clamping - uClamp0871P
(+8kV Contact per IEC 61000-4-2)



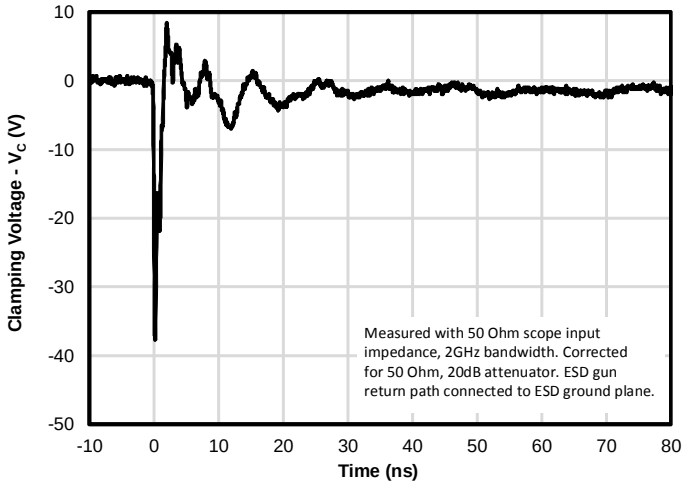
ESD Clamping - uClamp0871P
(-8kV Contact per IEC 61000-4-2)



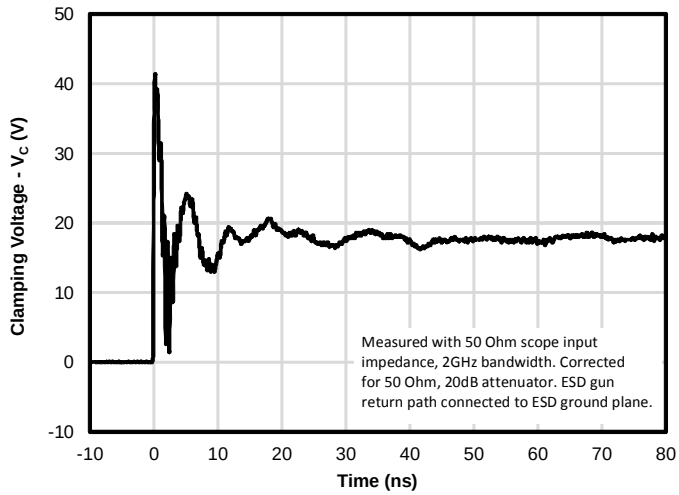
ESD Clamping - uClamp1071P
(+8kV Contact per IEC 61000-4-2)



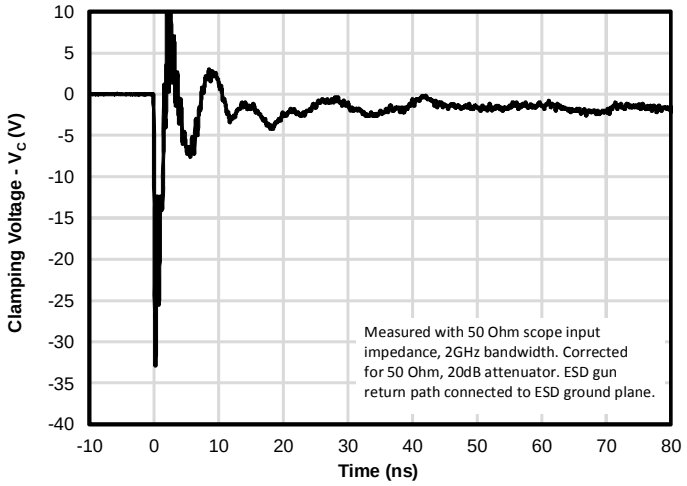
ESD Clamping - uClamp1071P
(-8kV Contact per IEC 61000-4-2)



ESD Clamping - uClamp1271P
(+8kV Contact per IEC 61000-4-2)

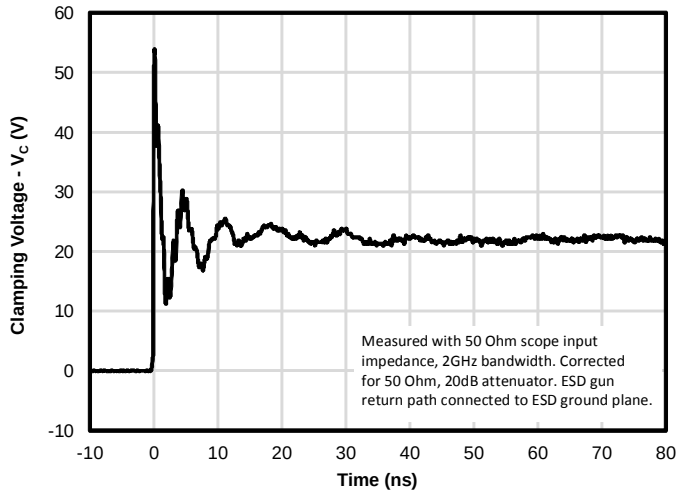


ESD Clamping - uClamp1271P
(-8kV Contact per IEC 61000-4-2)

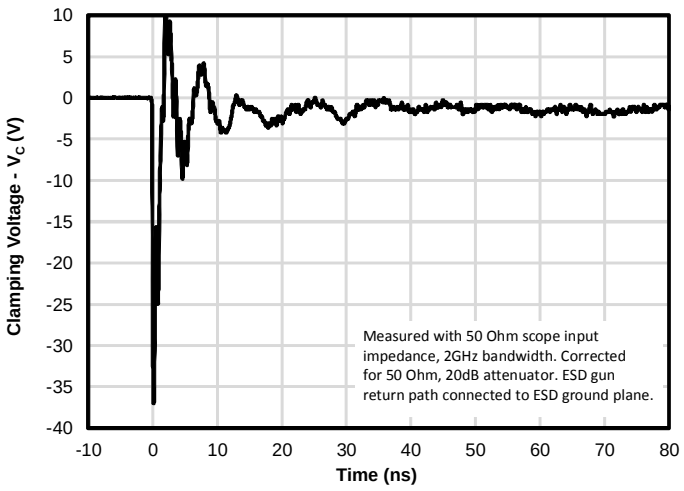


Typical Characteristics

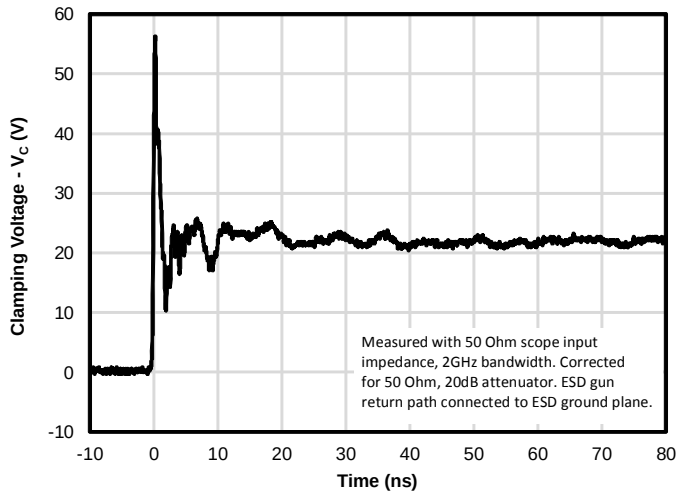
ESD Clamping - uClamp1571P (+8kV Contact per IEC 61000-4-2)



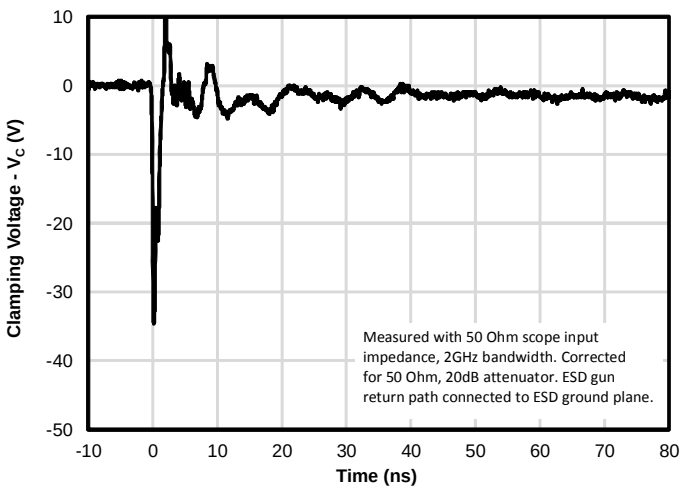
ESD Clamping - uClamp1571P (-8kV Contact per IEC 61000-4-2)



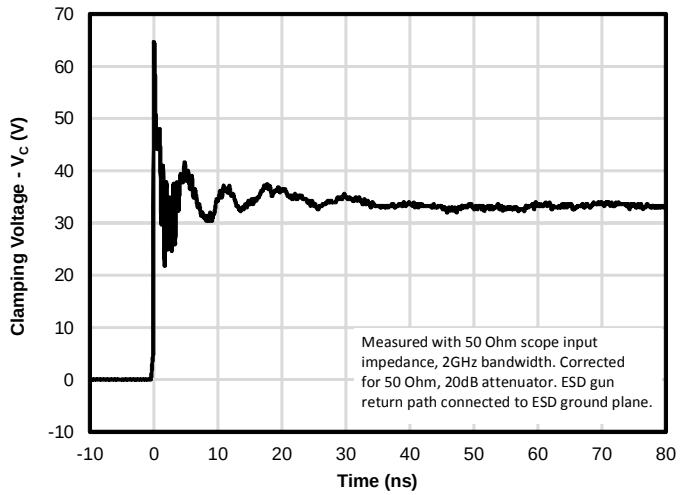
ESD Clamping - uClamp1871P (+8kV Contact per IEC 61000-4-2)



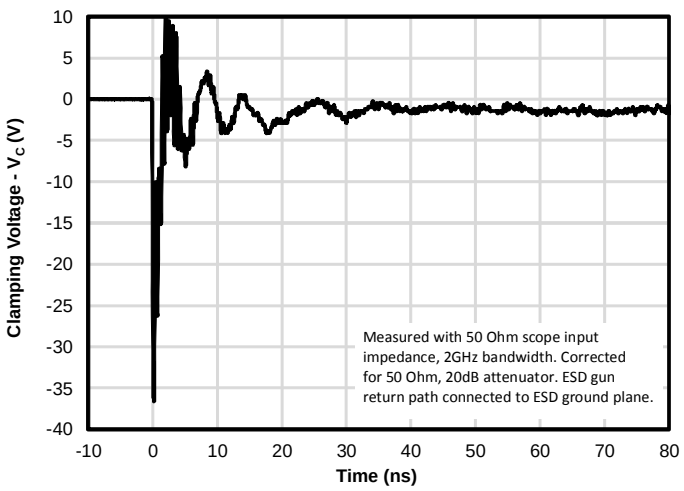
ESD Clamping - uClamp1871P (-8kV Contact per IEC 61000-4-2)



ESD Clamping - uClamp2271P (+8kV Contact per IEC 61000-4-2)

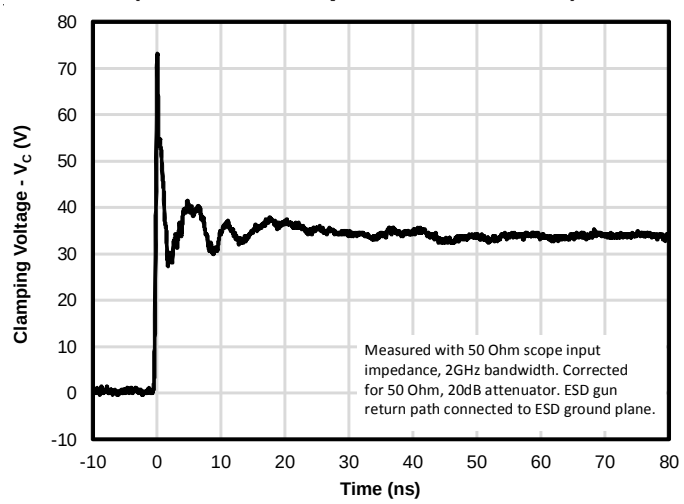


ESD Clamping - uClamp2271P (-8kV Contact per IEC 61000-4-2)

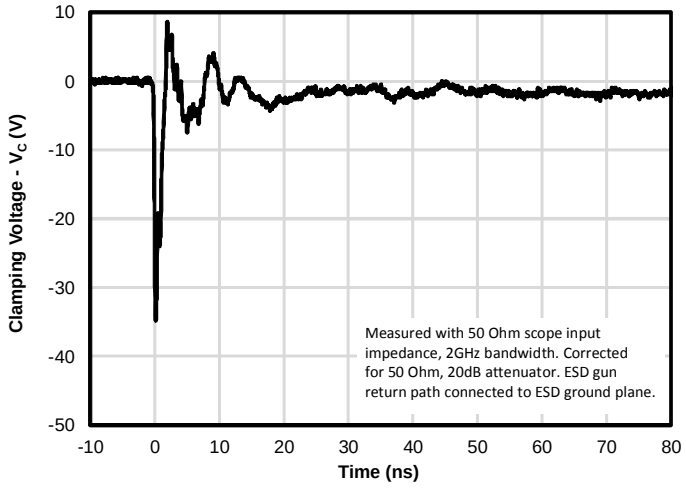


Typical Characteristics

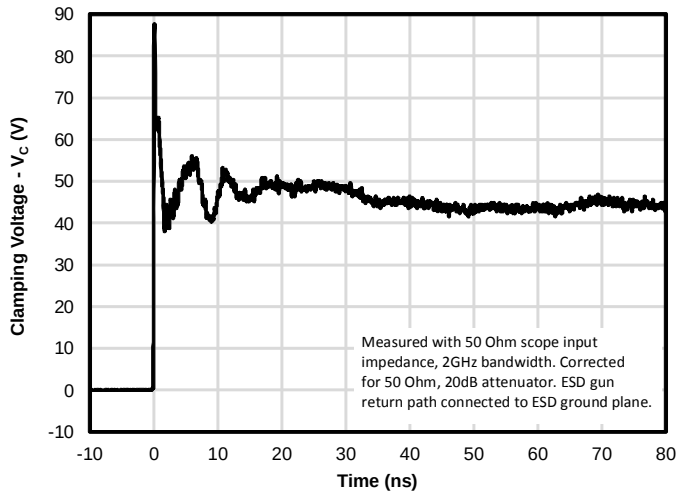
ESD Clamping - uClamp2671P (+8kV Contact per IEC 61000-4-2)



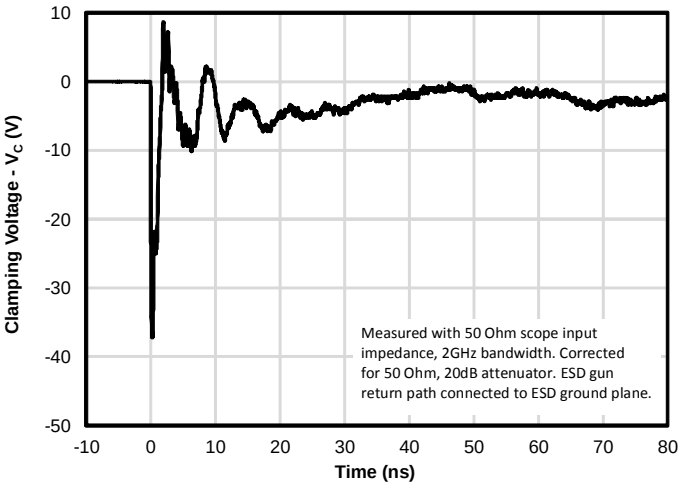
ESD Clamping - uClamp2671P (-8kV Contact per IEC 61000-4-2)



ESD Clamping - uClamp3671P (+8kV Contact per IEC 61000-4-2)



ESD Clamping - uClamp3671P (-8kV Contact per IEC 61000-4-2)

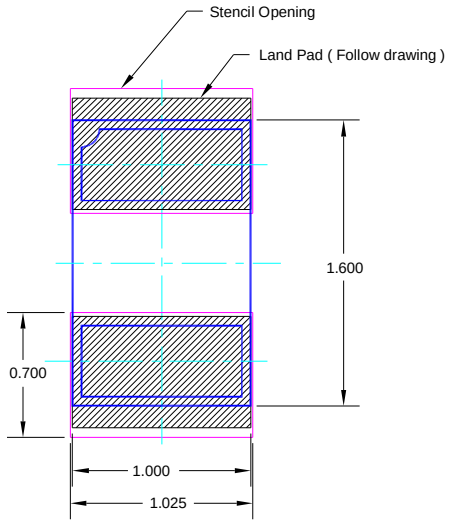


Applications Information

Assembly Guidelines

The table below provides Semtech's recommended assembly guidelines for mounting this device. The figure at the right details Semtech's recommended aperture based on the below recommendations. Note that these are only recommendations and should serve only as a starting point for design since there are many factors that affect the assembly process. The exact manufacturing parameters will require some experimentation to get the desired solder application.

Assembly Parameter	Recommendation
Solder Stencil Design	Laser cut, Electro-polished
Aperture shape	Rectangular with rounded corners
Solder Stencil Thickness	0.125 mm (0.005")
Solder Paste Type	Type 3 size sphere or smaller
Solder Reflow Profile	Per JEDEC J-STD-020
PCB Solder Pad Design	Non-Solder mask defined
PCB Pad Finish	OSP OR NiAu

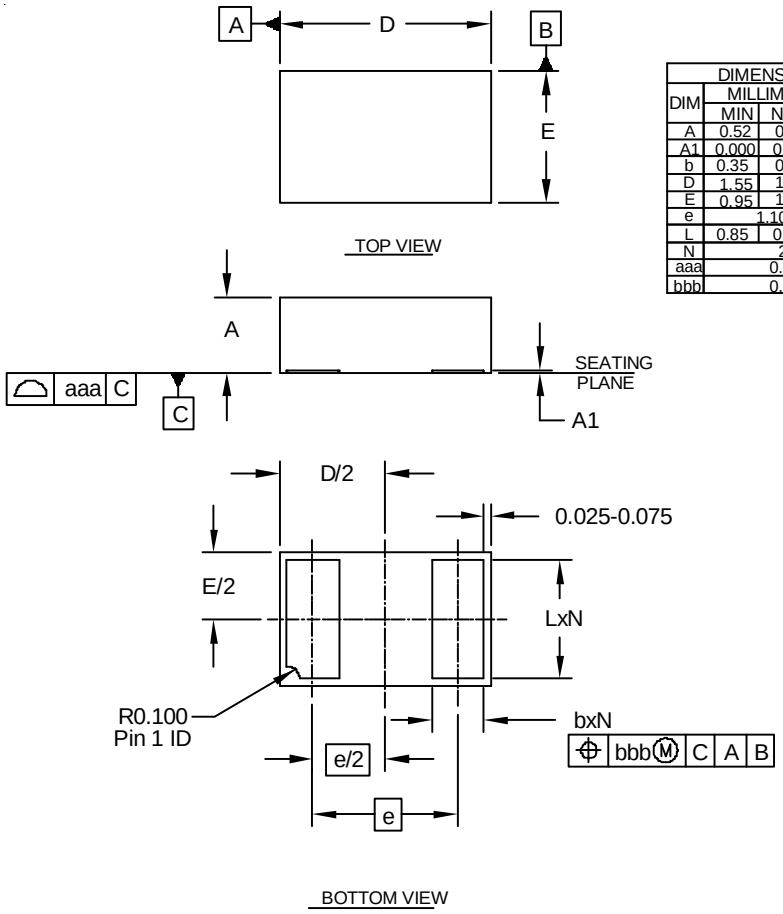


All Dimensions are in mm.

Land Pad. **Stencil opening** **Component**

Recommended Mounting Pattern

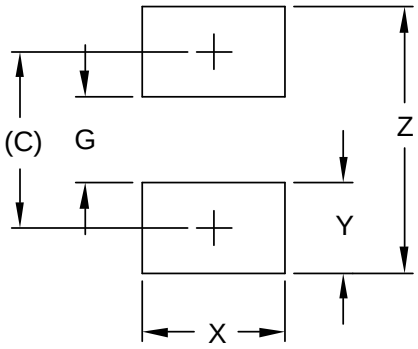
Outline Drawing - SGP1610N2



DIMENSIONS			
DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.52	0.57	0.62
A1	0.000	0.015	0.05
b	0.35	0.40	0.45
D	1.55	1.60	1.65
E	0.95	1.00	1.05
e	1.10 BSC		
L	0.85	0.90	0.95
N	2		
aaa	0.08		
bbb	0.10		

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

Land Pattern - SGP1610N2

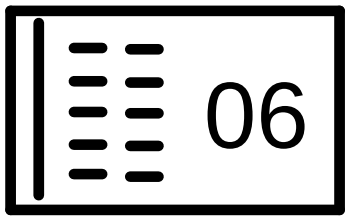


DIMENSIONS	
DIM	MILLIMETERS
C	(1.225)
G	0.60
X	1.00
Y	0.625
Z	1.85

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.

Example Device Marking



Notes:
1) Marking includes marking code, pin 1 bar, and 2x5 matrix date code

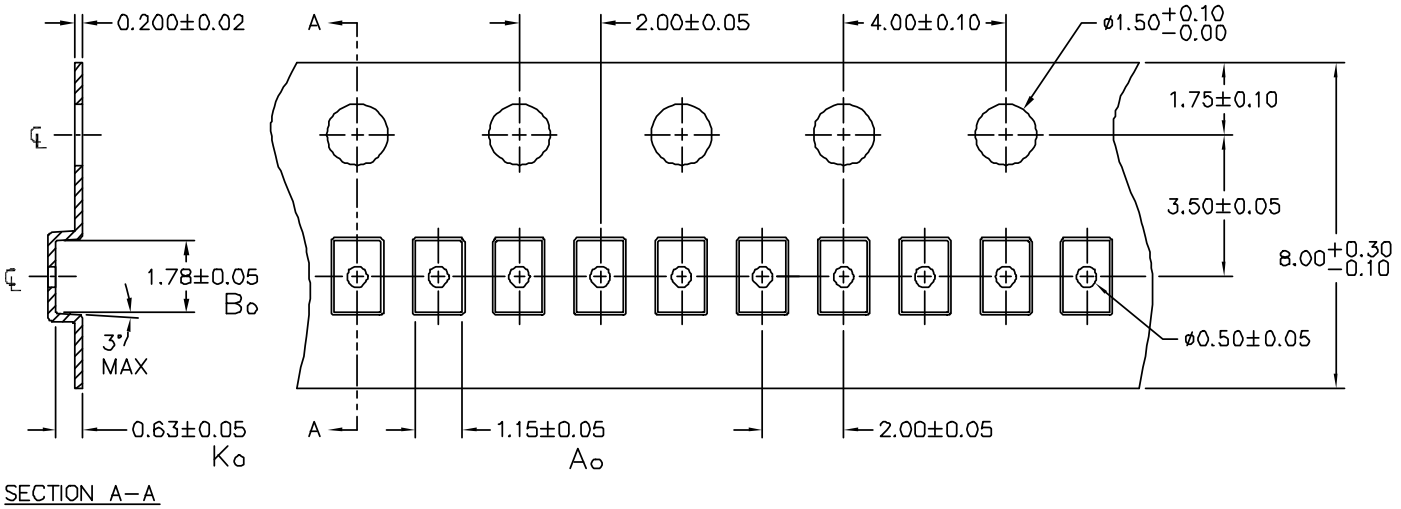
Ordering Information

Part Number	Marking Code	Working Voltage	Qty per Reel
uClamp0571P.TNT	06	5V	10,000
uClamp0871P.TNT	11	8V	10,000
uClamp1071P.TNT	12	10V	10,000
uClamp1271P.TNT	16	12V	10,000
uClamp1571P.TNT	18	15V	10,000
uClamp1871P.TNT	24	18V	10,000
uClamp2271P.TNT	26	22V	10,000
uClamp2671P.TNT	30	26V	10,000
uClamp3671P.TNT	37	36V	10,000

Notes:
MicroClamp, uClamp and µClamp are trademarks of Semtech Corporation

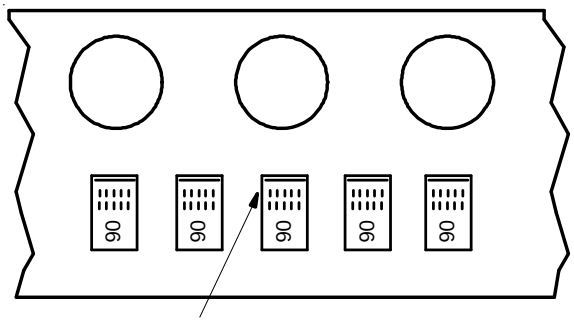
PROTECTION PRODUCTS

Carrier Tape Specification



NOTES: 1.) ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

Note: All dimensions in mm unless otherwise specified



PIN 1 Location
(Towards Sprocket Holes)

Device Orientation in Tape

Contact Information

Semtech Corporation
Protection Products Division
200 Flynn Rd., Camarillo, CA 93012
Phone: (805)498-2111 FAX (805)498-3804