Absolute Maximum Ratings

Rating	Symbol	Value	Units
Peak Pulse Power (tp = 8/20µs)	P_{PK}	25	Watts
Maximum Peak Pulse Current (tp = 8/20µs)	I_{PP}	3	Amps
ESD per IEC 61000-4-2 (Air)[1] ESD per IEC 61000-4-2 (Contact)[1]	V_{ESD}	+/- 17 +/- 12	kV
Operating Temperature	T_J	-55 to +125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

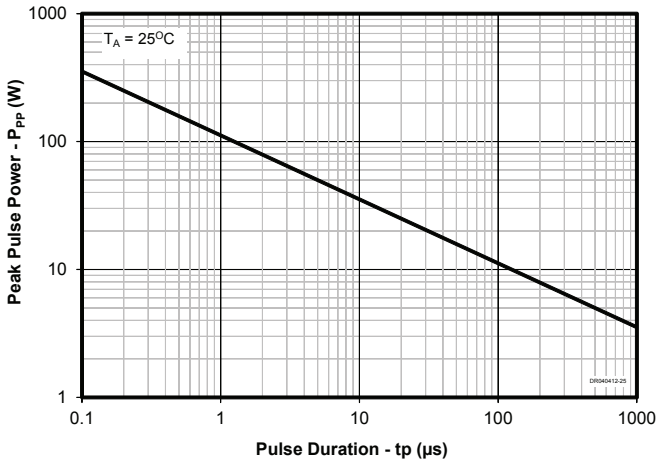
Electrical Characteristics (T=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V_{RWM}				3.3	V
Breakdown Voltage	V_{BR}	I_{BR} = 1mA	5.5	7	8.5	V
Reverse Leakage Current	I_R	V_{RWM} = 3.3V		10	50	nA
Clamping Voltage	V_C	I_{PP} = 1A, tp = 8/20µs		9.5	10	V
Clamping Voltage	V_C	I_{PP} = 4A, tp = 8/20µs		10.5	13	V
ESD Clamping Voltage[2]	V_C	I_{PP} = 4A, tlp = 0.2/100ns		8.8		V
ESD Clamping Voltage[2]	V_C	I_{PP} = 16A, tlp = 0.2/100ns		14.5		V
Trigger Voltage[2]	V_{TRIG}	tlp = 0.2/100ns		8		V
Dynamic Resistance[2, 3]	R_{DYN}	tlp = 0.2 / 100ns		0.47		Ω
Junction Capacitance	C_j	V_R = 0V, f = 1MHz		0.22	0.35	pF

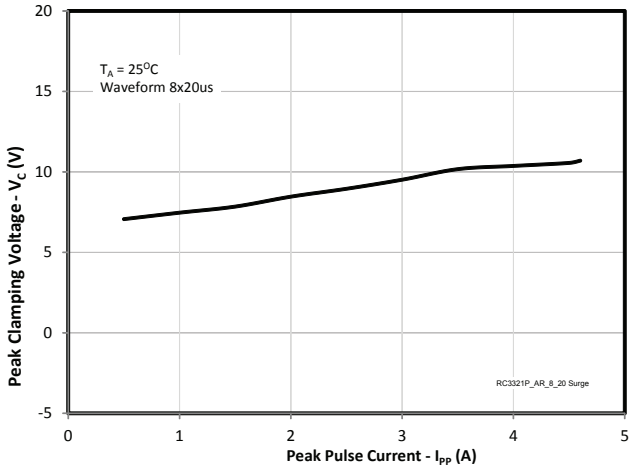
Notes
1)ESD gun return path connected to ESD ground reference plane.
2)TLP Settings: t_p = 100ns, t_r = 0.2ns, I_{TLP} and V_{TLP} sample window: t_1 = 70ns to t_2 = 90ns.
3) Dynamic resistance calculated from I_{pp} = 4A to I_{pp} = 16A using “Best Fit”
4) Device is electrically symmetrical

Typical Characteristics

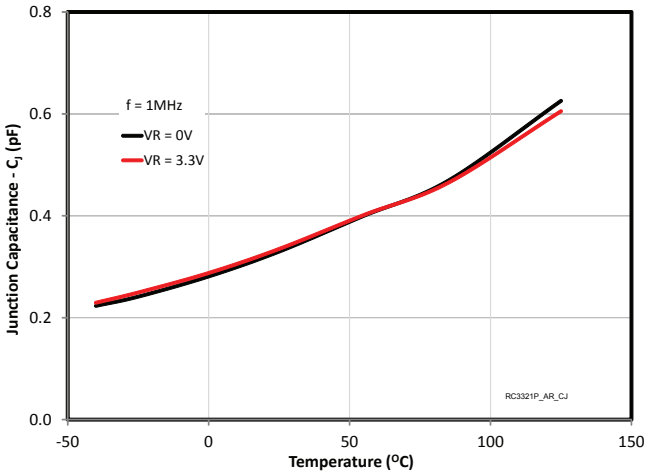
Non-Repetitive Peak Pulse Power vs. Pulse Time



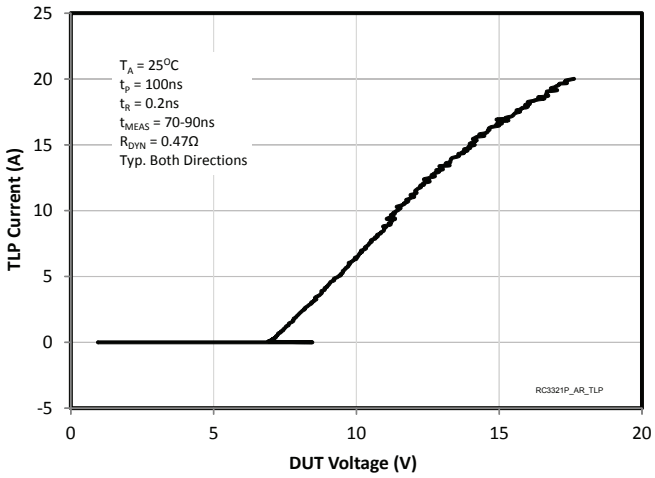
8x20us Peak Clamping Voltage vs Peak Current



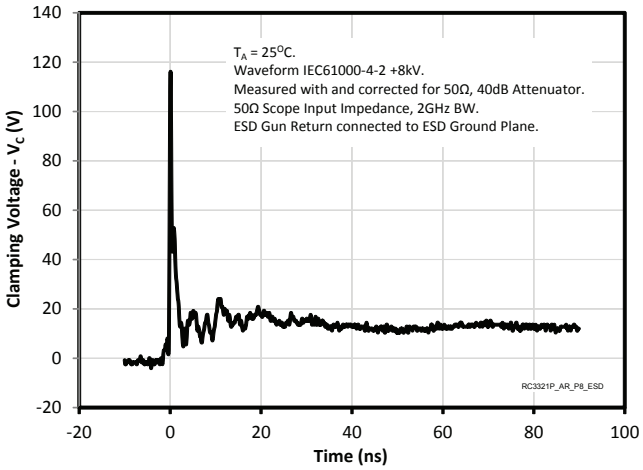
Capacitance vs. Temperature vs. Bias Voltage



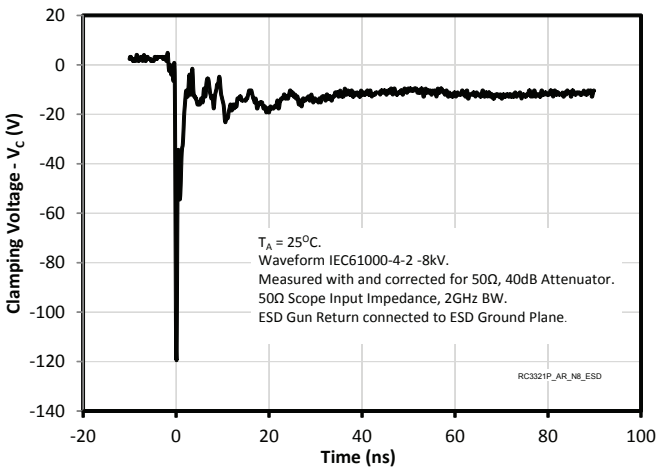
TLP Characteristic



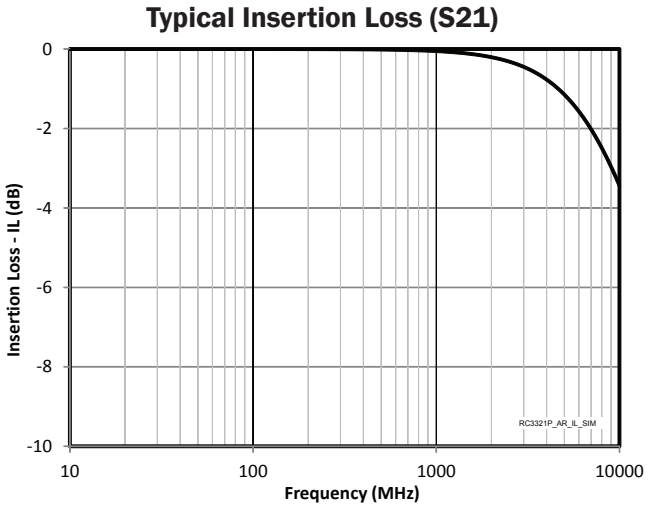
ESD Clamping (+8kV Contact per IEC 61000-4-2)



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

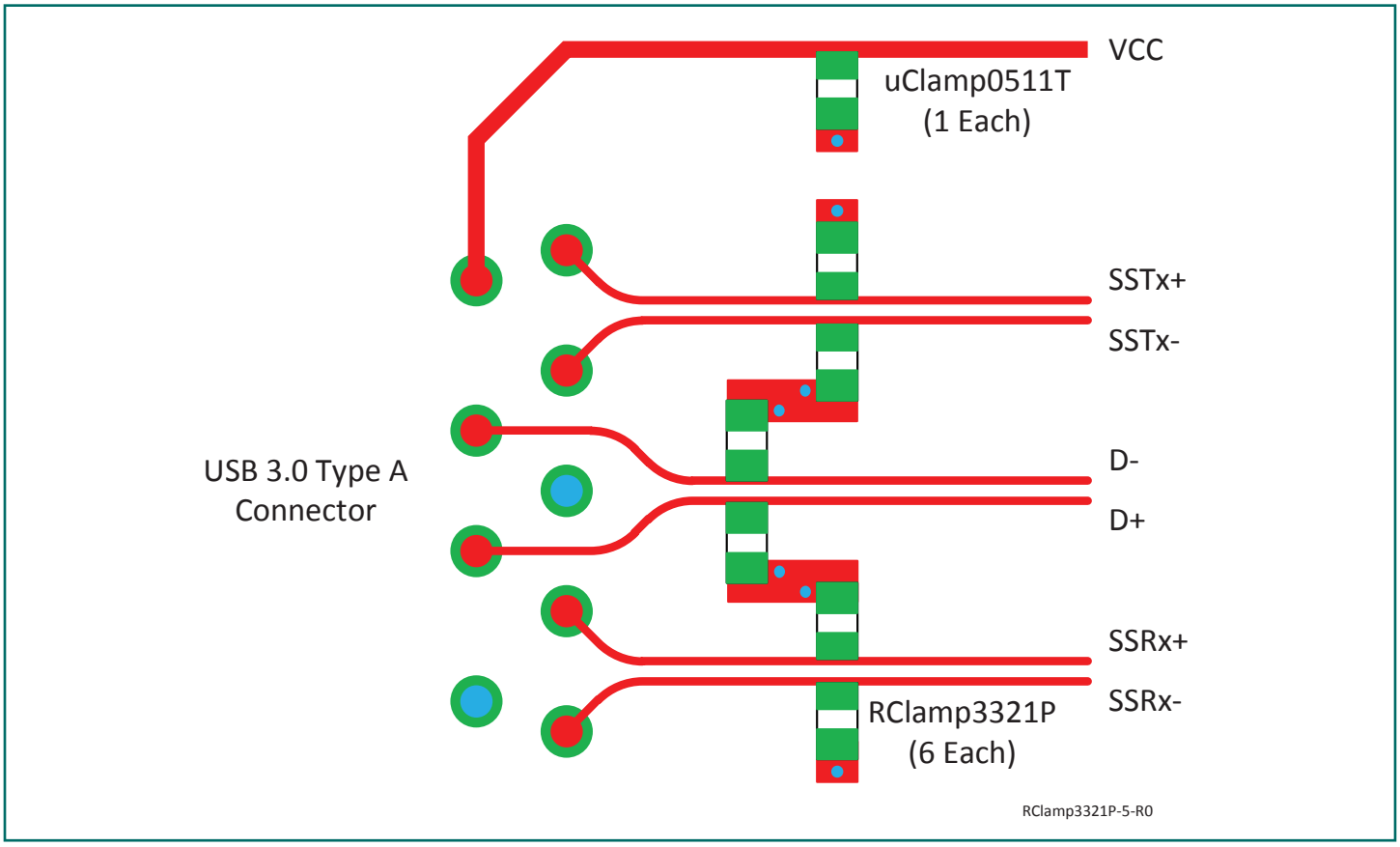


Typical Characteristics (Continued)

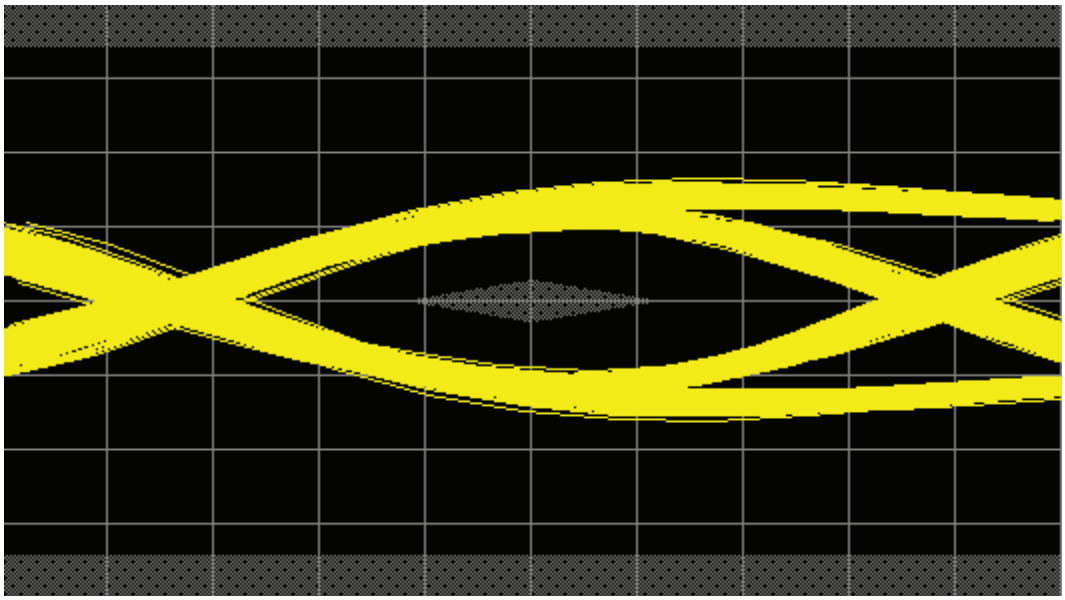


Applications Information

USB3.0 Layout Diagram



USB3.0 Eye Diagram



Applications Information

Device Connection Options

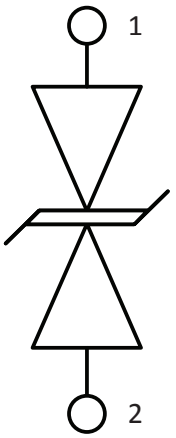
These low capacitance TVS diodes are designed to provide common mode protection for one high-speed line or differential protection for one line pair. The device is bidirectional and may be used on lines where the signal polarity is positive and negative.

Circuit Board Layout Recommendations for Suppression of ESD.

Good circuit board layout is critical for the suppression of ESD induced transients. The following guidelines are recommended:

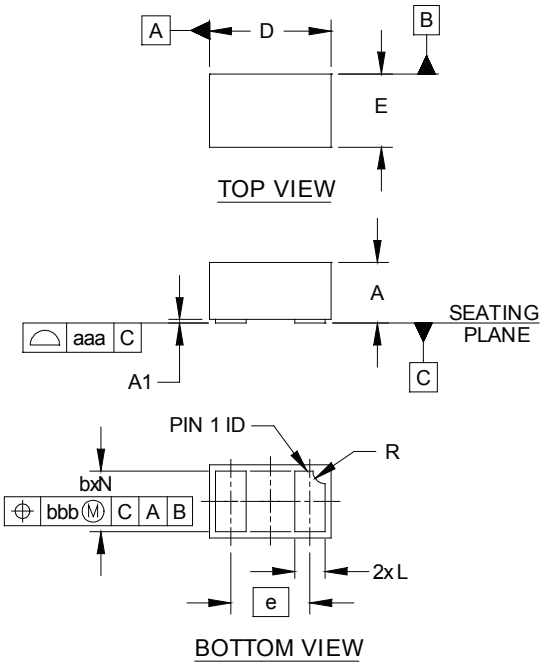
- Place the TVS near the input terminals or connectors to restrict transient coupling.
- Minimize the path length between the TVS and the protected line.
- Minimize all conductive loops including power and ground loops.
- The ESD transient return path to ground should be kept as short as possible.
- Never run critical signals near board edges.
- Use ground planes whenever possible.

Equivalent Circuit Diagram



RClamp3321P-3-R0

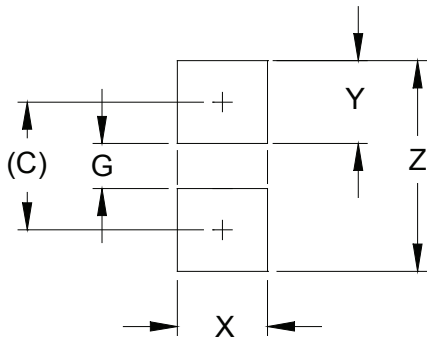
Outline Drawing - SLP1006P2



DIMENSIONS						
DIM	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.016	.020	.022	0.40	0.50	0.55
A1	.000	.001	.002	0.00	0.03	0.05
b	.018	.020	.022	0.45	0.50	0.55
D	.035	.039	.043	0.90	1.00	1.10
E	.020	.024	.028	0.50	0.60	0.70
e	.026 BSC			0.65 BSC		
L	.008	.010	.012	0.20	0.25	0.30
R	.002	.004	.006	0.05	0.10	0.15
N	2			2		
aaa	.003			0.08		
bbb	.004			0.10		

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

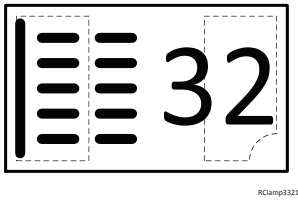
Land Pattern - SLP1006P2



DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	(.033)	(0.85)
G	.012	0.30
X	.024	0.60
Y	.022	0.55
Z	.055	1.40

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



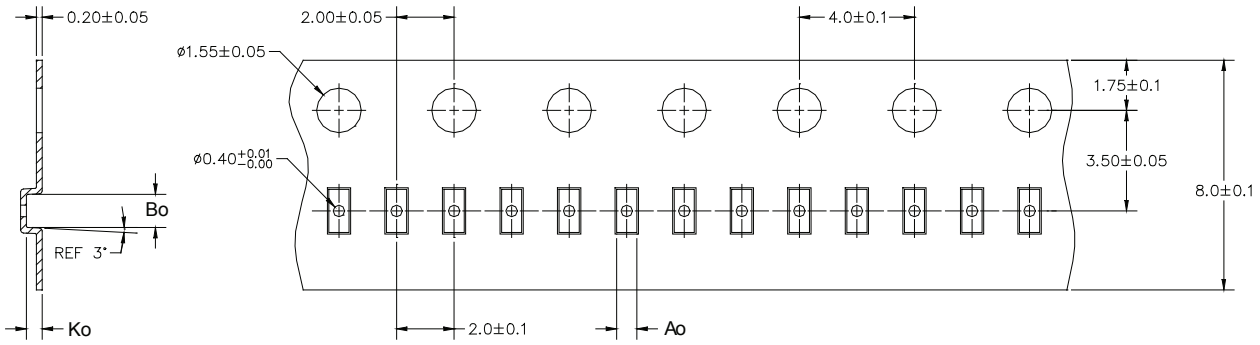
Notes:
1) Device is electrically symmetrical
2) Marking will also include line matrix date code

Ordering Information

Part Number	Qty per Reel	Reel Size
RClamp3321P.TNT	10,000	7 inch

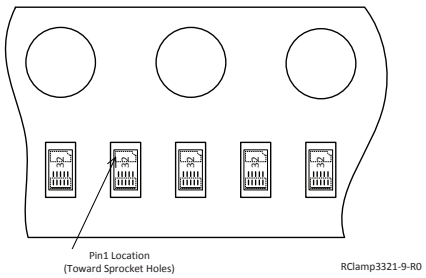
Note:
RailClamp and RClamp are trademarks of Semtech Corporation

Tape and Reel Specification



A0	B0	K0
0.69 ± 0.10 mm	1.19 ± 0.10 mm	0.66 ± 0.10 mm

Note: All dimensions in mm unless otherwise specified



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