Absolute Maximum Rating

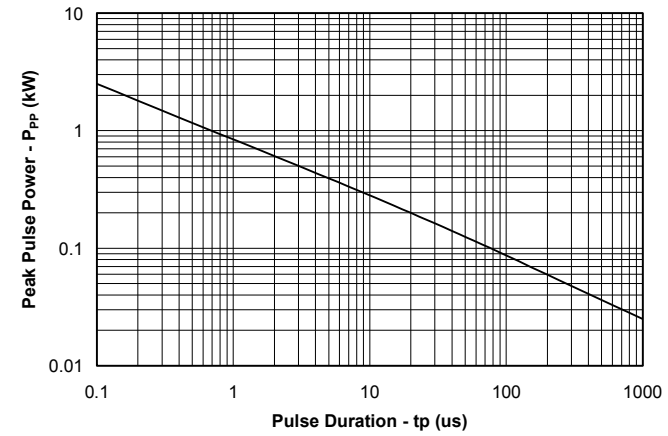
Rating	Symbol	Value	Units
Peak Pulse Power (tp = 8/20µs)	P_{pk}	200	Watts
Maximum Peak Pulse Current (tp = 8/20µs)	I_{pp}	8	Amps
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{PP}	+/- 20 +/- 15	kV
Lead Soldering Temperature	T_L	260 (10 sec.)	°C
Operating Temperature	T_J	-55 to +125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Characteristics (T=25°C)

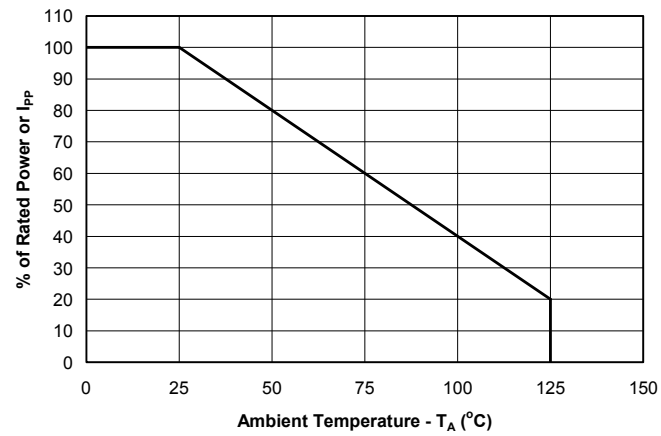
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}				12	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA	13.3			V
Reverse Leakage Current	I_R	V_{RWM} = 12V, T=25°C			1	µA
Forward Voltage	V_F	I_F = 10mA		0.8		V
Clamping Voltage	V_C	I_{PP} = 1A, t_p = 8/20µs			19	V
Clamping Voltage	V_C	I_{PP} = 8A, t_p = 8/20µs			25	V
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			60	pF

Typical Characteristics

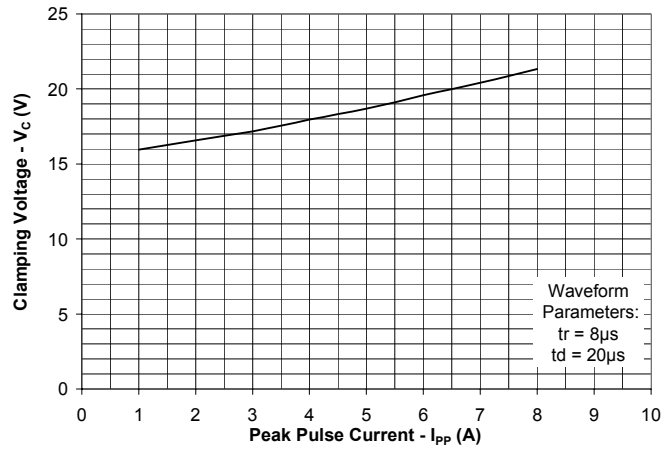
Non-Repetitive Peak Pulse Power vs. Pulse Time



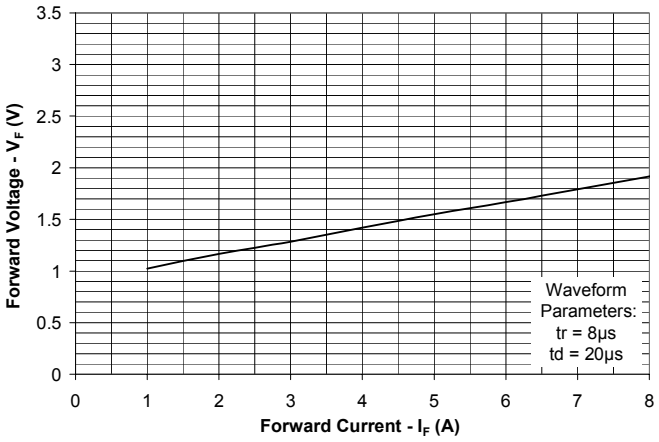
Power Derating Curve



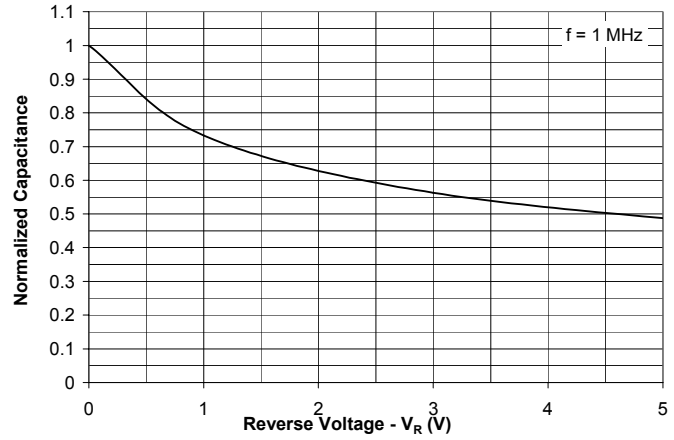
Clamping Voltage vs. Peak Pulse Current



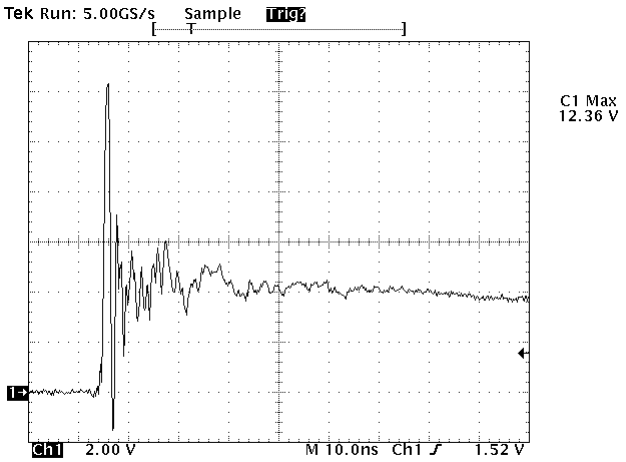
Forward Voltage vs. Forward Current



Junction Capacitance vs. Reverse Voltage



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



Applications Information

Device Connection Options

These TVS diodes are designed to protect one data, I/O, or power supply line. The device is unidirectional and may be used on lines where the signal polarity is above ground. The cathode band should be placed towards the line that is to be protected.

Circuit Board Layout Recommendations for Suppression of ESD.

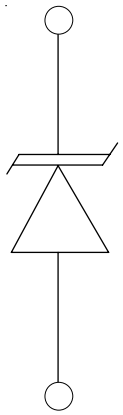
Good circuit board layout is critical for the suppression of ESD induced transients. The following guidelines are recommended:

- 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.

Matte Tin Lead Finish

Matte tin has become the industry standard lead-free replacement for SnPb lead finishes. A matte tin finish is composed of 100% tin solder with large grains. Since the solder volume on the leads is small compared to the solder paste volume that is placed on the land pattern of the PCB, the reflow profile will be determined by the requirements of the solder paste. Therefore, these devices are compatible with both lead-free and SnPb assembly techniques. In addition, unlike other lead-free compositions, matte tin does not have any added alloys that can cause degradation of the solder joint.

Circuit Diagram



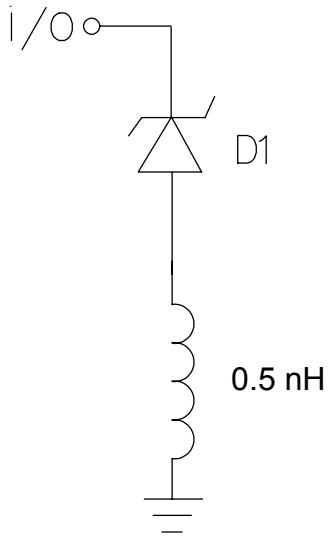
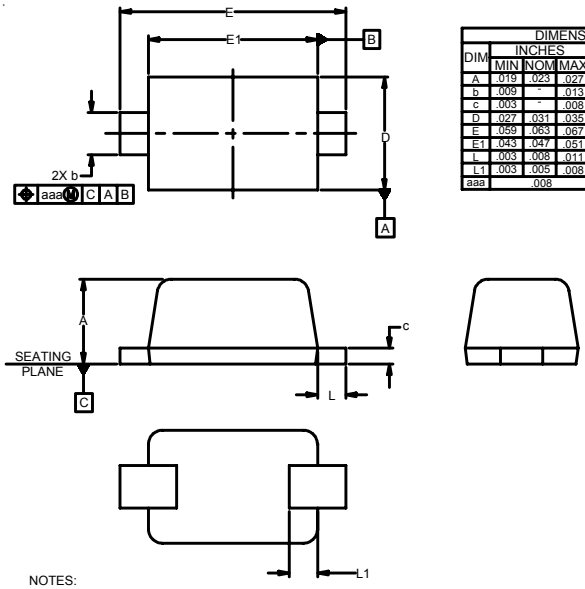


Figure 1 - uClamp1201H Spice Model

Table 1 - uClamp1201H Spice Parameters

Parameter	Unit	D1 (TVS)
IS	Amp	1.48E-14
BV	Volt	15.33
VJ	Volt	0.723
RS	Ohm	0.772
IBV	Amp	1.0E-3
CJO	Farad	52E-12
TT	sec	2.541E-9
M	--	0.268
N	--	1.1
EG	eV	1.11

Outline Drawing - SOD-523

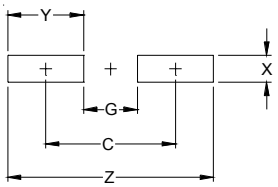


DIM	DIMENSIONS					
	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.019	.023	.027	0.50	0.60	0.70
b	.009	-	.013	0.25	-	0.35
c	.003	-	.008	0.10	-	0.20
D	.027	.031	.035	0.70	0.80	0.90
E	.059	.063	.067	1.50	1.60	1.70
E1	.043	.047	.051	1.10	1.20	1.30
L	.003	.008	.011	0.10	0.20	0.30
L1	.003	.005	.008	0.10	0.15	0.20
aaa	.008			0.20		

NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONS "E1" AND "D" DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

Land Pattern - SOD-523

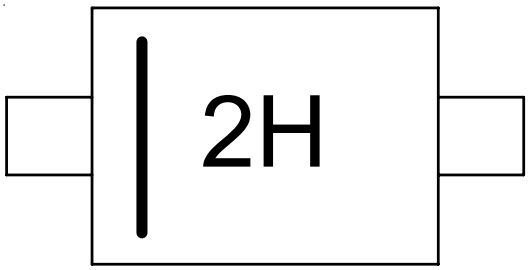


DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	(.057)	(1.45)
G	.024	0.60
X	.018	0.45
Y	.033	0.85
Z	.090	2.30

NOTES:

1. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY CONSULT YOUR MANUFACTURING GROUP TO ENSURE YOUR COMPANY'S MANUFACTURING GUIDELINES ARE MET.

Marking Code



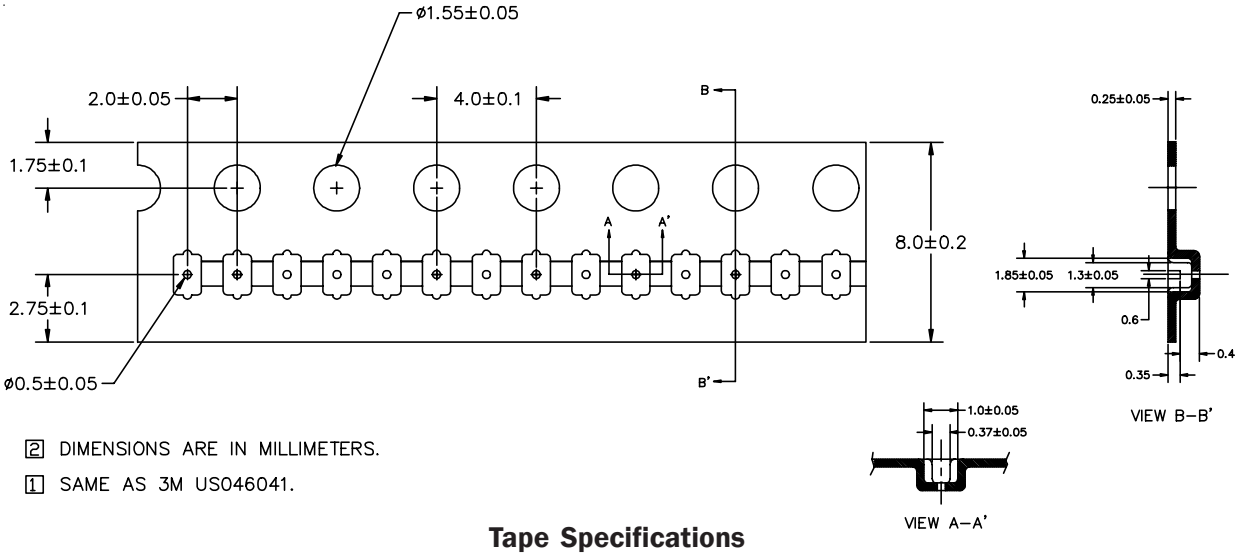
Ordering Information

Part Number	Working Voltage	Device Marking	Qty per Reel	Reel Size
uClamp1201H.TCT	12V	2H	3,000	7 Inch

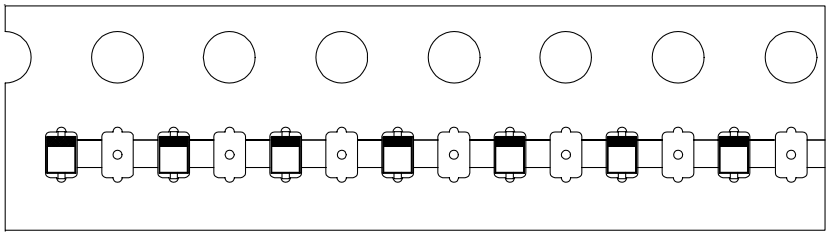
Note: Devices are lead-free

MicroClamp, uClamp and µClamp are marks of Semtech Corporation

Tape and Reel Specification



Tape Specifications



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