

## PROTECTION PRODUCTS

### Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power ( $t_p = 8/20\mu s$ )	$P_{pk}$	135	Watts
Peak Pulse Current ( $t_p = 8/20\mu s$ ) <sup>1</sup>	$I_{pp}$	15	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	$V_{ESD}$	+/-30 +/-25	kV
Operating Temperature	$T_J$	-55 to +125	°C
Storage Temperature	$T_{STG}$	-55 to +150	°C

Note: 1) Any I/O to GND

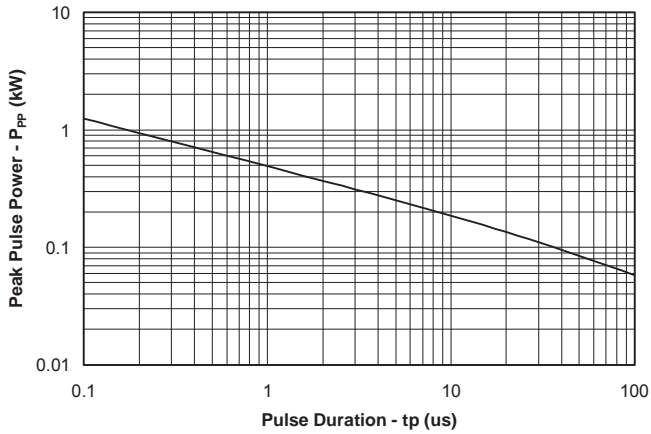
### Electrical Characteristics (T=25°C)

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	$V_{RWM}$				2.5	V
Punch-Through Voltage	$V_{PT}$	$I_{PT} = 2\mu A$ Any I/O to GND	2.7			V
Snap-Back Voltage	$V_{SB}$	$I_{SB} = 50mA$ Any I/O to GND	2.0			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 2.5V, T=25^\circ C$ Any I/O to GND			0.5	$\mu A$
Clamping Voltage	$V_C$	$I_{pp} = 1A, t_p = 8/20\mu s$ Any I/O to GND			4.8	V
Clamping Voltage	$V_C$	$I_{pp} = 10A, t_p = 8/20\mu s$ Any I/O to GND			7.7	V
Clamping Voltage	$V_C$	$I_{pp} = 15A, t_p = 8/20\mu s$ Any I/O to GND			9.0	V
Forward Voltage	$V_F$	$I_{pp} = 10A, t_p = 8/20\mu s$ GND to Any I/O			3.5	V
Forward Voltage	$V_F$	$I_{pp} = 15A, t_p = 8/20\mu s$ GND to Any I/O			4.8	V
Junction Capacitance	$C_j$	Between I/O pins and Ground $V_R = 0V - 2.5V, f = 1MHz$			5	pF
		Between I/O pins $V_R = 0V - 2.5V, f = 1MHz$		2.0		pF

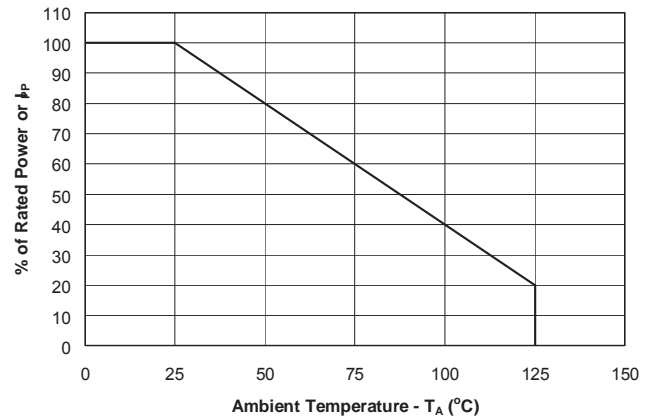
## PROTECTION PRODUCTS

### Typical Characteristics

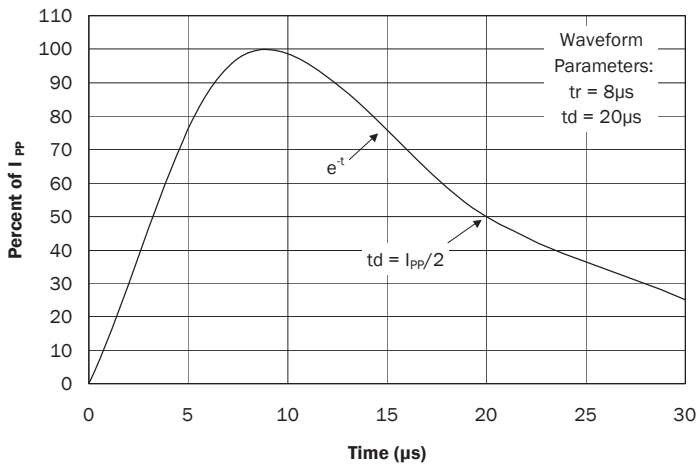
#### Non-Repetitive Peak Pulse Power vs. Pulse Time



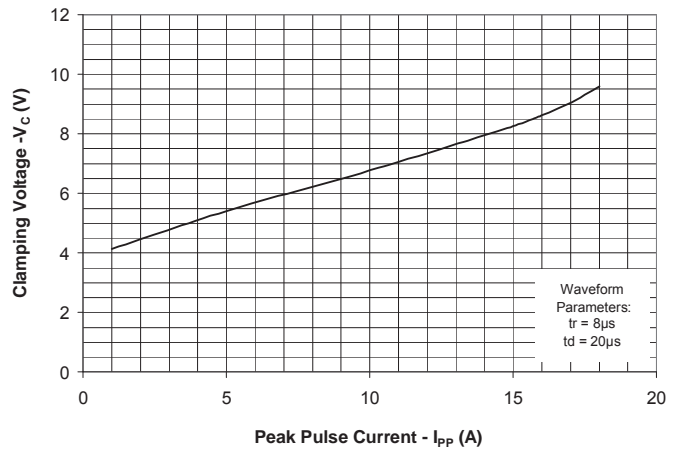
#### Power Derating Curve



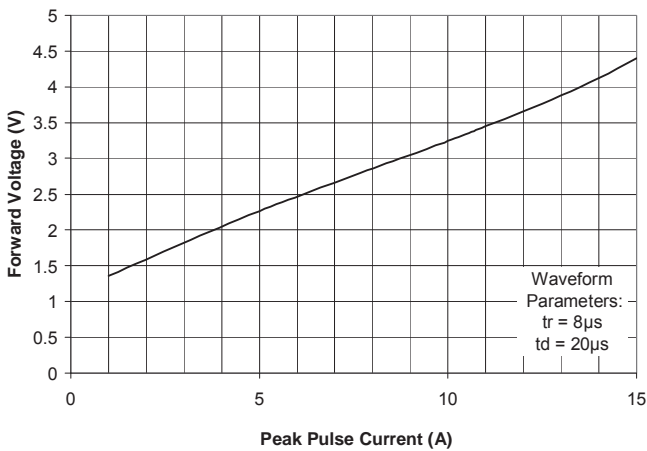
#### Surge Current Output Waveform ( $t_p = 8/20\mu s$ )



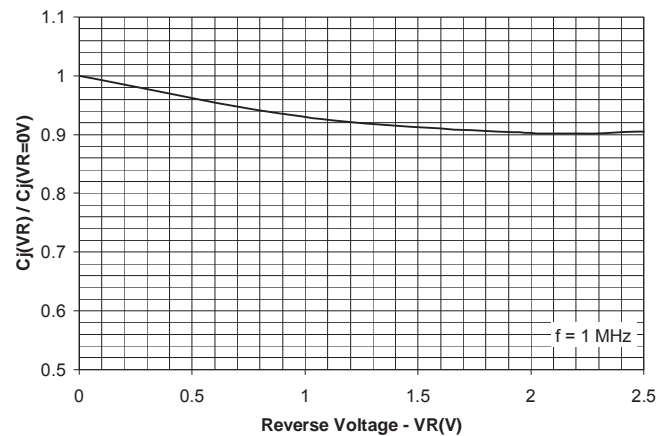
#### Clamping Voltage vs. Peak Pulse Current Any I/O to GND ( $t_p = 8/20\mu s$ )



#### Forward Voltage vs. Peak Pulse Current GND to any I/O ( $t_p = 8/20\mu s$ )



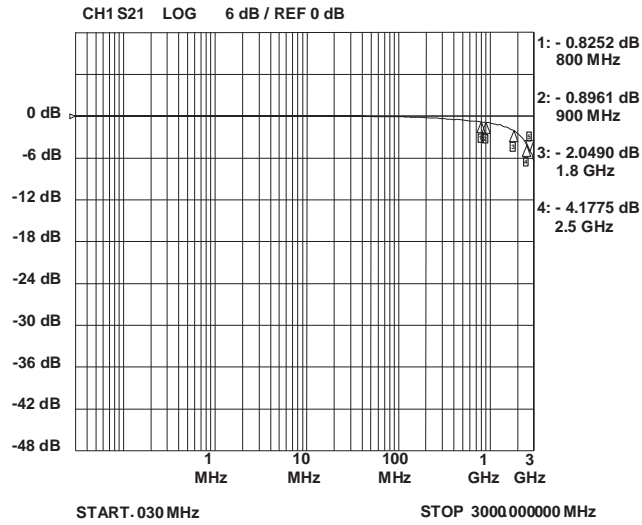
#### Normalized Capacitance vs. Reverse Voltage (Any I/O to GND)



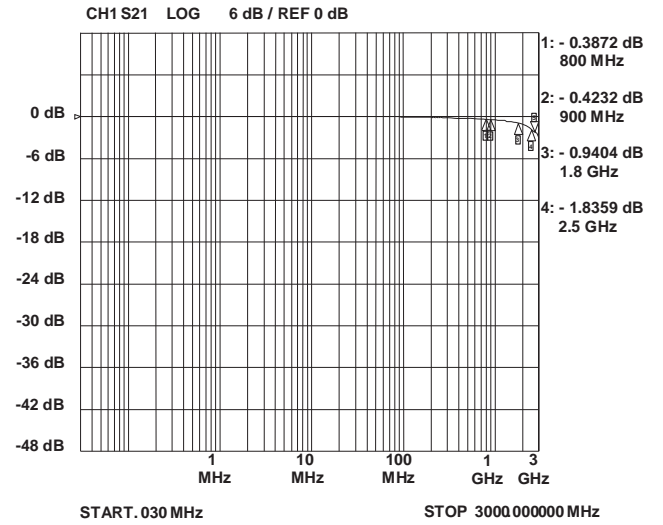
## PROTECTION PRODUCTS

### Typical Characteristics

#### Insertion Loss S21 (I/O to Gnd)



#### Insertion Loss S21 (I/O to I/O)



## PROTECTION PRODUCTS

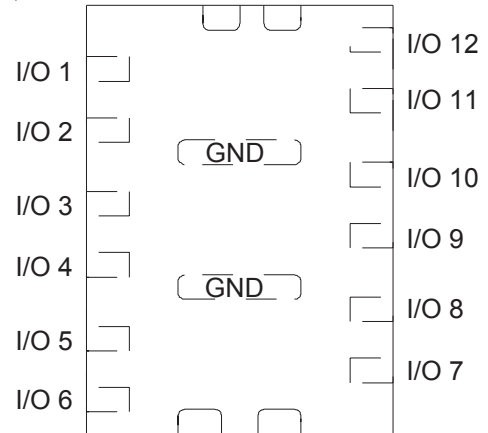
### Applications Information

#### Device Connection Options for Protection of Twelve High-Speed Data Lines

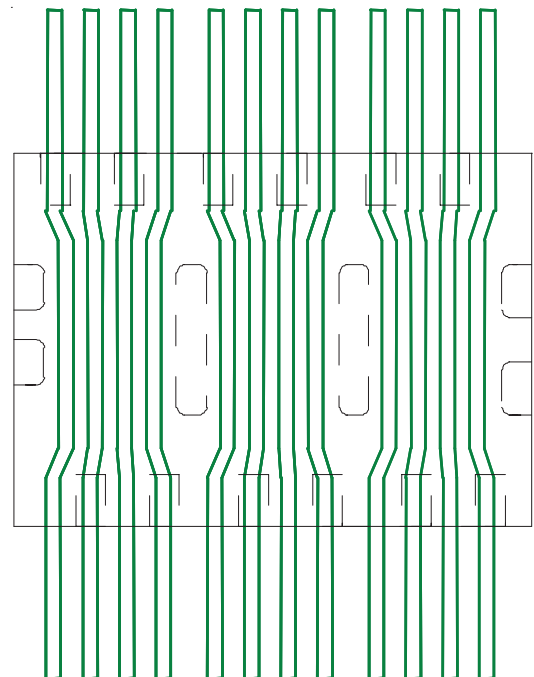
This device is designed to protect up to twelve high-speed data lines. It has been optimized for use on LVDS interfaces. The RClamp7512N is constructed using Semtech's proprietary EPD process technology. The EPD process provides low stand-off (turn-on) voltages with significant reductions while maintaining good clamping characteristics and high surge capability. They feature a true operating voltage of 2.5 volts. The characteristics of the RClamp7512N eliminate the need to add an external resistor for protection of LVDS interfaces.

Each pin (1-12) is internally connected to a protection circuit. The pins are slightly staggered to allow clearance for routing traces up to 0.100mm wide with 0.150mm spacing between traces. This flow through design means that the RClamp7512N can be used on PC boards with as few as 2-layers. The device also features two center ground tabs. These pads provide a low inductance path for the surge current to ground. The low inductance ground path is especially critical for reducing the clamping voltage during ESD events.

#### Pin Configuration (Top View)

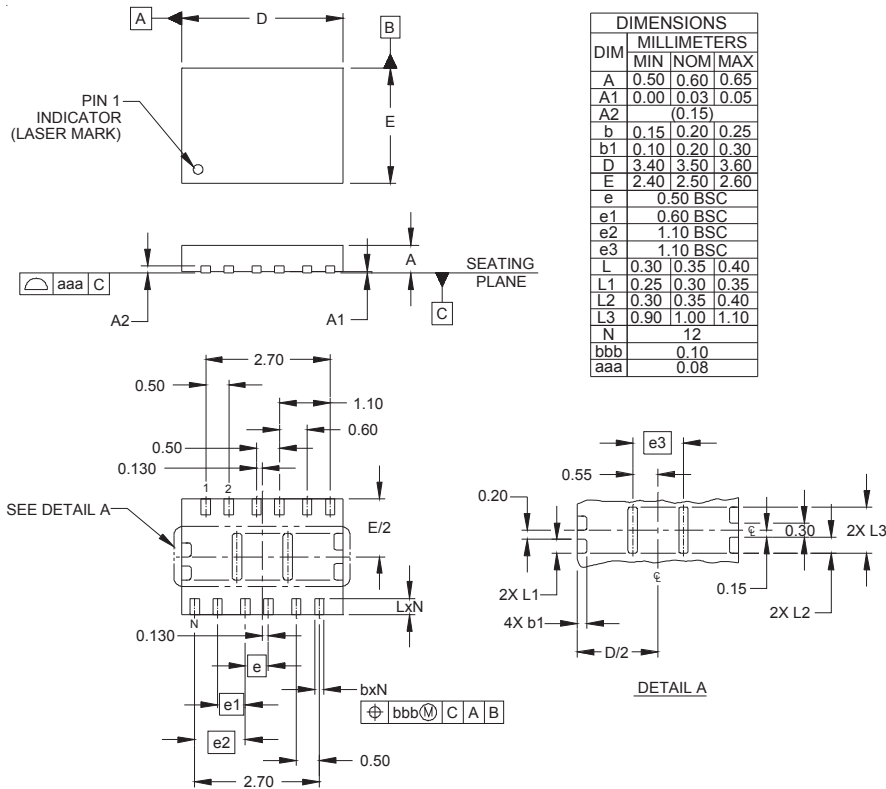


#### Layout Example



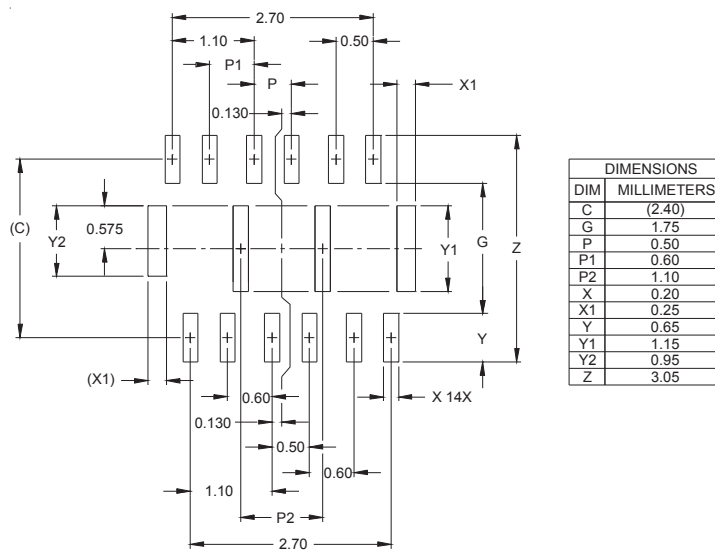
## PROTECTION PRODUCTS

### Outline Drawing - SLP3525N12



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

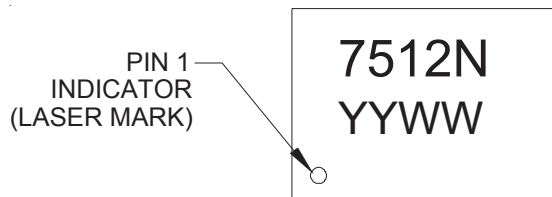
### Land Pattern - SLP3525N12



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.

## PROTECTION PRODUCTS

### Marking



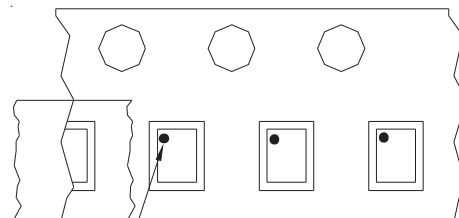
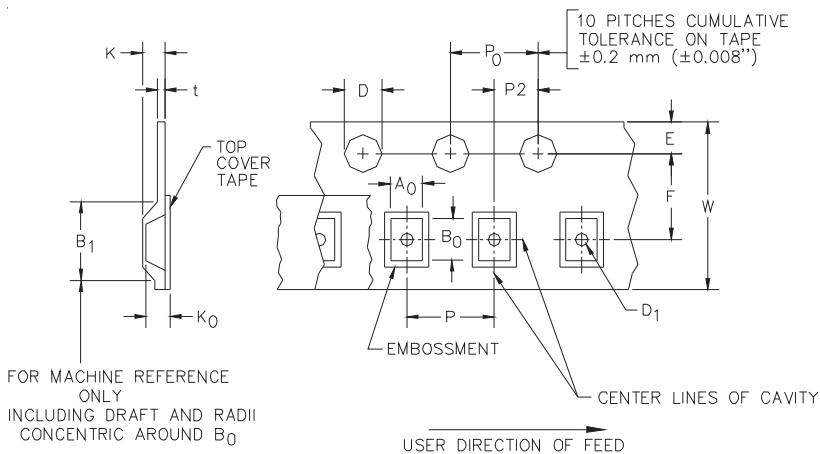
### Ordering Information

Part Number	Lead Finish	Qty per Reel	Reel Size
RClamp7512N.TCT	NiPdAu	3000	7 Inch

RailClamp and RClamp are marks of Semtech Corporation

YYWW = Date Code

### Tape and Reel Specification



Pin 1 Location

User Direction of feed

**Device Orientation in Tape**

A0	B0	K0
2.80 +/-0.20 mm	3.80 +/-0.20 mm	0.80 +/-0.10 mm

Tape Width	B, (Max)	D	D1	E	F	K (MAX)	P	P0	P2	T(MAX)	W
12 mm	8.2 mm	1.5 + 0.1 mm - 0.0 mm )	0.5 mm ±0.05	1.750±.10 mm	5.5±0.05 mm	4.5 mm	8.0±0.1 mm	4.0±0.1 mm	2.0±0.05 mm	0.4 mm	12.0 mm ± 0.3 mm

### Contact Information

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

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Semtech:](#)

[RCLAMP7512N.TCT](#)