

PROTECTION PRODUCTS
Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power (tp = 8/20μs)	P _{pk}	75	Watts
Peak Pulse Current (tp = 8/20μs)	I _{pp}	5	A
ESD per IEC 61000-4-2 (Air) ¹ ESD per IEC 61000-4-2 (Contact) ¹	V _{ESD}	+/- 30 +/- 25	kV
Operating Temperature	T _J	-55 to +125	°C
Storage Temperature	T _{STG}	-55 to +150	°C

Electrical Characteristics (T=25°C)

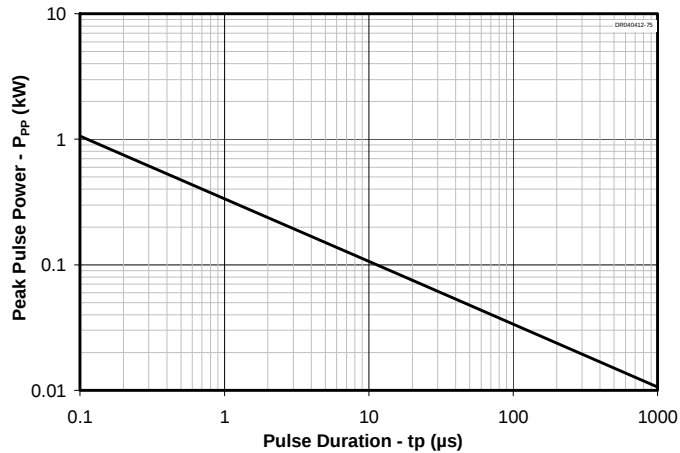
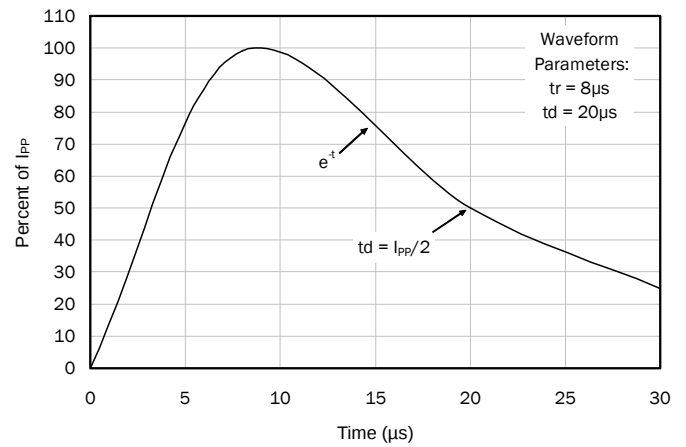
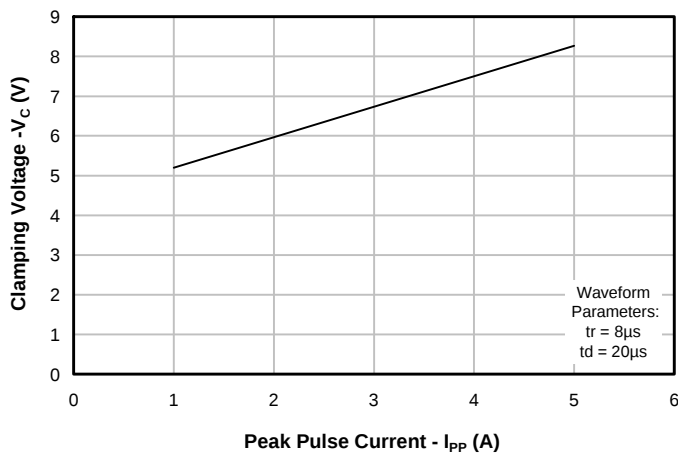
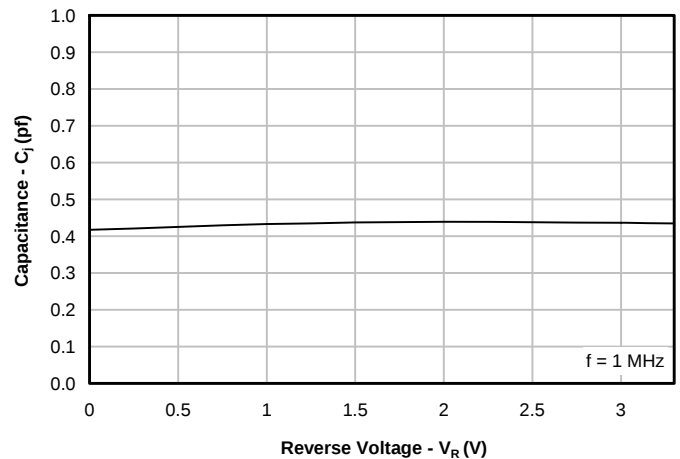
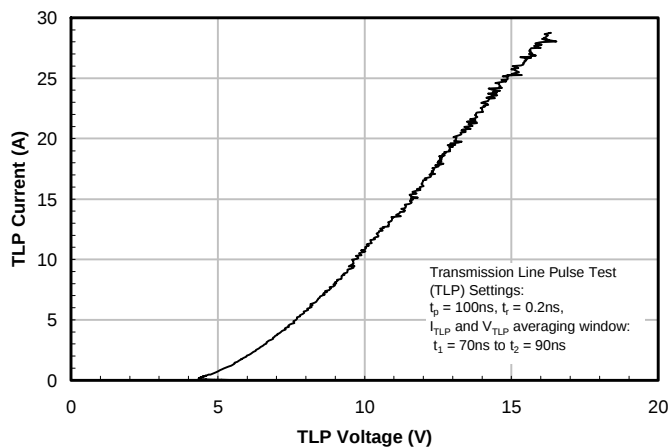
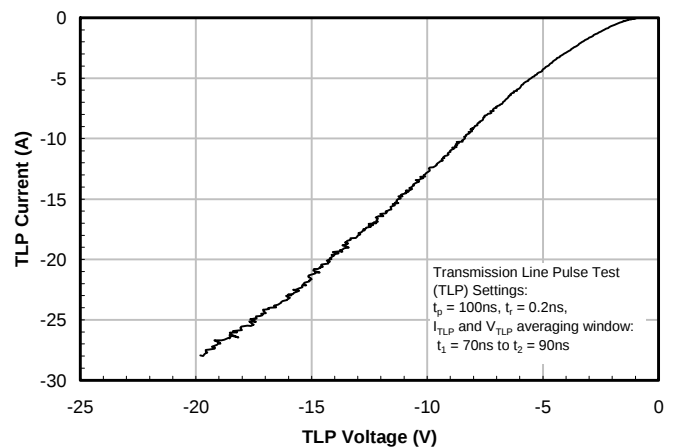
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V _{RWM}	Any I/O to GND			3.3	V
Punch-Through Voltage	V _{PT}	I _{PT} = 2μA Any I/O to GND	3.8	4.8	5.5	V
Reverse Leakage Current	I _R	V _{RWM} = 3.3V, Any I/O to GND		0.005	0.100	μA
Clamping Voltage	V _C	I _{pp} = 1A, tp = 8/20μs Any I/O to GND		5.2	7	V
Clamping Voltage	V _C	I _{pp} = 5A, tp = 8/20μs Any I/O to GND		8.2	10.5	V
ESD Clamping Voltage ²	V _C	IPP = 16A, t1p = 0.2/100ns		11.8		V
ESD Clamping Voltage ²	V _C	IPP = -16A, t1p = 0.2/100ns		11.7		V
Dynamic Resistance (Positive) ^{2,3}	R _D	tp = 100ns		0.35		Ohms
Dynamic Resistance(negative) ^{2,3}	R _D	tp = 100ns		0.50		Ohms
Junction Capacitance	C _J	V _R = 0V, f = 1MHz, Any I/O to GND		0.40	0.65	pF
		V _R = 0V, f = 1MHz, Between I/O pins		0.30	0.4	pF

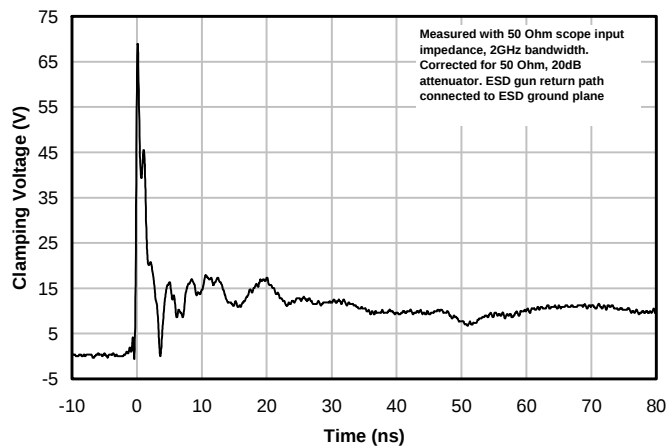
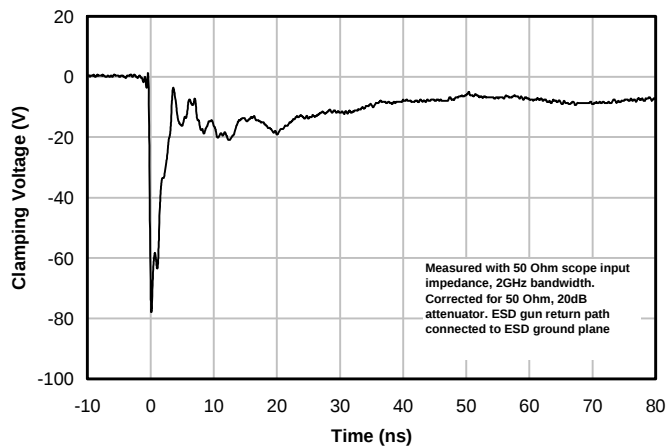
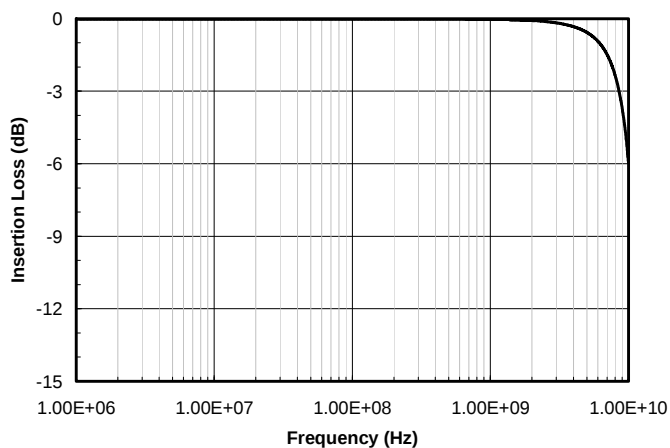
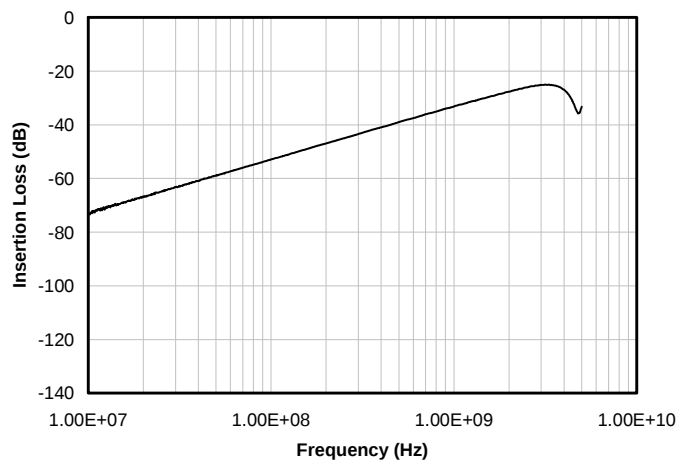
Notes

1) Measured with a 20dB attenuator, 50 Ohm scope input impedance, 2GHz bandwidth. 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: t₁ = 70ns to t₂ = 90ns.

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

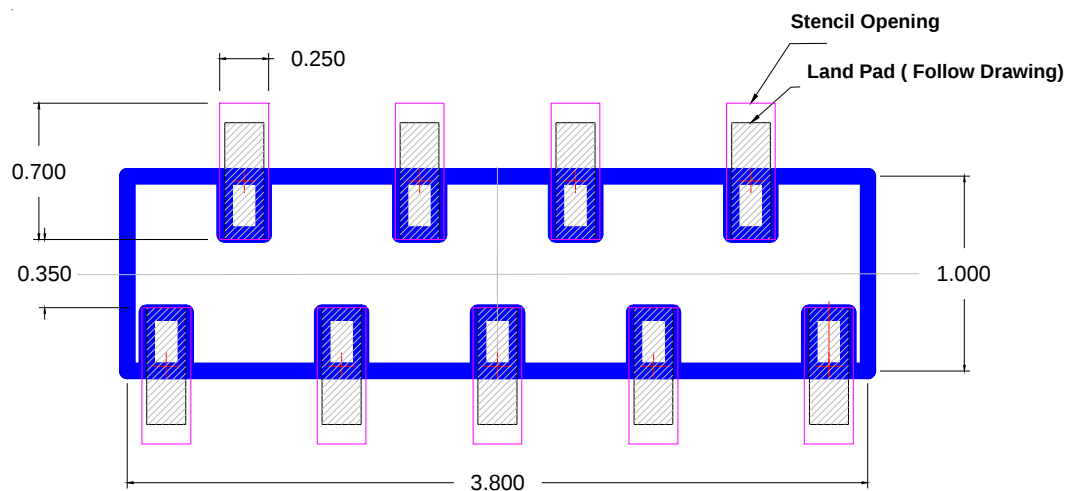
PROTECTION PRODUCTS
Typical Characteristics
Non-Repetitive Peak Pulse Power vs. Pulse Time

8/20 μ s Pulse Waveform

**Clamping Voltage vs. Peak Pulse Current
(Between any I/O and Ground)**

**Junction Capacitance vs. Reverse Voltage
(Between any I/O and Ground)**

TLP Characteristic (Positive)

TLP Characteristic (Negative)


PROTECTION PRODUCTS
Typical Characteristics (Con't)
**ESD Clamping (+8kV Contact per IEC 61000-4-2)
(Between any I/O and Ground)**

**ESD Clamping (-8kV Contact per IEC 61000-4-2)
(Between any I/O and Ground)**

Typical Insertion Loss S21

Analog Crosstalk


PROTECTION PRODUCTS
Applications Information
Assembly Guidelines

The small size of this device means that some care must be taken during the mounting process to insure reliable solder joint. Semtech's recommended assembly guidelines for mounting this device are shown in the Table. The figure below 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	0.100 mm (0.004")
Solder Paste Type	Type 4 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.

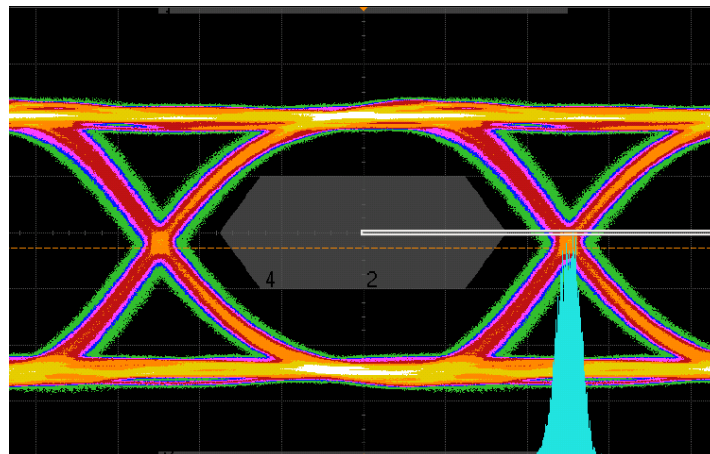
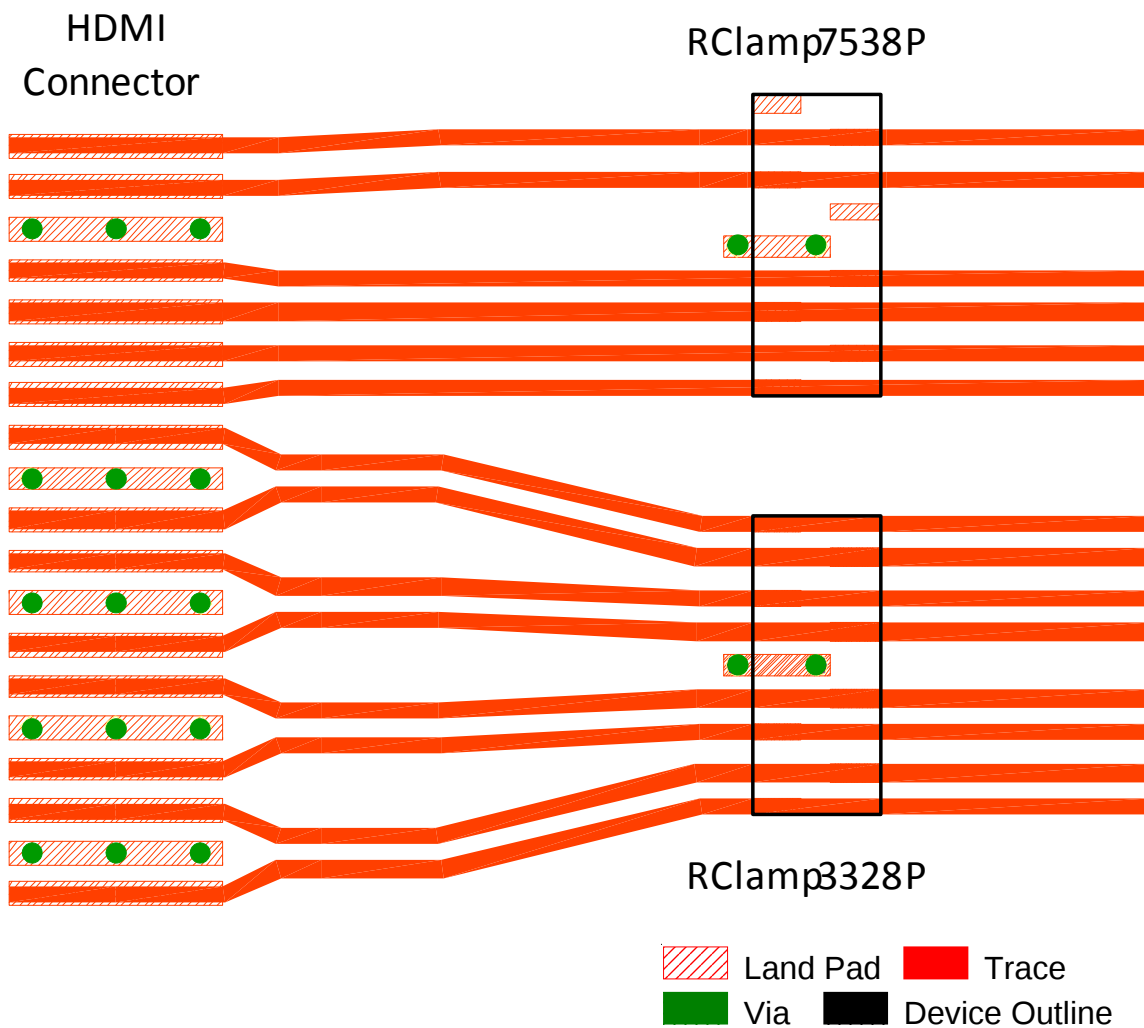


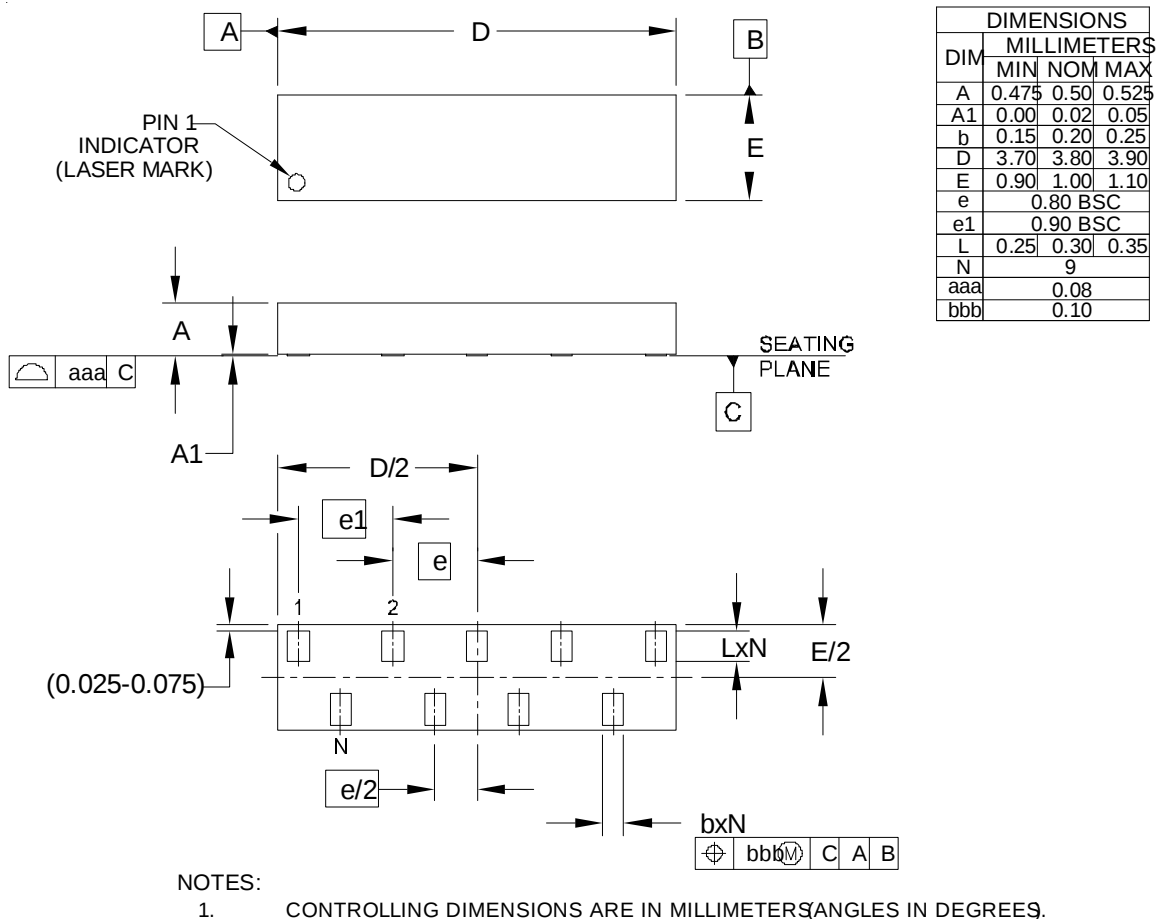
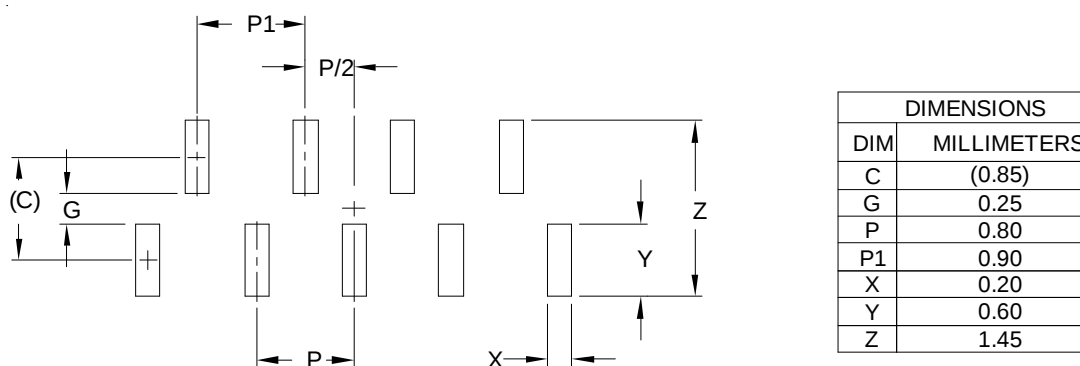
Stencil opening



Component

Recommended Mounting Pattern

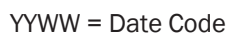

HDMI 1.4 Layout and Eye Diagram with RClamp3328P

PROTECTION PRODUCTS
Outline Drawing - SGP3810N9

Land Pattern - SGP3810N9

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

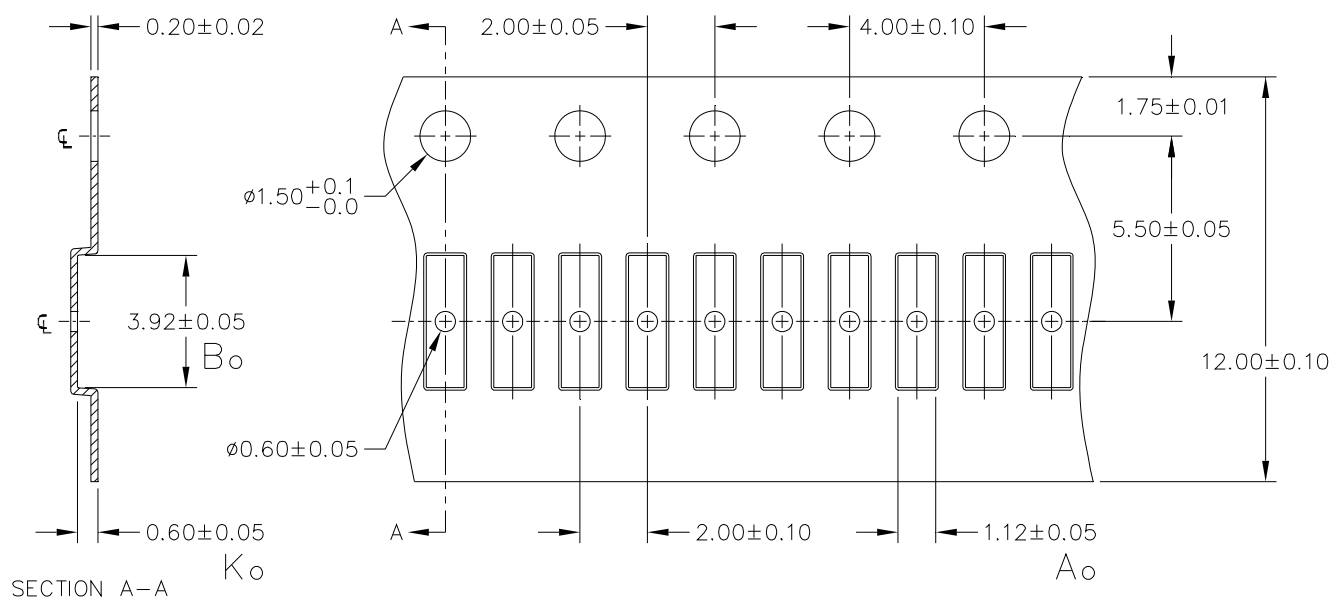
Ordering Information



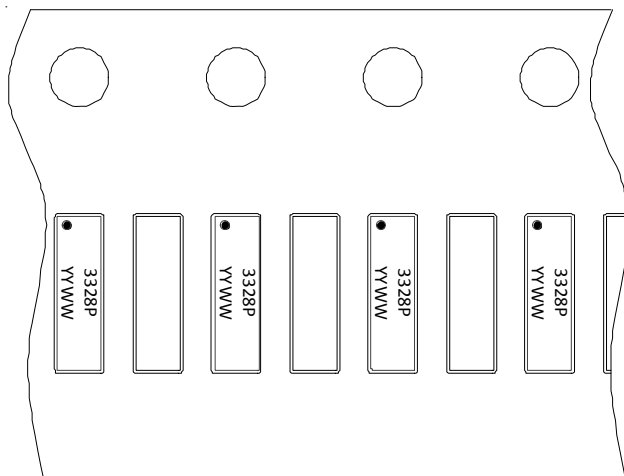
Part Number	Qty per Reel	Device to Device Pitch	Reel Size
RClamp3328P.TZT	5,000	4mm	7 Inch
RClamp3328P.TNT	10,000	2mm	7 Inch

RailClamp and RClamp are trademarks of Semtech Corporation.

Carrier Tape Specification



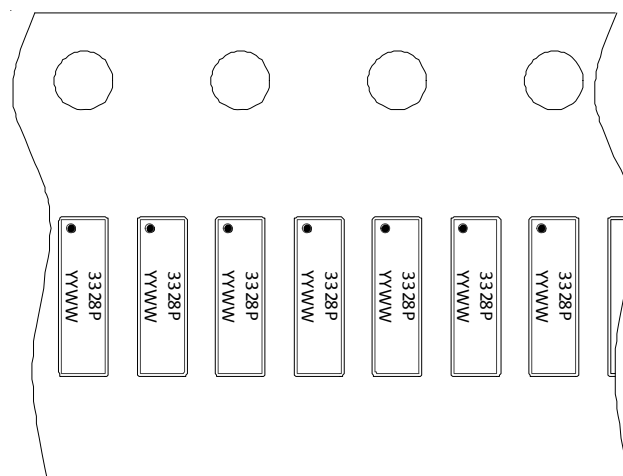
NOTE: ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.



Notes:

- 1) Pin 1 towards sprocket holes
- 2) Every other pocket populated

Device Orientation in Tape (5K Piece Option)



Notes:

- 1) Pin 1 towards sprocket holes
- 2) Every pocket populated

Device Orientation in Tape (10K Piece Option)

Contact Information

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