PRODUCT DISCONTINUANCE NOTIFICATION
EOL-000341
Date: 15MAR2022

Semtech Corporation, 200 Flynn Road, Camarillo CA 93012

Product Discontinuance Details

Purpose, Description and Effect of Change:

This notification is to inform your company that Semtech is discontinuing the manufacture of the RCLAMP0524J.TCT product listed below. In accordance with Semtech's product discontinuation policy, we are hereby giving notice of these product changes in order for your company to make any final lifetime purchases of the discontinued products that are still in supply.

RCLAMP0584J.TCT will be available as an equivalent replacement for this part.

Part Number(s) Affected:	**Customer Part Number(s) Affected:** ☒ N/A
RCLAMP0524J.TCT	

Replacement or Alternate Part Number(s)
RClamp0584J.TCT

Last Time Buy (LTB) Date	**15SEP2022**	**Must Accept Final Delivery by**	**15MAR2023**
Sample Availability of Alt. Part	**Immediate**	**Qualification Report Availability of Alt. Part**	**Attached**

Attachments:

Supporting Documents for Replacement or Alternate Part Number(s)

- **RJ# 4958 – Final Reliability Report – RClamp0584J.TCT**
- **Datasheet – Rclamp0584J**

Last Time Buy Conditions

We request you carefully review this information and notify your purchasing offices and buyers to place your company's final purchases for available discontinued products as soon as possible according to the following last time buy terms and conditions.

1. **Availability:** The ***Last Time Buy Date*** and ***Date to Accept Final Delivery*** are noted above. All orders must have a ***requested ship date before the Date to Accept Final Delivery*** or the order will be rejected. ***The Last Time Buy Date automatically expires when the final available inventory quantity has been scheduled and sold.***

2. **Pricing:** The product unit price will be subject to Semtech's individual price quotation of your company's last time buy requirements.

3. **Order Acceptance/Change Conditions:**
   A. Semtech will accept last time orders from your company for the discontinued products as "Firm and Final". As such, these orders will not be subject to any reschedule, cancellation, or termination by your company without Semtech's prior written authorization and payment of full termination charges.
   B. Semtech reserves its right to make changes in the scheduled delivery dates, or to terminate remaining undelivered quantities of your company's last time buy order, due to changes in

Semtech's last time manufacturing capabilities, or for commercially impracticable circumstances, which makes delivery not feasible.

4. **Quantities:** The following applies to final buy quantities for the available discontinued product:
   A. **First:** The quantities in any existing unfilled orders and contracts acknowledged by Semtech will be honored, then
   B. **Next:** The unfilled quantities in any volume agreement(s) or quantities in unexpired standalone quote(s) will be accepted, and
   C. **Finally:** Any additional reasonable quantity of product that Semtech quotes based upon your company's identified requirements will be taken.

IN THE EVENT OF CONFLICT FOR THE LIMITED AVAILABILITY PRODUCT, QUANTITIES FOR CUSTOMER'S OR DISTRIBUTOR'S ORDERS WILL BE DETERMINED ON A FIRST-COME FIRST-SERVE BASIS; AND WILL BE SUBJECT TO SEMTECH'S AVAILABLE INVENTORY AND REMAINING MANUFACTURING CAPACITY FOR THE PRODUCT.

Limited Warranty

All discontinued product orders subject to this notice shall carry Semtech's standard limited warranty; or, if applicable, the warranty set forth in a duly executed formal contract between Semtech and your company will apply; except that:

1. Semtech will accept all valid warranty claims for credit only, unless a replacement order is otherwise agreed upon by Semtech and the replacement parts can be manufactured or delivered from remaining inventory.
2. The applicable warranty period for making any return claims for discontinued products will be no later than ninety (90) days following delivery of the discontinued products.
3. Any return claims must be made under Semtech's current Return Material Authorization "RMA" procedures.

Additional Provisions

SEMTECH ACCEPTS NO LIABILITY FOR EXCESS REPROCUREMENT COSTS OR FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES WHATSOEVER ASSOCIATED WITH THIS NOTICE, WITH ITS PRODUCTS, OR WITH THE FINAL MANUFACTURE AND PERFORMANCE AGAINST ANY LAST TIME BUY ORDERS RELATED TO THE DISCONTINUED PRODUCTS COVERED BY THIS NOTICE.

We regret the inconvenience and impact this notice may cause your company. Semtech's sales, marketing, and distribution personnel stand ready to assist you in placing your company's final orders, or in providing the product information you require.

For product inquiries or purchase order information, please contact your local Semtech sales representative.

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Date: 15MAR2022

Issuing Authority		
Semtech Business Unit:	PROTECTION	
Semtech Contact Info:	Les Fang Yuen Semtech Corporation Qualit Assurance 200 Flynn Road Camarillo, CA 93012 lfangyuen@semtech.com Office: (949) 269-4443 Fax: (805) 498-3804	
FOR FURTHER INFORMATION & WORLDWIDE SALES COVERAGE: http://www.semtech.com/contact/index.html#support		

Rel Job Detail Report

by Sublot, by Sequence
Contact: Gurmail Sajjan
(805) 480 2142
gsajjan@semtech.com

Businessunit	Protection			
Reljob#	**Part_Number, Job Name/Type**	**Fab, Package**	**Rel Job Status**	**Key Dates:**
4958	RClamp0584J.TCT New Device Qual New Product on qualified process and qualified package	ASMC21 TVS SLP2710P8	Rel Testing Complete Passes All Requirements	**Job Accepted:** 08-Jun-2010 **Requested CD:** **Actual Start Date:** 07-Jun-2010 **ECD for Conditional:** **Job ECD:** 28-Jul-2010

Completed Tasks

1.0 **Lot** 2010-238 **AssemblyLot** 2010-238 **DateCode** 1025

Seq	TaskCode	SampleSize	Criteria	Complete	Failures	DataSource	Results/Comments
1	Data-Prep	None	None	07-Jul-2010		Camarillo	
2	HTRB_Pre_Elect_150°C_RT24	20	Pass on Zero Fails	13-Jul-2010	0	Camarillo	
3	HTRB_150°C_Real Time_0024	20	Pass on Zero Fails	14-Jul-2010	0	Camarillo	
4	HTRB_Pre_Elect	105	Pass on Zero Fails	08-Jul-2010	0	Camarillo	
5	HTRB_150°C_0072	105	Pass on Zero Fails	12-Jul-2010	0	Camarillo	
6	HTRB_150°C _0408	105	Pass on Zero Fails	26-Jul-2010	0	Camarillo	
7	85/85_Pre Elec	20	Pass on Zero Fails	08-Jul-2010	0	Camarillo	
8	85/85_120hr_On/Off	20	Pass on Zero Fails	20-Jul-2010	0	Camarillo	
9	CSAM Analysis	22	Pass on Zero Fails	28-Jul-2010		Camarillo	
10	IR_Reflow_Char	22	Pass on Zero Fails	28-Jul-2010		Camarillo	
11	CSAM Analysis	22	Pass on Zero Fails	28-Jul-2010		Camarillo	
12	Pack_Clos	0	0	28-Jul-2010		Camarillo	

RClamp0584J
Ultra Low Capacitance TVS Array

PROTECTION PRODUCTS - RailClamp®

Description

RailClamp® TVS arrays are ultra low capacitance ESD protection devices designed to protect high speed data interfaces. This series has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by **ESD** (electrostatic discharge), **CDE** (Cable Discharge Events), and **EFT** (electrical fast transients).

The RClamp®0584J has a typical capacitance of only 0.25pF between I/O pins. This allows it to be used on circuits operating in excess of 3GHz without signal attenuation. It may be used to meet the ESD immunity requirements of IEC 61000-4-2. Each device is designed to protect four lines (two differential pairs).

The RClamp0584J is in a 10-pin SLP2710P8 package. It measures 2.7 x 1.0 with a nominal height of 0.5mm. The leads are spaced at a pitch of 0.5mm and are finished with lead-free NiPdAu. It is designed for easy PCB layout by allowing the traces to run straight through the device. The combination of small size, low capacitance, and high level of ESD protection makes this device a flexible solution for applications such as HDMI, DisplayPort™, MDDI, and eSATA interfaces.

Features

- ESD protection for high-speed data lines to
  IEC 61000-4-2 (ESD) ±18kV (air), ±12kV (contact)
  IEC 61000-4-5 (Lightning) 5A (8/20µs)
  IEC 61000-4-4 (EFT) 40A (5/50ns)
- Package design optimized for high speed lines
- Flow-Through design
- Protects four I/O lines
- Low capacitance: **0.25pF** typical (I/O to I/O)
- Low clamping voltage
- Low operating voltage: 5V
- Solid-state silicon-avalanche technology

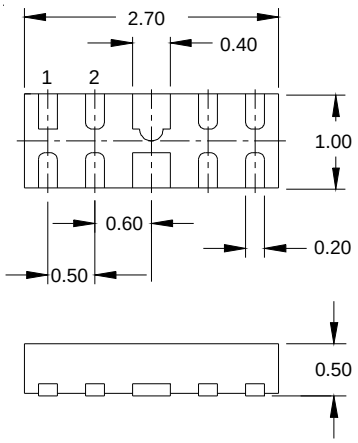
Mechanical Characteristics

- SLP2710P8 10-pin package (2.7 x 1.0 x 0.5mm)
- Pb-Free, Halogen Free, RoHS/WEEE Compliant
- Lead Pitch: 0.5mm
- Lead finish: NiPdAu
- Marking: Marking Code
- Packaging: Tape and Reel

Applications

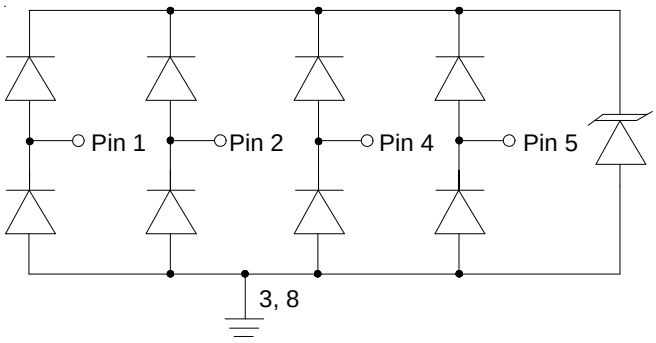
- HDMI 1.3 and HDMI 1.4
- USB 3.0
- Digital Visual Interface (DVI)
- DisplayPort™ Interface
- LVDS Interfaces
- PCI Express
- eSATA Interfaces

Dimensions



Nominal Dimensions in mm

Circuit Diagram



4-Line Protection

Absolute Maximum Rating

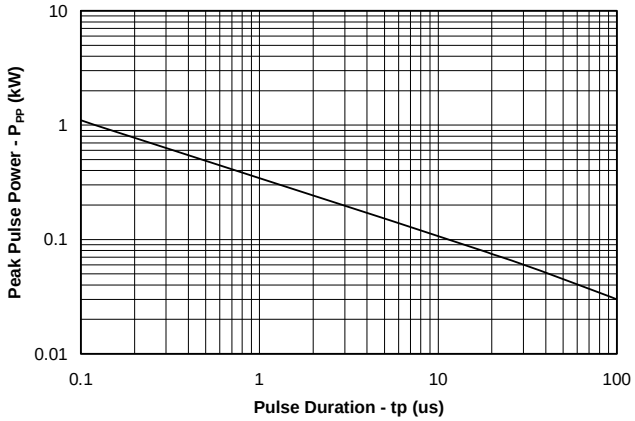
Rating	Symbol	Value	Units
Peak Pulse Power (tp = 8/20µs)	P_{pk}	75	Watts
Peak Pulse Current (tp = 8/20µs)	I_{PP}	5	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	+/- 18 +/- 12	kV
Operating Temperature	T_J	-55 to +125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Characteristics (T=25°C)

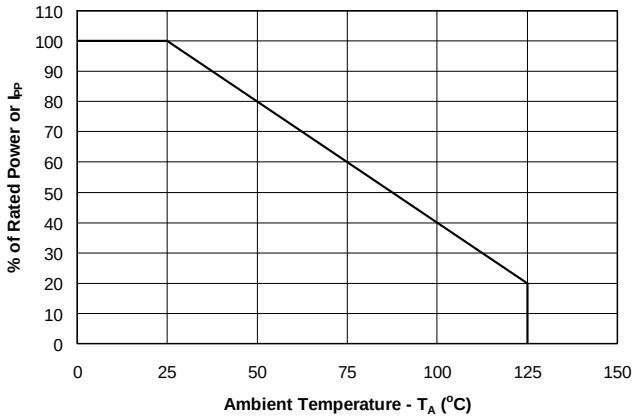
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}	Any I/O to GND			5	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA, Any I/O to GND	6.5	8	11	V
Reverse Leakage Current	I_R	V_{RWM} = 5.0V, Any I/O to GND		0.005	0.100	µA
Clamping Voltage	V_C	I_{PP} = 1A, tp = 8/20µs Any I/O to GND			12	V
Clamping Voltage	V_C	I_{PP} = 5A, tp = 8/20µs Any I/O to GND			15	V
Junction Capacitance	C_j	V_R = 0V, f = 1MHz, Any I/O to GND		0.45	0.60	pF
		V_R = 0V, f = 1MHz, Between I/O pins		0.25	0.4	pF

Typical Characteristics

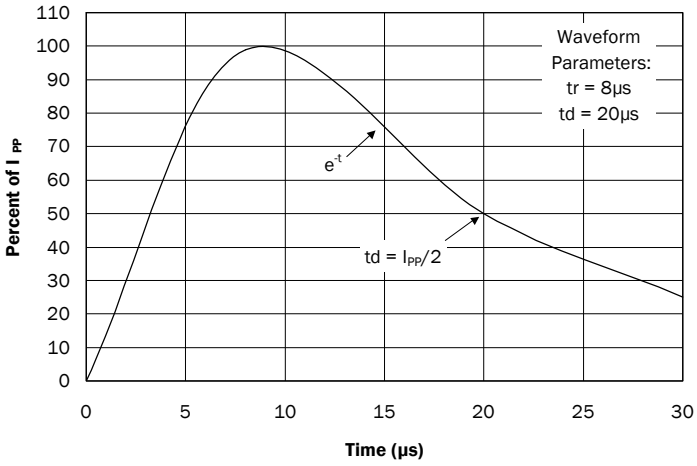
Non-Repetitive Peak Pulse Power vs. Pulse Time



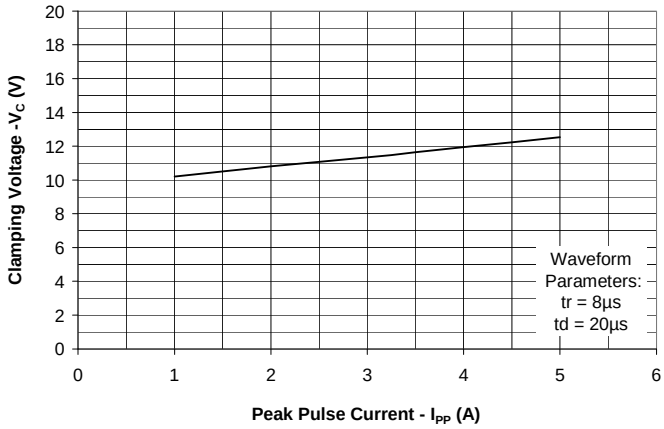
Power Derating Curve



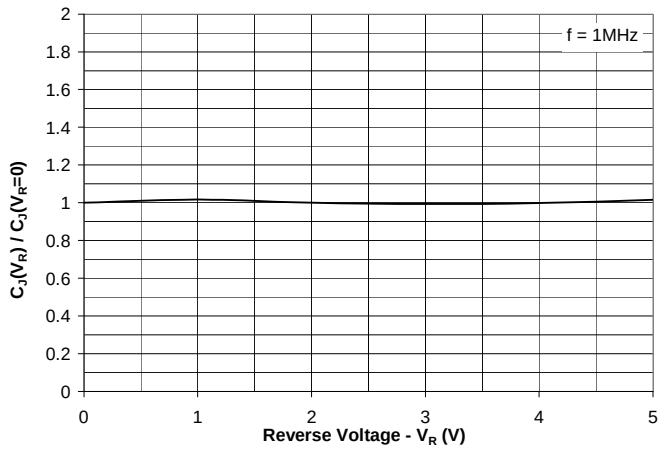
Pulse Waveform



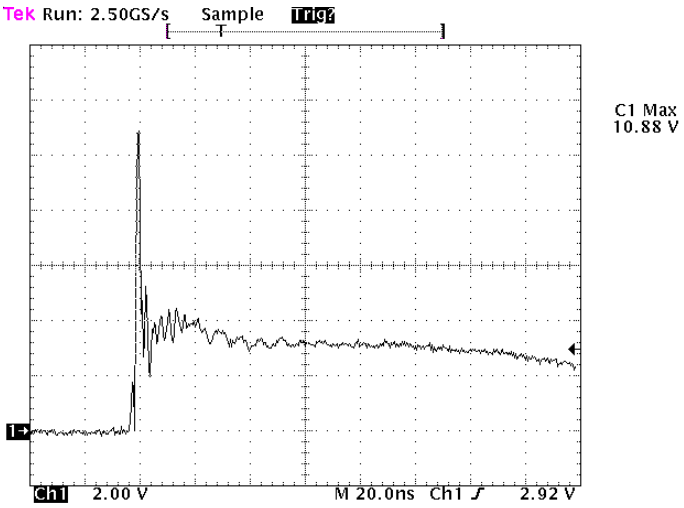
Clamping Voltage vs. Peak Pulse Current (Between any I/O and Ground)



Normalized Capacitance vs. Reverse Voltage



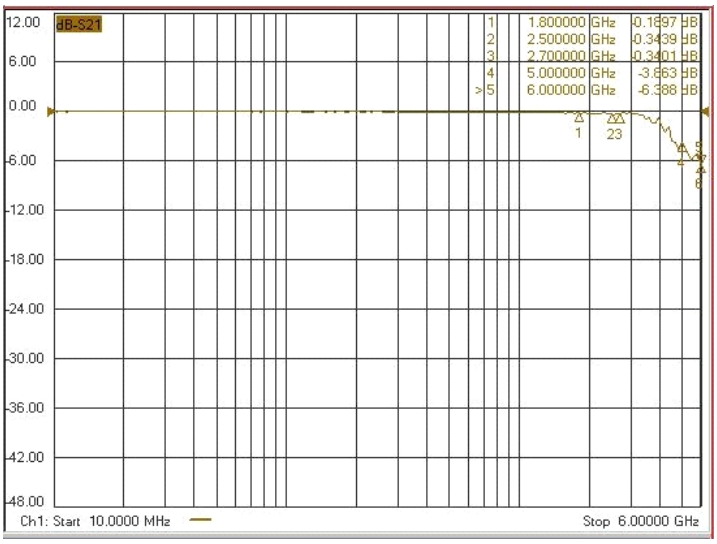
ESD Clamping (Pin 1, 2, 3, or 4 to GND) (+8kV Contact per IEC 61000-4-2)



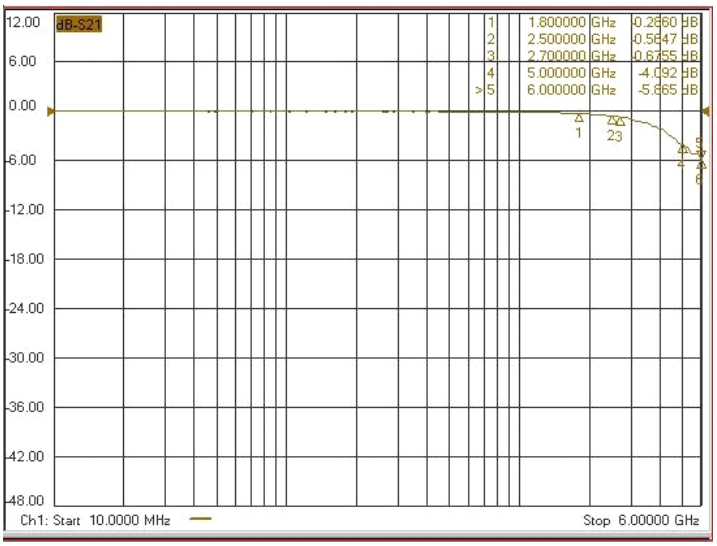
Note: Data is taken with a 10x attenuator

Typical Characteristics (Con't)

Insertion Loss S21 - I/O to I/O



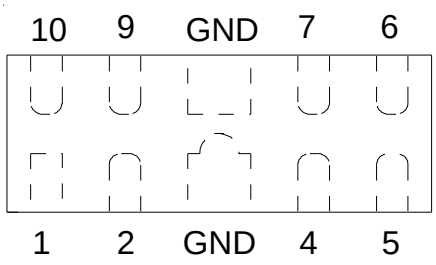
Insertion Loss S21 - I/O to GND



Applications Information

Design Recommendations for HDMI Protection

Adding external ESD protection to HDMI ports can be challenging. First, ESD protection devices have an inherent junction capacitance. Furthermore, adding even a small amount of capacitance will cause the impedance of the differential pair to drop. Second, large packages and land pattern requirements cause discontinuities that adversely affect signal integrity. The RClamp0584J is specifically designed for protection of high-speed interfaces such as HDMI. They present <0.3pF capacitance between the pairs while being rated to handle >±8kV ESD contact discharges (>±15kV air discharge) as outlined in IEC 61000-4-2. Each device is in a leadless SLP package that is less than 1.1mm wide. They are designed such that the traces flow straight through the device. The narrow package and flow-through design reduces discontinuities and minimizes impact on signal integrity. This becomes even more critical as signal speeds increase.



Pin	Identification
1, 2, 4, 5	Input Lines
6, 7, 9, 10	Output Lines (No Internal Connection)
3, 8	Ground

Figure 1 - SLP2710P8 Pin Configuration (Top View)

Pin Configuration

Figure 1 is an example of how to route the high speed differential traces through the RClamp0584J. The PCB traces are used to connect the pin pairs for each line (pin 1 to pin 10, pin 2 to pin 9, pin 4 to pin 7, pin 5 to pin 6). For example, line 1 enters at pin 1 and exits at Pin 10 and the PCB trace connects pin 1 and 10 together. This is true for lines connected at pins 2, 4, and 5 also. Ground is connected at pins 3 and 8. One large ground pad should be used in lieu of two separate pads.

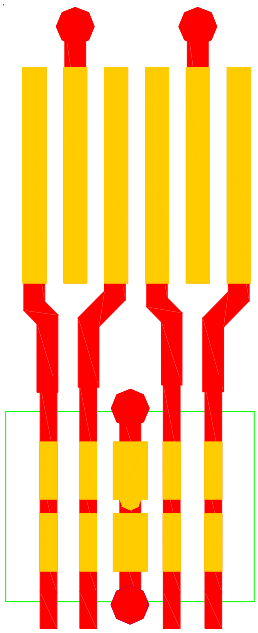


Figure 2 - Flow through Layout Using RClamp0584J

TDR Measurements for HDMI

The combination of low capacitance, small package, and flow-through design means it is possible to use these devices to meet the HDMI impedance requirements of 100 Ohms ±15% without any PCB board modification. Figure 3 shows a typical impedance test result for a TDR risetime of 200ps using a Semtech evaluation board with 100 Ohm traces throughout. Measurements were taken using a TDR method as outlined in the HDMI Compliance Test Specification (CTS). As shown, the device meets the HDMI CTS requirement of 100 Ohm ±15% with plenty of margin.

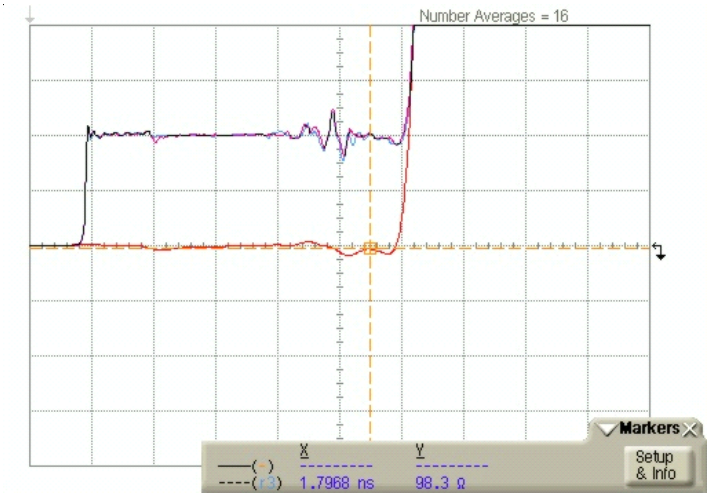
Applications Information

Figure 3 shows a typical HDMI 1.3 eye pattern at 1080p resolution. As shown there are no violations of the eye pattern with RClamp0584J in the circuit. The RClamp0506T can be used to protect the remaining lines (I2C, CEC, hot plug, etc.).

Layout Guidelines for Optimum ESD Protection

Good circuit board layout is critical not only for signal integrity, but also for effective suppression of ESD induced transients. For optimum ESD protection, the following guidelines are recommended:

- Place the device as close to the connector as possible. This practice restricts ESD coupling into adjacent traces and reduces parasitic inductance.
- The ESD transient return path to ground should be kept as short as possible. Whenever possible, use multiple micro vias connected directly from the device ground pad to the ground plane.
- Avoid running critical signals near board edges.



X-axis	1.79	**(nsec)**
Y-axis	98.3	**(Ohm)**

Figure 2 - TDR Measurement with 200ps risetime using Semtech Evaluation Board

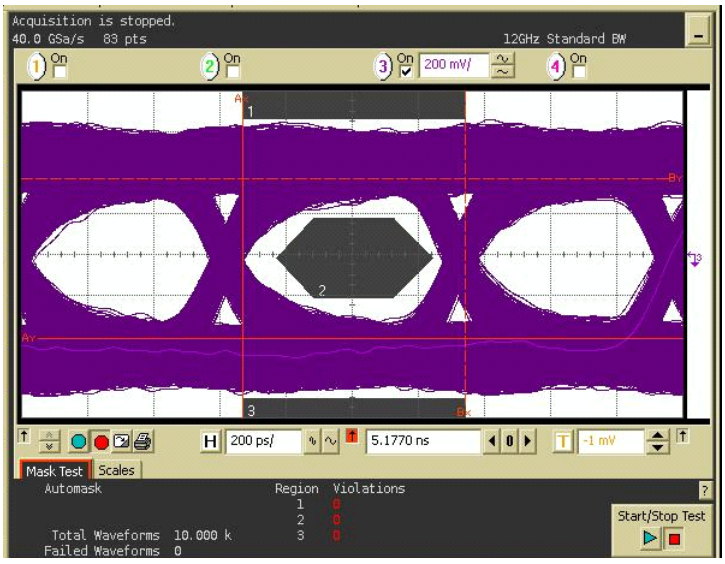
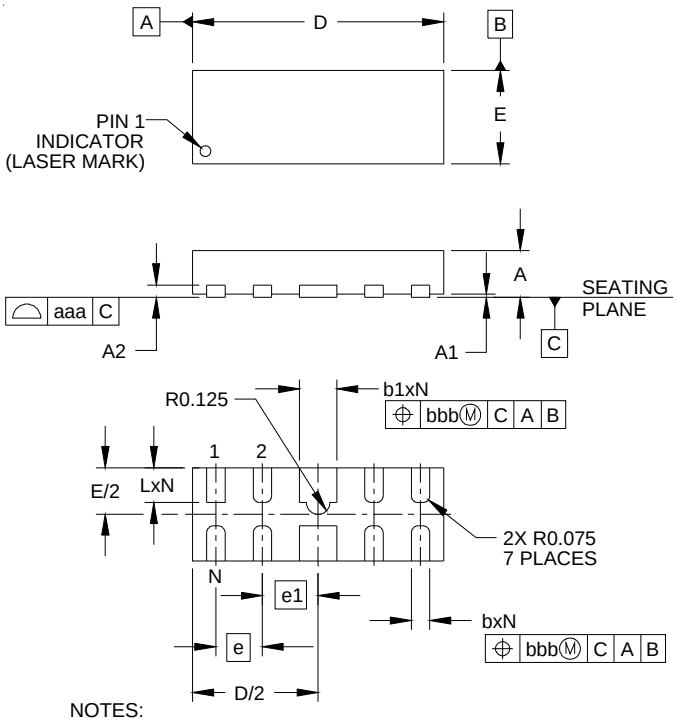


Figure 3 - Typical HDMI 1.3 Eye Pattern (1080p) with RClamp0584J

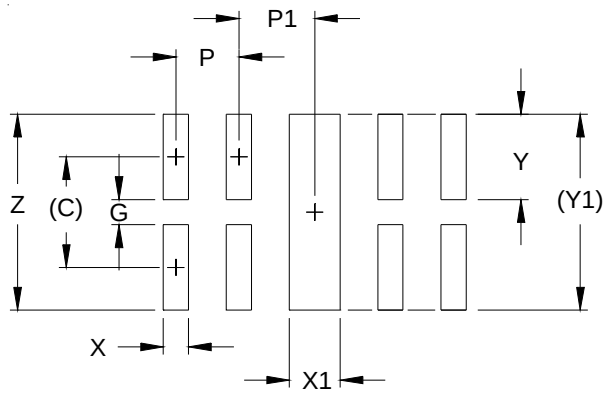
Outline Drawing - SLP2710P8



DIMENSIONS			
DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.47	0.50	0.53
A1	0.00	0.03	0.05
A2		(0.13)	
b	0.15	0.20	0.25
b1	0.35	0.40	0.45
D	2.60	2.70	2.80
E	0.90	1.00	1.10
e		0.50 BSC	
e1		0.60 BSC	
L	0.30	0.38	0.43
N		8	
aaa		0.08	
bbb		0.10	

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

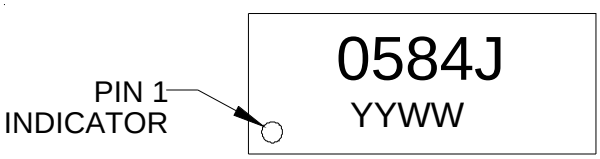
Land Pattern - SLP2710P8



DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	(.034)	(0.875)
G	.008	0.20
P	.020	0.50
P1	.024	0.60
X	.008	0.20
X1	.016	0.40
Y	.027	0.675
Y1	(.061)	(1.55)
Z	.061	1.55

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 Codes



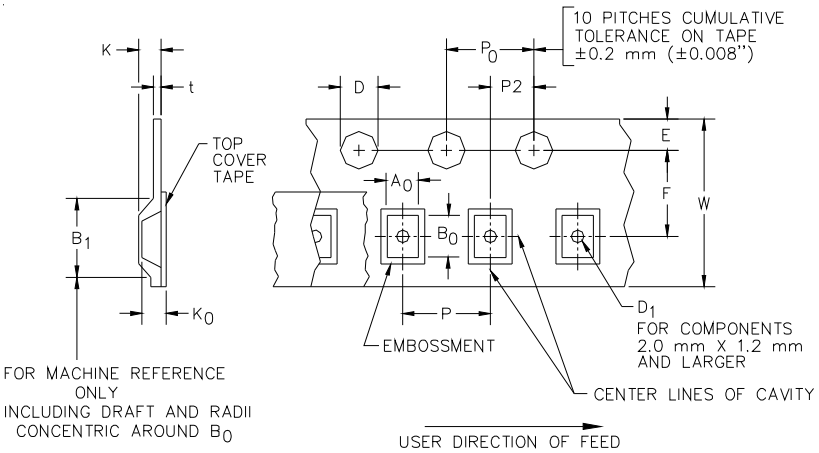
YYWW = Date Code

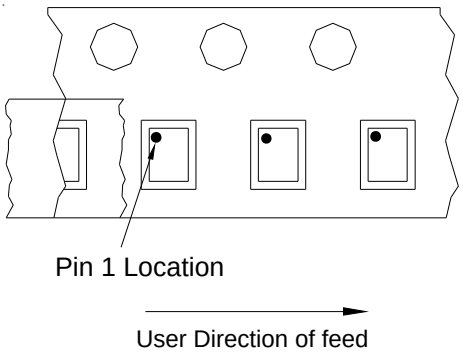
Ordering Information

Part Number	Number of Lines	Qty per Reel	Reel Size
RClamp0584J.TCT	4	3000	7 Inch

RailClamp and RClamp are trademarks of Semtech Corporation.

Tape and Reel Specification





Device Orientation in Tape

Part Number	A0	B0	K0
RClamp0584J	1.21 +/-0.10 mm	2.91 +/-0.10 mm	0.66 +/-0.10 mm

Tape Width	B, (Max)	D	D1	E	F	K (MAX)	P	P0	P2	T(MAX)	W
8 mm	4.2 mm	1.5 + 0.1 mm - 0.0 mm)	0.5 mm ±0.05	1.750±.10 mm	3.5±0.05 mm	2.4 mm	4.0±0.1 mm	4.0±0.1 mm	2.0±0.05 mm	0.4 mm	8.0 mm + 0.3 mm - 0.1 mm

Contact Information

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