

PROTECTION PRODUCTS

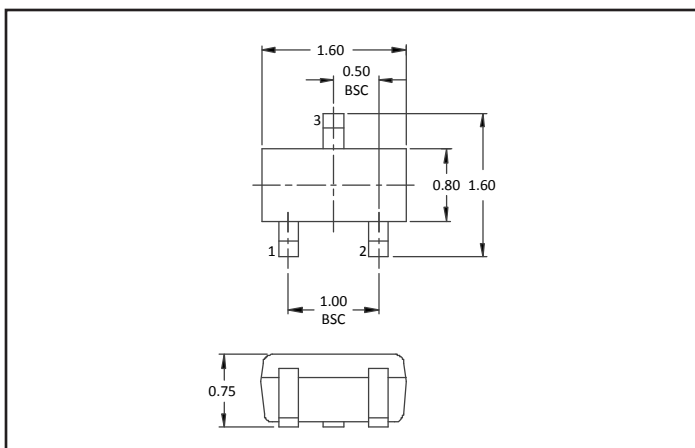
Description

The RClamp®0582B transient voltage suppressor is 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®0582B features high peak pulse current capability ($I_{pp}=15A$, $t_p=8/20\mu s$) for use in applications that require high surge immunity testing. It has a maximum capacitance of only 1.2pF (pin 1 or 2 to pin3). They may be used to meet the ESD immunity requirements of IEC 61000-4-2 ($\pm 30kV$ air, $\pm 25kV$ contact discharge). Each device can be configured to protect 1 bidirectional line or two unidirectional lines.

These devices are in a small SC-75 (SOT-523) package and feature a lead-free, matte tin finish. They are compatible with both lead free and SnPb assembly techniques. The combination of small size, low capacitance, and high level of surge protection makes them a flexible solution for protection of USB 2.0, LVDS, and video interfaces.

Nominal Dimensions (mm)



Features

- Transient protection for high-speed data lines to IEC 61000-4-2 (ESD) $\pm 30kV$ (air), $\pm 25kV$ (contact) IEC 61000-4-4 (EFT) 40A (5/50ns)
- Protects up to two I/O lines
- Low capacitance ($<1.2pF$)
- High surge capability: 15A ($t_p=8/20\mu s$)
- Low leakage current and clamping voltage
- Low operating voltage: 5.0V
- Solid-state silicon-avalanche technology

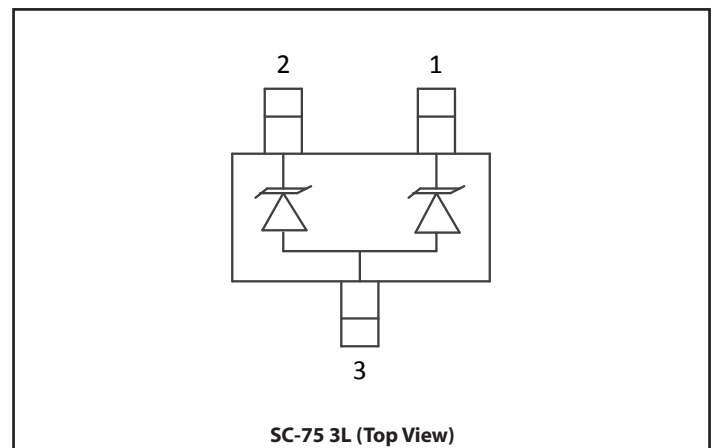
Mechanical Characteristics

- SC-75 (SOT-523) package
- Lead Finish: Matte Tin
- Pb-Free, Halogen Free, RoHS/WEEE Compliant
- Molding compound flammability rating: UL 94V-0
- Packaging: Tape and Reel

Applications

- USB 2.0
- Video Lines
- LVDS Lines
- Networking equipment

Schematic & Pin Configuration



Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power ($t_p = 8/20\mu s$)	P_{PK}	300	W
Peak Pulse Current ($t_p = 8/20\mu s$)	I_{PP}	15	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	-40 to +105	°C
Storage Temperature	T_{STG}	-55 to +150	°C

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

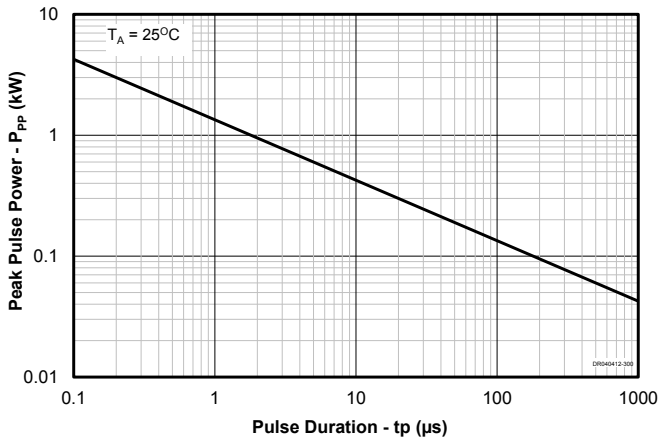
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units	
Reverse Stand-Off Voltage	V_{RWM}	Pin 1 or Pin 2 to Pin 3			5	V	
Reverse Breakdown Voltage	V_{BR}	$I_{BR} = 1mA$, Pin 1 to Pin 2 to Pin 3	6		11	V	
Reverse Leakage Current	I_R	$V_{RWM} = 5V$, $T=25^\circ C$, Pin 1 or Pin 2 to Pin 3 and between Pin 1 and 2			0.1	μA	
Reverse Leakage Current	I_R	$V_{RWM} = 5V$, $T=105^\circ C$, Pin 1 or Pin 2 to Pin 3 and between Pin 1 and 2			0.3	μA	
Clamping Voltage	V_C	$t_p = 8/20\mu s$ Pin 1 or Pin 2 to Pin 3			15	V	
		$t_p = 8/20\mu s$ Pin 1 or Pin 2 to Pin 3	$I_{PP} = 5A$		20		
ESD Clamping Voltage ²	V_C	$t_p = 0.2/100ns$ Pin 1 or Pin 2 to Pin 3	$I_{PP} = 4A$		14	V	
			$I_{PP} = 16A$		20		
Dynamic Resistance ^{2,3}	R_{DYN}	$t_p = 0.2/100ns$, Pin 1 or Pin 2 to Pin 3		0.52		Ω	
Junction Capacitance	C_J	$V_R = 0V$, $f = 1MHz$	Pin 1 to Pin 2		0.5	0.8	pF
Junction Capacitance	C_J	$V_R = 0V$, $f = 1MHz$	Pin 1 or Pin 2 to Pin 3			1.2	pF

Notes:

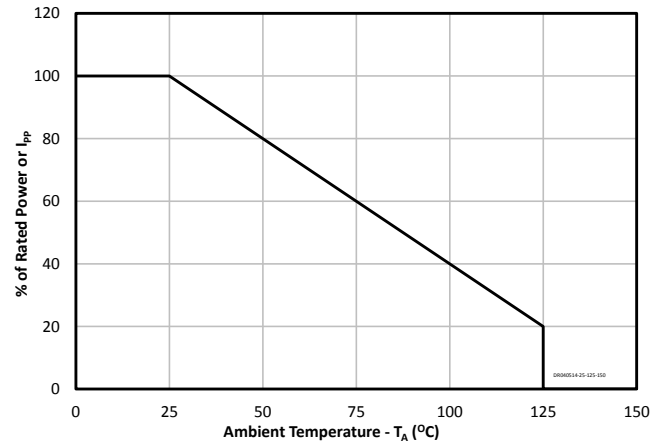
- ESD gun return path connected to ESD ground plane.
- Transmission Line Pulse Test (TLP) Settings: $t_p = 100ns$, $t_r = 0.2ns$, I_{TLP} and V_{TLP} averaging window: $t_1 = 70ns$ to $t_2 = 90ns$.
- Dynamic resistance calculated from $I_{TLP} = 4A$ to $I_{TLP} = 16A$

Typical Characteristics

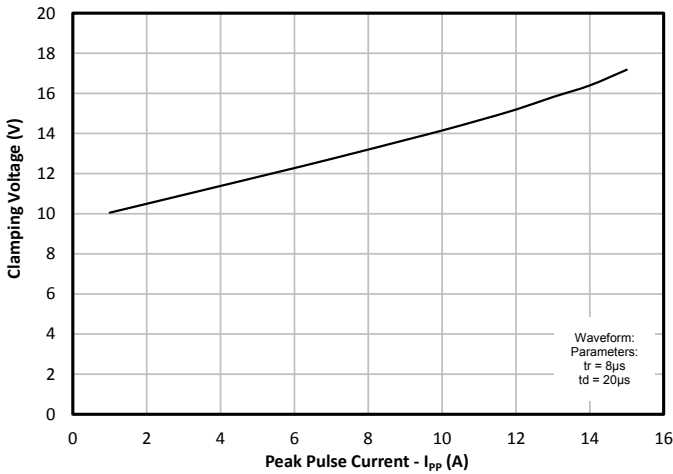
Non Repetitive Peak Pulse Power vs. Pulse Time



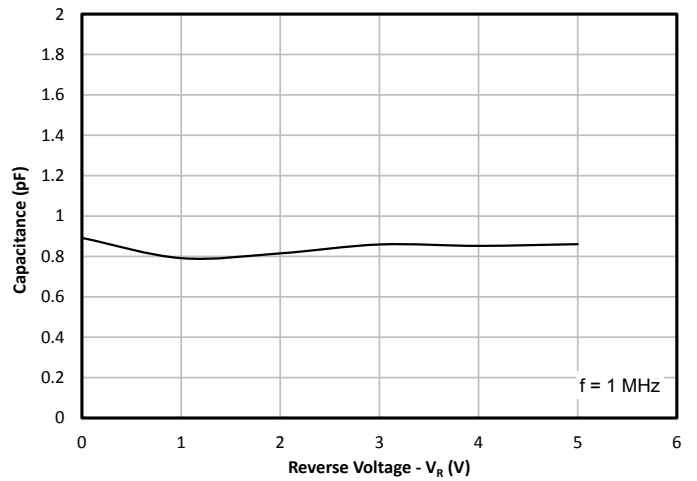
Power Derating Curve



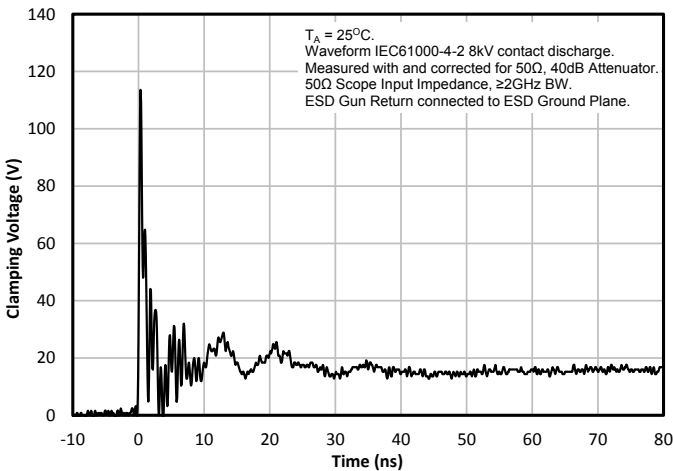
**Clamping Voltage vs. Peak Pulse Current ($t_p=8/20\mu\text{s}$)
Pin 1 or Pin 2 to Pin 3**



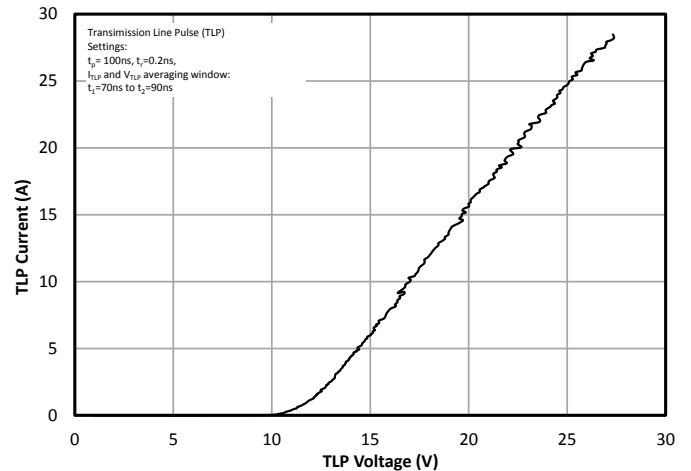
**Capacitance vs. Reverse Voltage
Pin 1 or Pin 2 to Pin 3**



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

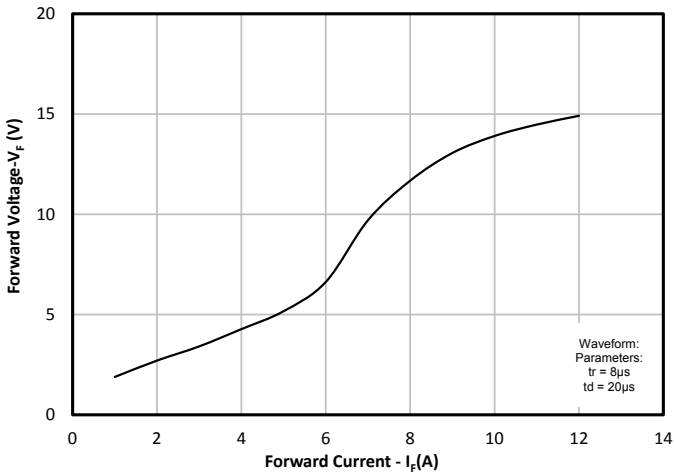


**TLP Characteristic
Pin 1 or Pin 2 to Pin 3**

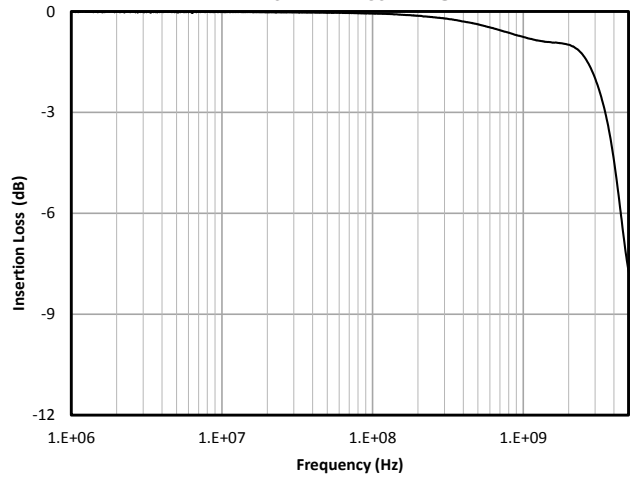


Typical Characteristics (Continued)

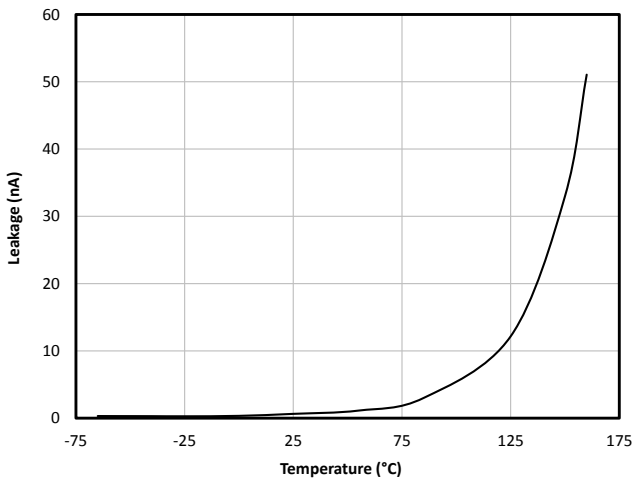
**Forward Voltage vs. Forward Current (tp=8/20µs)
Pin 1 or Pin 2 to Pin 3**



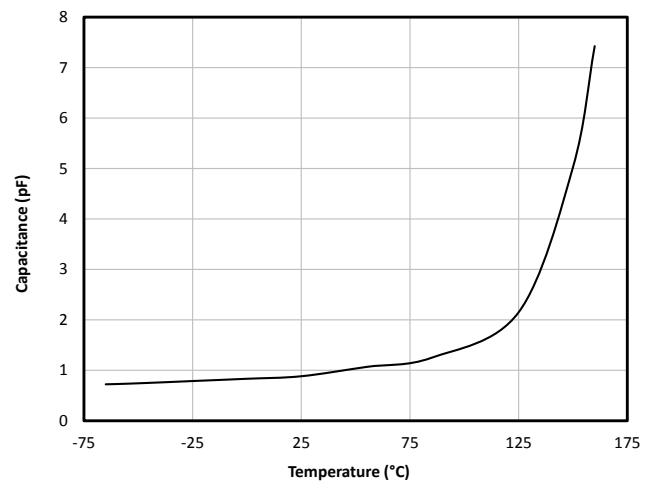
**Insertion Loss S21
Pin 1 or Pin 2 to Pin 3**



**Reverse Leakage Current vs. Temperature
Pin 1 or Pin 2 to Pin 3**



Capacitance vs. Temperature



Application Information

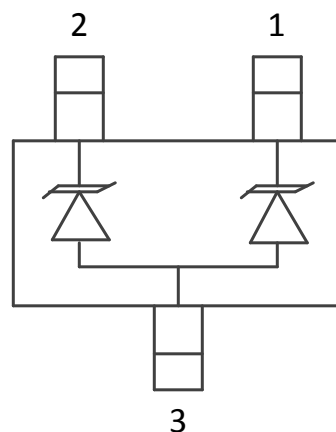
Device Connection Options

This device is optimized for protection of two high speed data lines. The device is connected as follows: Protection of two lines is achieved by connecting data lines at pins 1 & 2. Pin 3 is connected to ground. The connection to ground should be made directly to a ground plane. The path length should also be kept as short as possible to minimize parasitic inductance.

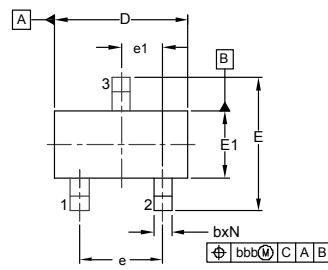
Matte Tin Lead Finish

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.

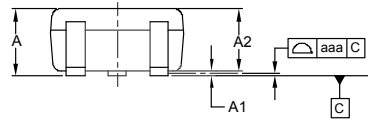
Figure 1. Pin Configuration



Outline Drawing - SC75 3L



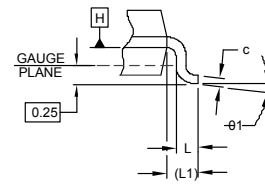
DIMENSIONS			
DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.60	-	0.90
A1	0.00	-	0.10
A2	0.60	0.75	0.80
b	0.15	-	0.30
c	0.10	-	0.20
D	1.50	1.60	1.70
E	1.45	1.60	1.75
E1	0.75	0.80	0.85
e	1.00 BSC		
e1	0.50 BSC		
L	0.10	0.22	0.30
L1	(0.40)		
N	3		
θ	0°	-	8°
aaa	0.10		
bbb	0.20		



SEATING PLANE



SIDE VIEW

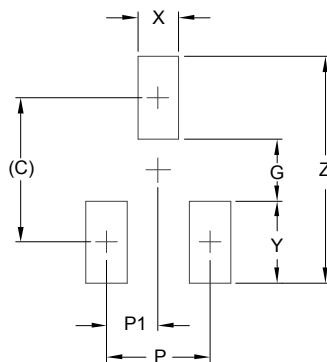


DETAIL A

NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DATUMS $-A-$ AND $-B-$ TO BE DETERMINED AT DATUM PLANE $-H-$.
3. DIMENSIONS "E1" AND "D" DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

Land Pattern - SC75 3L

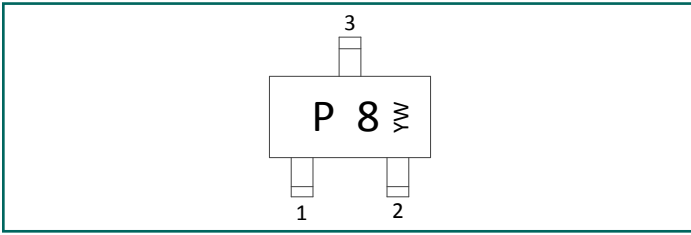


DIMENSIONS	
DIM	MILLIMETERS
C	(1.40)
G	0.60
P	1.00
P1	0.50
X	0.40
Y	0.80
Z	2.20

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.

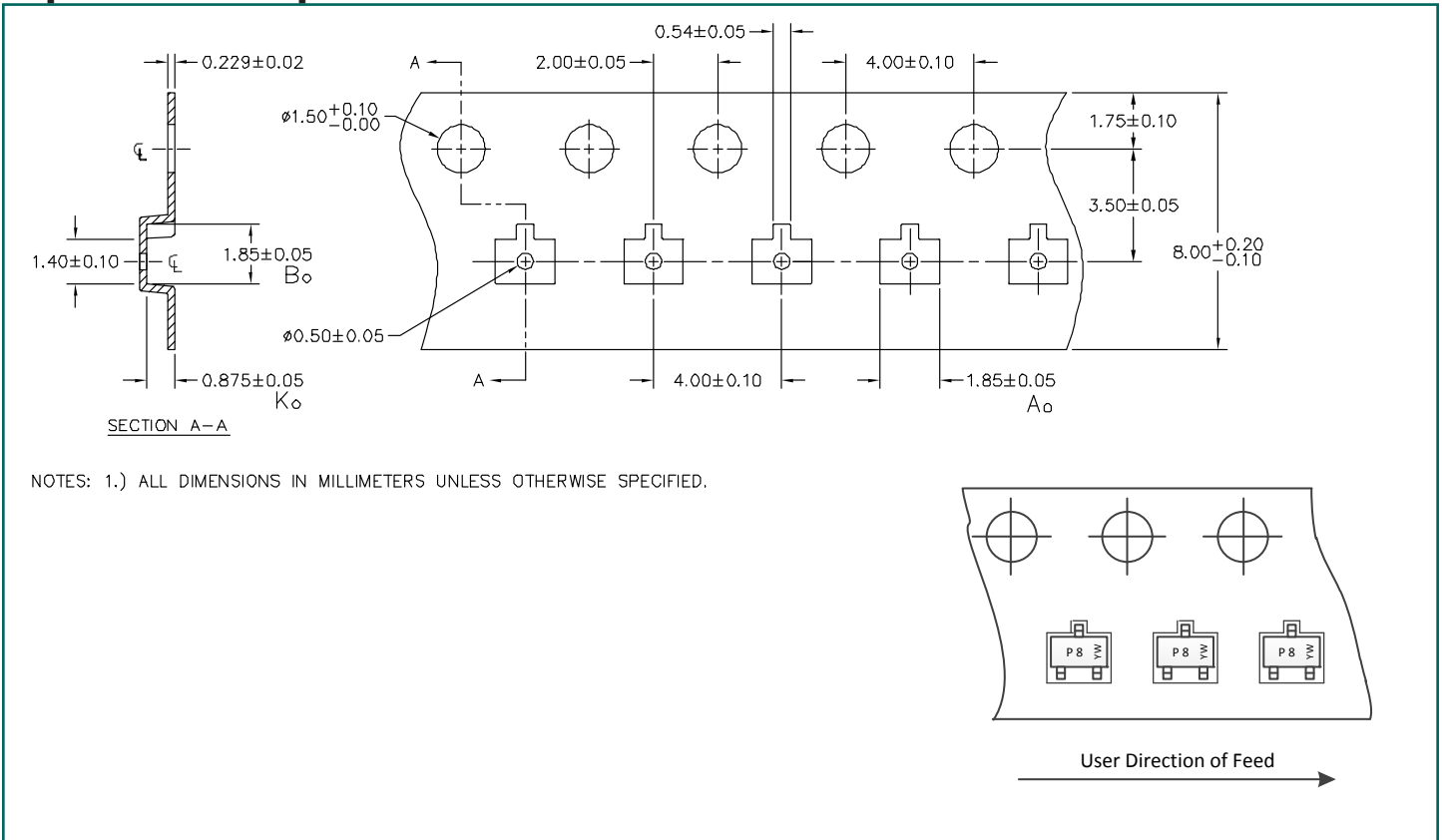
Marking Code



Note:

YW= Date Code

Tape and Reel Specification



Ordering Information

Part Number	Qty per Reel	Reel Size
RClamp0582B.TCT	3,000	7"



IMPORTANT NOTICE

Information relating to this product and the application or design described herein is believed to be reliable, however such information is provided as a guide only and Semtech assumes no liability for any errors in this document, or for the application or design described herein. Semtech reserves the right to make changes to the product or this document at any time without notice. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. Semtech warrants performance of its products to the specifications applicable at the time of sale, and all sales are made in accordance with Semtech's standard terms and conditions of sale.

SEMTECH PRODUCTS ARE NOT DESIGNED, INTENDED, AUTHORIZED OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT APPLICATIONS, DEVICES OR SYSTEMS, OR IN NUCLEAR APPLICATIONS IN WHICH THE FAILURE COULD BE REASONABLY EXPECTED TO RESULT IN PERSONAL INJURY, LOSS OF LIFE OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. INCLUSION OF SEMTECH PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE UNDERTAKEN SOLELY AT THE CUSTOMER'S OWN RISK. Should a customer purchase or use Semtech products for any such unauthorized application, the customer shall indemnify and hold Semtech and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs damages and attorney fees which could arise.

The Semtech name and logo are registered trademarks of the Semtech Corporation. All other trademarks and trade names mentioned may be marks and names of Semtech or their respective companies. Semtech reserves the right to make changes to, or discontinue any products described in this document without further notice. Semtech makes no warranty, representation or guarantee, express or implied, regarding the suitability of its products for any particular purpose. All rights reserved.

© Semtech 2015

Contact Information

Semtech Corporation
200 Flynn Road, Camarillo, CA 93012
Phone: (805) 498-2111, Fax: (805) 498-3804
www.semtech.com

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [ESD Suppressors / TVS Diodes](#) category:

Click to view products by [Semtech](#) manufacturer:

Other Similar products are found below :

[60KS200C](#) [D12V0H1U2WS-7](#) [D18V0L1B2LP-7B](#) [82356050220](#) [D5V0M5U6V-7](#) [NTE4902](#) [P4KE27CA](#) [P6KE11CA](#) [P6KE39CA-TP](#)
[P6KE8.2A](#) [SA110CA](#) [SA60CA](#) [SA64CA](#) [SMBJ12CATR](#) [SMBJ8.0A](#) [SMLJ30CA-TP](#) [ESD101-B1-02ELS E6327](#) [ESD112-B1-02EL E6327](#)
[ESD119B1W01005E6327XTSA1](#) [ESD5V0L1B02VH6327XTSA1](#) [ESD7451N2T5G](#) [19180-510](#) [CPDT-5V0USP-HF](#) [3.0SMCJ33CA-F](#)
[3.0SMCJ36A-F](#) [HSPC16701B02TP](#) [D3V3Q1B2DLP3-7](#) [D55V0M1B2WS-7](#) [DESD5V0U1BL-7B](#) [DRTR5V0U4SL-7](#) [SCM1293A-04SO](#)
[ESD200-B1-CSP0201 E6327](#) [ESD203-B1-02EL E6327](#) [SM12-7](#) [SMF8.0A-TP](#) [SMLJ45CA-TP](#) [CEN955 W/DATA](#) [82350120560](#)
[82356240030](#) [VESD12A1A-HD1-GS08](#) [CPDUR5V0R-HF](#) [CPDUR24V-HF](#) [CPDQC5V0U-HF](#) [CPDQC5V0USP-HF](#) [CPDQC5V0-HF](#)
[D1213A-01LP4-7B](#) [D1213A-02WL-7](#) [ESDLIN1524BJ-HQ](#) [5KP100A](#) [5KP15A](#)