

## SuperESD - RCLAMP0502B-ES

### 1. Description

The RCLAMP0502B-ES is an ultra-low capacitance TVS (Transient Voltage Suppressor) array designed to protect high speed data interfaces. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by Electrostatic Discharge.

### 2. Features

- IEC 61000-4-2 Level 4 ESD Protection
  - ±15kV Contact Discharge
  - ±15kV Air Discharge
- 72W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 5V
- Low leakage current
- RoHS compliant
- Protecting two unidirectional lines

### 3. Applications

- USB 2.0 and USB 3.0
- HDMI 1.3 and HDMI 1.4
- SATA and eSATA
- IEEE 1394
- PCI Express
- Notebooks

### 4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
RCLAMP0502B-ES	SOT-523	P5	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

## 5. Pin Configuration and Functions

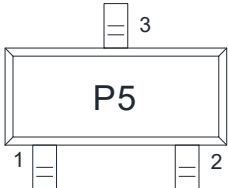
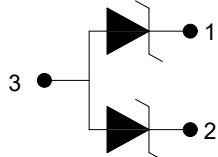
Pin	Name	Description	Outline	Circuit Diagram
1	IO	Connect to IO		
2	IO	Connect to IO		
3	GND	Connect to GND		

Table-2 Pin configuration

## 6. Specification

### 6.1. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20us)@25°C	P <sub>pk</sub>	-	72	W
Peak pulse current (tp=8/20us)@25°C	I <sub>PP</sub>	-	4	A
ESD (IEC61000-4-2 air discharge) @25°C	V <sub>ESD</sub>	-	±15	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V <sub>ESD</sub>	-	±15	kV
Junction temperature	T <sub>J</sub>	-	150	°C
Operating temperature	T <sub>OP</sub>	-40	125	°C
Storage temperature	T <sub>STG</sub>	-55	150	°C
Lead temperature	T <sub>L</sub>	-	260	°C

Table-3 Absolute Maximum rating

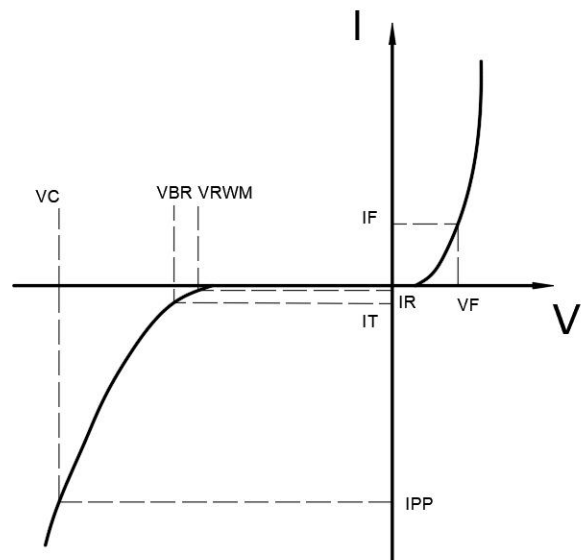
## 6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

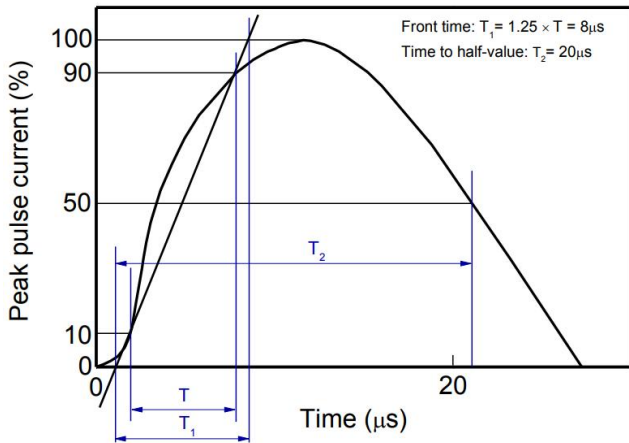
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	$V_{RWM}$				5.0	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	6.0		9.0	V
Reverse Leakage Current	$I_R$	$V_{RWM}=5V$			1.0	$\mu A$
Clamping Voltage	$V_C$	$I_{PP}=1A$ ; $t_p=8/20\mu s$		10.0	12.0	V
Clamping Voltage	$V_C$	$I_{PP}=4A$ ; $t_p=8/20\mu s$		15.0	18.0	V
Junction Capacitance	$C_J$	$V_R=0V$ ; $f=1MHz$		0.6	1.0	pF

Table-4 Electrical Characteristics

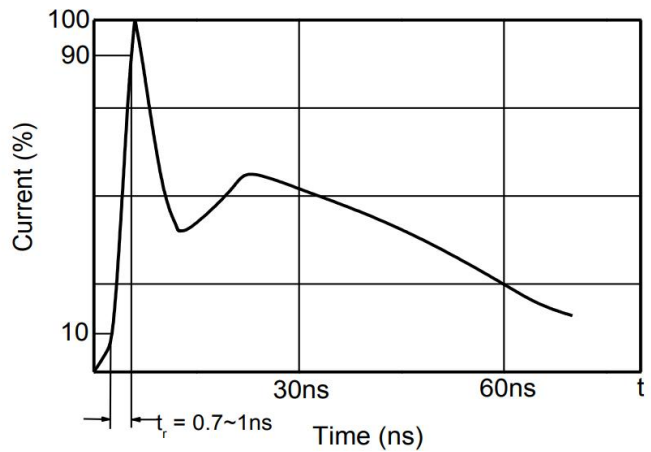
Symbol	Parameters
$V_{RWM}$	Peak Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$



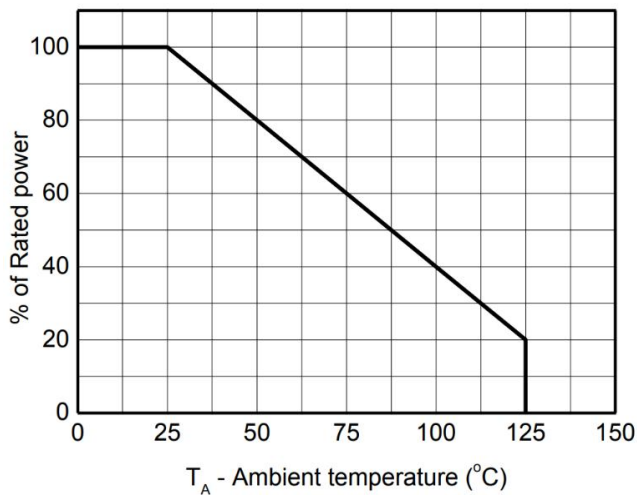
### 7. Typical Characteristic



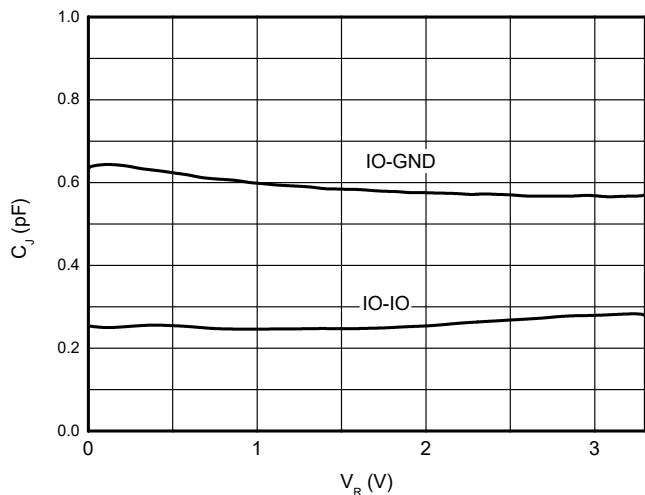
8/20μs waveform per IEC61000-4-5



Contact discharge current waveform per IEC61000-4-2



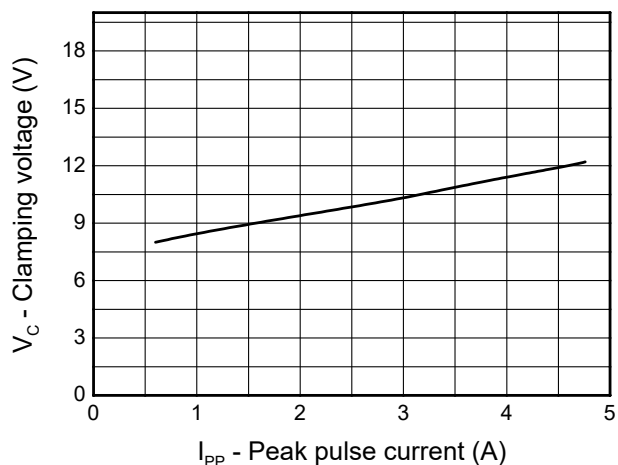
Power derating vs. Ambient temperature



Capacitance vs. Reverse voltage

**RCLAMP0502B-ES**

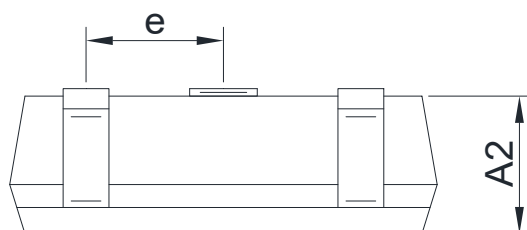
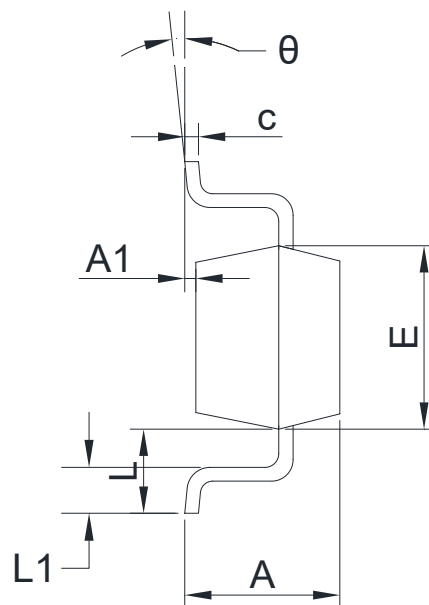
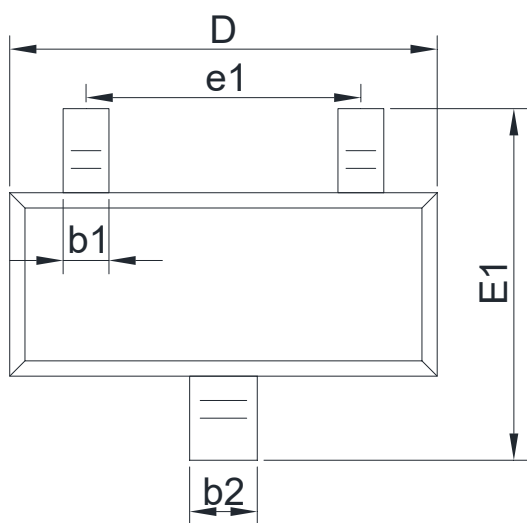
Rev-1.3



Clamping voltage vs. Peak pulse current

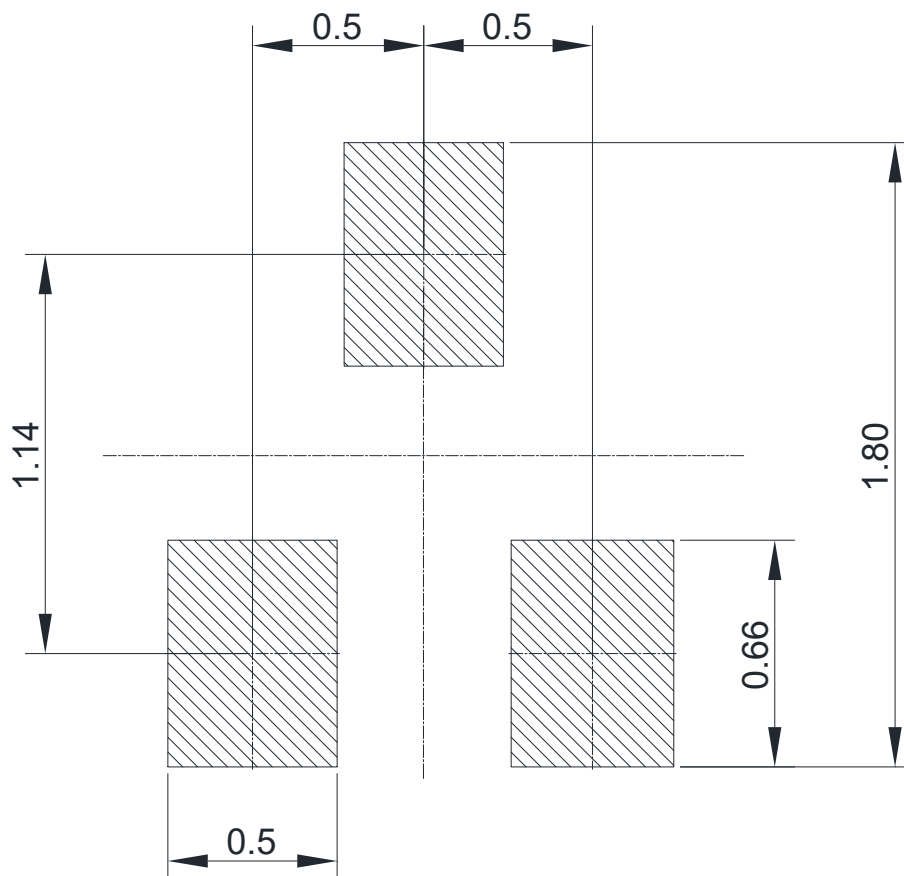
**8. Dimension (SOT-523)**

POD(Z)



REF	Millimeters		REF	Millimeters	
	Min	Max		Min	Max
A	0.70	0.90	E1	1.45	1.75
A1	0.00	0.10	E	0.70	0.90
A2	0.70	0.80	e	0.50TYP	
b1	0.15	0.25	e1	0.90	1.10
b2	0.25	0.35	L	0.40REF	
c	0.10	0.20	L1	0.25	0.46
D	1.50	1.70	$\theta$	0°	8°

**9. Recommended Soldering Footprint**



DIMENSIONS: MILLIMETERS

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