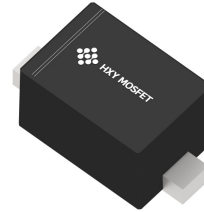




## Discription

The HESDUC5VB1CL-B protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD.

It gives designer the flexibility to protect one bi-directional line in applications where arrays are not practical.



SOD-523

## Features

- ★ IEC 61000-4-2 Level 4 ESD Protection
  - ±10kV Contact Discharge
  - ±15kV Air Discharge
- ★ 80W Peak pulse Power (8/20us)
- ★ Low clamping voltage
- ★ Working voltage: 5V
- ★ Low leakage current
- ★ RoHS compliant
- ★ Protecting one bi-directional lines
- ★ Ultra-low capacitance: 0.3pF Typ.



Circuit Diagram

## Applications

- ★ USB 2.0 and USB 3.0
- ★ SATA and eSATA
- ★ Notebooks & handhelds
- ★ HDMI 1.3 and HDMI 1.4
- ★ PCI Express
- ★ Peripherals

## Ordering Information

| Product ID     | Pack    | Qty(PCS) |
|----------------|---------|----------|
| HESDUC5VB1CL-B | SOD-523 | 3000     |

## Absolute Ratings(Tamb = 25°C)

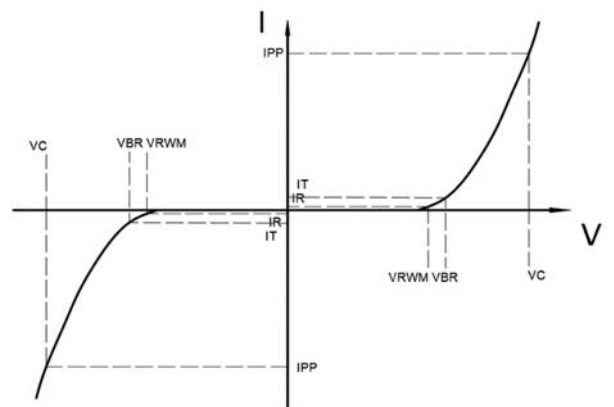
| Symbol           | Parameter                                         | Value       | Units |
|------------------|---------------------------------------------------|-------------|-------|
| P <sub>PK</sub>  | Peak Pulse Power (t <sub>p</sub> = 8/20 μs)       | 80          | W     |
| T <sub>L</sub>   | Maximum lead temperature for soldering during 10s | 260         | °C    |
| T <sub>stg</sub> | Storage Temperature Range                         | -55 to +150 | °C    |
| T <sub>op</sub>  | Operating Temperature Range                       | -40 to +125 | °C    |
| T <sub>j</sub>   | Maximum junction temperature                      | 150         | °C    |
| I <sub>PP</sub>  | Peak pulse current (tp=8/20us)@25°C               | 4           | A     |
| V <sub>ESD</sub> | ESD (IEC61000-4-2 air discharge) @25°C            | ±15         | KV    |
| V <sub>ESD</sub> | ESD (IEC61000-4-2 contact discharge) @25°C        | ±10         | KV    |



**Electrical Characteristics** Ratings at 25°C unless otherwise noted

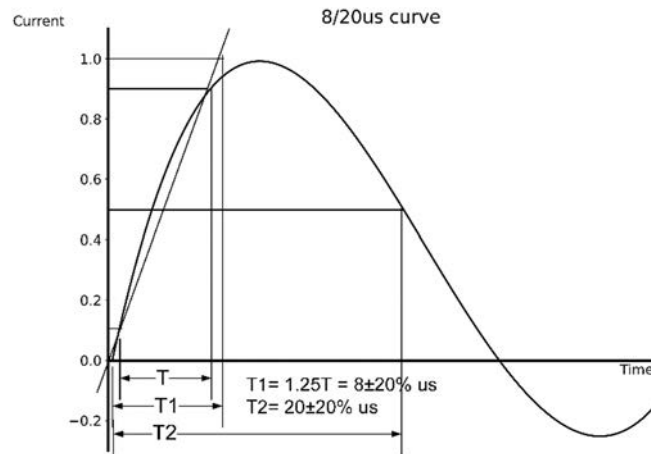
| Parameter                 | Symbol    | Conditions                      | Min. | Typ. | Max. | Units   |
|---------------------------|-----------|---------------------------------|------|------|------|---------|
| Reverse Stand-off Voltage | $V_{RWM}$ |                                 |      |      | 5    | V       |
| Reverse Breakdown Voltage | $V_{BR}$  | $I_T=1mA$                       | 6.0  |      |      | V       |
| Reverse Leakage Current   | $I_R$     | $V_{RWM}=5V$                    |      |      | 1    | $\mu A$ |
| Clamping Voltage          | $V_C$     | $I_{PP}=1A$ ; $t_p=8/20\mu s$   |      | 12   |      | V       |
| Clamping Voltage          | $V_C$     | $I_{PP}=4A$ ; $t_p=8/20\mu s$   |      | 18   |      | V       |
| Junction Capacitance      | $C_J$     | I/O to GND; $V_R=0V$ ; $f=1MHz$ |      | 0.35 |      | pF      |

| 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 @ $I_{PP}$         |

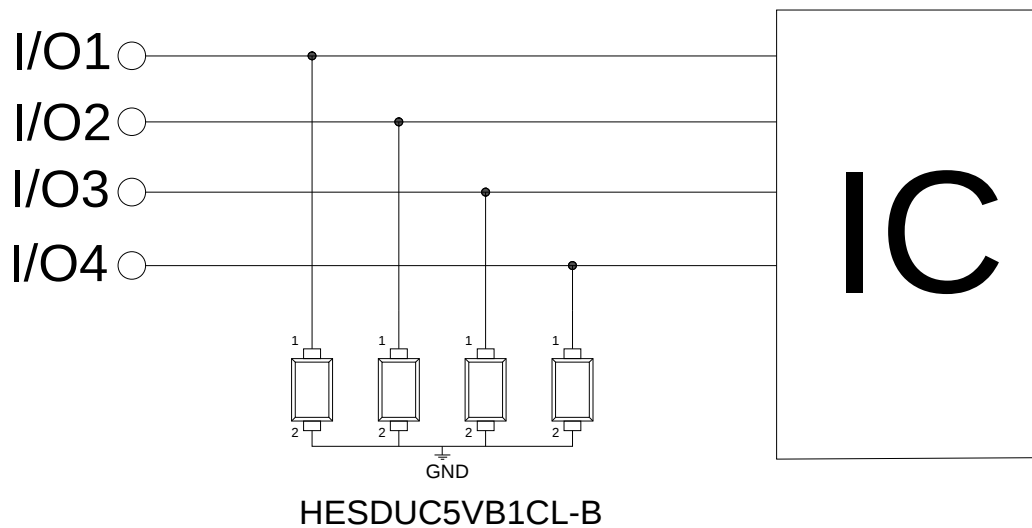




## Typical Characteristics

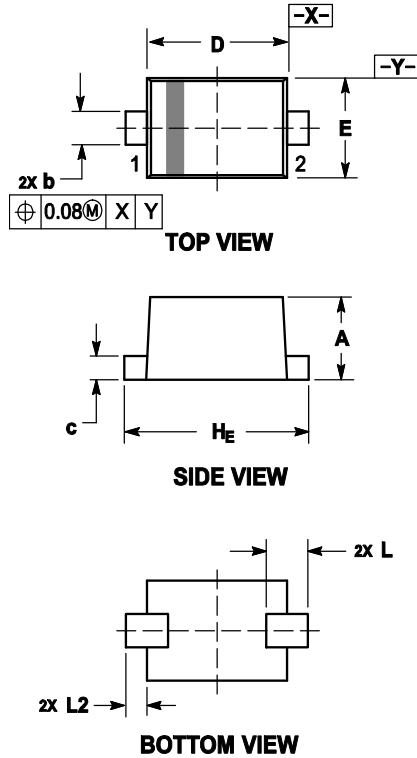


## Typical Application





## Outline And Dimensions

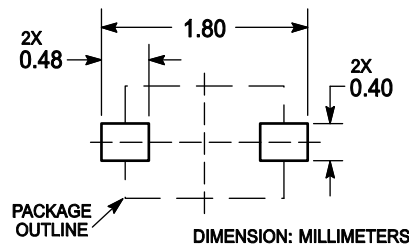


### Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

| DIM   | MILLIMETERS |      |      | INCHES    |       |       |
|-------|-------------|------|------|-----------|-------|-------|
|       | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A     | 0.50        | 0.60 | 0.70 | 0.020     | 0.024 | 0.028 |
| b     | 0.25        | 0.30 | 0.35 | 0.010     | 0.012 | 0.014 |
| c     | 0.07        | 0.14 | 0.20 | 0.003     | 0.006 | 0.008 |
| D     | 1.10        | 1.20 | 1.30 | 0.043     | 0.047 | 0.051 |
| E     | 0.70        | 0.80 | 0.90 | 0.028     | 0.031 | 0.035 |
| $H_E$ | 1.50        | 1.60 | 1.70 | 0.059     | 0.063 | 0.067 |
| L     | 0.30 REF    |      |      | 0.012 REF |       |       |
| $L_2$ | 0.15        | 0.20 | 0.25 | 0.006     | 0.008 | 0.010 |

## Soldering Footprint





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