



## Discription

The HESDUC5VB1EL-A 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-323

## Features:

- Ultra Low Capacitance 0.6 pF(Typ)
- 300W peak pulse power (8/20 $\mu$ S)
- Working Voltage 5V
- Low leakage current: nA Level
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 30$ KV
    - Contact discharge:  $\pm 30$ KV
  - IEC61000-4-5 (Lightning) 18A (8/20 $\mu$ S)
  - IEC61000-4-4 (EFT) 80A (5/50nS)
- RoHS compliant



Circuit Diagram

## Ordering Information

| Product ID     | Pack    | Qty(PCS) |
|----------------|---------|----------|
| HESDUC5VB1EL-A | SOD-323 | 3000     |

## Absolute Ratings (T<sub>amb</sub>=25°C )

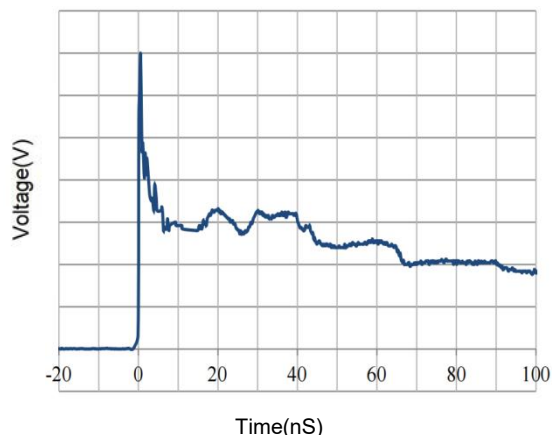
| Symbol           | Parameter                                                | Value                | Units |
|------------------|----------------------------------------------------------|----------------------|-------|
| P <sub>PP</sub>  | Peak Pulse Power (t <sub>p</sub> = 8/20 $\mu$ s)         | 300                  | W     |
| T <sub>L</sub>   | Maximum lead temperature for soldering during 10s        | 260                  | °C    |
| T <sub>stg</sub> | Storage Temperature Range                                | -55 to +155          | °C    |
| T <sub>op</sub>  | Operating Temperature Range                              | -40 to +125          | °C    |
| T <sub>j</sub>   | Maximum junction temperature                             | 150                  | °C    |
|                  | IEC61000-4-2 (ESD)<br>air discharge<br>contact discharge | $\pm 30$<br>$\pm 30$ | KV    |



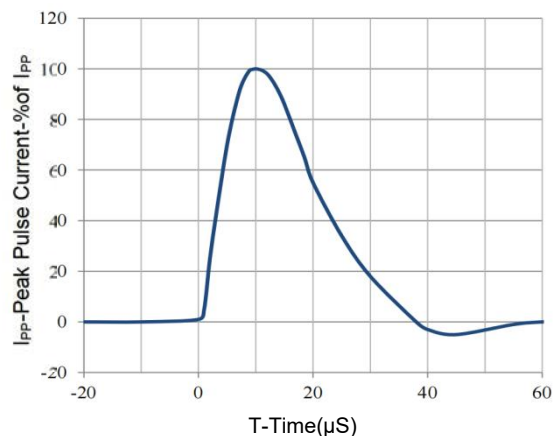
### Electrical Characteristics Ratings at 25°C

| Symbol    | Parameter                 | Test Condition                  | Min | Typ  | Max  | Units |
|-----------|---------------------------|---------------------------------|-----|------|------|-------|
| $V_{RWM}$ | Reverse Working Voltage   |                                 |     |      | 5.0  | V     |
| $V_{BR}$  | Reverse Breakdown Voltage | $I_T = 1mA$                     | 6.0 | 7.2  | 8.0  | V     |
| $I_R$     | Reverse Leakage Current   | $V_{RWM} = 5V$                  |     |      | 100  | nA    |
| $V_C$     | Clamping Voltage          | $I_{PP} = 1A, t_p = 8/20\mu s$  |     | 8.5  |      | V     |
|           |                           | $I_{PP} = 18A, t_p = 8/20\mu s$ |     | 15.0 | 16.5 | V     |
| $C_J$     | Junction Capacitance      | $V_R = 0V, f = 1MHz$            |     | 0.6  | 1.0  | pF    |

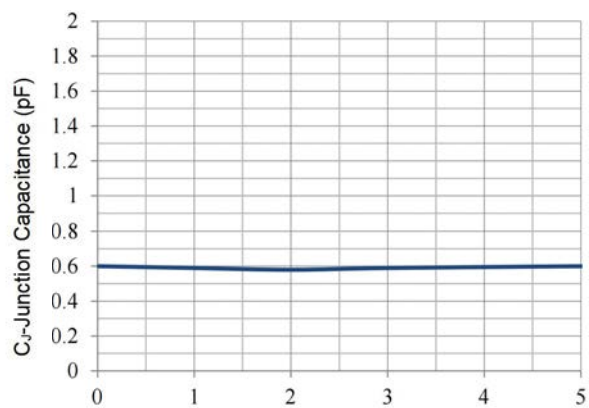
### Typical Performance Characteristics



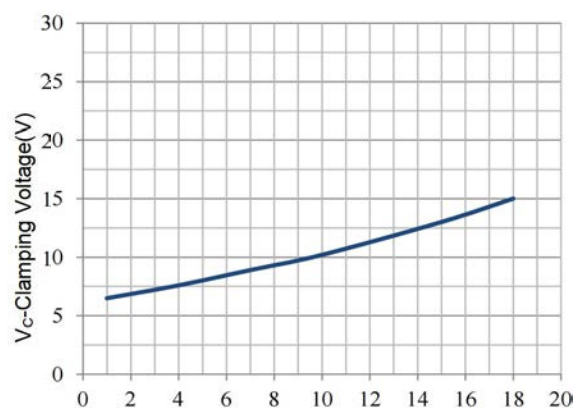
IEC61000-4-2 Pulse Waveform



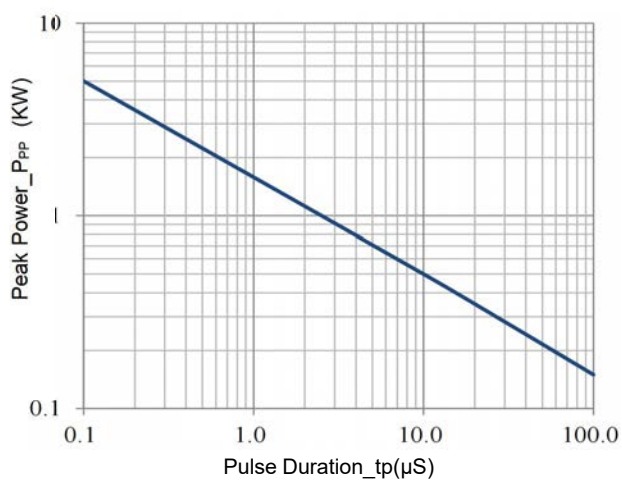
IEC61000-4-5 8X20 $\mu s$  Pulse Waveform



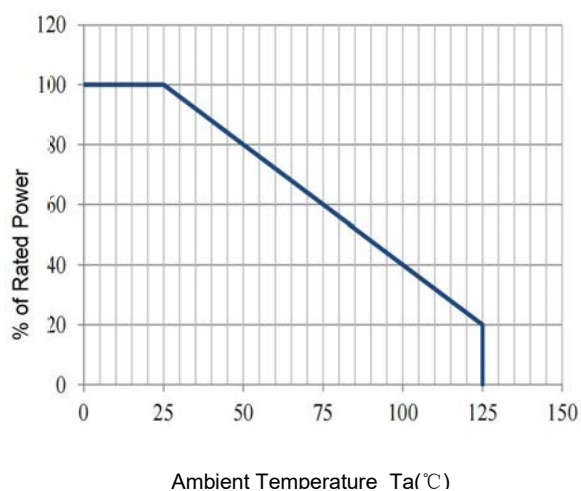
$V_R$ —Reverse Voltage(V)  
**Junction Capacitance vs. Reverse Voltage**



$I_{PP}$ —Peak Pulse Current(A)  
**Clamping Voltage vs. Peak Pulse Current**



**Peak Pulse Power vs. Pulse Time**



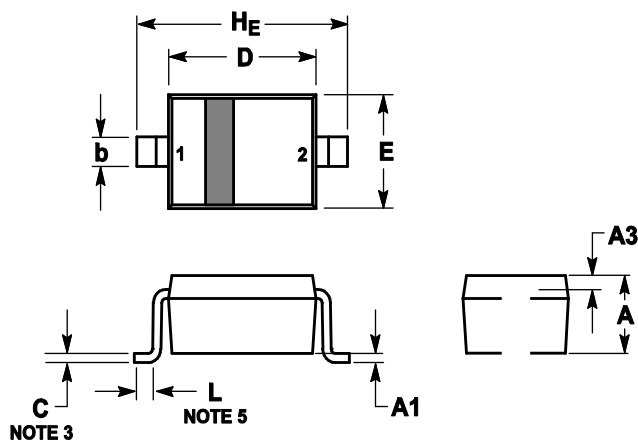
**Power Derating Curve**



## Outline And Dimensions

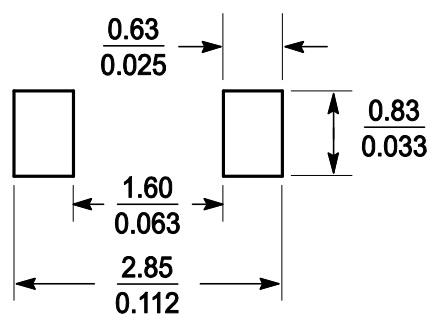
Notes:

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              | 0.8         | 0.9  | 1     | 0.031    | 0.035 | 0.04  |
| A1             | 0           | 0.05 | 0.1   | 0        | 0.002 | 0.004 |
| A3             | 0.15REF     |      |       | 0.006REF |       |       |
| b              | 0.25        | 0.32 | 0.4   | 0.01     | 0.012 | 0.016 |
| C              | 0.089       | 0.12 | 0.177 | 0.003    | 0.005 | 0.007 |
| D              | 1.6         | 1.7  | 1.8   | 0.062    | 0.066 | 0.07  |
| E              | 1.15        | 1.25 | 1.35  | 0.045    | 0.049 | 0.053 |
| L              | 0.08        |      |       | 0.003    |       |       |
| H <sub>E</sub> | 2.3         | 2.5  | 2.7   | 0.09     | 0.098 | 0.105 |

## Soldering Footprint





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