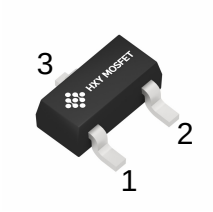
# HESDUC5VU2I-C
ESD PROTECTION DIODE

## Discription

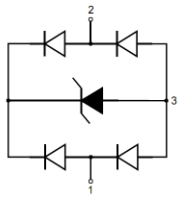
The HESDUC5VU2I-C protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD.




**SOT-23**

## Features

- Stand-off voltage: 5V Max
- Transient protection for each line according to
  IEC61000-4-2 (ESD): ±20kV (contact and air discharge)
  IEC61000-4-4 (EFT): 40A (5/50ns)
  IEC61000-4-5 (surge): 4A (8/20μs)
- Ultra-low capacitance: $C_J$ = 0.4pF typ.
- Ultra-low leakage current: $I_R$ <1nA typ.
- Low clamping voltage: $V_{CL}$ = 20V @ $I_{PP}$ = 16A(TLP)
- Solid-state silicon technology




Circuit Diagram

## Ordering Information

| Product ID | Pack | Qty(PCS) |
|---|---|---|
| HESDUC5VU2I-C | SOT-23 | 3000 |

## Absolute Ratings ($T_{amb}$=25°C )

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $P_{PP}$ | Peak Pulse Power ($t_p$ = 8/20μs) | 60 | W |
| $T_L$ | Maximum lead temperature for soldering during 10s | 260 | °C |
| $T_{stg}$ | Storage Temperature Range | -55 to +150 | °C |
| $T_{op}$ | Operating Temperature Range | -40 to +125 | °C |
| $T_j$ | Maximum junction temperature | 150 | °C |
| | IEC61000-4-2 (ESD) air discharge<br>contact discharge | ±20<br>±20 | KV |

## Electrical characteristics ($T_A$=25 °C, unless otherwise noted)

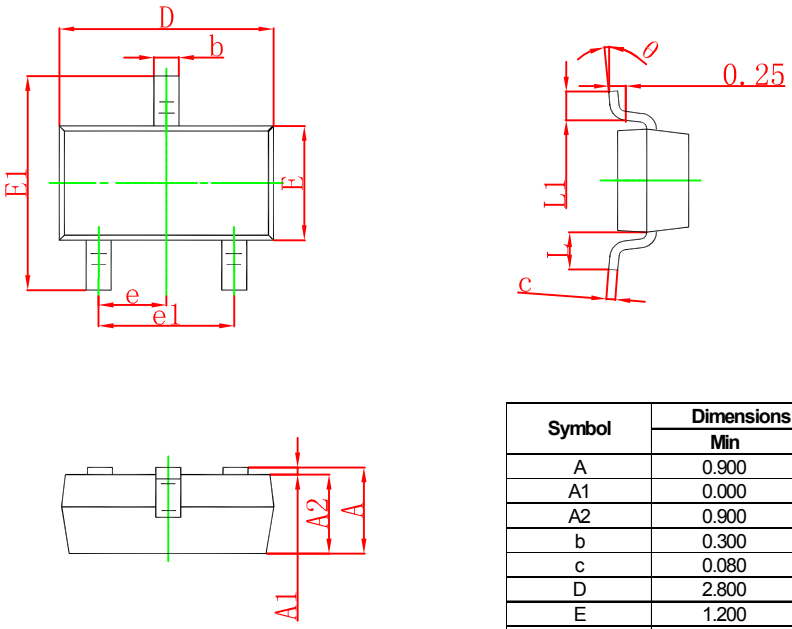
| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Reverse maximum working voltage | $V_{RWM}$ | | | | 5.0 | V |
| Reverse leakage current | $I_R$ | $V_{RWM}$ = 5V | | <1 | 100 | nA |
| Reverse breakdown voltage | $V_{BR}$ | $I_T$ = 1mA | 7.0 | 8.0 | 9.0 | V |
| Forward voltage | $V_F$ | $I_T$ = 10mA | 0.6 | 0.9 | 1.2 | V |
| Clamping voltage 1) | $V_{CL}$ | $I_{PP}$ = 16A, $t_p$ = 100ns | | 20 | | V |
| Dynamic resistance 1) | $R_{DYN}$ | | | 0.65 | | Ω |
| Clamping voltage 2) | $V_{CL}$ | $I_{PP}$ = 1A, $t_p$ = 8/20μs | | | 11 | V |
| | | $I_{PP}$ = 4A, $t_p$ = 8/20μs | | | 15 | V |
| Junction capacitance | $C_J$ | $V_R$ = 0V, f = 1MHz<br>Any I/O pin to GND | | 0.40 | 0.65 | pF |
| | | $V_R$ = 0V, f = 1MHz<br>Between any I/O pin | | 0.25 | 0.40 | pF |

*Notes:*

*1) TLP parameter: $Z_0$ = 50 Ω , $t_p$ = 100ns, $t_r$ = 2ns, averaging window from 60ns to 80ns. $R_{DYN}$ is calculated from 4A to 16A.*

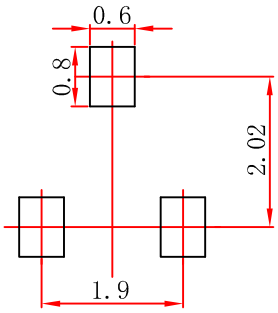
*2) According to IEC61000-4-5.*

## SOT-23 Package Outline Dimensions




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0.035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950 TYP | | 0.037 TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550 REF | | 0.022 REF | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0° | 8° | 0° | 8° |

## SOT-23 Suggested Pad Layout




Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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