# ULTRA-LOW CAPACITANCE BIDIRECTIONAL TVS

## Product Summary

| $V_{BR\ min}$ | $I_{pp\ max}$ | $C_{IN\ typ}$ |
|---|---|---|
| 6V | 17A | 0.6pF |

## Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±27kV
- 1 Channel of ESD Protection
- Low Channel Input Capacitance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

## Description

The DBLC05CI is an ultra-low capacitance, bidirectional, Electro Static Discharge (ESD) protection diode in a small Surface-Mounted Device (SMD) plastic package designed to protect one data line from damage caused by ESD.

## Applications

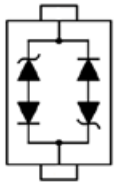
- Ethernet – 10/100/1000 base T
- Handheld wireless systems
- USB interfaces

## Mechanical Data

- Package: SOD323
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead-Free Plating). Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.004 grams (Approximate)

SOD323

Top View



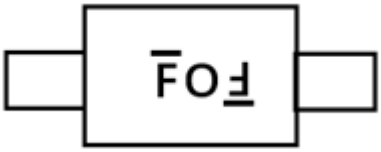
Device Schematic

## Ordering Information (Note 4)

| Product | Compliance | Marking | Reel size(inches) | Tape width(mm) | Quantity per reel |
|---|---|---|---|---|---|
| DBLC05CI-7 | Commercial | F0J | 7 | 8 | 3,000/Tape & Reel |

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

## Marking Information




F0J = Product Type Marking Code

## Maximum Ratings (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit | Conditions |
|---|---|---|---|---|
| Peak Pulse Power Dissipation | $P_{PP}$ | 350 | W | 8/20μs, Per Figure 3 |
| Peak Pulse Current | $I_{PP}$ | 17 | A | 8/20μs, Per Figure 3 |
| ESD Protection – Contact Discharge | $V_{ESD\_Contact}$ | ±27 | kV | Standard IEC 61000-4-2 |
| ESD Protection – Air Discharge | $V_{ESD\_Air}$ | ±30 | kV | Standard IEC 61000-4-2 |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Package Power Dissipation (Note 5) | $P_D$ | 250 | mW |
| Thermal Resistance, Junction to Ambient (Note 5) | $R_{\Theta JA}$ | 500 | °C/W |
| Operating Temperature Range | $T_J$ | -55 to +125 | °C |
| Storage Temperature Range | $T_{STG}$ | -55 to +150 | °C |
| Soldering Temperature, t max =10s | $T_L$ | 260 | °C |

## Electrical Characteristics (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Reverse Working Voltage | $V_{RWM}$ | — | — | 5 | V | — |
| Reverse Current (Note 5) | $I_R$ | — | — | 4.5 | uA | $V_R = V_{RWM}$ = 5V |
| Reverse Breakdown Voltage | $V_{BR}$ | 6 | — | — | V | $I_R$ = 1mA |
| Reverse Clamping Voltage | $V_{CL}$ | — | — | 9.8 | V | $I_{PP}$ = 1A, $t_p$ = 8/20μs |
| | | — | — | 20.6 | | $I_{PP}$ = 17A, $t_p$ = 8/20μs |
| Capacitance | $C_T$ | — | 0.6 | 0.7 | pF | $V_R$ = 0V, f = 1MHz |

Notes: 5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown in Diodes Incorporated's package outline PDFs, which can be found on our website at http://www.diodes.com/package-outlines.html.
6. Short duration pulse test used to minimize self-heating effect.

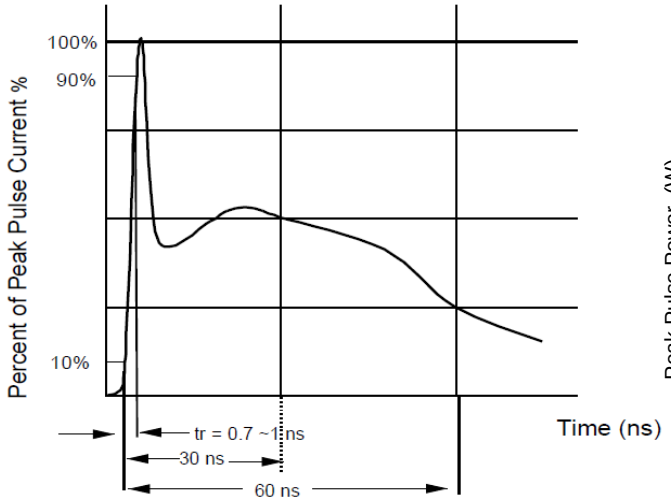



Figure 1, ESD pulse waveform according to IEC 61000-4-2

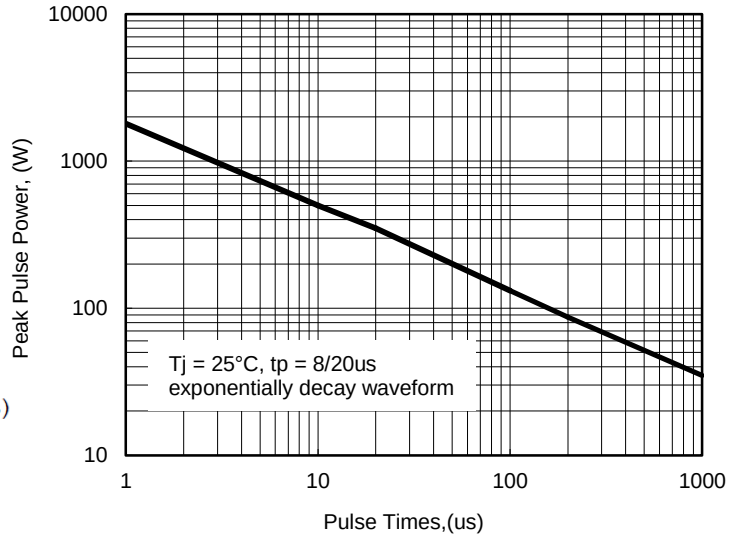



Figure 2, power dissipation versus pulse time

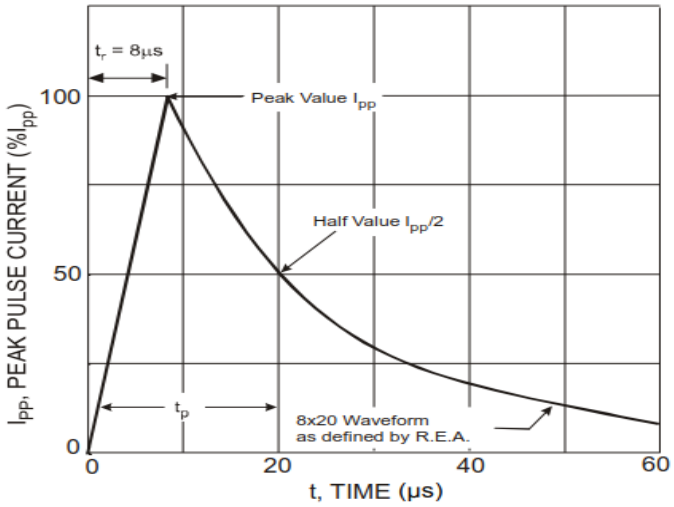



Figure 3, typical 8 x 20µs pulse waveform

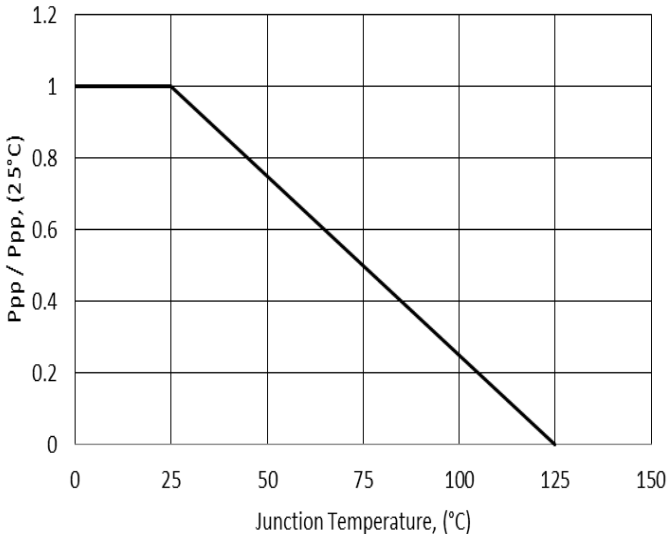



Figure 4, peak pulse power versus Tj

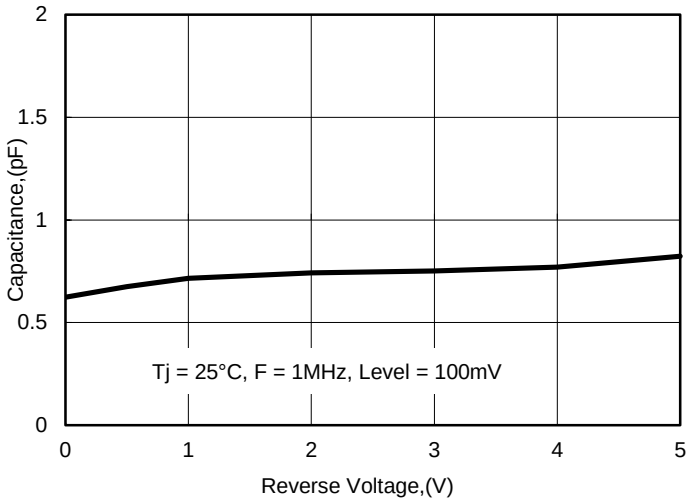



Figure 5, typical junction capacitance

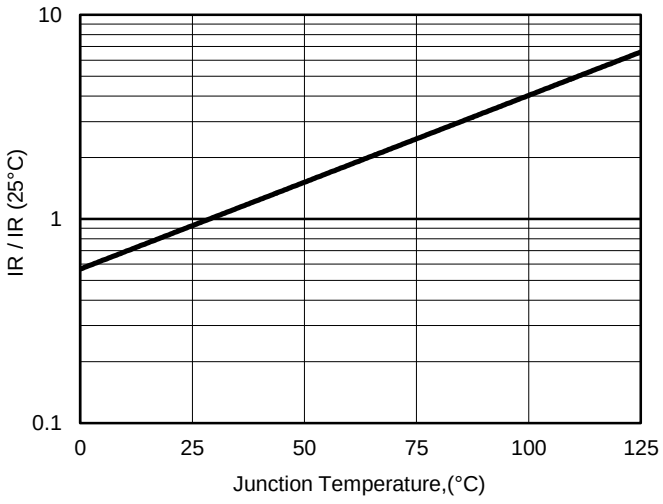



Figure 6, reverse leakage current versus Tj

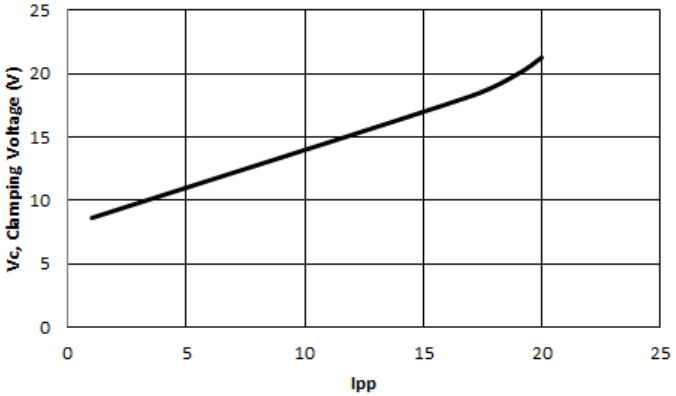



Figure 7, Clamping Voltage Characteristic (tp=8/20uS)

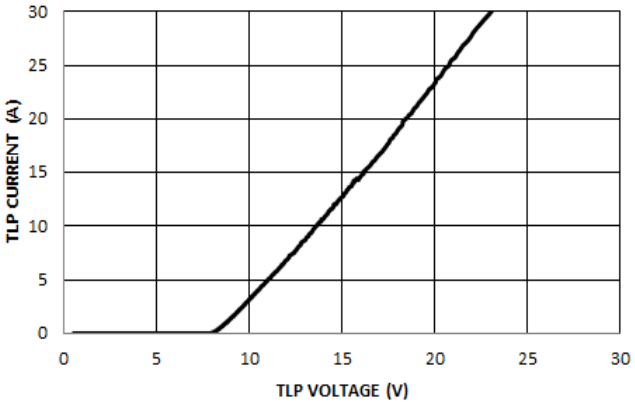
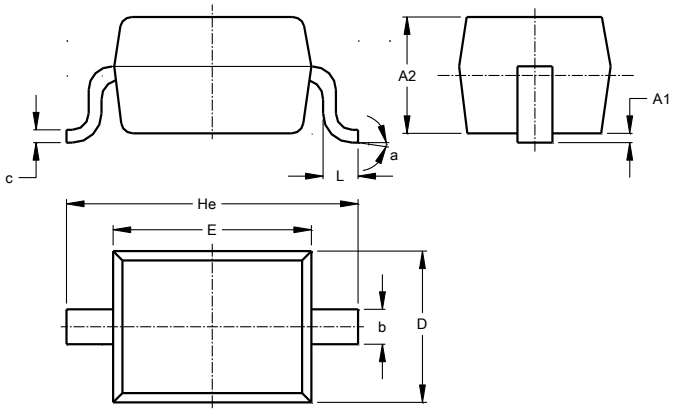



Figure 8 TLP Curve (tp=100ns)

## Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

**SOD323**

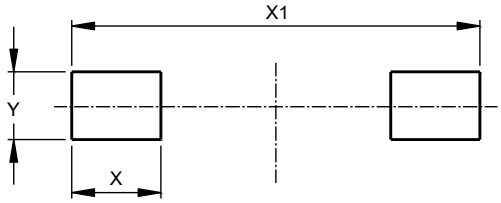



| SOD323 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A1** | -- | 0.10 | 0.05 |
| **A2** | 1.00 | 1.10 | 1.05 |
| **b** | 0.25 | 0.35 | 0.30 |
| **c** | 0.10 | 0.15 | 0.11 |
| **D** | 1.20 | 1.40 | 1.30 |
| **E** | 1.60 | 1.80 | 1.70 |
| **He** | 2.30 | 2.70 | 2.50 |
| **L** | 0.20 | 0.40 | 0.30 |
| **a** | 0º | 8º | -- |
| **All Dimensions in mm** | | | |

## Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

**SOD323**




| Dimensions | Value (in mm) |
|---|---|
| **X** | 0.590 |
| **X1** | 2.700 |
| **Y** | 0.450 |

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