

ULTRA-LOW CAPACITANCE BIDIRECTIONAL TVS

Product Summary

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

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

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/>**

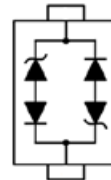
Mechanical Data

- 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



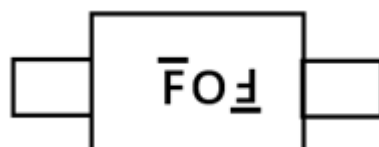
Device Schematic

Ordering Information (Note 4)

| Product | Compliance | Marking | Reel size(inches) | Tape width(mm) | Quantity per reel |
|------------|------------|---------|-------------------|----------------|-------------------|
| DBLC05CI-7 | Commercial | FOF | 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



FOF = 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 _{θJA} | 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 | μA | 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.

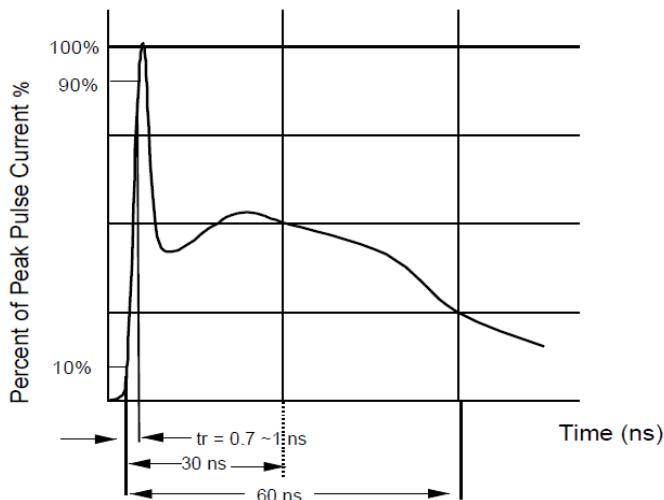


Figure 1, ESD pulse waveform according to IEC 61000-4-2

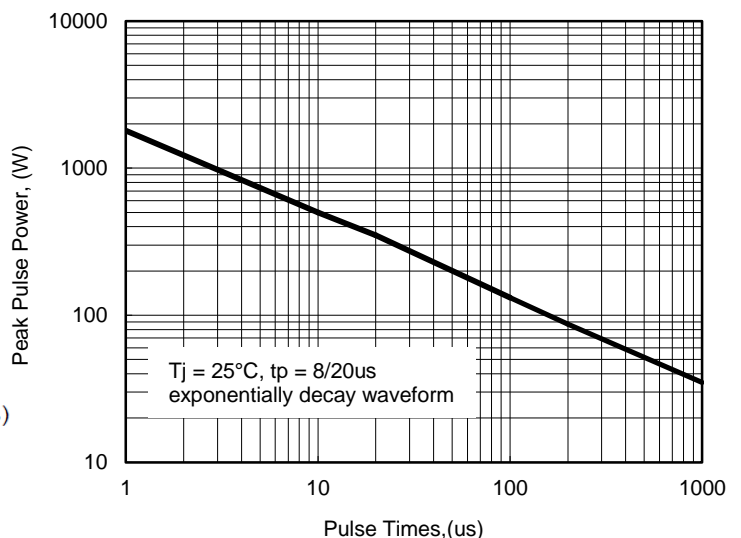


Figure 2, power dissipation versus pulse time

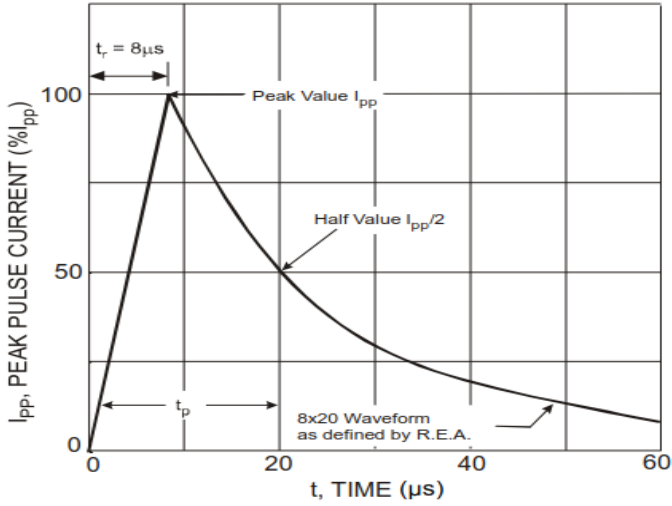


Figure 3, typical 8 x 20µs pulse waveform

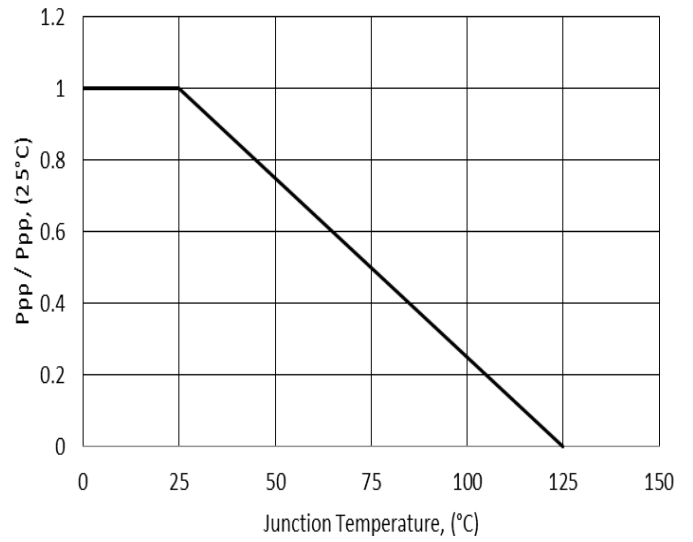


Figure 4, peak pulse power versus Tj

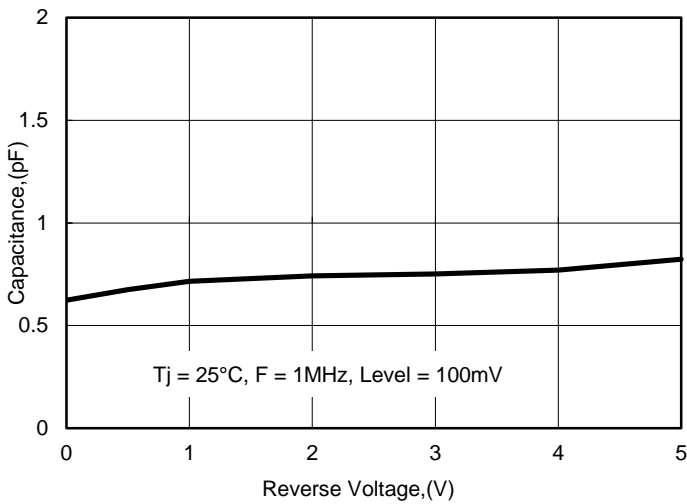


Figure 5, typical junction capacitance

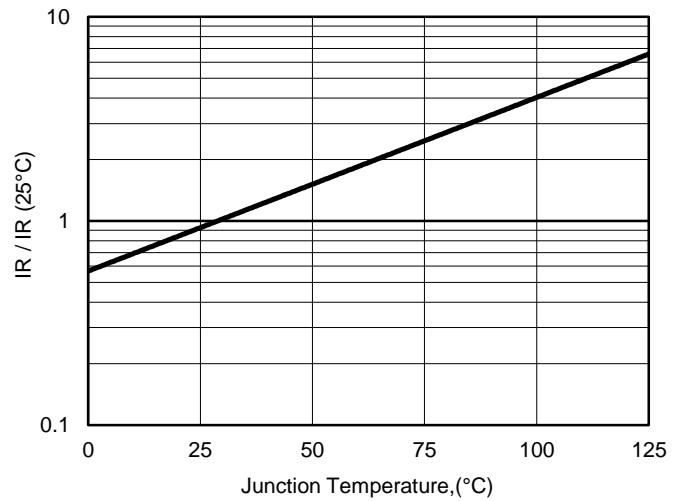


Figure 6, reverse leakage current versus Tj

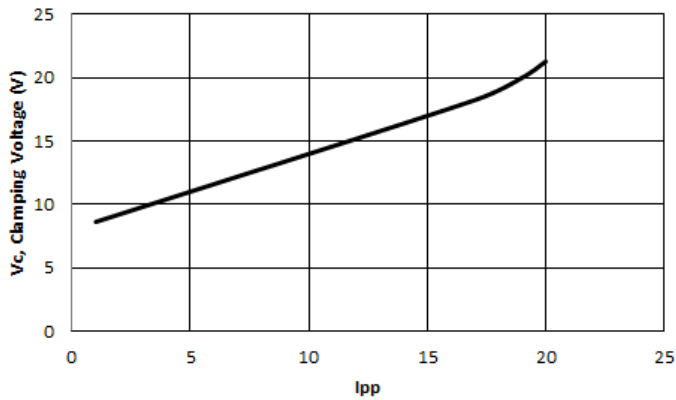


Figure 7, Clamping Voltage Characteristic (tp=8/20µs)

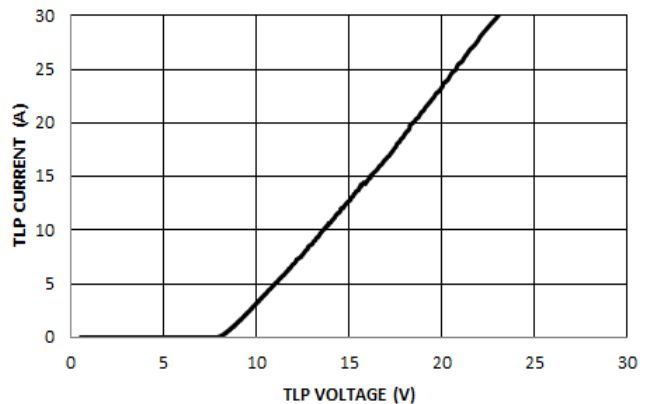
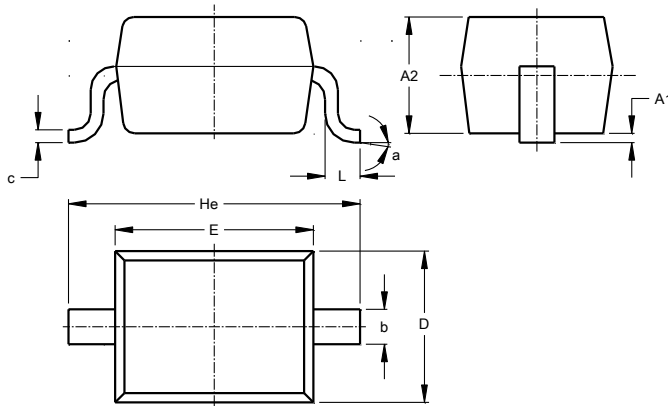


Figure 8 TLP Curve (tp=100ns)

Package Outline Dimensions

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

SOD323

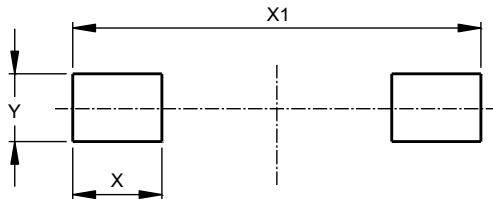


| SOD323 | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A1 | -- | 0.10 | 0.05 |
| A2 | 1.00 | 1.10 | 1.05 |
| b | 0.25 | 0.35 | 0.30 |
| c | 0.10 | 0.15 | 0.11 |
| D | 1.20 | 1.40 | 1.30 |
| E | 1.60 | 1.80 | 1.70 |
| He | 2.30 | 2.70 | 2.50 |
| L | 0.20 | 0.40 | 0.30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