ULTRA-LOW CAPACITANCE BIDIRECTIONAL TVS

Product Summary

$V_{BR\ Min}$	$I_{PP\ Max}$	$C_{T\ Typ}$
6V	17A	0.6pF

Description

The DBLC05CI is an ultra-low capacitance, bidirectional, electrostatic 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

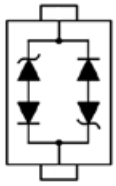
- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±27kV
- 1 Channel of ESD Protection
- Low Channel Input Capacitance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, 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



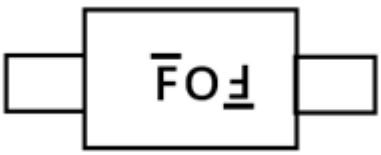
Device Schematic

Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DBLC05CI-7	SOD323	F0J	7	8	3000	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 +150	°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 6)	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 = 0, 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.

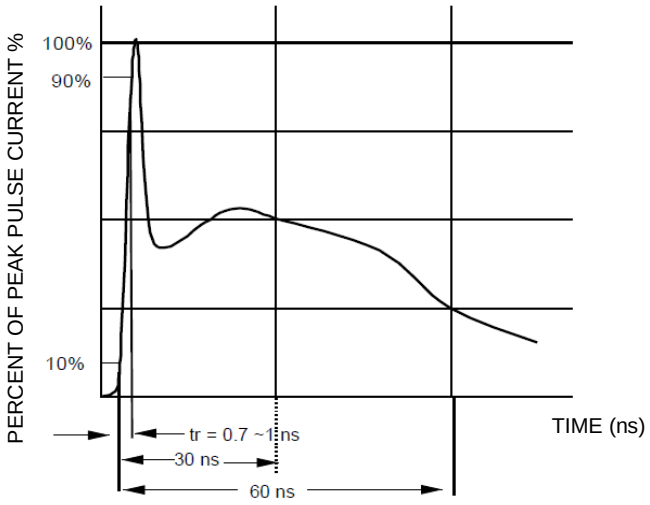


Figure 1. ESD Pulse Waveform According to IEC 61000-4-2

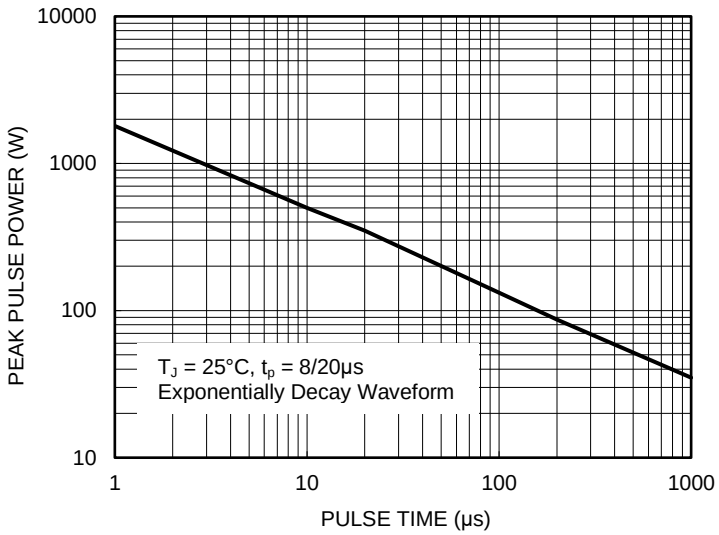


Figure 2. Power Dissipation vs. Pulse Time

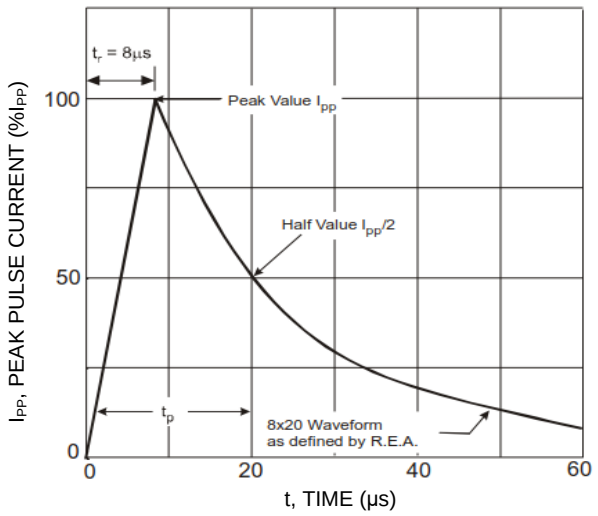


Figure 3. Typical 8 x 20µs Pulse Waveform

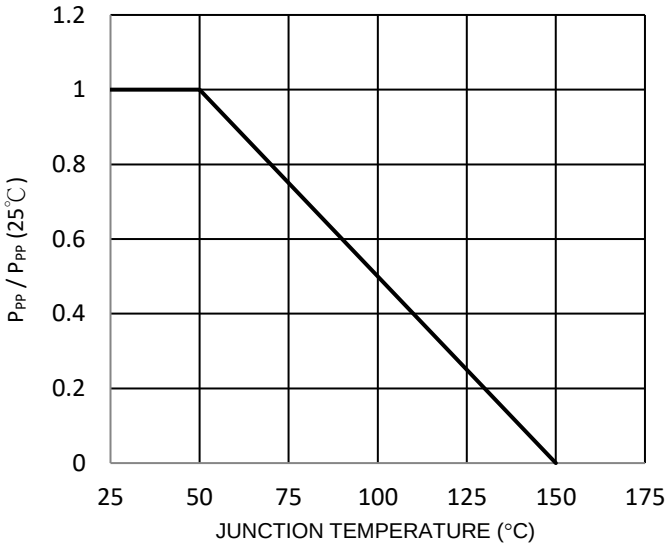


Figure 4. Peak Pulse Power vs. T_J

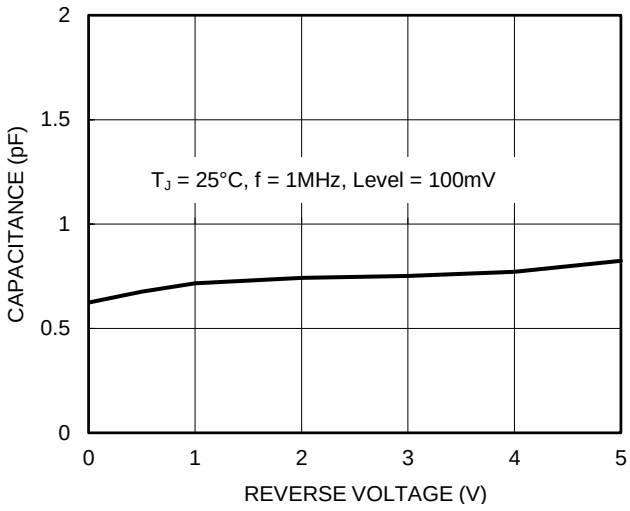


Figure 5. Typical Junction Capacitance

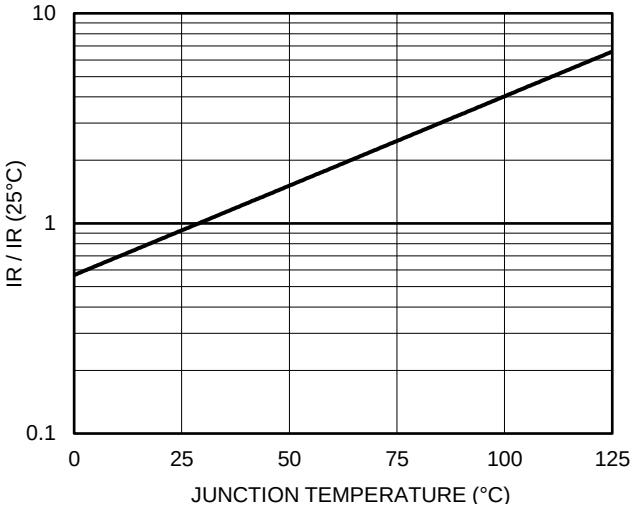


Figure 6. Reverse Leakage Current vs. T_J

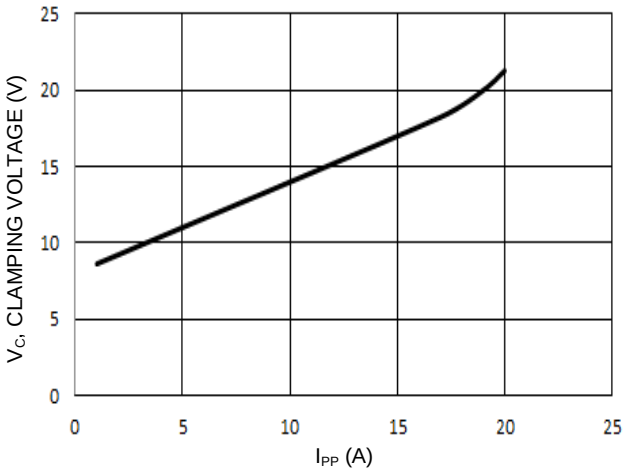


Figure 7. Clamping Voltage Characteristic (t_p = 8/20µs)

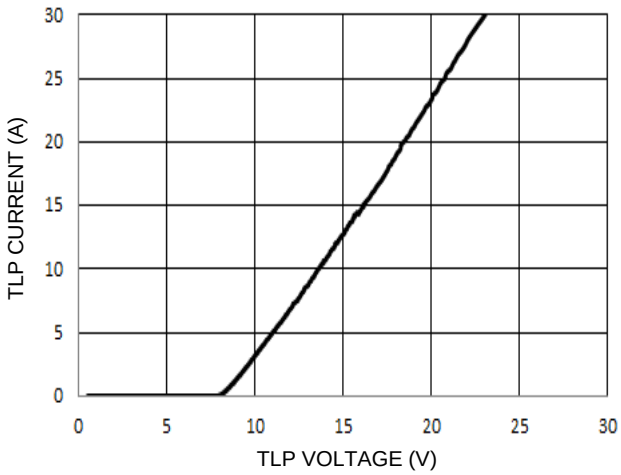
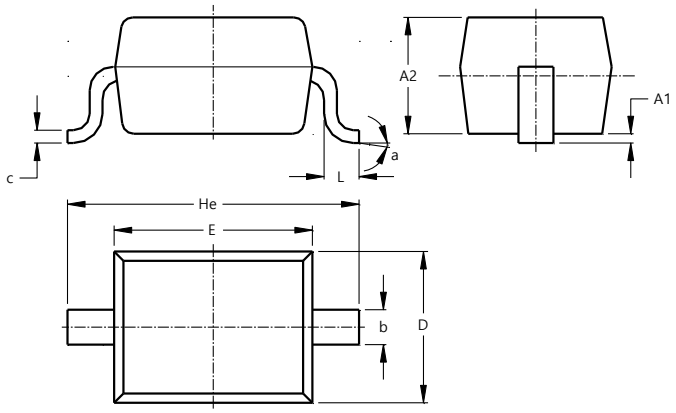


Figure 8. TLP Curve (t_p = 100ns)

Package Outline Dimensions

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

SOD323

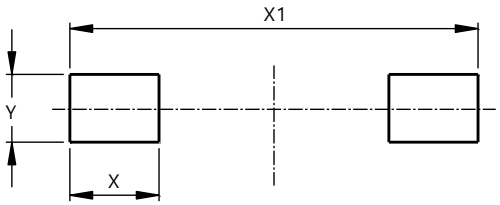


SOD323			
Dim	**Min**	**Max**	**Typ**
A1	--	0.10	0.05
A2	1.00	1.10	1.05
b	0.25	0.35	0.30
c	0.10	0.15	0.11
D	1.20	1.40	1.30
E	1.60	1.80	1.70
He	2.30	2.70	2.50
L	0.20	0.40	0.30
a	0º	8º	--
All Dimensions in mm			

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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