ULTRA-LOW CAPACITANCE UNI-DIRECTIONAL TVS

Product Summary

$V_{BR\ Min}$	$I_{PP\ Max}$	$C_{T\ Max}$
6V	25A	1.5pF

Description

The DBLC05IQ integrates low-capacitance steering diodes for uni-directional protection to protect against ESD and lightning-induced surge events. These components can safely absorb up to 25A per IEC 61000-4-5 (tp = 8/20µs) without performance degradation and a minimum ±30kV ESD per IEC 61000-4-2 international standard.

Applications

- USB interfaces
- 10/100/1000 Ethernet
- Power ports
- Automotive applications

Features

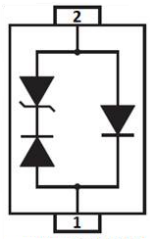
- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±30kV
- 1 Channel of ESD Protection
- Low Channel Input Capacitance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DBLC05IQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  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



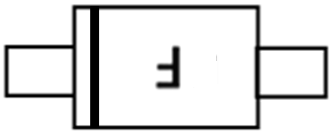
Device Schematic

Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DBLC05IQ-7	SOD323	ⅎ	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



ⅎ = Product Type Marking Code
Line Denotes Pin 1

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P_{PP}	600	W	8/20µs, Per Figure 3
Peak Pulse Current	I_{PP}	25	A	8/20µs, Per Figure 3
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	±30	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)	$R_{\theta JA}$	600	°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	—	—	0.5	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, tp = 8/20µs
		—	—	27.0		I_{PP} = 25A, tp = 8/20µs
Capacitance	C_T	—	1.2	1.5	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.

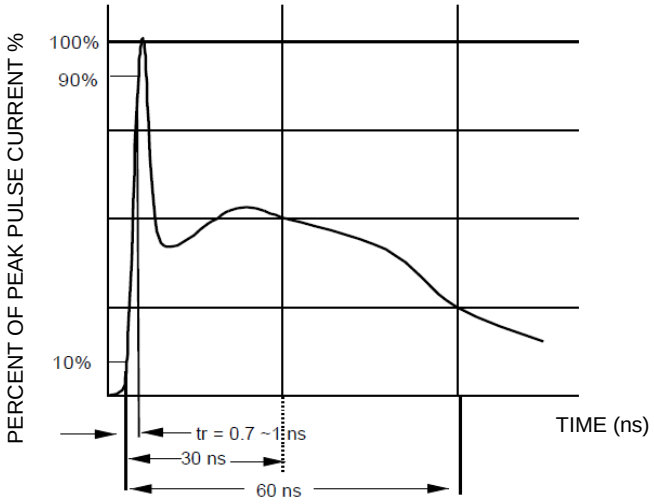

Figure 1. ESD Pulse Waveform According to IEC 61000-4-2

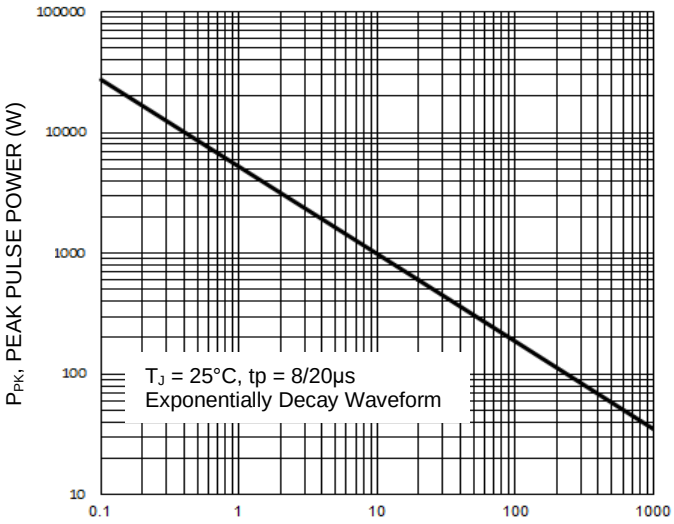

Figure 2. Power Dissipation vs. Pulse Time

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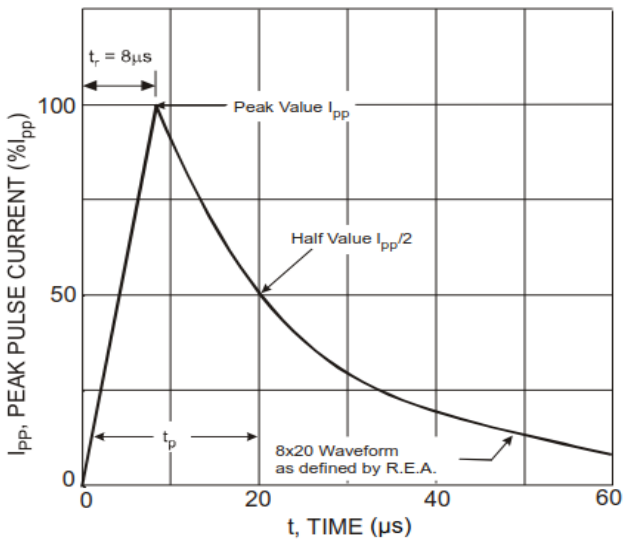

Figure 3. Typical 8 x 20µs Pulse Waveform

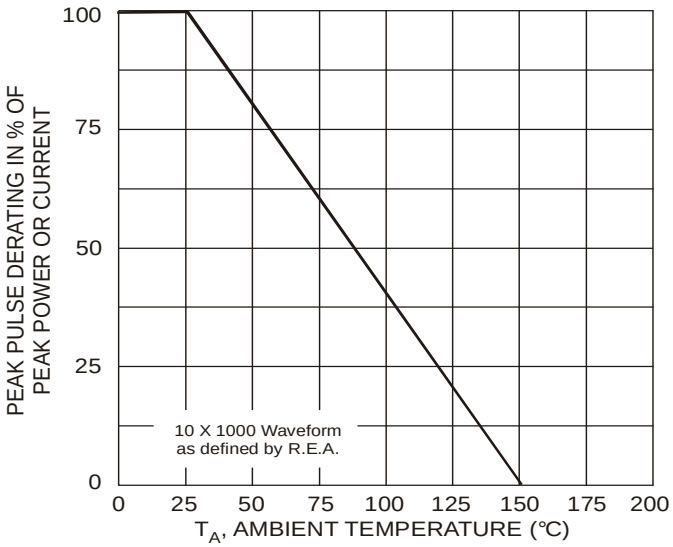

Figure 4. Peak Pulse Power vs. T_A

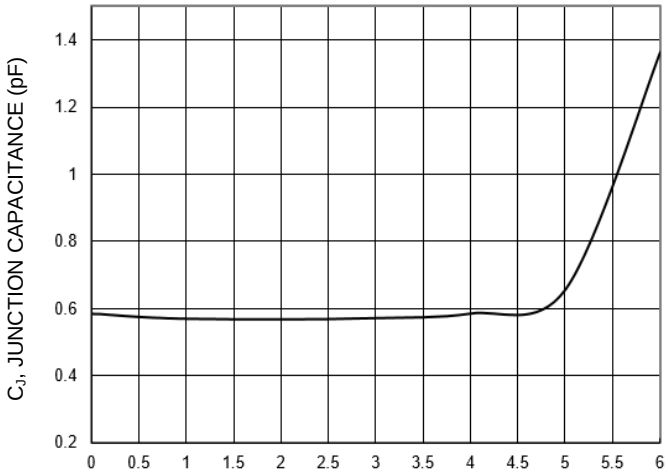

Figure 5. Typical Junction Capacitance

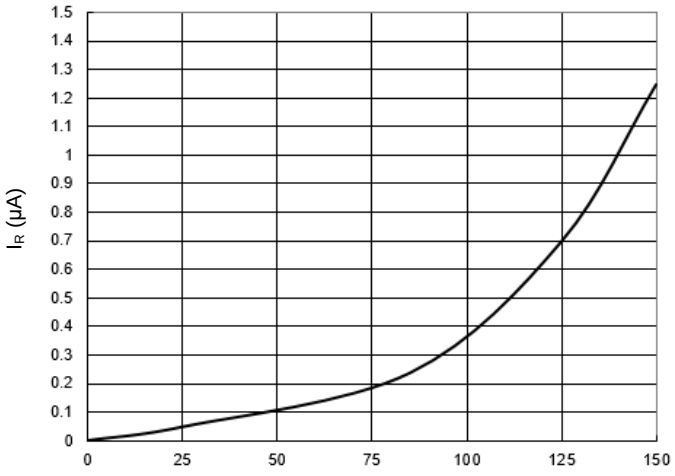

Figure 6. Reverse Leakage Current vs. T_J

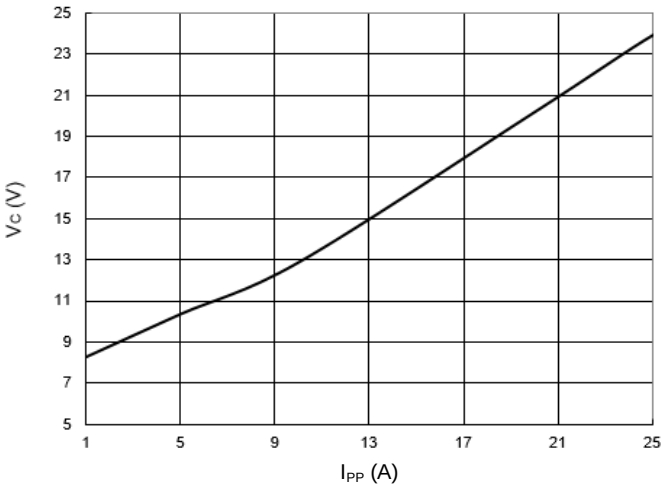

Figure 7. Typical Peak Clamping Voltage V_C vs. Peak Pulse Current I_{PP}

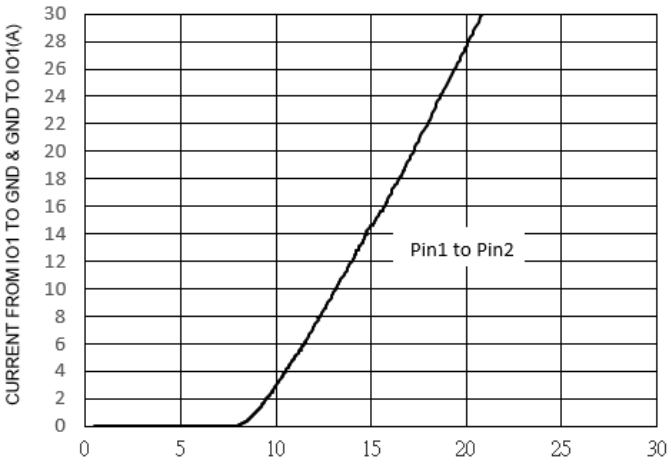

Figure 8. TLP Curve (tp = 100ns)

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Package Outline Dimensions

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

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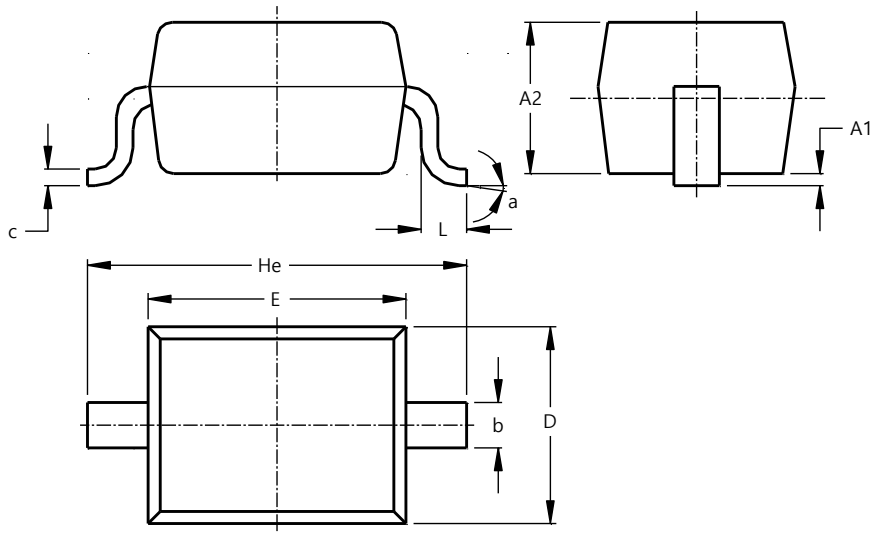
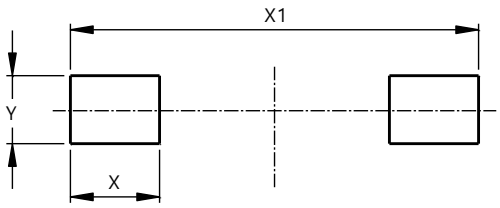


SOD323			
Dim	**Min**	**Max**	**Typ**
A1	--	0.10	0.05
A2	1.00	1.10	1.05
b	0.25	0.35	0.30
c	0.10	0.15	0.11
D	1.20	1.40	1.30
E	1.60	1.80	1.70
He	2.30	2.70	2.50
L	0.20	0.40	0.30
a	0º	8º	--
All Dimensions in mm			

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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