

Bi-directional ESD Protection Diode

FEATURES

- Meet IEC61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 8\text{kV}$ (contact)
- Meet IEC61000-4-4 (EFT) rating. 40A (5/50ns)
- Protects one Bi-directional I/O line
- Moisture sensitivity level: level 1, per J-STD-020
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
P_{PPM}	500	W
I_{PP}	5	A
V_{RWM}	5	V
V_C at $I_{PP} = 5\text{ A}$	9.8	V
Package	SOD-323	

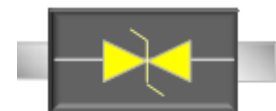
APPLICATIONS

- Cell Phone Handsets and Accessories
- Notebooks, Desktops, and Servers
- Keypads, Side Keys, USB 2.0, LCD Displays
- Portable Instrumentation
- Microprocessor Based Equipment



MECHANICAL DATA

- Case: SOD-323
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Weight: 4.85 mg (approximately)
- Marking code on the device: 2B



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TESDC5V0	UNIT
Rated random recurring peak Impulse power dissipation ($t_p = 8/20\mu\text{s}$ waveform)	P_{PPM}	500	W
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	± 15 ± 8	KV
Junction temperature range	T_J	-55 to +150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Reverse breakdown voltage ⁽¹⁾	$I_R = 1 \text{ mA}$	$V_{(BR)}$	6	-	-	V
Rated working standoff voltage		V_{WM}	-	-	5	V
Reverse current ⁽¹⁾	$V_R = 5 \text{ V}$	I_R	-	-	5	μA
Clamping voltage ⁽²⁾	$I_{PP} = 5 \text{ A}$	V_C	-	-	9.8	V
Clamping voltage ⁽²⁾	$I_{PP} = 24 \text{ A}$	V_C	-	-	14.5	V
Junction capacitance	1 MHz, $V_R = 0\text{V}$	C_J	-	200	-	pF

Notes:

1. Pulse test with $PW = 30 \text{ ms}$
2. $tp = 8/20\mu\text{s}$ waveform

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
TESDC5V0 RR	SOD-323	3K / 7" Reel
TESDC5V0 RRG	SOD-323	3K / 7" Reel

Note: "G" means green compound (halogen)

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 Non-Repetitive Peak Pulse Power vs. Pulse Time

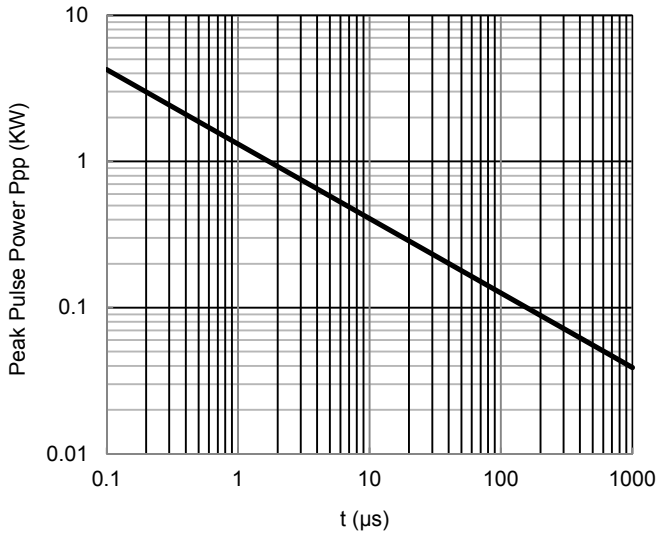


Fig. 2 8/20 μs pulse waveform according to IEC 61000-4-5

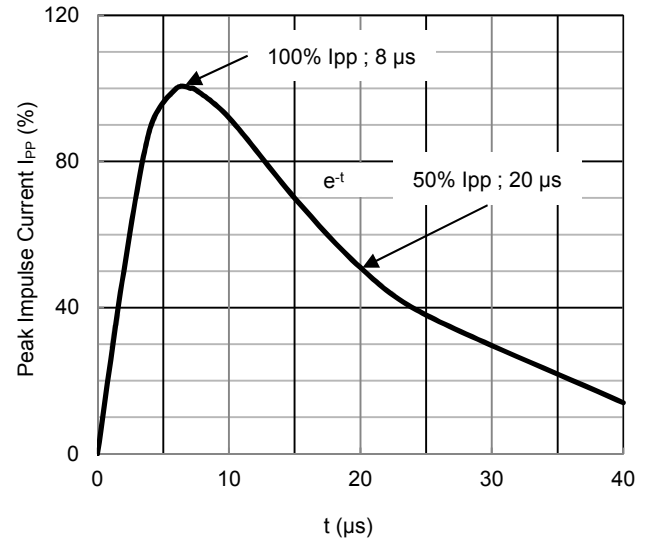


Fig. 3 Admissible Power Dissipation Curve

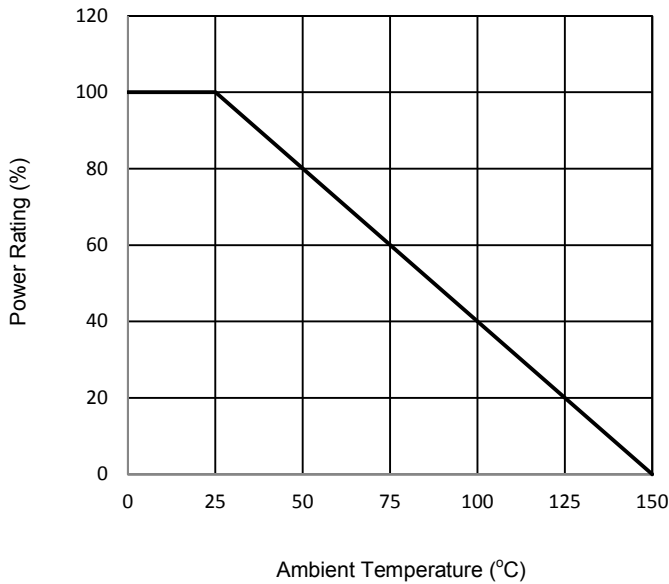
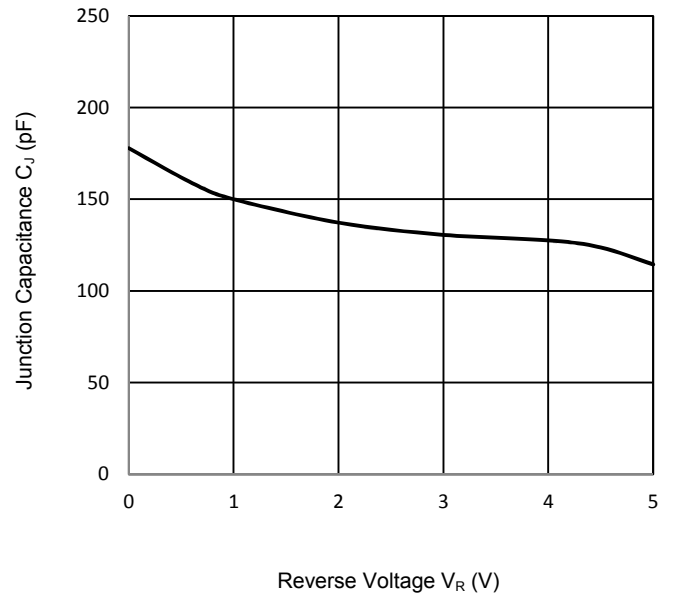


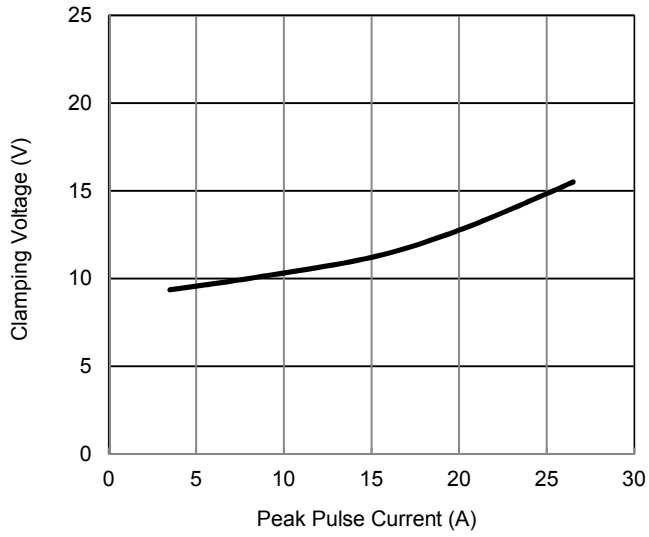
Fig. 4 Typical Junction Capacitance



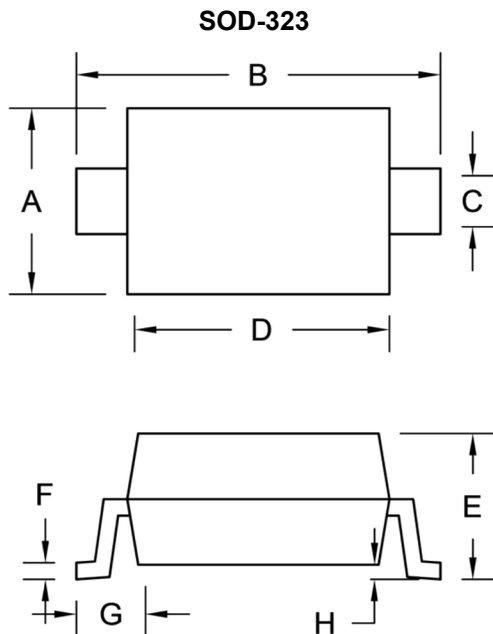
CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

**Fig. 5 Clamping Voltage vs.
Peak Pulse Current**

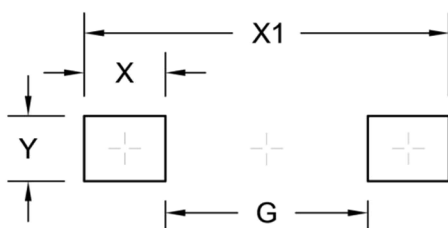


PACKAGE OUTLINE DIMENSION



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.150	1.400	0.045	0.055
B	2.300	2.700	0.091	0.106
C	0.250	0.450	0.010	0.018
D	1.600	1.800	0.063	0.071
E	0.800	1.000	0.031	0.039
F	0.050	0.177	0.002	0.007
G	0.475 (Ref.)		0.019 (Ref.)	
H	-	0.100	-	0.004

SUGGEST PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
G	1.52	0.060
X	0.61	0.024
X1	2.74	0.108
Y	0.49	0.019

Note: The suggested land pattern dimensions have been provided for reference only, as actual pad layouts may vary depending on application.

APPLICATION INFORMATION

- Designed to protect one data, I/O, or power supply line
- Designed to protect sensitive electronics from damage or latch-up due to ESD
- Designed to replace multilayer varistors (MLVs) in portable applications
- Offers superior electrical characteristics such as lower clamping voltage and no device degradation when compared to MLVs
- The combination of small size and high ESD surge capability makes them ideal for use in portable applications

CIRCUIT BOARD LAYOUT RECOMMENDATIONS

- Good circuit board layout is critical for the suppression of ESD induced transients
- Place the ESD Protection Diode near the input terminals or connectors to restrict transient coupling
- Minimize the path length between the ESD Protection Diode and the protected line
- Minimize all conductive loops including power and ground loops
- The ESD transient return path to ground should be kept as short as possible

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