

Bi-directional ESD Protection Diode

DESCRIPTIONS

The TESDL24VB17P1Q1 is Bidirectional ESD rated clamping cell to protect power interfaces, or control line, or low speed data line in an electronic system. It has been specifically designed to protect sensitive electronic components which are connected to power and control lines from over-voltage damage by Electrostatic Discharging (ESD), and Lightning.

TESDL24VB17P1Q1 is a unique design which includes proprietary clamping cells in a small package. During transient conditions, the proprietary clamping cells prevent over-voltage on the control/data/power lines, protecting any downstream components.

The TESDL24VB17P1Q1 may be used to provide ESD protection up to $\pm 30\text{kV}$ (contact and air discharge) according to IEC61000-4-2, and withstand peak pulse current up to $3\text{A}(8/20\mu\text{s})$ according to IEC61000-4-5.

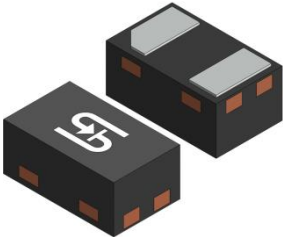
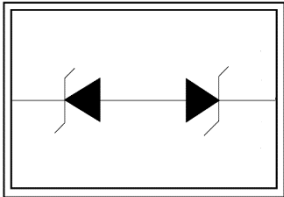
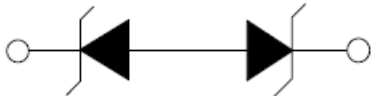
FEATURES

- ESD protect for 1 line with bidirectional.
- Provide ESD protection for each channel to IEC61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)
- IEC61000-4-4 (EFT) 4kV (5/50ns)
- IEC61000-4-5 (Lightning) 3A (8/20 μs)
- Suitable for 24V and below, operating voltage applications
- Protect I/O line or power line.
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-Free

APPLICATION

- General Purpose I/O
- Portable Instrumentation
- Power lines on PCB Protection



PACKAGE: DFN1006-2L	PIN CONFIGURATION	CIRCUIT DIAGRAM
		

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power ($t_p = 8/20\mu\text{s}$)	P_{PK}	150	W
Peak pulse current ($t_p = 8/20\mu\text{s}$)	I_{PP}	3	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 30	kV
ESD according to IEC61000-4-2 contact discharge		± 30	kV
Junction temperature range	T_J	-55 to +125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +125	$^\circ\text{C}$

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Reverse working voltage		V_{RWM}	-	-	24	V
Reverse breakdown voltage	$I_R = 1\text{mA}$, $T_J = 25^\circ\text{C}$	V_{BR}	25.2	-	32.6	V
Reverse leakage current	$V_{RWM} = 24\text{V}$	I_R	-	-	50	nA
Clamping voltage ⁽¹⁾	$I_{PP} = 3\text{A}$, $t_p = 8/20\mu\text{s}$	V_C	-	-	50	V
Clamping voltage ⁽²⁾	$I_{TLP} = 2\text{A}$, $t_p = 100\text{ns}$	V_{CL}	-	31	-	V
	$I_{TLP} = 8\text{A}$, $t_p = 100\text{ns}$		-	33.7	-	V
Junction capacitance	1MHz, $V_R = 0\text{V}$	C_J	-	13.9	17.5	pF
Dynamic resistance ⁽²⁾		R_{DYN}	-	0.45	-	Ω

Notes:

1. Non-repetitive current pulse, according to IEC61000-4-5.
2. TLP parameter: $Z_0 = 50\ \Omega$, $t_p = 100\text{ns}$, $t_r = 2\text{ns}$, averaging window from 60ns to 80ns. R_{DYN} is calculated from 2A to 8A.

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
TESDL24VB17P1Q1 RNG	DFN1006-2L	10,000 / 7" Tape & Reel

CHARACTERISTICS CURVES

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

Fig.1 Peak Pulse Power vs. Junction Temperature

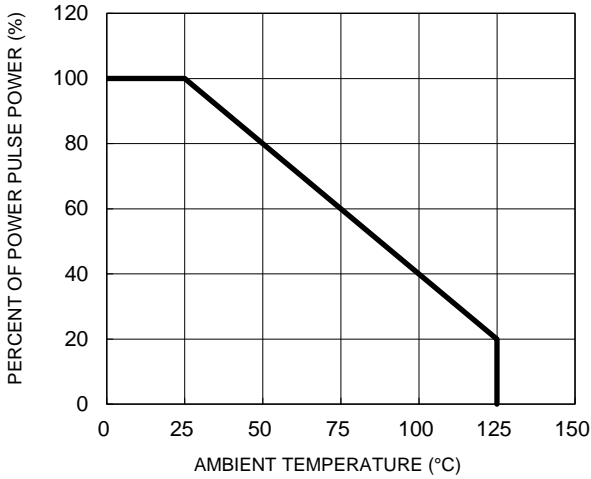


Fig.2 Non-Repetitive Peak Pulse Power vs. Pulse Time

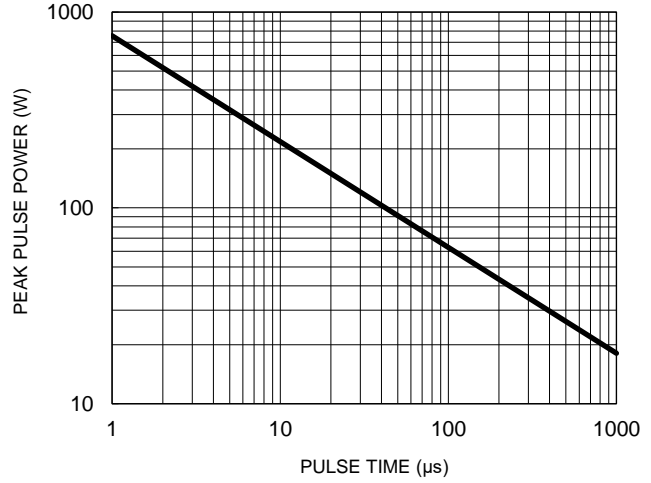


Fig.3 Clamping Voltage vs. Peak Pulse Current

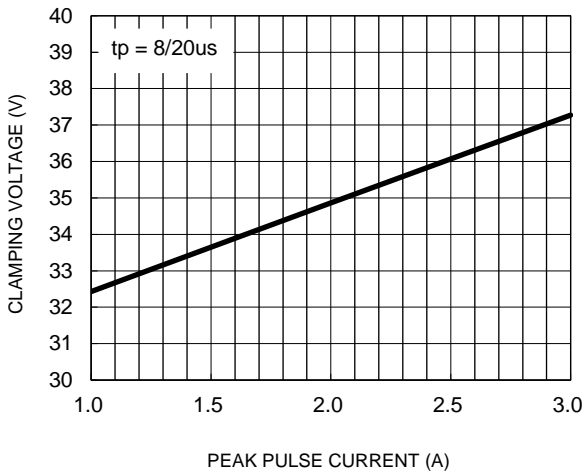


Fig.4 Capacitance vs. Reverse Voltage

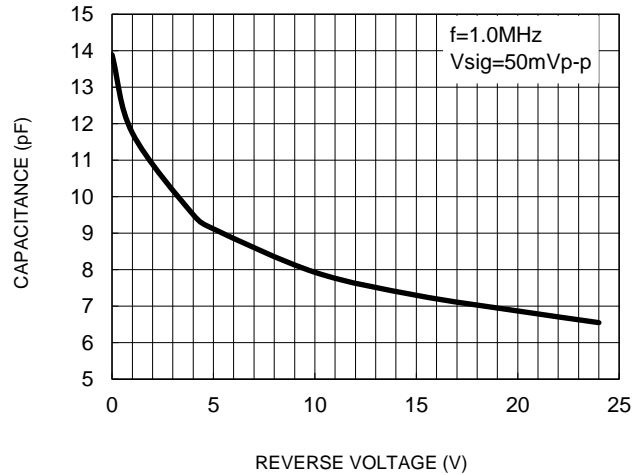
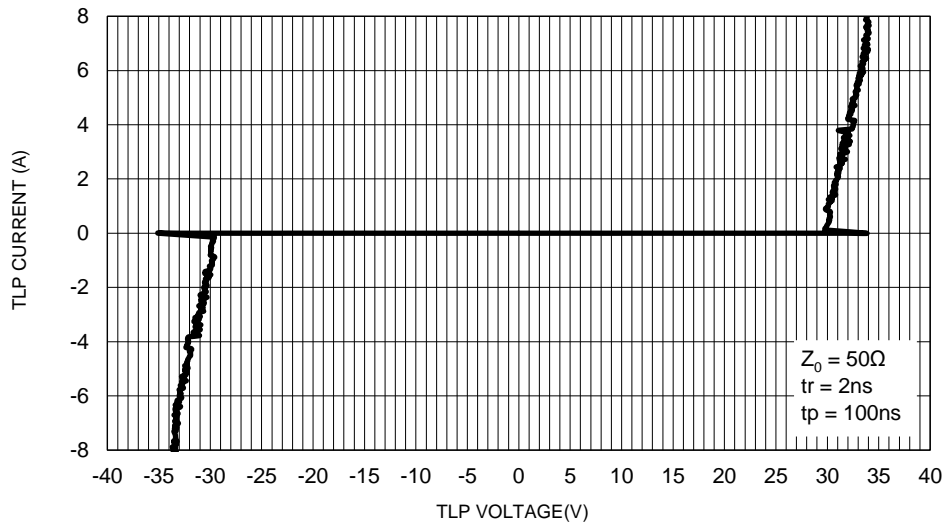


Fig.5 TLP Curve



CHARACTERISTICS CURVES

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

Fig.6 8/20 μs pulse waveform per IEC61000-4-5

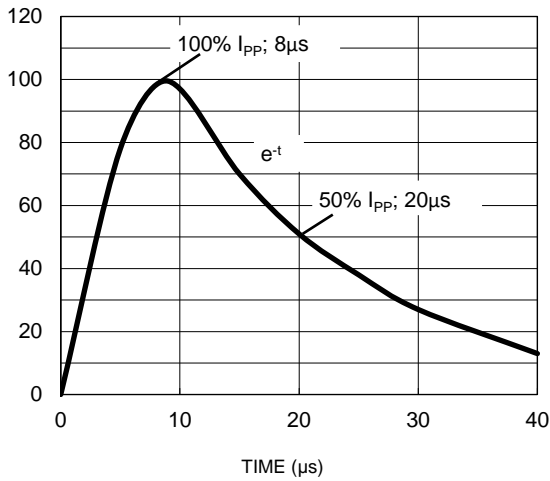
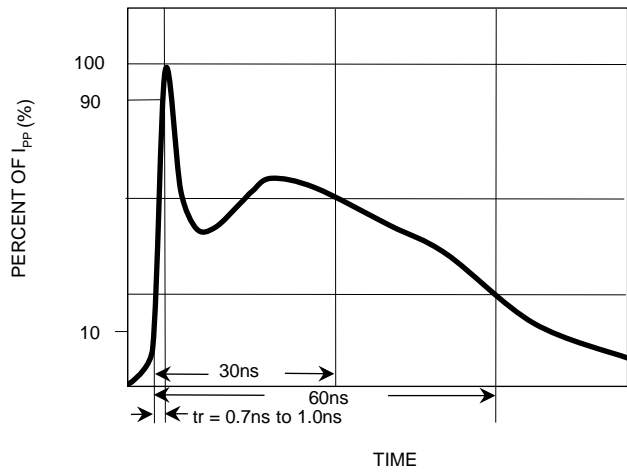
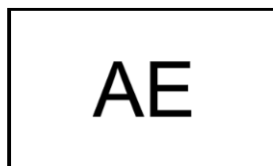
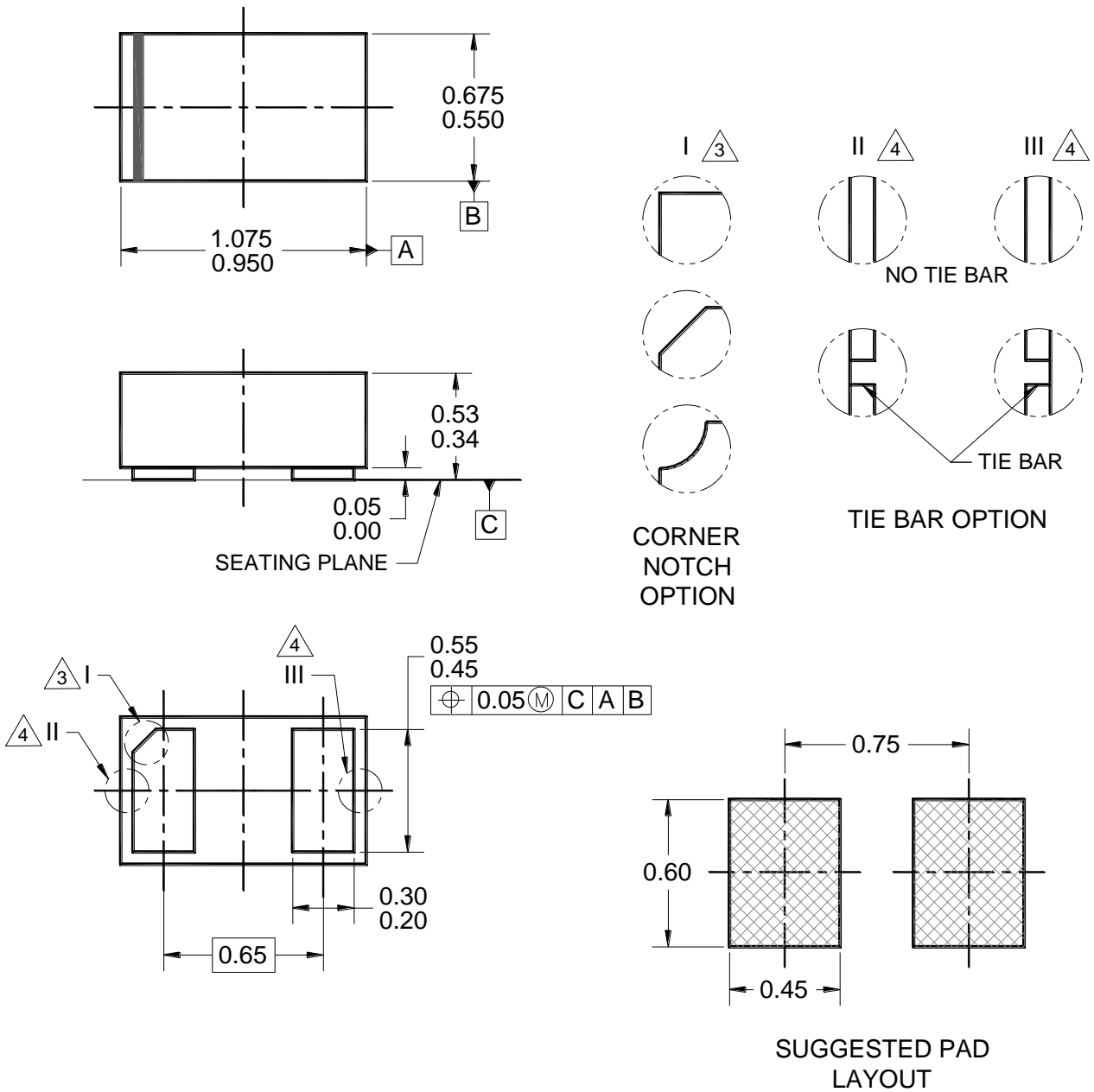


Fig.7 ESD pulse waveform per IEC61000-4-2



PACKAGE OUTLINE DIMENSIONS

DFN1006-2L



MARKING DIAGRAM

AE = MARKING CODE

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
3. CATHODE TERMINAL MAY HAVE CHAMFER, NOTCH OR FULL 90 DEGREES CORNER.
4. TERMINAL EDGE MAY HAVE TIE BAR OR NONE.
5. SUGGESTED PAD LAYOUT IS FOR REFERENCE PURPOSE ONLY.
6. DWG NO. REF: HQ2SD07-DFN1006_2L-075 REV A.

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