

4 CHANNEL LOW CAPACITANCE BI-DIRECTIONAL TVS ARRAY
Features

- Provides ESD Protection per IEC 61000-4-2 Standard:
Air – $\pm 30\text{kV}$, Contact – $\pm 30\text{kV}$
- 4 Channels of Bi-Directional ESD Protection
- Low Channel Input Capacitance
- Typically Used at Portable Electronics, Cellular Handsets and Communication Systems
- Lead Free/RoHS Compliant (Note 1)**
- "Green" Device (Note 2)**

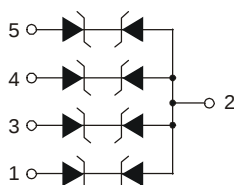
Mechanical Data

- Case: TSOT25
- Case 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 Copper leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Weight: 0.013 grams (approximate)

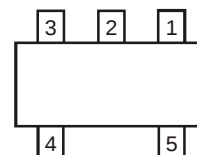
TSOT25



Top View



Device Schematic

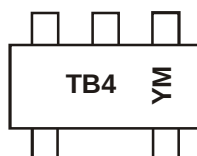

 Top View
Pin Configuration

Ordering Information (Note 3)
D 5V0 L X B X XXX- XX

Voltage	Capacitance	# of Channels	Polarity	# of Pins	Package	Packing
5V0: 5.0 Volts	X: Extremely Low (<0.5pF) F: Ultra Low (0.5 ~ 1.0pF) P: Very Low (1.1 ~ 10pF) L: Low (10.1 ~ 20pF) M: Medium (>20pF)	1: 1 Channel 2: 2 Channels 4: 4 Channels 6: 6 Channels	B: Bidirectional (Symmetrical) U: Unidirectional A: Bidirectional (Asymmetrical)	2: 2 Pins 3: 3 Pins 5: 5 Pins 6: 6 Pins 8: 8 Pins 10: 10 Pins	LP3: X3-DFN0603-2 LP: X1-DFN1006-2 LP4: X2-DFN1006-2 WS: SOD323 T: SOD523/SOT523 SO: SOT23/SOT25 W: SOD123/SOT323 TS: TSOT25/TSOT26 S: SOT353/SOT363 V: SOT553/SOT563	7: 7" reel (3K/reel) 7B: 7" reel (10K/reel) 13: 13" reel

Part Number	Case	Packaging
D5V0L4B5TS-7	TSOT25	3000/Tape & Reel

- Notes:
- EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. No purposely added lead. Halogen and Antimony free.
 - Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
 - For packaging details, go to our website at <http://www.diodes.com>.

Marking Information


TB4 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: Z = 2012)
 M = Month (ex: 9 = September)

Date Code Key

Date Code Key

Year	2011	2012	2013	2014	2015	2016	2017
Code	Y	Z	A	B	C	D	E

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P _{PP}	84	W	8/20μs, Per Fig. 2
Peak Pulse Current	I _{PP}	6	A	8/20μs, Per Fig. 2
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	300	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	417	°C/W
Operating Junction Temperature Range	T _J	-65 to +150	°C
Storage Temperature Range	T _{STG}	-65 to +150	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V _{RWM}	-	-	5.0	V	-
Breakdown Voltage	V _{BR}	6	7	8	V	I _R = 1.0mA
Reverse Leakage Current (Note 6)	I _R	-	10	100	nA	V _{RWM} = 5V
Clamping Voltage (Note 4)	V _{CL}	-	7.0	9.0	V	I _{PP} = 1A, t _p = 8/20μs
		-	8.7	10.7	V	I _{PP} = 3A, t _p = 8/20μs
		-	10.5	12.0	V	I _{PP} = 5A, t _p = 8/20μs
		-	11.5	14.0	V	I _{PP} = 6A, t _p = 8/20μs
Differential Resistance	R _{DIF}	-	0.2	-	Ω	I _R = 1.0A, t _p = 8/20μs
Channel Input Capacitance	C _T	-	15	20	pF	V _{IN} = 0V, f = 1MHz (Channel to Pin 2)

- Notes:
4. Measured from channel to pin 2; Non-repetitive current pulse per Fig. 2.
 5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes, Inc. suggested pad layout AP02001, which can be found on our website at <http://www.diodes.com>.
 6. Short duration pulse test used to minimize self-heating effect.

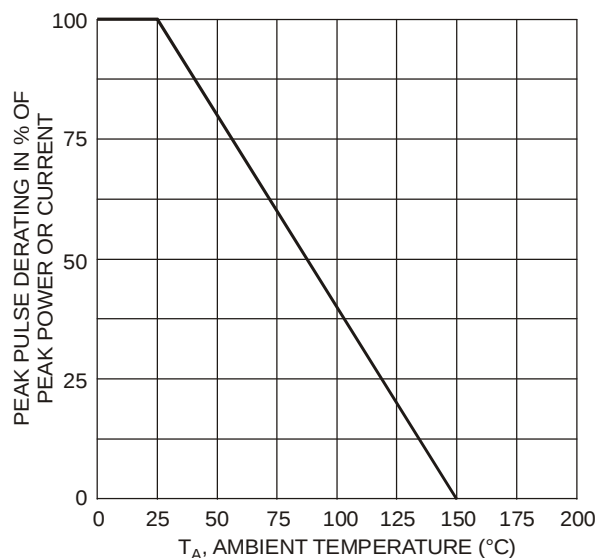


Fig. 1 Pulse Derating Curve

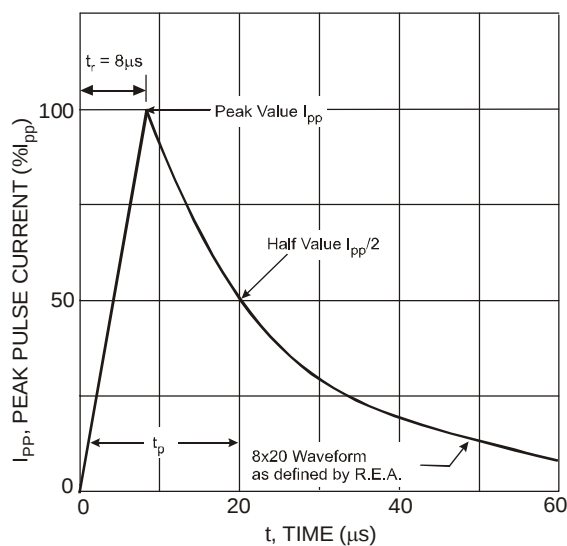


Fig. 2 Pulse Waveform

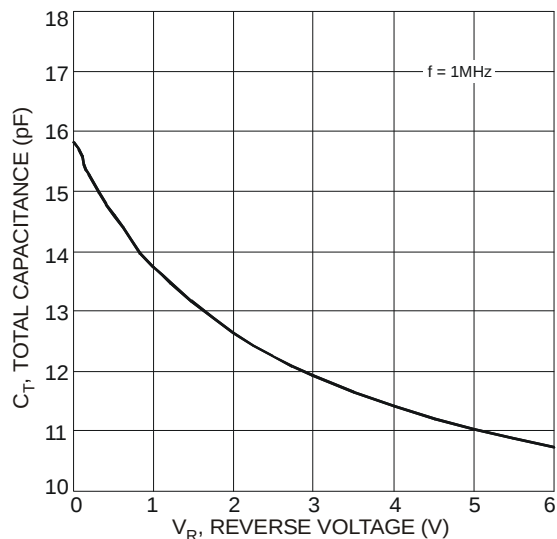


Fig. 3 Typical Total Capacitance vs. Reverse Voltage

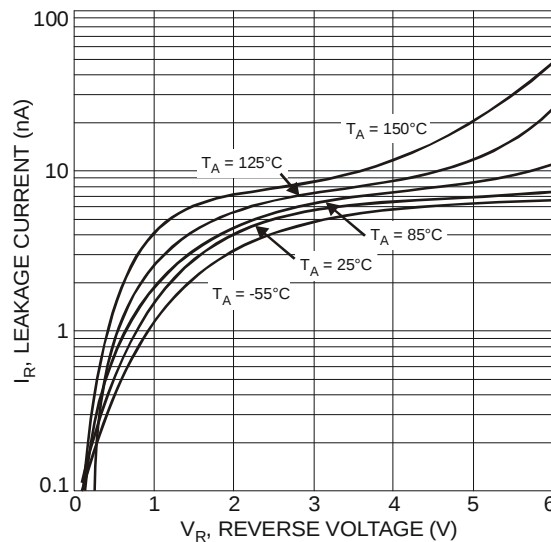


Fig. 4 Typical Reverse Characteristics

Typical Applications

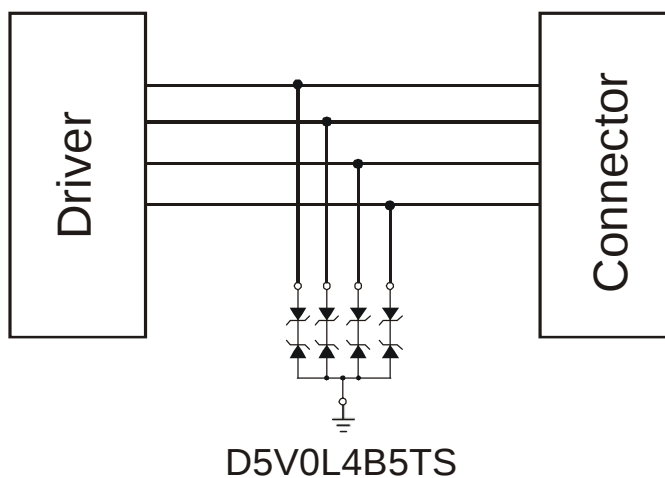


Figure 1 consists of three sub-diagrams labeled (a), (b), and (c) illustrating the geometrical parameters of the test specimen.

- (a) Top View:** Shows a rectangular specimen with overall width D and overall height E . The central rectangular body has a height of $E1$. Two vertical rectangular features are positioned on the top surface, separated by a distance $e1$. The bottom surface features five rectangular protrusions, each with a width of b , totaling $5 \times b$. The distance between the centerlines of the two top features and the first bottom feature is e .
- (b) Side View:** Shows the specimen's profile with a total height A and a central section height $A2$. The bottom edge is defined by a series of rectangular steps with a total width $A1$. The specimen has a horizontal section of length L followed by a curved fillet section of length $L2$. The fillet has a thickness c and a fillet angle θ .
- (c) Detail View:** A close-up of the fillet transition, showing a fillet radius of $4 \times \theta1$.

TSOT25			
Dim	Min	Max	Typ
A	–	1.00	–
A1	0.01	0.10	–
A2	0.84	0.90	–
D	–	–	2.90
E	–	–	2.80
E1	–	–	1.60
b	0.30	0.45	–
c	0.12	0.20	–
e	–	–	0.95
e1	–	–	1.90
L	0.30	0.50	–
L2	–	–	0.25
θ	0°	8°	4°
θ1	4°	12°	–
All Dimensions in mm			

The diagram illustrates a 2D grid layout. It shows a top row of three rectangles and a bottom row of three rectangles. The vertical distance between the top and bottom rows is labeled $Y1$. The horizontal distance between the center of the first rectangle in the top row and the center of the second rectangle in the top row is labeled C . The vertical distance between the top and bottom edges of the rectangles in the bottom row is labeled $Y(5x)$. The horizontal distance between the right edge of the first rectangle and the right edge of the second rectangle in the bottom row is labeled $X(5x)$.

Dimensions	Value (in mm)
C	0.950
X	0.700
Y	1.000
Y1	3.199

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