

Product Summary

V _{BR} (min)	I _{PP} (max)	C _T (typ)
6V	4.7A	0.55pF

Description

The DT1446-04TS is a high performance device suitable for protecting four high speed I/Os and one V_{CC}. These devices are assembled in TSOT26 package. They have high ESD surge capability and low capacitance.

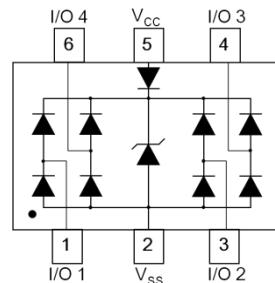
Applications

- Typically Used for High Speed Ports such as USB 2.0, IEEE1394, HDMI, Laptop and Personal Computers, Flat Panel Displays, Video Graphics Displays, SIM Ports

TSOT26



Top View



Device Schematic

Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DT1446-04TS-7	Standard	BE2	7	8	3,000/Tape & Reel

Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



BE2 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: A = 2013)
M = Month (ex: 9 = September)

Date Code Key

Year	2013	2014	2015	2016	2017	2018
Code	A	B	C	D	E	F

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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current ,per IEC 61000-4-5	$I_{PP_I/O}$	4.7	A	I/O to V_{SS} , 8/20 μs
Operating Voltage (DC)	V_{DC}	6	V	V_{CC} to V_{SS}
ESD Protection – Contact Discharge	$V_{ESD_I/O}$	± 16	kV	I/O to V_{SS} , per IEC 61000-4-2
	$V_{ESD_V_{CC}}$	± 30	kV	V_{CC} to V_{SS} , per IEC 61000-4-2
ESD Protection – Air Discharge, per IEC 61000-4-2	$V_{ESD_I/O}$	± 19	kV	I/O to V_{SS} , per IEC 61000-4-2
	$V_{ESD_V_{CC}}$	± 30	kV	V_{CC} to V_{SS} , per IEC 61000-4-2

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation Typical (Note 5)	P_D	300	mW
Thermal Resistance, Junction to Ambient Typical (Note 5)	$R_{\theta JA}$	417	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

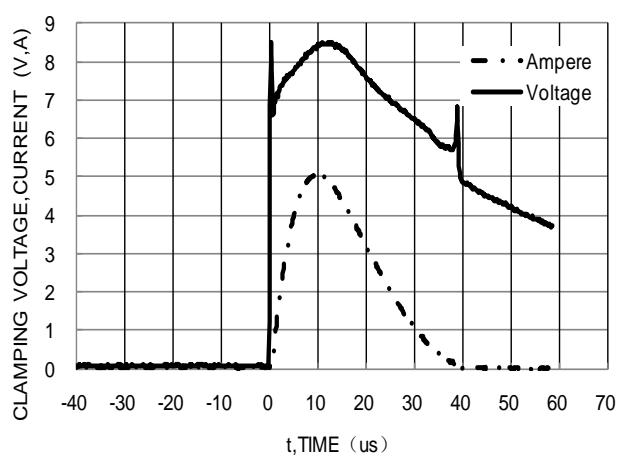
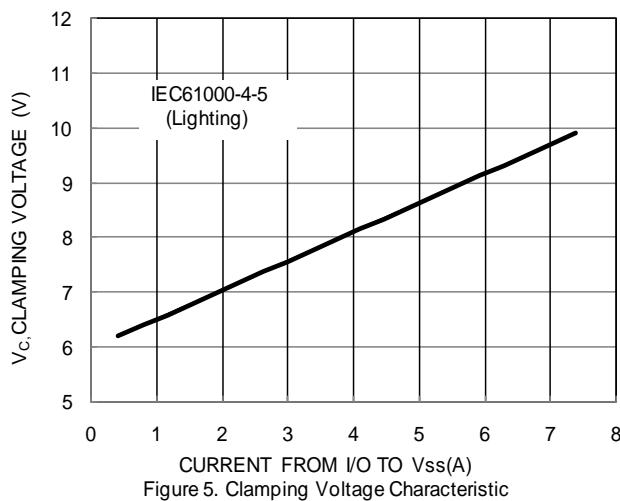
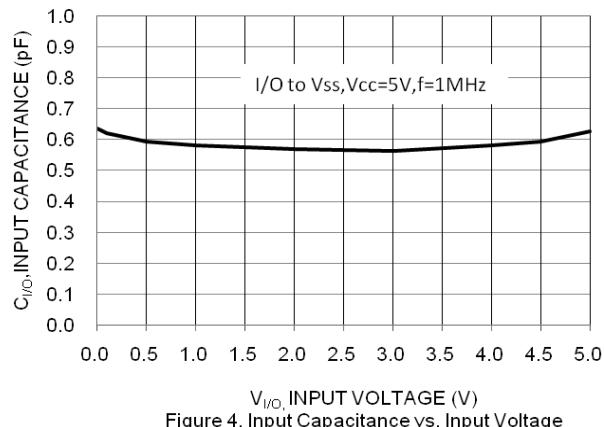
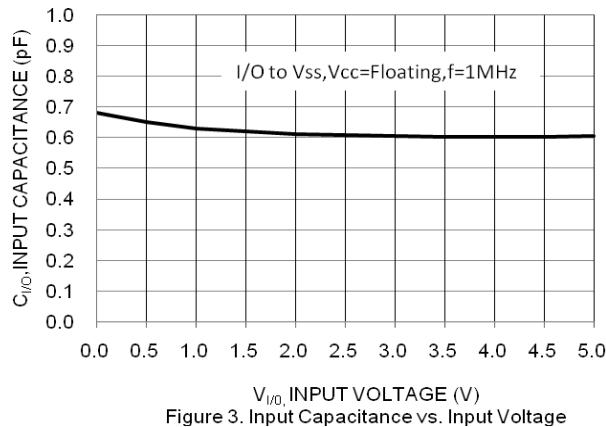
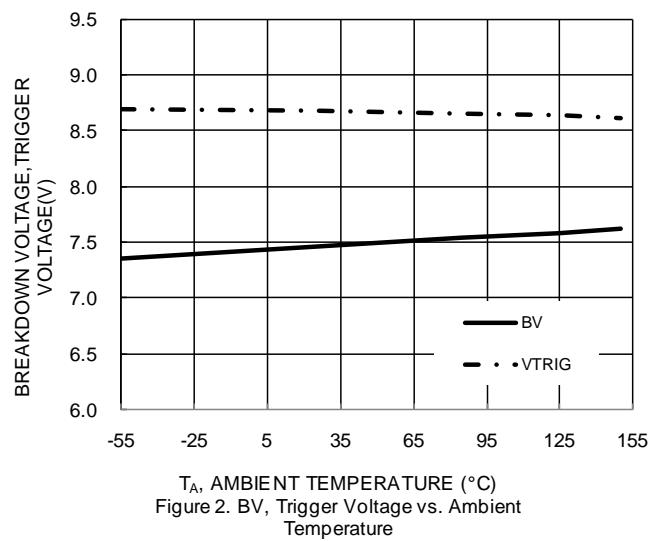
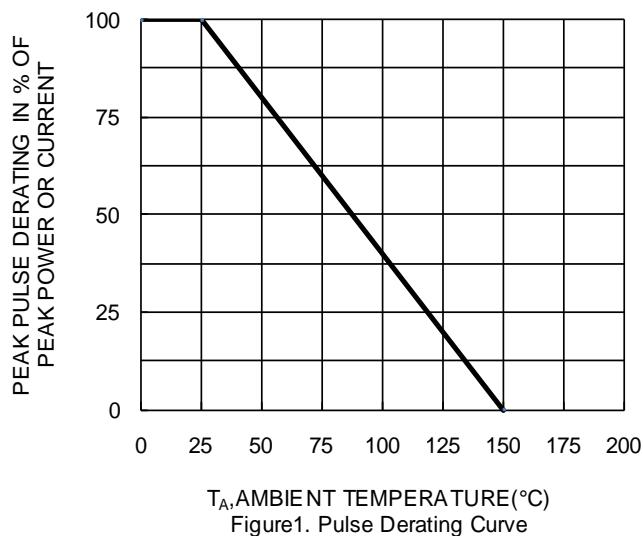
Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V_{RWM}	—	—	5.0	V	V_{CC} to V_{SS}
Reverse Current (Note 6)	$I_R(V_{CC} \text{ to } V_{SS})$	—	—	5.0	μA	$V_R = V_{RWM} = 5\text{V}$, V_{CC} to V_{SS}
Reverse Current (Note 6)	$I_R(I/O \text{ to } V_{SS})$	—	—	1.0	μA	$V_R = V_{RWM} = 5\text{V}$, any I/O to V_{SS}
Reverse Breakdown Voltage	V_{BR}	6.0	—	9.0	V	$I_R = 1\text{mA}$, V_{CC} to V_{SS}
Forward Clamping Voltage	V_F	—	0.8	1.0	V	$I_F = 15\text{mA}$, V_{SS} to V_{CC}
Reverse Clamping Voltage (Note 7)	$V_{C_I/O}$	—	8.5	—	V	$I_{PP} = 4.7\text{A}$, I/O to V_{SS} , 8/20 μs
ESD Clamping Voltage	$V_{ESD_V_{CC}}$	—	10	—	V	TLP, 20A, $tp = 100\text{ ns}$, V_{CC} to V_{SS}
	$V_{ESD_I/O}$	—	12	—	V	TLP, 20A, $tp = 100\text{ ns}$, I/O to V_{SS}
Dynamic Resistance	$R_{DIF_V_{CC}}$	—	0.14	—	Ω	TLP, 20A, $tp = 100\text{ ns}$, V_{CC} to V_{SS}
	$R_{DIF_I/O}$	—	0.3	—	Ω	TLP, 20A, $tp = 100\text{ ns}$, I/O to V_{SS}
Channel Input Capacitance	$C_{I/O \text{ to } V_{SS}}$	—	0.55	0.65	pF	$V_R = 2.5\text{V}$, $V_{CC} = 5\text{V}$, $f = 1\text{MHz}$
Channel Input Capacitance	$C_{I/O \text{ to } V_{SS}}$	—	0.65	—	pF	$V_R = 2.5\text{V}$, $V_{CC} = \text{floating}$, $f = 1\text{MHz}$
Variation of Channel Input Capacitance	$C_{I/OMAX}-C_{I/OMIN}$	—	0.03	—	pF	$V_{CC} = 5\text{V}$, $V_{SS} = 0\text{V}$, I/O = 2.5V, $f = 1\text{MHz}$, $T = +25^\circ\text{C}$, $C_{I/OMAX} - C_{I/OMIN}$
Variation of Channel Input Capacitance	$C_{I/OMAX}-C_{I/OMIN}$	—	0.05	—	pF	$V_{CC} = \text{floating}$, $V_{SS} = 0\text{V}$, I/O = 2.5V, $f = 1\text{MHz}$, $T = +25^\circ\text{C}$, $C_{I/OMAX} - C_{I/OMIN}$

Notes: 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.

7. Clamping voltage value is based on an 8x20 μs peak pulse current (I_{PP}) waveform.



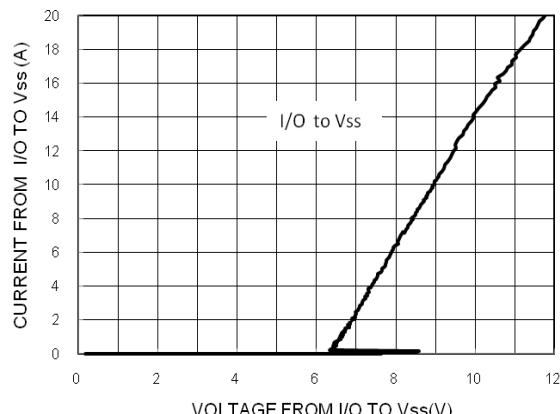


Figure 7. Transmission Line Pulsing (TLP) Measurement
Current vs. Voltage

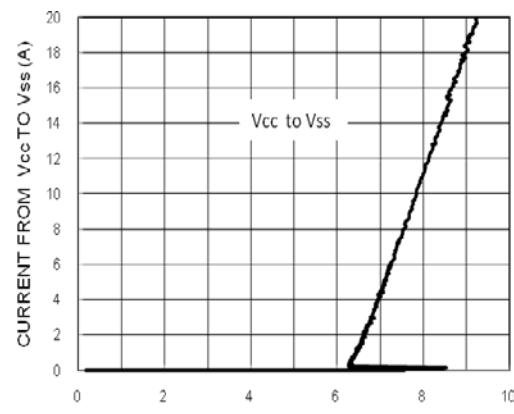
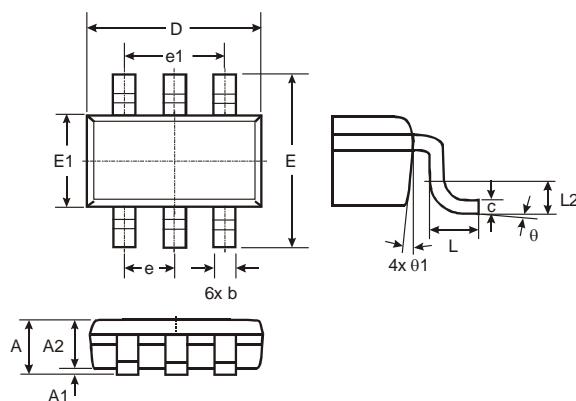


Figure 8. Transmission Line Pulsing (TLP) Measurement
Current vs. Voltage

Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.

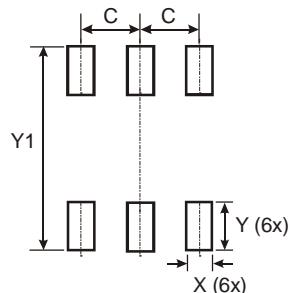


TSOT26			
Dim	Min	Max	Typ
A	—	1.00	—
A1	0.01	0.10	—
A2	0.84	0.90	—
D	—	—	2.90
E	—	—	2.80
E1	—	—	1.60
b	0.30	0.45	—
c	0.12	0.20	—
e	—	—	0.95
e1	—	—	1.90
L	0.30	0.50	—
L2	—	—	0.25
θ	0°	8°	4°
θ1	4°	12°	—

All Dimensions in mm

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for latest version.



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

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