4 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY

Product Summary

$V_{BR\ (min)}$	$I_{PP\ (max)}$	$C_{T\ (typ)}$
6V	5.5A	0.55pF

Description

The DT1240V3-04SO-7 is a high-performance device suitable for protecting four high speed I/Os. These devices are assembled in SOT26 packages and have high ESD surge capability and low capacitance.

Features

- Clamping Voltage: 8.8V at 10A 100ns, TLP
  9V at 5.5A 8μs/20μs
- IEC 61000-4-2 (ESD): Air — ±16kV, Contact — ±14kV
- IEC 61000-4-5 (Lightning): ±5.5A (8/20μs)
- 4 Channels of ESD Protection
- Low Channel Input Capacitance of 0.55pF Typical
- TLP Dynamic Resistance: 0.3Ω
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

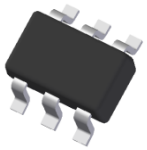
Applications

Typically used at high-speed ports such as USB 2.0, IEEE1394 (Firewire®, iLink™), Serial ATA, DVI, HDMI, PCI.

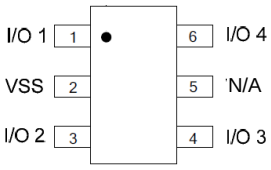
Mechanical Data

- Case: SOT26
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Schematic
- Terminals – Finish – Matte Tin Pleated Leads; Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.016 grams (Approximate)

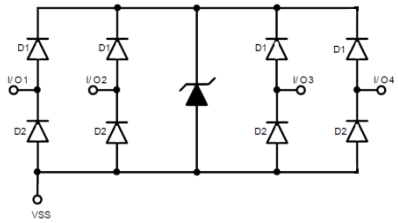
SOT26



Top View



Device Schematic



Circuit Schematic

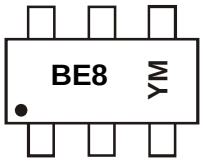
Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DT1240V3-04SO-7	Standard	BE8	7	8	3,000/Tape & Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. 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.
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 http://www.diodes.com/products/packages.html.

Marking Information

SOT26



BE8 = 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°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current, per IEC 61000-4-5	I_{PP}	5.5	A	I/O to V_{SS}, 8/20µs
Peak Pulse Power, per IEC 61000-4-5	P_{PP}	60	W	I/O to V_{SS}, 8/20µs
ESD Protection – Contact Discharge, per IEC 61000-4-2	$V_{ESD\_Contact}$	±14	kV	I/O to V_{SS}
ESD Protection – Air Discharge, per IEC 61000-4-2	V_{ESD_Air}	±16	kV	I/O to V_{SS}
Operating Temperature	T_{OP}	-55 to +85	°C	—
Storage Temperature	T_{STG}	-55 to +150	°C	—

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

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V_{RWM}	—	—	3.3	V	I_R=1mA, , I/O to V_{SS}
Reverse Current	I_R	—	—	0.5	µA	V_R = 3.3V, I/O to V_{SS}
Reverse Breakdown Voltage	V_{BR}	6	—	—	V	I_R = 1mA, I/O to V_{SS}
Forward Clamping Voltage	V_F	-1.0	-0.85	—	V	I_F = -15mA, I/O to V_{SS}
Reverse Clamping Voltage (Note 6)	V_C	—	9	11	V	I_{PP} = 5.5A, I/O to V_{SS}, 8/20µs
Trigger Voltage	V_{TRIG}	—	—	9.5	V	—
ESD Clamping Voltage	V_{ESD}	—	8.8	—	V	TLP, 10A, tp = 100 ns, I/O to V_{SS}
Dynamic Reverse Resistance	R_{DIF-R}	—	0.3	—	Ω	TLP, 10A, tp = 100 ns, I/O to V_{SS}
Dynamic Forward Resistance	R_{DIF-F}	—	0.25	—	Ω	TLP, 10A, tp = 100 ns, V_{SS} to I/O
Channel Input Capacitance	$C_{I/O}$	—	0.55	0.65	pF	$V_{I/O}$ = 2.5V, V_{SS} = 0V, f = 1MHz
Delta $C_{I/O}$	$C_{I/OMAX}$-$C_{I/OMIN}$	—	0.04	—	pF	$C_{I/OMAX}$-$C_{I/OMIN}$

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. Clamping voltage value is based on an 8 x 20µs peak pulse current (I_{pp}) waveform.

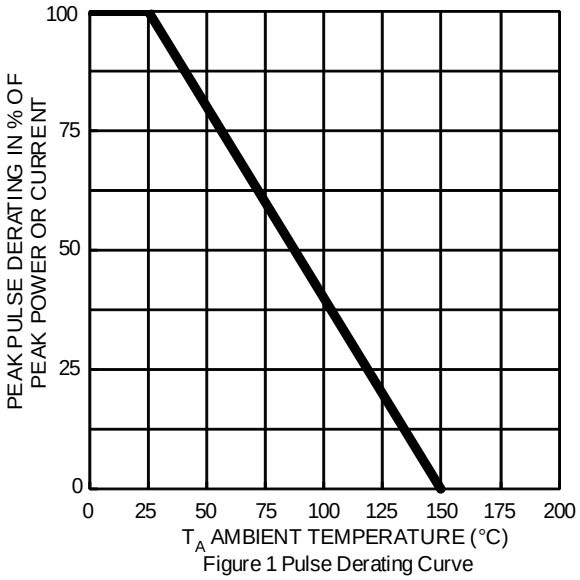


Figure 1 Pulse Derating Curve

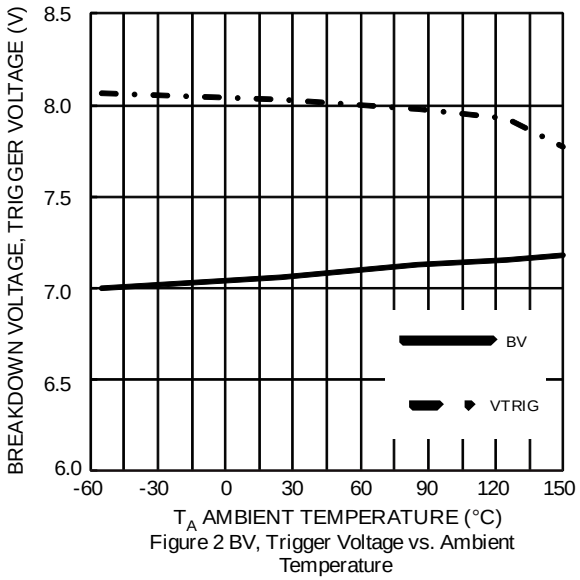


Figure 2 BV, Trigger Voltage vs. Ambient Temperature

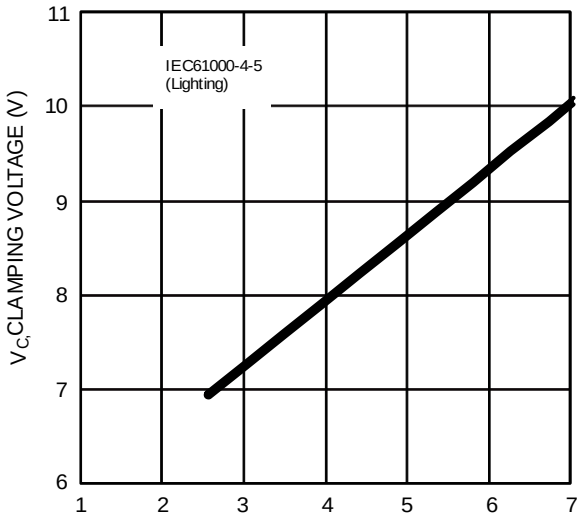


Figure 3. Clamping Voltage Characteristic

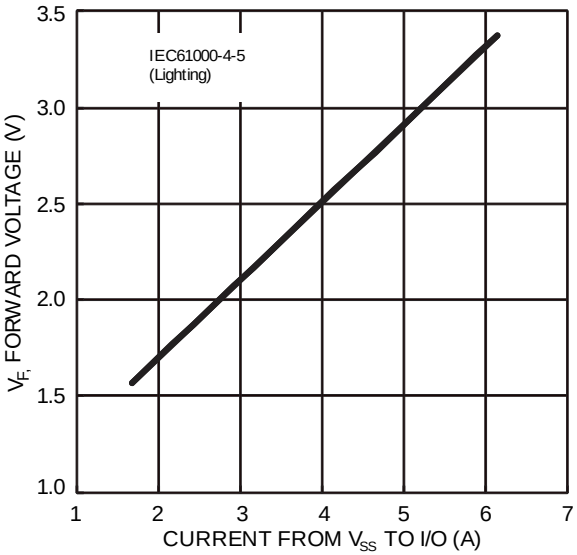


Figure 4. Forward Voltage Characteristic

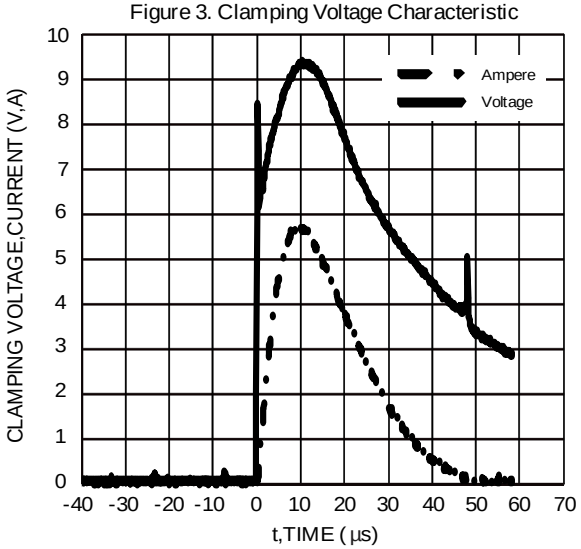


Figure 5. Waveform of Clamping Voltage, Current vs. Time (8/20 µs, I/O to V_{SS})

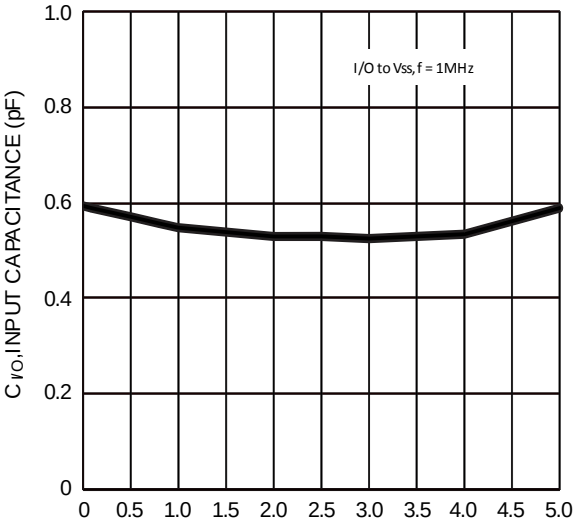


Figure 6. Input Capacitance vs. Input Voltage

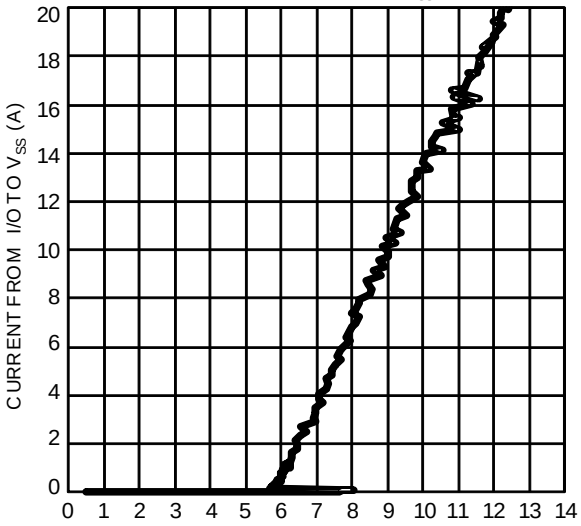
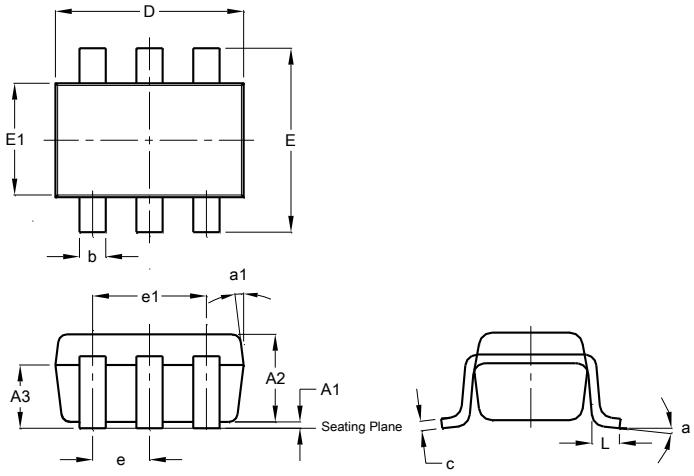


Figure 7. Current vs. Voltage

Package Outline Dimensions

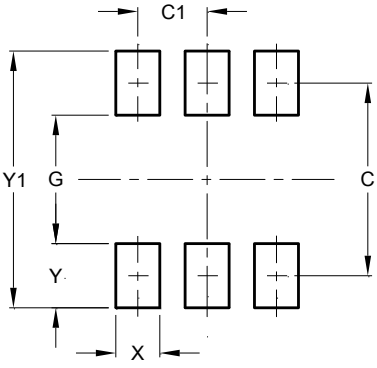
Please see AP02001 at http://www.diodes.com/_files/datasheets/ap02001.pdf for the latest version.



SOT26			
Dim	**Min**	**Max**	**Typ**
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

Suggested Pad Layout

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



Dimensions	Value (in mm)
C	2.40
C1	0.95
G	1.60
X	0.55
Y	0.80
Y1	3.20

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