8-CHANNEL LOW CAPACITANCE TVS DIODE ARRAY

Product Summary

V_{BR} (Min)	I_{PP} (Max)	$C_{I/O}$ (Typ)
5V	5.5A	0.6pF

Description

The DT1240A-08LP3810Q is a high-performance device suitable for protecting eight high-speed I/Os. This device is assembled in U-DFN3810-9 (Type B) package and has high ESD surge capability and low capacitance.

Applications

Typically used at high-speed ports such as USB 2.0, USB 3.0, USB 3.1, IEEE 1394 (Firewire®, iLink), Serial ATA, DVI™, HDMI™ 1.4, HDMI 2.0 and PCI™.

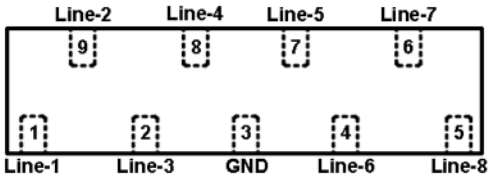
Features

- Clamping Voltage: 8.2V at 10A 100ns, TLP; 7.5V at 5.5A (8µs/20µs)
- IEC 61000-4-2 (ESD): Air – ±16kV, Contact – ±14kV
- IEC 61000-4-5 (Lighting): 5.5A (8/20µs)
- 8 Channels of ESD Protection
- Low Channel Input Capacitance of 0.6pF Typical
- TLP Dynamic Resistance: 0.25Ω
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DT1240A-08LP3810Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

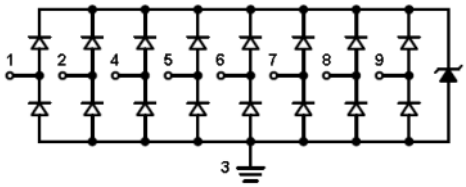
Mechanical Data

- Package: U-DFN3810-9
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Schematic
- Terminals: Finish – NiPdAu, Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.005 grams (Approximate)

U-DFN3810-9 (Type B)



Pin Description (Top View)



Device Schematic

Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DT1240A-08LP3810Q-7	U-DFN3810-9 (Type B)	MW4	7	8	5,000	Tape & Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ 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 https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



MW4 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: M = 2025)
M = Month (ex: 9 = September)

Date Code Key

Year	2019	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	G	-	M	N	P	R	S	T	U	V	W	X

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

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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}	55	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 +150	°C	—
Storage Temperature	T_{STG}	-55 to +150	°C	—

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation Typical (Note 5)	P_D	350	mW
Thermal Resistance, Junction to Ambient Typical (Note 5)	$R_{\theta JA}$	360	°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	—
Reverse Current	I_R	—	—	0.5	µA	V_R = 3.3V, I/O to V_{SS}
Reverse Breakdown Voltage	V_{BR}	5	—	—	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	—	7.5	10	V	I_{PP} = 5.5A, I/O to V_{SS}, 8/20µs
ESD Clamping Voltage	V_{ESD}	—	8.2	—	V	TLP, 10A, t_P = 100ns, I/O to V_{SS}
Dynamic Reverse Resistance	R_{DIF-R}	—	0.25	—	Ω	TLP, 10A, t_P = 100ns, I/O to V_{SS}
Dynamic Forward Resistance	R_{DIF-F}	—	0.25	—	Ω	TLP, 10A, t_P = 100ns, V_{SS} to I/O
Channel Input Capacitance	$C_{I/O}$	—	0.6	0.7	pF	$V_{I/O}$ = 1.65V, V_{SS} = 0, 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 our website at http://www.diodes.com/package-outlines.html.
6. Clamping voltage value is based on an 8x20µs peak pulse current (I_{PP}) waveform.

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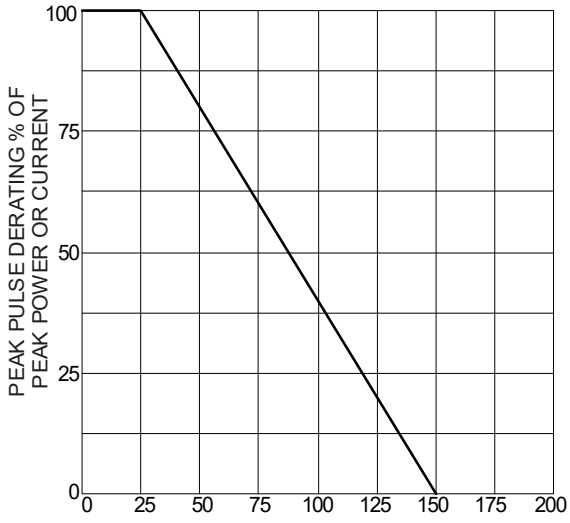


Figure 1 Pulse Derating Curve

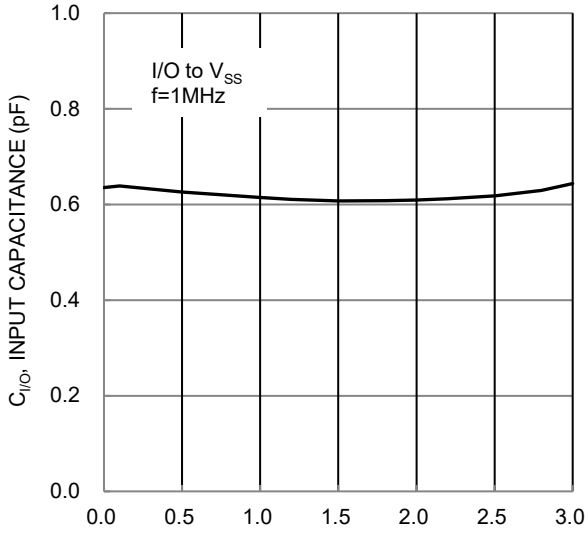


Figure 2 Input Capacitance vs. Input Voltage

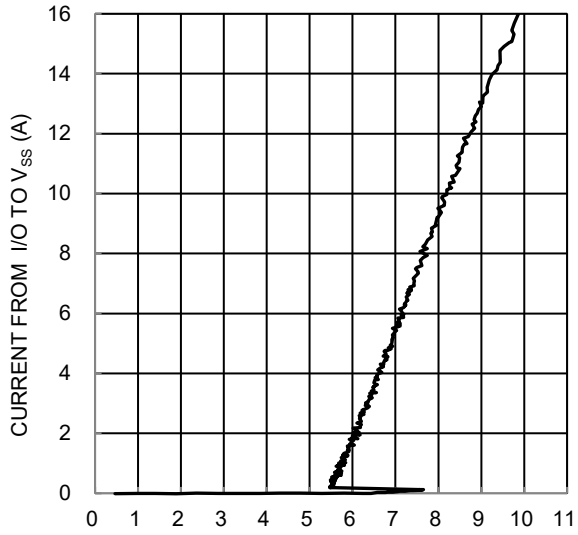


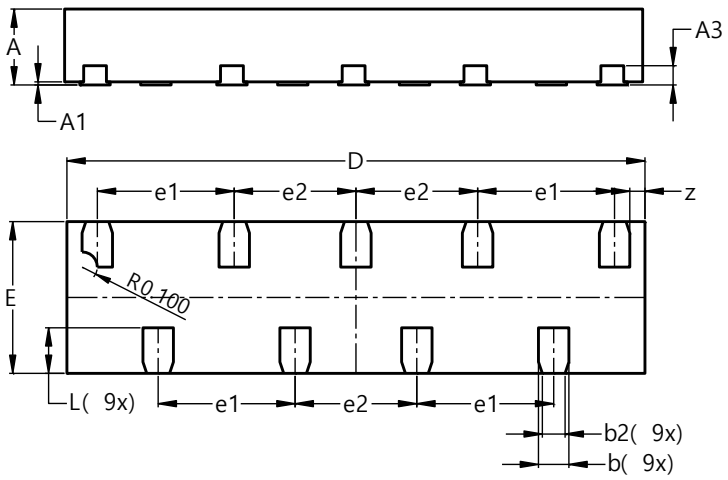
Figure 3 Current vs. Voltage

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Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

U-DFN3810-9 (Type B)

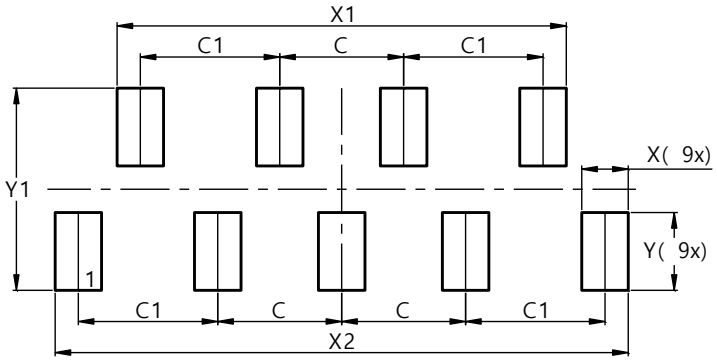


U-DFN3810-9 (Type B)			
Dim	**Min**	**Max**	**Typ**
A	0.45	0.55	0.50
A1	0.00	0.05	0.02
A3	—	—	0.127
b	0.15	0.25	0.20
b2	0.10	0.20	0.15
D	3.75	3.85	3.80
E	0.95	1.05	1.00
e1	—	—	0.90
e2	—	—	0.80
L	0.25	0.35	0.30
z	—	—	0.10
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

U-DFN3810-9 (Type B)



Dimensions	Value (in mm)
C	0.800
C1	0.900
X	0.300
X1	2.900
X2	3.700
Y	0.500
Y1	1.300

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