



### 8 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY

## **Product Summary**

VBR (Min)	IPP (Max)	Сі/о (тур)
5.5V	3	0.45pF

## **Description**

The D3V3X8U9LP3810 is a high-performance device suitable for protecting four high speed I/Os. These devices are assembled in U-DFN3810-9 (Type B) package and have high ESD surge capability, low ESD clamping voltage and ultra-low capacitance.

## **Applications**

Typically used at high-speed ports such as USB 3.0, USB 3.1, Serial ATA, Display port.

### **Features**

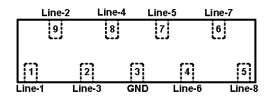
- Clamping Voltage: 7V at 16A TLP
- IEC 61000-4-2 (ESD): Air ±10kV, Contact ±8kV
- IEC 61000-4-5 (Lightning): 3A (8/20µs)
- 8 Channels of ESD Protection
- Ultra-Low Channel Input Capacitance of 0.45pF Typical
- TLP Dynamic Resistance: 0.3Ω
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative.

https://www.diodes.com/quality/product-definitions/

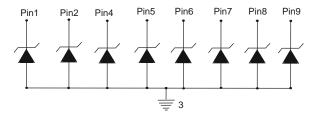
## **Mechanical Data**

- Case: U-DFN3810-9
- Case 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 @
- Weight: 0.005 grams (Approximate)

### U-DFN3810-9 (Type B)



Pin Description (Top View)



**Device Schematic** 

### **Ordering Information** (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity
D3V3X8U9LP3810-7	Standard	MW6	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**

U-DFN3810-9 (Type B)

MW6 YM

MW6 = Product Type Marking Code YM = Date Code Marking Y = Year (ex: H = 2020) M = Month (ex: 9 = September)

#### Date Code Key

Year	2017		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Code	E		Н	I	J	K	L	М	N	0	Р	R
			1				•					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec



# **Maximum Ratings** (@ $T_A = +25^{\circ}C$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current, per IEC 61000-4-5	IPP	3	Α	I/O to V <sub>SS</sub> , 8/20µs
Peak Pulse Power, per IEC 61000-4-5	P <sub>PP</sub>	20	W	I/O to Vss, 8/20µs
ESD Protection – Contact Discharge, per IEC 61000-4-2	VESD_CONTACT	±8	kV	I/O to Vss
ESD Protection – Air Discharge, per IEC 61000-4-2	Vesd_air	±10	kV	I/O to Vss
Operating Temperature	Тор	-55 to +85	°C	_
Storage Temperature	T <sub>STG</sub>	-55 to +150	°C	_

# **Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation Typical (Note 5)	PD	350	mW
Thermal Resistance, Junction to Ambient Typical (Note 5)	RθJA	360	°C/W

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

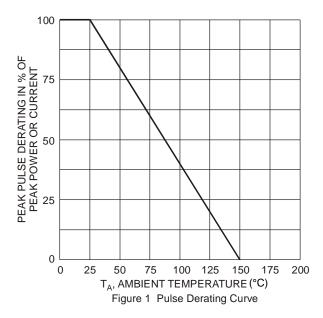
Characteristic	Symbol	Min	Тур	Max	Unit	Test Conditions
Reverse Working Voltage	$V_{RWM}$	_	_	3.3	V	I <sub>R</sub> =1mA, I/O to V <sub>SS</sub>
Reverse Current	I <sub>R</sub>	_	_	1.0	μΑ	$V_R = 3.3V$ , I/O to $V_{SS}$
Reverse Breakdown Voltage	V <sub>BR</sub>	5.5	7.0	_	V	I <sub>R</sub> = 1mA, I/O to V <sub>SS</sub>
Forward Clamping Voltage	VF	-1.0	-0.85	_	V	IF = -15mA, I/O to Vss
Holding Reverse Voltage	V <sub>HOLD</sub>	_	1.19	_	V	I/O to V <sub>SS</sub>
Holding Reverse Current	IHOLD	_	90	_	mA	I/O to Vss
Clamping Voltage (Note 6)	Vc	_	7	_	V	TLP, 16A, tp = 100ns, I/O to Vss
Clamping Voltage (Note 6)	Vc	_	7	_	V	TLP, -16A, tp = 100ns, I/O to V <sub>SS</sub>
Dynamic Reverse Resistance	R <sub>DIF-R</sub>	_	0.3	_	Ω	TLP, 10A, tp = 100ns, I/O to Vss
Dynamic Forward Resistance	R <sub>DIF-F</sub>	_	0.25	_	Ω	TLP, 10A, tp = 100ns, V <sub>SS</sub> to I/O
Channel Input Capacitance	C <sub>I/O</sub>	_	0.45	_	pF	V <sub>I/O</sub> = 0V, V <sub>SS</sub> = 0V, f = 1MHz

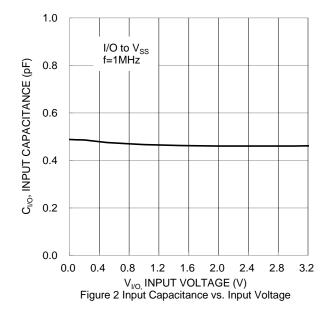
Notes:

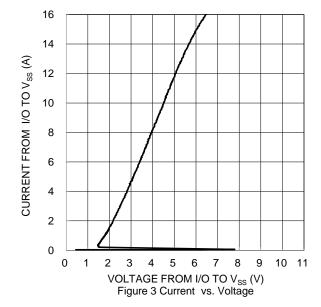
<sup>5.</sup> Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes Incorporated's suggested pad layout, which can be found on our website at http://www.diodes.com/package-outlines.html.

<sup>6.</sup> Clamping voltage value is based on a TLP model. TLP conditions:  $Z_0=50\Omega$ , tp = 100ns, averaging window; t1=70ns to t2=90ns.







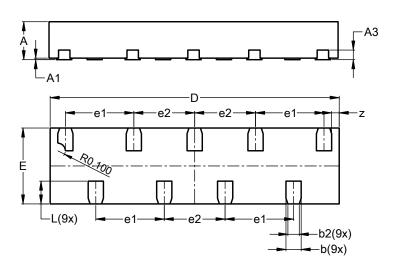




# **Package Outline Dimensions**

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

### U-DFN3810-9 (Type B)

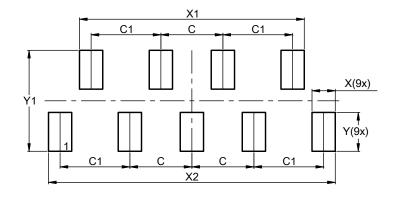


U-DFN3810-9 (Type B)					
Dim	Min	Max	Тур		
Α	0.45	0.55	0.50		
A1	0.00	0.05	0.02		
A3			0.127		
b	0.15	0.25	0.20		
b2	0.10	0.20	0.15		
D	3.75	3.85	3.80		
Е	0.95	1.05	1.00		
e1			0.90		
e2			0.80		
٦	0.25	0.35	0.30		
Z			0.10		
All	Dimensi	ons in	mm		

# **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)		
Dilliensions			
С	0.800		
C1	0.900		
Х	0.300		
X1	2.900		
X2	3.700		
Y	0.500		
Y1	1 300		



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