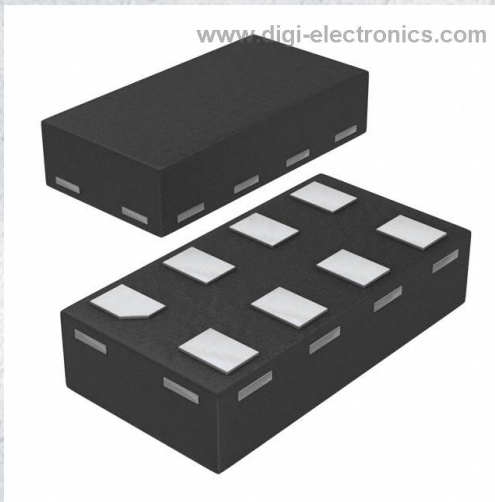


74LVC2G32HD4-7 Datasheet



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	74LVC2G32HD4-7-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	74LVC2G32HD4-7
Description	IC GATE OR 2CH 2-INP DFN2010-8
Detailed Description	OR Gate IC 2 Channel X2-DFN2010-8



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

74LVC2G32HD4-7

Series:

74LVC

Logic Type:

OR Gate

Number of Inputs:

2

Voltage - Supply:

1.65V ~ 5.5V

Current - Output High, Low:

32mA, 32mA

Input Logic Level - High:

-

Operating Temperature:

-40°C ~ 125°C

Supplier Device Package:

X2-DFN2010-8

Base Product Number:

74LVC2G32

Manufacturer:

Diodes Incorporated

Product Status:

Active

Number of Circuits:

2

Features:

-

Current - Quiescent (Max):

40 μ A

Input Logic Level - Low:

-

Max Propagation Delay @ V, Max CL:

4ns @ 5V, 50pF

Mounting Type:

Surface Mount

Package / Case:

8-XFDNF

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8542.39.0001

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99



74LVC2G32

DUAL 2-INPUT OR GATE

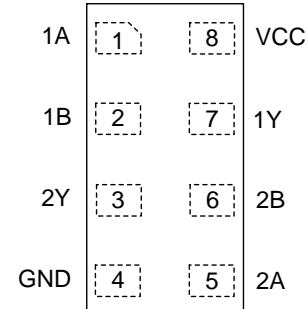
Description

The 74LVC2G32 is a dual, two input OR gate. Both gates have push-pull outputs designed for operation over a power supply range of 1.65V to 5.5V. The device is fully specified for partial power down applications using I_{OFF}. The I_{OFF} circuitry disables the output, preventing damaging current backflow when the device is powered down. Each gate performs the positive Boolean function:

$$Y = A + B \text{ or } Y = \overline{\overline{A} \cdot \overline{B}}$$

Pin Assignments

(Top View)



X2-DFN2010-8
X2-DFN1410-8
X2-DFN1210-8

Features

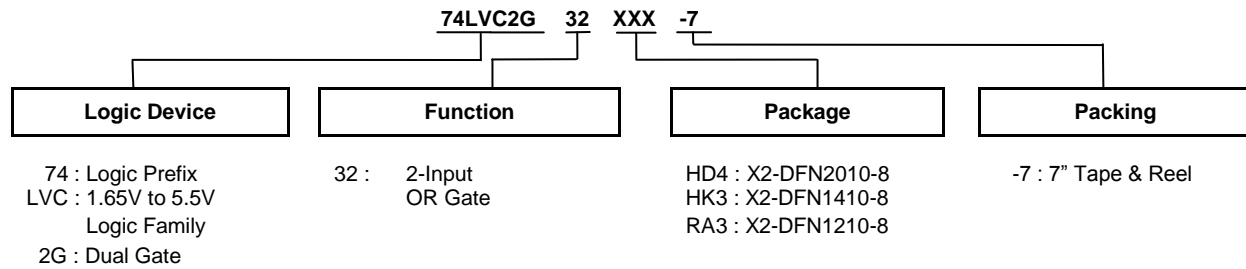
- Wide Supply Voltage Range from 1.65 to 5.5V
- ±24mA Output Drive at 3.3V
- CMOS Low Power Consumption
- I_{OFF} Supports Partial-Power-Down Mode Operation
- Inputs accept up to 5.5V
- Schmitt Trigger Action at all inputs makes the circuit tolerant for slower input rise and fall times. The hysteresis is typically 100mV at V_{CC} = 3.0V.
- ESD Protection Exceeds JESD 22
 - 2000-V Human Body Model (A114)
 - Exceeds 1000-V Charged Device Model (C101)
- Latch-Up Exceeds 100mA per JESD 78, Class I
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Applications

- Voltage Level Shifting
- General Purpose Logic
- Power Down Signal Isolation
- Wide Array of Products Such as:
 - PCs, Networking, Notebooks, Netbooks, PDAs
 - Tablet Computers, E-readers
 - Computer Peripherals, Hard Drives, CD/DVD ROMs
 - TVs, DVDs, DVRs, Set Top Boxes
 - Cell Phones, Personal Navigation / GPS
 - MP3 Players, Cameras, Video Recorders

- 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.

Ordering Information (Note 4)



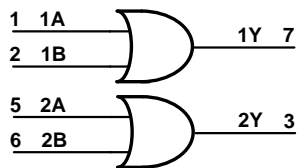
Device	Package Code	Package (Note 5)	Package Size	7" Tape and Reel (Note 6)	
				Quantity	Part Number Suffix
74LVC2G32HD4-7	HD4	X2-DFN2010-8	1.95mm x 1.0mm x 0.4mm 0.5 mm lead pitch	5,000/Tape & Reel	-7
74LVC2G32HK3-7	HK3	X2-DFN1410-8	1.35mm x 1.0mm x 0.35mm 0.4 mm lead pitch	5,000/Tape & Reel	-7
74LVC2G32RA3-7	RA3	X2-DFN1210-8	1.2mm x 1.0mm x 0.35mm 0.3 mm lead pitch	5,000/Tape & Reel	-7

- Notes:
- For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.
 - Pad layout as shown in Diodes Incorporated's package outline PDFs, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
 - The taping orientation is located on our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Pin Descriptions

Pin Name	Pin No.	Description
1A	1	Data Input
1B	2	Data Input
2Y	3	Data Output
GND	4	Ground
2A	5	Data Input
2B	6	Data Input
1Y	7	Data Output
V _{CC}	8	Supply Voltage

Logic Diagram



Function Table

Inputs		Output
A	B	Y
L	L	L
L	H	H
H	L	H
H	H	H



74LVC2G32

Absolute Maximum Ratings (Notes 7 & 8)

Symbol	Description	Rating	Unit
ESD HBM	Human Body Model ESD Protection	2	kV
ESD CDM	Charged Device Model ESD Protection	1	kV
V _{CC}	Supply Voltage	-0.5 to +6.5	V
V _I	Input Voltage	-0.5 to +6.5	V
V _O	Output Voltage - Active Mode	-0.5 to V _{CC} +0.5	V
	Output Voltage Power Down Mode	-0.5 to +6.5	V
I _{IK}	Input Clamp Current V _I <0	-50	mA
I _{OK}	Output Clamp Current (V _O < 0 OR V _O > V _{CC})	±50	mA
I _O	Continuous Output Current (V _O = 0 to V _{CC})	±50	mA
I _{CC}	Continuous Current Through V _{CC}	100	mA
I _{GND}	Continuous Current Through GND	-100	mA
T _J	Operating Junction Temperature	-40 to +150	°C
T _{STG}	Storage Temperature	-65 to +150	°C

- Notes:
- Stresses beyond the absolute maximum may result in immediate failure or reduced reliability. These are stress values and device operation should be within recommend values.
 - Forcing the maximum allowed voltage could cause a condition exceeding the maximum current or conversely forcing the maximum current could cause a condition exceeding the maximum voltage. The ratings of both current and voltage must be maintained within the controlled range.

Recommended Operating Conditions (Note 9)

Symbol	Parameter		Min	Max	Unit
V _{CC}	Operating Voltage	Operating	1.65	5.5	V
		Data Retention Only	1.5	—	
V _I	Input Voltage		0	5.5	V
V _O	Output Voltage Active Mode		0	V _{CC}	V
	Output Voltage Power-Down Mode		0	5.5	
I _{OH}	High-Level Output Current	V _{CC} = 1.65V	—	-4	mA
		V _{CC} = 2.3V	—	-8	
		V _{CC} = 2.7V	—	-12	
		V _{CC} = 3.0V	—	-16	
		V _{CC} = 4.5V	—	-24	
I _{OL}	Low-Level Output Current	V _{CC} = 1.65V	—	4	mA
		V _{CC} = 2.3V	—	8	
		V _{CC} = 2.7V	—	12	
		V _{CC} = 3.0V	—	16	
		V _{CC} = 4.5V	—	32	
Δt/ΔV	Input Transition Rise or Fall Rate	V _{CC} = 1.65V to 2.7V	—	20	ns/V
		V _{CC} = 2.7V to 5.5V	—	10	
T _A	Operating Free-Air Temperature		-40	+125	°C

Note: 9. Unused inputs should be held at V_{CC} or Ground.



74LVC2G32

Electrical Characteristics (All typical values are at $T_A = +25^\circ\text{C}$)

Symbol	Parameter	Test Conditions	V_{CC}	-40°C to +85°C			-40°C to +125°C		Unit
				Min	Typ.	Max	Min	Max	
V_{IH}	High-Level Input Voltage	—	$V_{CC} = 1.65\text{V to } 1.95\text{V}$	$0.65 \times V_{CC}$	—	—	$0.65 \times V_{CC}$	—	V
			$V_{CC} = 2.3\text{V to } 2.7\text{V}$	1.7	—	—	1.7	—	
			$V_{CC} = 2.7\text{V to } 3.6\text{V}$	2.0	—	—	2.0	—	
			$V_{CC} = 4.5\text{V to } 5.5\text{V}$	$0.7 \times V_{CC}$	—	—	$0.7 \times V_{CC}$	—	
V_{IL}	Low-Level Input Voltage	—	$V_{CC} = 1.65\text{V to } 1.95\text{V}$	—	—	$0.35 \times V_{CC}$	—	$0.35 \times V_{CC}$	V
			$V_{CC} = 2.3\text{V to } 2.7\text{V}$	—	—	0.7	—	0.7	
			$V_{CC} = 2.7\text{V to } 3.6\text{V}$	—	—	0.8	—	0.8	
			$V_{CC} = 4.5\text{V to } 5.5\text{V}$	—	—	$0.3 \times V_{CC}$	—	$0.3 \times V_{CC}$	
V_{OH}	High-Level Output Voltage	$I_{OH} = -100\mu\text{A}$	1.65V to 5.5V	$V_{CC} - 0.1$	V_{CC}	—	$V_{CC} - 0.1$	—	V
		$I_{OH} = -4\text{mA}$	1.65V	1.2	1.53	—	0.95	—	
		$I_{OH} = -8\text{mA}$	2.3V	1.9	2.13	—	1.7	—	
		$I_{OH} = -12\text{mA}$	2.7	2.2	2.5	—	1.9	—	
		$I_{OH} = -16\text{mA}$	3V	2.4	2.7	—	2.2	—	
		$I_{OH} = -24\text{mA}$		2.3	2.6	—	2.0	—	
		$I_{OH} = -32\text{mA}$	4.5V	3.8	4.1	—	3.4	—	
V_{OL}	Low-Level Output Voltage	$I_{OL} = 100\mu\text{A}$	1.65V to 5.5V	—	0	0.1	—	0.1	V
		$I_{OL} = 4\text{mA}$	1.65V	—	0.08	0.45	—	0.7	
		$I_{OL} = 8\text{mA}$	2.3V	—	0.14	0.3	—	0.45	
		$I_{OL} = 12\text{mA}$	2.7V	—	0.19	0.4	—	0.6	
		$I_{OL} = 16\text{mA}$	3V	—	0.25	0.4	—	0.6	
		$I_{OL} = 24\text{mA}$		—	0.37	0.55	—	0.8	
		$I_{OL} = 32\text{mA}$	4.5V	—	0.43	0.55	—	0.8	
I_I	Input Current	$V_I = 5.5\text{V or GND}$	0V to 5.5V	—	± 0.1	± 5	—	± 20	μA
I_{OFF}	Power Down Leakage Current	$V_I \text{ or } V_O = 5.5\text{V}$	0V	—	± 0.1	± 10	—	± 20	μA
I_{CC}	Supply Current	$V_I = 5.5\text{V or GND}$ $I_O = 0\text{A}$	1.65V to 5.5V	—	0.1	10	—	40	μA
ΔI_{CC}	Additional Supply Current	One input at $V_{CC} - 0.6\text{V}$ Other inputs at V_{CC} or GND	2.3V to 5.5V	—	5	500	—	5,000	μA
C_I	Input Capacitance	$V_I = V_{CC} \text{ or GND}$	3.3V	—	2.5	—	—	—	pF



74LVC2G32

Operating Characteristics

Parameter		Test Conditions	V _{CC} = 1.8V	V _{CC} = 2.5V	V _{CC} = 3.3V	V _{CC} = 5V	Unit
			Typ.	Typ.	Typ.	Typ.	
C _{pd}	Power Dissipation Capacitance	f = 10MHz	17	17	17	19	pF

Package Characteristics

Symbol	Parameter	Package	Test Conditions	Min	Typ.	Max	Unit
θ _{JA}	Thermal Resistance Junction-to-Ambient	X2-DFN2010-8	(Note 10)	—	313	—	°C/W
		X2-DFN1410-8		—	321	—	
		X2-DFN1210-8		—	395	—	
θ _{JC}	Thermal Resistance Junction-to-Case	X2-DFN2010-8	(Note 10)	—	145	—	°C/W
		X2-DFN1410-8		—	166	—	
		X2-DFN1210-8		—	236	—	

Note: 10. Test condition for each package type: Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

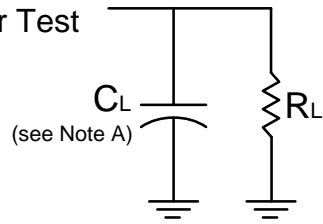
Switching Characteristics

Typical Values at T_A = +25°C and nominal voltages 1.8V, 2.5V, 2.7V, 3.3V, and 5.0V. See Figure 1.

Parameter	From Input	To Output	V _{CC}	T _A = -40°C to +85°C			T _A = -40°C to +125°C		Unit
				Min	Typ	Max	Min	Max	
t _{pd}	A or B	Y	1.8V ± 0.15V	1.3	3.9	8.8	1.3	11.0	ns
			2.5V ± 0.2V	0.8	2.4	4.7	0.8	5.9	
			2.7V	0.8	2.7	4.8	0.8	6.0	
			3.3V ± 0.3V	0.9	2.2	4.2	0.9	5.3	
			5.0V ± 0.5V	0.7	1.7	3.2	0.7	4.0	

Parameter Measurement Information

From Output
Under Test



V_{CC}	Inputs		V_M	C_L	R_L
	V_I	t_r/t_f			
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	30pF	1k Ω
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	30pF	500 Ω
2.7V	2.7V	$\leq 2.5ns$	1.5V	50pF	500 Ω
$3.3V \pm 0.3V$	2.7V	$\leq 2.5ns$	1.5V	50pF	500 Ω
$5.0V \pm 0.5V$	V_{CC}	$\leq 2.5ns$	$V_{CC}/2$	50pF	500 Ω

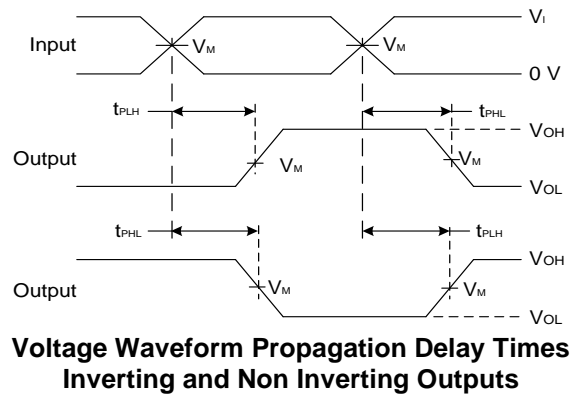
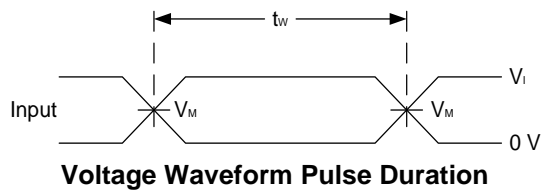
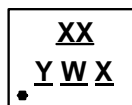


Figure 1. Load Circuit and Voltage Waveforms

- Notes:
- A. Includes test lead and test apparatus capacitance.
 - B. All pulses are supplied at pulse repetition rate $\leq 10MHz$.
 - C. Inputs are measured separately one transition per measurement.
 - D. t_{PLH} and t_{PHL} are the same as t_{pd} .

Marking Information

(Top View)



XX : Identification Code

Y : Year : 0~9

W : Week : A~Z : 1~26 week;

a~z : 27~52 week; z represents
52 and 53 week

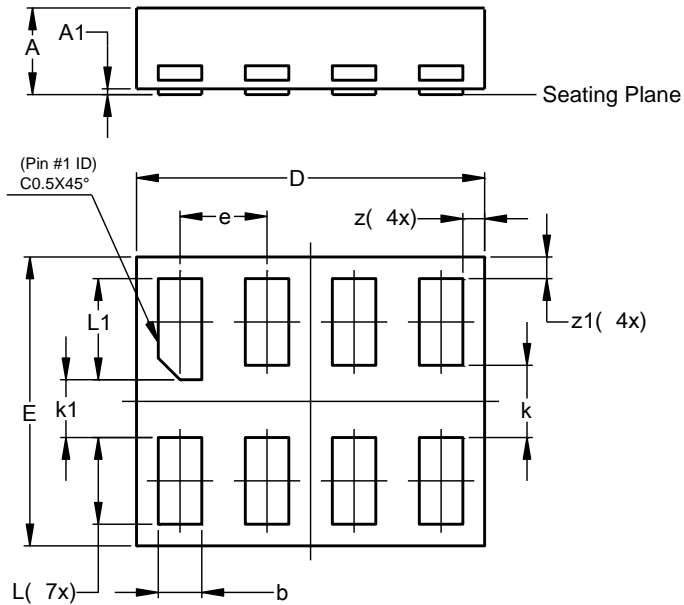
X : Internal Code

Part Number	Package	Identification Code
74LVC2G32HD4-7	X2-DFN2010-8	9H
74LVC2G32HK3-7	X2-DFN1410-8	9J
74LVC2G32RA3-7	X2-DFN1210-8	9K

X2-DFN1210-8 Package Outline Dimensions

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

X2-DFN1210-8

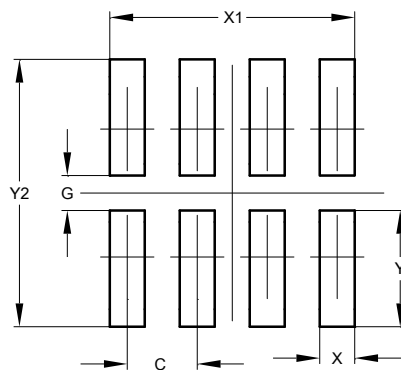


X2-DFN1210-8			
Dim	Min	Max	Typ
A	-	0.35	0.30
A1	0	0.03	0.02
b	0.10	0.20	0.15
D	1.15	1.25	1.20
E	0.95	1.05	1.00
e	-	-	0.30
k	-	-	0.25
k1	-	-	0.20
L	0.25	0.35	0.30
L1	0.30	0.40	0.35
z	0.050	0.100	0.075
z1	0.050	0.100	0.075
All Dimensions in mm			

Suggested Pad Layout

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

X2-DFN1210-8

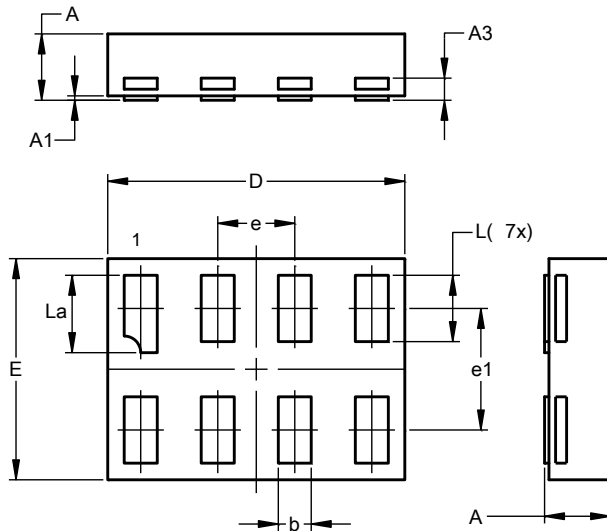


Dimensions	Value (in mm)
C	0.300
G	0.150
X	0.150
X1	1.050
Y	0.500
Y1	1.150

X2-DFN1410-8 Package Outline Dimensions

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

X2-DFN1410-8

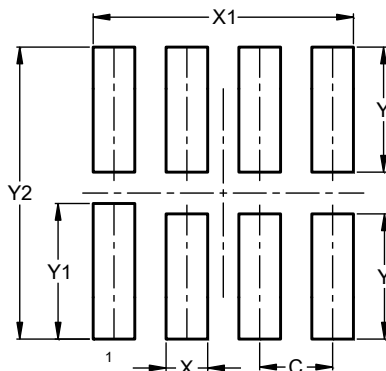


X2-DFN1410-8			
Dim	Min	Max	Typ
A	0.30	0.35	0.33
A1	0.00	0.03	0.02
A3	--	--	0.10
b	0.12	0.20	0.15
D	1.30	1.40	1.35
E	0.95	1.05	1.00
e	--	--	0.35
e1	--	--	0.55
L	0.27	0.35	0.30
L1	0.32	0.40	0.35
All Dimensions in mm			

Suggested Pad Layout

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

X2-DFN1410-8

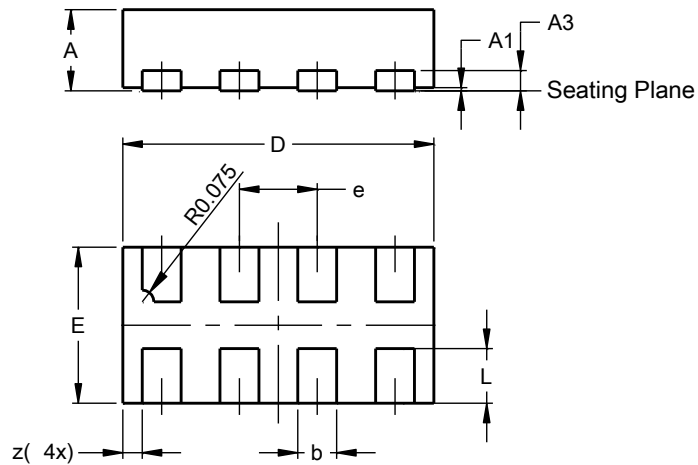


Dimensions	Value (in mm)
C	0.350
X	0.200
X1	1.250
Y	0.600
Y1	0.650
Y2	1.400

X2-DFN2010-8 Package Outline Dimensions

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

X2-DFN2010-8



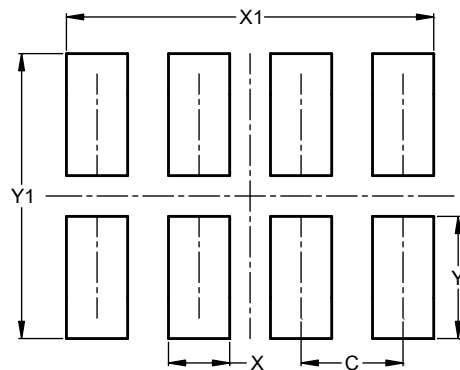
X2-DFN2010-8			
Dim	Min	Max	Typ
A	--	0.40	--
A1	0.00	0.05	0.02
A3	--	--	0.13
b	0.20	0.30	0.25
D	1.950	2.05	2.00
E	0.95	1.05	1.00
e	--	--	0.50
L	0.30	0.40	0.35
z	--	--	0.125

All Dimensions in mm

Suggested Pad Layout

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

X2-DFN2010-8



Dimensions	Value (in mm)
C	0.500
X	0.300
X1	1.800
Y	0.600
Y1	1.400



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2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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