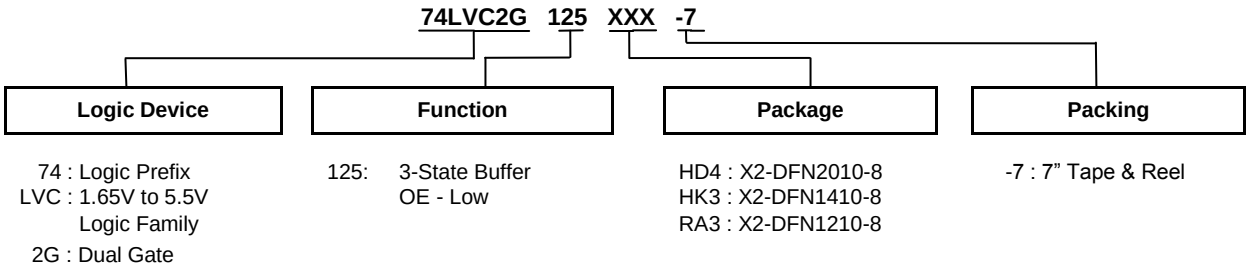
Ordering Information (Note 4)



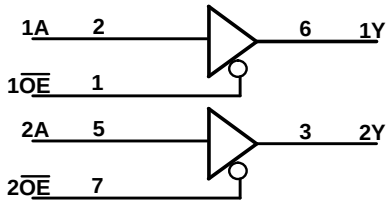
Device	Package Code	Package (Note 5)	Package Size	7" Tape and Reel (Note 6)	
				Quantity	Part Number Suffix
74LVC2G125HD4-7	HD4	X2-DFN2010-8	1.95mm x 1.0mm x 0.4mm 0.5 mm lead pitch	5,000/Tape & Reel	-7
74LVC2G125HK3-7	HK3	X2-DFN1410-8	1.35mm x 1.0mm x 0.35mm 0.4 mm lead pitch	5,000/Tape & Reel	-7
74LVC2G125RA3-7	RA3	X2-DFN1210-8	1.2mm x 1.0mm x 0.35mm 0.3 mm lead pitch	5,000/Tape & Reel	-7

Notes: 4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.
5. 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.
6. The taping orientation is located on our website at http://www.diodes.com/datasheets/ap02007.pdf.

Pin Descriptions

Pin Name	Pin No.	Description
$1\overline{OE}$	1	Output Enable for buffer 1
1A	2	Data Input
2Y	3	Data Output
GND	4	Ground
2A	5	Data Input
1Y	6	Data Output
$2\overline{OE}$	7	Output Enable for buffer 2
V_{CC}	8	Supply Voltage

Logic Diagram



Function Table

Inputs		Output
$\overline{OE}$	A	Y
L	H	H
L	L	L
H	X	Z

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 > Vcc)	±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: 7. 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.
8. 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	
			—	-24	
		V_{CC} = 4.5V	—	-32	
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	
			—	24	
		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.

Electrical Characteristics (All typical values are at T_A = +25°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} = 1.65V to 1.95V	0.65 x V_{CC}	—	—	0.65 x V_{CC}	—	V
			V_{CC} = 2.3V to 2.7V	1.7	—	—	1.7	—	
			V_{CC} = 2.7V to 3.6V	2.0	—	—	2.0	—	
			V_{CC} = 4.5V to 5.5V	0.7 x V_{CC}	—	—	0.7 x V_{CC}	—	
V_{IL}	Low-Level Input Voltage	—	V_{CC} = 1.65V to 1.95V	—	—	0.35 x V_{CC}	—	0.35 x V_{CC}	V
			V_{CC} = 2.3V to 2.7V	—	—	0.7	—	0.7	
			V_{CC} = 2.7V to 3.6V	—	—	0.8	—	0.8	
			V_{CC} = 4.5V to 5.5V	—	—	0.3 x V_{CC}	—	0.3 x V_{CC}	
V_{OH}	High-Level Output Voltage	I_{OH} = -100µA	1.65V to 5.5V	V_{CC} – 0.1	Vcc	—	V_{CC} – 0.1	—	V
		I_{OH} = -4mA	1.65V	1.2	1.53	—	0.95	—	
		I_{OH} = -8mA	2.3V	1.9	2.13	—	1.7	—	
		I_{OH} = -12mA	2.7	2.2	2.5	—	1.9	—	
		I_{OH} = -16mA	3V	2.4	2.7	—	2.2	—	
		I_{OH} = -24mA		2.3	2.6	—	2.0	—	
		I_{OH} = -32mA	4.5V	3.8	4.1	—	3.4	—	
V_{OL}	Low-Level Output Voltage	I_{OL} = 100µA	1.65V to 5.5V	—	0	0.1	—	0.1	V
		I_{OL} = 4mA	1.65V	—	0.08	0.45	—	0.7	
		I_{OL} = 8mA	2.3V	—	0.14	0.3	—	0.45	
		I_{OL} = 12mA	2.7V	—	0.19	0.4	—	0.6	
		I_{OL} = 16mA	3V	—	0.25	0.4	—	0.6	
		I_{OL} = 24mA		—	0.37	0.55	—	0.8	
		I_{OL} = 32mA	4.5V	—	0.43	0.55	—	0.8	
I_I	Input Current	V_I = 5.5V or GND	0V to 5.5V	—	± 0.1	±5	—	± 20	µA
I_{OZ}	Z-State Leakage Current	V_I = V_{IH} or V_{IL} V_O = 5.5V or GND	3.6V	—	± 0.1	± 10	—	±20	µA
I_{OFF}	Power Down Leakage Current	V_I or V_O = 5.5V	0V	—	± 0.1	±10	—	±20	µA
I_{CC}	Supply Current	V_I = 5.5V or GND I_O=0A	1.65V to 5.5V	—	0.1	10	—	40	µA
ΔI_{CC}	Additional Supply Current	One input at V_{CC} –0.6V 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} or GND	3.3V	—	2.5	—	—	—	pF

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 output enabled	17	17	17	17	pF
		f = 10MHz output disabled	5	5	5	5	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	—	

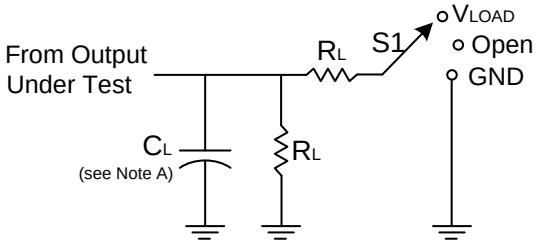
Note: 10. Test condition for each package type: Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

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.

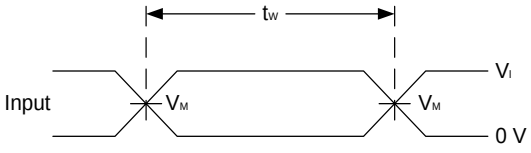
Parameter	From Input	To Output	V_{CC}	T_A = -40°C to +85°C			T_A = -40°C to +125°C		Unit
				Min	Typ	Max	Min	Max	
t_{pd}	A	Y	1.8V ± 0.15V	1.0	3.7	9.1	1.0	11.4	ns
			2.5V ± 0.2V	0.5	2.5	4.8	0.5	6.0	
			2.7V	1.0	2.7	4.8	1.0	6.0	
			3.3V ± 0.3V	0.5	2.3	4.4	0.5	5.5	
			5.0V ± 0.5V	0.5	1.9	3.7	0.5	4.6	
t_{en}	$\overline{OE}$	Y	1.8V ± 0.15V	1.5	4.3	9.9	1.5	12.4	ns
			2.5V ± 0.2V	1.0	2.8	5.6	1.0	7.0	
			2.7V	1.5	3.3	5.7	1.5	7.1	
			3.3V ± 0.3V	0.5	2.4	5.0	0.5	5.9	
			5.0V ± 0.5V	0.5	2.0	3.8	0.5	4.8	
t_{dis}	$\overline{OE}$	Y	1.8V ± 0.15V	1.0	3.5	11.6	1.0	14.1	ns
			2.5V ± 0.2V	0.5	1.8	5.8	0.5	7.6	
			2.7V	1.0	2.7	4.8	1.0	6.2	
			3.3V ± 0.3V	1.0	2.7	4.6	1.0	5.9	
			5.0V ± 0.5V	0.5	1.8	3.4	0.5	4.6	

Parameter Measurement Information

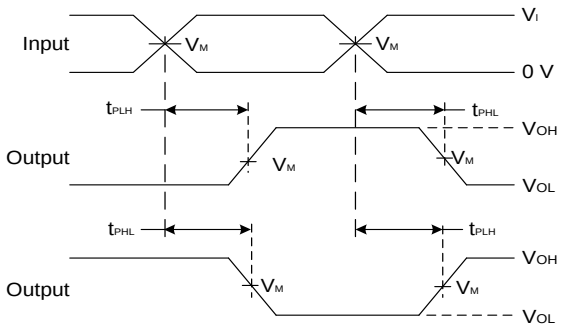


TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	V_{LOAD}
t_{PHZ}/t_{PZH}	GND

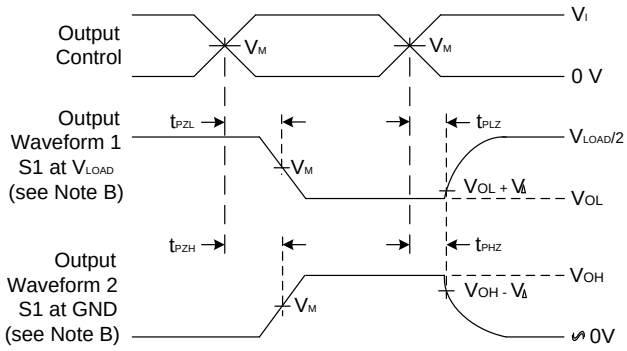
V_{CC}	Inputs		V_M	V_{LOAD}	C_L	R_L	$V\Delta$
	V_I	t_r/t_f					
1.8V±0.15V	V_{CC}	≤2ns	$V_{CC}/2$	2 x V_{CC}	30pF	1kΩ	0.15V
2.5V±0.2V	V_{CC}	≤2ns	$V_{CC}/2$	2 x V_{CC}	30pF	500Ω	0.15V
2.7V	2.7V	≤2.5ns	1.5V	6V	50pF	500Ω	0.3V
3.3V±0.3V	3V	≤2.5ns	1.5V	6V	50pF	500Ω	0.3V
5V±0.5V	V_{CC}	≤2.5ns	$V_{CC}/2$	2 x V_{CC}	50pF	500Ω	0.3V



Voltage Waveform Pulse Duration



Voltage Waveform Propagation Delay Times
Inverting and Non Inverting Outputs



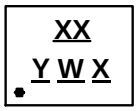
Voltage Waveform Enable and Disable Times
Low and High Level Enabling

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 ≤ 10MHz.
C. Inputs are measured separately one transition per measurement.
D. t_{PLZ} and t_{PHZ} are the same as t_{dis}.
E. t_{PZL} and t_{PZH} are the same as t_{en}.
F. t_{PLH} and t_{PHL} are the same as t_{pd}.

Marking Information

(Top View)



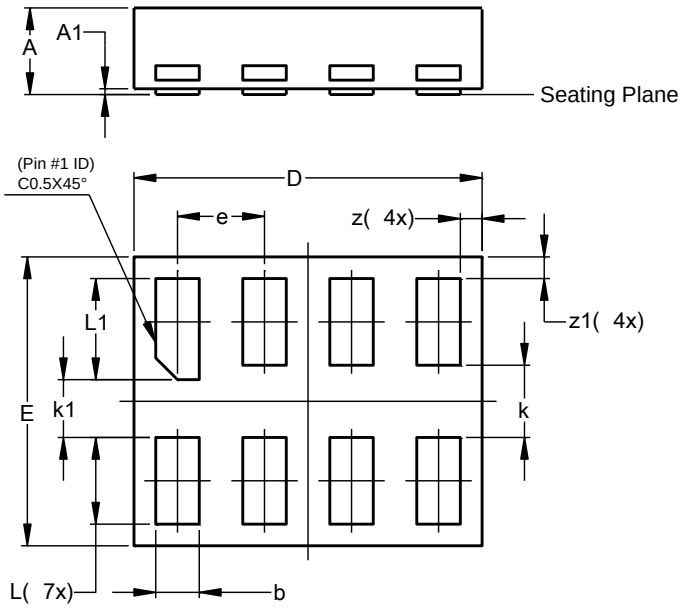
XX : Identification Code
Y : Year : 0~9
W : Week : A~Z : 1~26 week;
a~z : 27~52 week; z represents
52 and 53 week
X : Internal Code

Part Number	Package	Identification Code
74LVC2G125HD4-7	X2-DFN2010-8	9U
74LVC2G125HK3-7	X2-DFN1410-8	9V
74LVC2G125RA3-7	X2-DFN1210-8	9W

X2-DFN1210-8 Package Outline Dimensions

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

X2-DFN1210-8

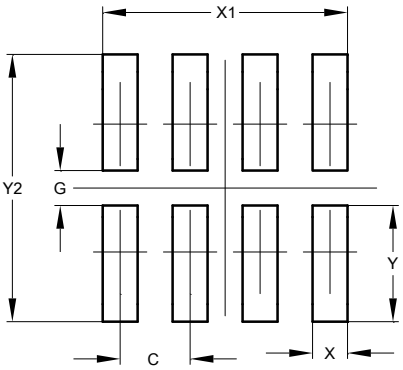


X2-DFN1210-8			
Dim	**Min**	**Max**	**Typ**
A	-	0.35	0.30
A1	0	0.03	0.02
b	0.10	0.20	0.15
D	1.15	1.25	1.20
E	0.95	1.05	1.00
e	-	-	0.30
k	-	-	0.25
k1	-	-	0.20
L	0.25	0.35	0.30
L1	0.30	0.40	0.35
z	0.050	0.100	0.075
z1	0.050	0.100	0.075
All Dimensions in mm			

Suggested Pad Layout

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

X2-DFN1210-8

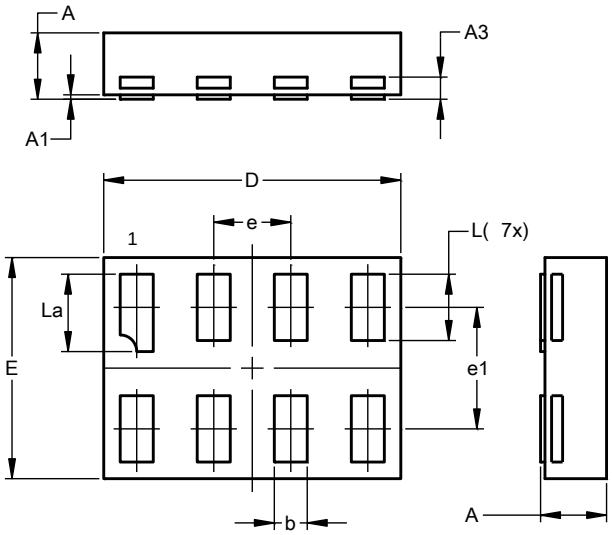


Dimensions	Value (in mm)
C	0.300
G	0.150
X	0.150
X1	1.050
Y	0.500
Y1	1.150

X2-DFN1410-8 Package Outline Dimensions

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

X2-DFN1410-8

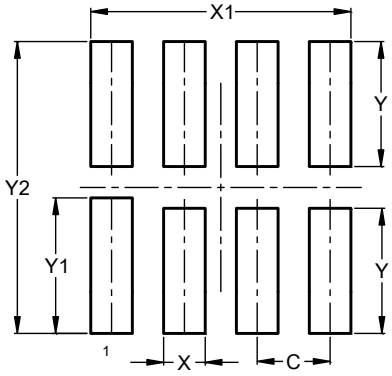


X2-DFN1410-8			
Dim	**Min**	**Max**	**Typ**
A	0.30	0.35	0.33
A1	0.00	0.03	0.02
A3	--	--	0.10
b	0.12	0.20	0.15
D	1.30	1.40	1.35
E	0.95	1.05	1.00
e	--	--	0.35
e1	--	--	0.55
L	0.27	0.35	0.30
L1	0.32	0.40	0.35
All Dimensions in mm			

Suggested Pad Layout

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

X2-DFN1410-8

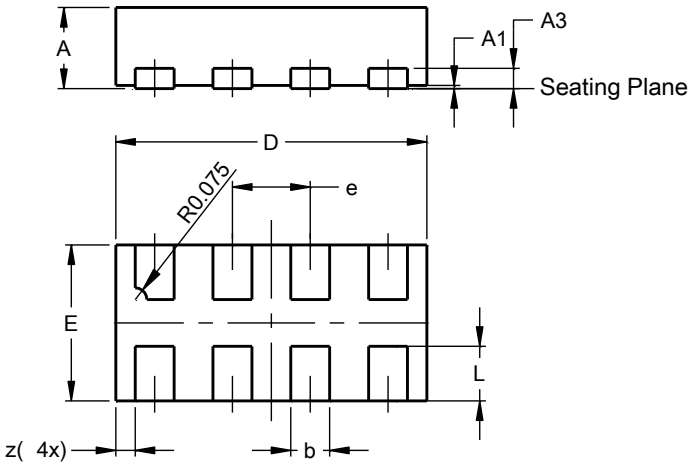


Dimensions	Value (in mm)
C	0.350
X	0.200
X1	1.250
Y	0.600
Y1	0.650
Y2	1.400

X2-DFN2010-8 Package Outline Dimensions

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

X2-DFN2010-8

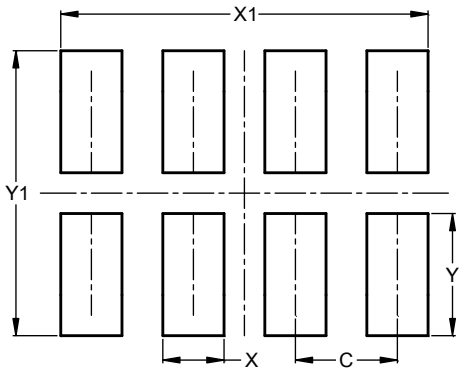


X2-DFN2010-8			
Dim	**Min**	**Max**	**Typ**
A	--	0.40	--
A1	0.00	0.05	0.02
A3	--	--	0.13
b	0.20	0.30	0.25
D	1.950	2.05	2.00
E	0.95	1.05	1.00
e	--	--	0.50
L	0.30	0.40	0.35
z	--	--	0.125
All Dimensions in mm			

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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