Ordering Information (Note 4)

74 LVC1G 125 XXX -7

Logic Device
74 : Logic Prefix
LVC : 1.65 to 5.5 V Logic Family
1G : One Gate

Function
125: 3-State Buffer OE active low

Package
W5 : SOT25
SE : SOT353
Z : SOT553
FS3 : X2-DFN0808-4
FW5 :X1-DFN1010-6 (Type B)
FW4 :X2-DFN1010-6
FX4 : X2- DFN1409-6
FZ4 : X2- DFN1410-6

Packing
-7 : 7" Tape & Reel

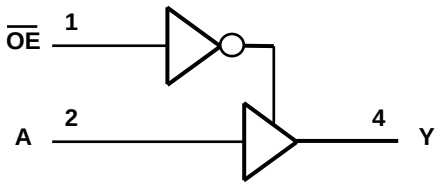
Part Number	Package Code	Package (Notes 5 & 6)	Package Size	7" Tape and Reel	
				Quantity	Part Number Suffix
74LVC1G125W5-7	W5	SOT25	3.0mm x 2.8mm x 1.2mm 0.95mm lead pitch	3,000/Tape & Reel	-7
74LVC1G125SE-7	SE	SOT353	2.0mm x 2.0mm x 1.1mm 0.65mm lead pitch	3,000/Tape & Reel	-7
74LVC1G125Z-7	Z	SOT553	1.6mm x 1.6 mm x 0.62mm 0.5mm lead pitch	4,000/Tape & Reel	-7
74LVC1G125FS3-7	FS3	X2-DFN0808-4	0.8mm x 0.8 mm x 0.35mm 0.5mm pad pitch (diamond)	5,000/Tape & Reel	-7
74LVC1G125FW5-7	FW5	X1-DFN1010-6 (Type B)	1.0mm x 1.0mm x 0.5mm 0.35mm pad pitch	5,000/Tape & Reel	-7
74LVC1G125FW4-7	FW4	X2-DFN1010-6	1.0mm x 1.0mm x 0.4mm 0.35mm pad pitch	5,000/Tape & Reel	-7
74LVC1G125FX4-7	FX4	X2-DFN1409-6 **(Chip scale alternative)**	1.4mm x 0.9mm x 0.4mm 0.5mm pad pitch	5,000/Tape & Reel	-7
74LVC1G125FZ4-7	FZ4	X2-DFN1410-6	1.4mm x 1.0mm x 0.4mm 0.5mm pad 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 on Diodes Inc. suggested pad layout 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	Description
$\overline{OE}$	Output Enable
A	Data Input
GND	Ground
Y	Data Output
V_{CC}	Supply Voltage
NC	No Connection

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

Symbol	Description	Rating	Unit
ESD HBM	Human Body Model ESD Protection	2	kV
ESD CDM	Charged Device Model ESD Protection	1	kV
ESD MM	Machine Model ESD Protection	200	V
V_{CC}	Supply Voltage Range	-0.5 to 6.5	V
V_I	Input Voltage Range	-0.5 to 6.5	V
V_O	Voltage Applied to Output in High Impedance or I_{OFF} State	-0.5 to 6.5	V
V_O	Voltage Applied to Output in High or Low State.	-0.5 to V_{CC} +0.5	V
I_{IK}	Input Clamp Current $V_I < 0$	-50	mA
I_{OK}	Output Clamp Current	-50	mA
I_O	Continuous Output Current	±50	mA
I_{CC}, I_{GN}	Continuous Current Through V_{CC} or 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) (@T_A = +25°C, unless otherwise specified.)

Symbol	Parameter		Min	Max	Unit
V_{CC}	Operating Voltage	Operating	1.65	5.5	V
		Data Retention Only	1.5	—	V
V_{IH}	High-Level Input Voltage	V_{CC} = 1.65V to 1.95V	0.65 x V_{CC}	—	V
		V_{CC} = 2.3V to 2.7V	1.7	—	
		V_{CC} = 3V to 3.6V	2	—	
		V_{CC} = 4.5V to 5.5V	0.7 x V_{CC}	—	
V_{IL}	Low-Level Input voltage	V_{CC} = 1.65V to 1.95V	—	0.35 x V_{CC}	V
		V_{CC} = 2.3V to 2.7V	—	0.7	
		V_{CC} = 3V to 3.6V	—	0.8	
		V_{CC} = 4.5V to 5.5V	—	0.3 x V_{CC}	
V_I	Input Voltage		0	5.5	V
V_O	Output Voltage		0	V_{CC}	V
I_{OH}	High-Level Output Current	V_{CC} = 1.65V	—	-4	mA
		V_{CC} = 2.3V	—	-8	
		V_{CC} = 2.7V	—	-12	
		V_{CC} = 3V	—	-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} = 3V	—	16	
			—	24	
		V_{CC} = 4.5V	—	32	
Δt/ΔV	Input Transition Rise or Fall Rate	V_{CC} = 1.8V ± 0.15V, 2.5V ± 0.2V	—	20	ns/V
		V_{CC} = 3.3V ± 0.3V	—	10	
		V_{CC} = 5V ± 0.5V	—	5	
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 V_{CC} = 3.3V, 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_{OH}	High-Level Output Voltage	I_{OH} = -100µA	1.65V to 5.5V	V_{CC} -0.1	—	—	V_{CC} – 0.1	—	V
		I_{OH} = -4mA	1.65V	1.2	—	—	0.95	—	
		I_{OH} = -8mA	2.3V	1.9	—	—	1.7	—	
		I_{OH} = -12mA	2.7V	2.2	—	—	1.9	—	
		I_{OH} = -16mA	3V	2.4	—	—	2.2	—	
		I_{OH} = -24mA		2.3	—	—	2.0	—	
		I_{OH} = -32mA	4.5V	3.8	—	—	3.4	—	
V_{OL}	Low-Level Output Voltage	I_{OL} = 100µA	1.65V to 5.5V	—	—	0.1	—	0.1	V
		I_{OL} = 4mA	1.65V	—	—	0.45	—	0.7	
		I_{OL} = 8mA	2.3V	—	—	0.3	—	0.45	
		I_{OL} = 12mA	2.7V	—	—	0.4	—	0.6	
		I_{OL} = 16mA	3V	—	—	0.4	—	0.6	
		I_{OL} = 24mA		—	—	0.55	—	0.8	
		I_{OL} = 32mA	4.5V	—	—	0.55	—	.8	
I_I	Input Current	V_I = 5.5 V or GND	0 to 5.5V	—	± 0.1	±5	—	± 100	µA
I_{OFF}	Power Down Leakage Current	V_I or V_O = 5.5V	0V	—	—	±10	—	±200	µA
I_{OZ}	Z State Leakage Current	V_O =0 to 5.5V	3.6V		0.1	10		20	µA
I_{CC}	Supply Current	V_I = 5.5V or GND I_O=0	5.5V	—	0.1	10	—	200	µA
ΔI_{CC}	Additional Supply Current	Input at V_{CC} –0.6V	3V to 5.5V	—	—	500	—	5,000	µA
C_i	Input Capacitance	V_i = V_{CC} – or GND	3.3V	—	5	—	—	—	pF

Package Characteristics (All typical values are at V_{CC} = 3.3V, T_A = +25°C)

Symbol	Parameter	Test Conditions	V_{CC}	Min	Typ	Max	Unit
θ_{JA}	Thermal Resistance Junction-to-Ambient	SOT25	(Note 10)	—	204	—	°C/W
		SOT353		—	371	—	
		SOT553		—	231	—	
		X2-DFN0808-4		—	400	—	
		X1-DFN1010-6 (Type B)		—	435	—	
		X2-DFN1010-6		—	445	—	
		X2-DFN1409-6		—	470	—	
		X2-DFN1410-6		—	460	—	
θ_{JC}	Thermal Resistance Junction-to-Case	SOT25	(Note 10)	—	52	—	°C/W
		SOT353		—	143	—	
		SOT553		—	105	—	
		X2-DFN0808-4		—	225	—	
		X1-DFN1010-6 (Type B)		—	250	—	
		X2-DFN1010-6		—	250	—	
		X2-DFN1409-6		—	275	—	
		X2-DFN1410-6		—	265	—	

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

Switching Characteristics

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

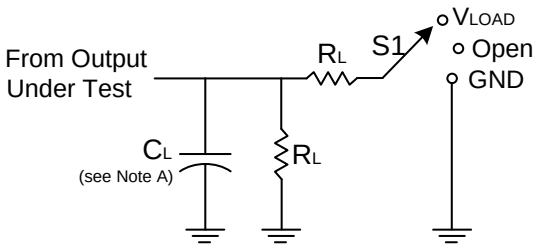
Parameter	From Input	To Output	V_{CC}	T_A = -40°C to +85°C			T_A = -40°C to +125°C		Unit
				Min	Typ	Max	Min	Max	
t_{pd}	A	Y	1.8V ± 0.15V	1.0	3.3	8.0	1.0	10.5	ns
			2.5V ± 0.2V	0.5	2.2	5.5	0.5	7.0	
			2.7V	0.5	2.5	5.5	0.5	7.5	
			3.3V ± 0.3V	0.5	2.1	4.5	0.5	6.0	
			5.0V ± 0.5V	0.5	1.7	4.0	0.5	5.5	
t_{en}	$\overline{OE}$	Y	1.8 V ± 0.15V	1.0	4.1	9.4	1.0	12.0	ns
			2.5V ± 0.2V	0.5	2.8	6.6	0.5	8.5	
			2.7V	0.5	3.3	6.6	0.5	8.5	
			3.3V ± 0.3V	0.5	2.4	5.3	0.5	7.0	
			5.0V ± 0.5V	0.5	2.1	5.0	0.5	6.5	
t_{dis}	$\overline{OE}$	Y	1.8V ± 0.15V	1.0	4.3	9.2	1.0	12.0	ns
			2.5V ± 0.2V	0.5	2.7	5.0	0.5	6.5	
			2.7V	0.5	3.0	5.0	0.5	6.5	
			3.3V ± 0.3V	0.5	3.1	5.0	0.5	6.5	
			5.0V ± 0.5V	0.5	2.2	4.2	0.5	5.5	

Operating Characteristics

T_A = +25°C

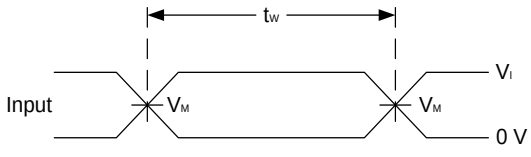
Parameter			Test Conditions	V_{CC} = 1.8V	V_{CC} = 2.5V	V_{CC} = 3.3V	V_{CC} = 5V	Unit
				Typ	Typ	Typ	Typ	
C_{pd}	Power Dissipation Capacitance	Outputs Enabled	f = 10MHz	19	19	19	21	pF
		Outputs Disabled		2	2	3	4	

Parameter Measurement Information

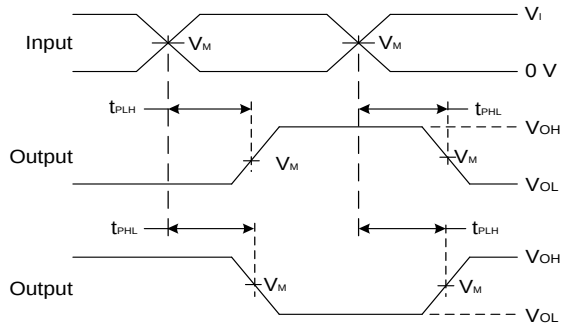


TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	V_{LOAD}
t_{PHZ}/t_{PZH}	GND

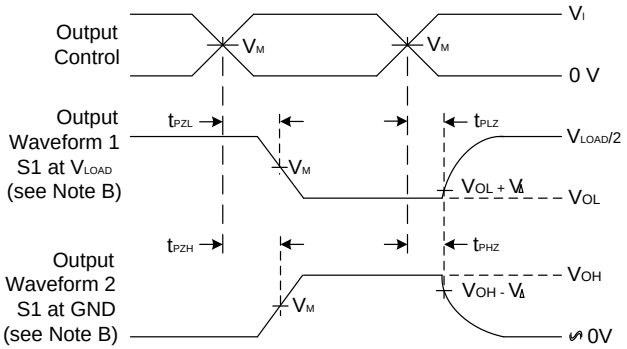
V_{CC}	Inputs		V_M	V_{LOAD}	C_L	R_L	$V\Delta$
	V_I	t_r/t_f					
1.8V±0.15V	V_{CC}	≤2ns	$V_{CC}/2$	2 x V_{CC}	30pF	1kΩ	0.15V
2.5V±0.2V	V_{CC}	≤2ns	$V_{CC}/2$	2 x V_{CC}	30pF	500Ω	0.15V
2.7V	2.7V	≤2.5ns	1.5V	6V	50pF	500Ω	0.3V
3.3V±0.3V	3V	≤2.5ns	1.5V	6V	50pF	500Ω	0.3V
5V±0.5V	V_{CC}	≤2.5ns	$V_{CC}/2$	2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



Voltage Waveform Pulse Duration



Voltage Waveform Propagation Delay Times
Inverting and Non Inverting Outputs



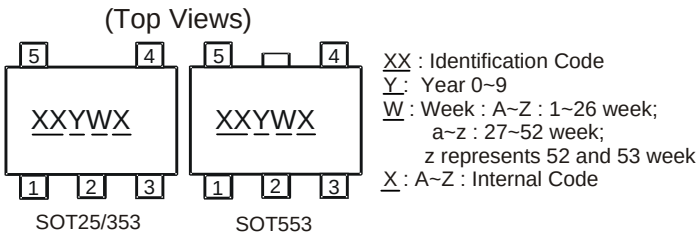
Voltage Waveform Enable and Disable Times
Low and High Level Enabling

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}.

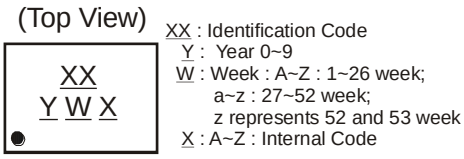
Marking Information

(1) SOT25, SOT353 and SOT553



Part Number	Package	Identification Code
74LVC1G125W5-7	SOT25	UY
74LVC1G125SE-7	SOT353	UY
74LVC1G125Z-7	SOT553	UY

(2) DFN Packages

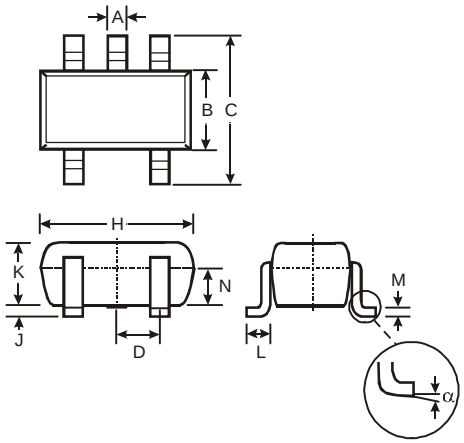


Part Number	Package	Identification Code
74LVC1G125FS3-7	X2-DFN0808-4	WY
74LVC1G125FW5-7	X1-DFN1010-6 (Type B)	VY
74LVC1G125FW4-7	X2-DFN1010-6	UY
74LVC1G125FX4-7	X2-DFN1409-6	MW
74LVC1G125FZ4-7	X2-DFN1410-6	UY

Package Outline Dimensions

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

SOT25

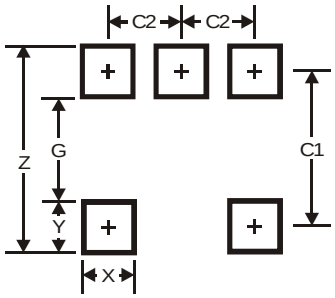


SOT25			
Dim	**Min**	**Max**	**Typ**
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	-	-	0.95
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
N	0.70	0.80	0.75
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout

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

SOT25

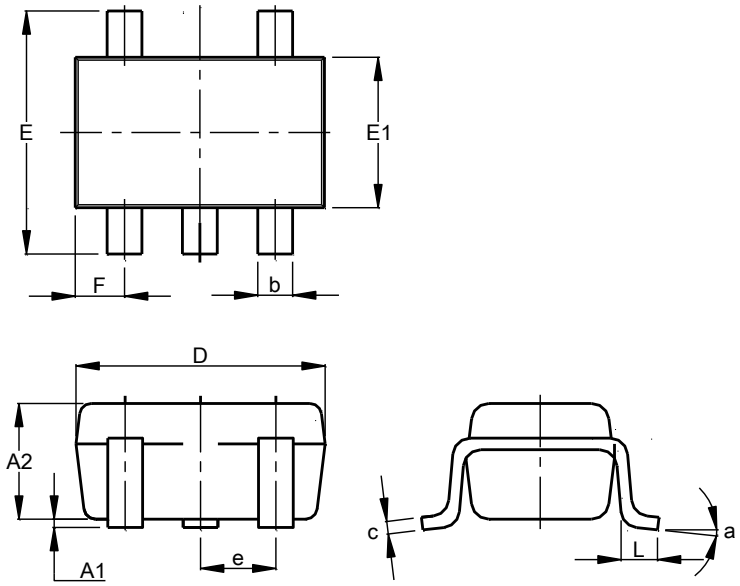


Dimensions	Value
Z	3.20
G	1.60
X	0.55
Y	0.80
C1	2.40
C2	0.95

Package Outline Dimensions

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

SOT353

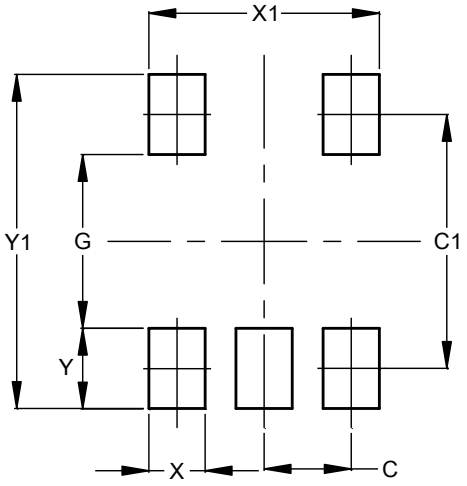


SOT353			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	1.00
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT353

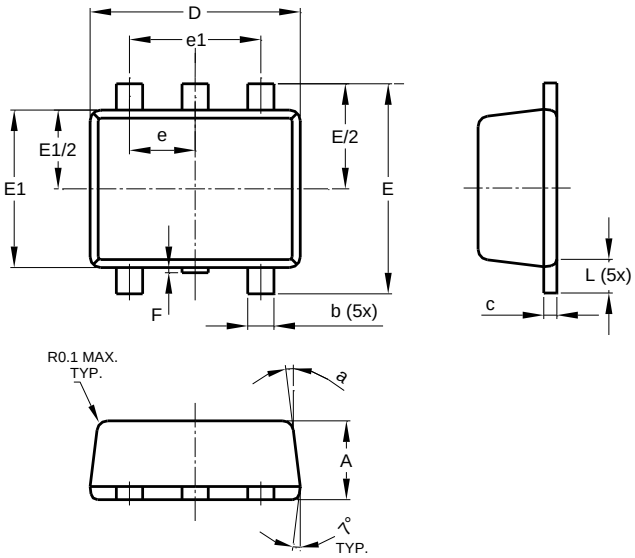


Dimensions	Value (in mm)
C	0.650
C1	1.900
G	1.300
X	0.420
X1	1.720
Y	0.600
Y1	2.500

Package Outline Dimensions

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

SOT553

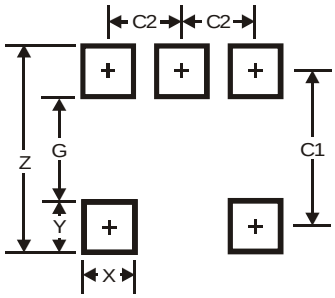


SOT553			
Dim	**Min**	**Max**	**Typ**
A	0.55	0.62	0.60
b	0.15	0.30	0.20
c	0.10	0.18	0.15
D	1.50	1.70	1.60
E	1.55	1.70	1.60
E1	1.10	1.25	1.20
e	0.50 BSC		
e1	1.00 BSC		
F	0.00	0.10	—
L	0.10	0.30	0.20
a	6°	8°	7°
All Dimensions in mm			

Suggested Pad Layout

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

SOT553

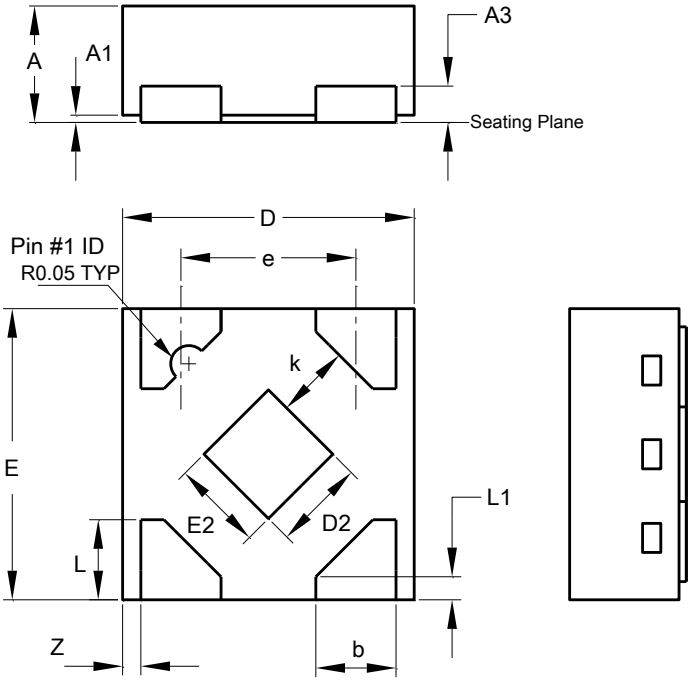


Dimensions	Value
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5

Package Outline Dimensions

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

X2-DFN0808-4

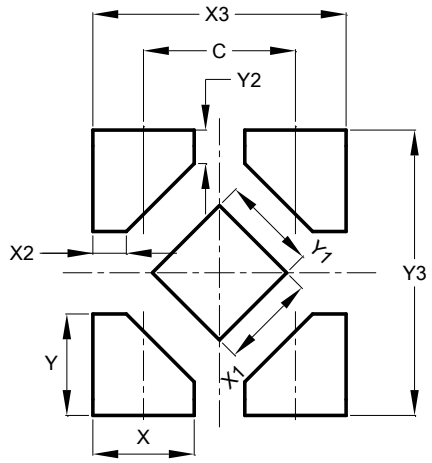


X2-DFN0808-4			
Dim	**Min**	**Max**	**Typ**
A	0.25	0.35	0.30
A1	0	0.04	0.02
A3	-	-	0.13
b	0.17	0.27	0.22
D	0.75	0.85	0.80
D2	0.15	0.35	0.25
E	0.75	0.85	0.80
E2	0.15	0.35	0.25
e	-	-	0.48
k	0.20	-	-
L	0.17	0.27	0.22
L1	0.02	0.12	0.07
z	-	-	0.05
All Dimensions in mm			

Suggested Pad Layout

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

X2-DFN0808-4

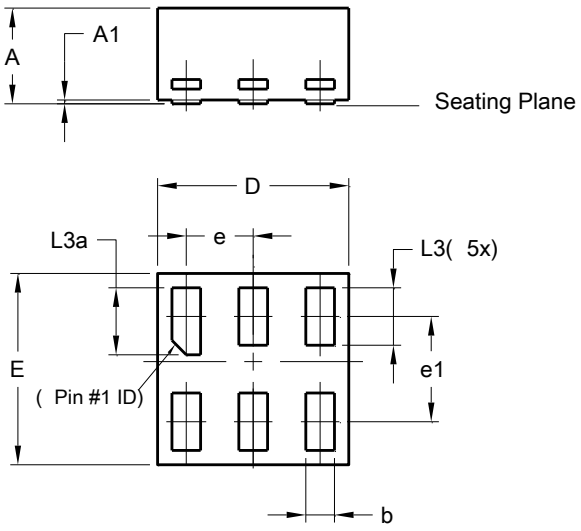


Dimensions	Value
C	0.480
X	0.320
X1	0.300
X2	0.106
X3	0.800
Y	0.320
Y1	0.300
Y2	0.106
Y3	0.900

Package Outline Dimensions

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

X1-DFN1010-6 (Type B)

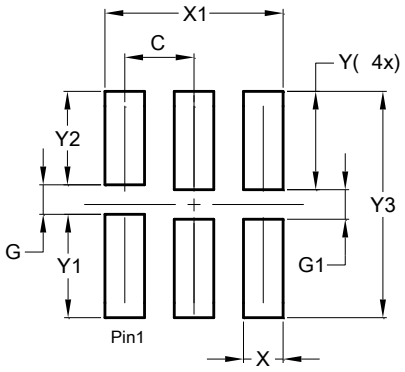


X1-DFN1010-6 (Type B)			
Dim	**Min**	**Max**	**Typ**
A	-	0.50	0.39
A1	-	0.04	-
b	0.12	0.20	0.15
D	0.95	1.050	1.00
E	0.95	1.050	1.00
e	0.35 BSC		
e1	0.55 BSC		
L3	0.27	0.30	0.30
L3a	0.32	0.40	0.35
All Dimensions in mm			

Suggested Pad Layout

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

X1-DFN1010-6 (Type B)

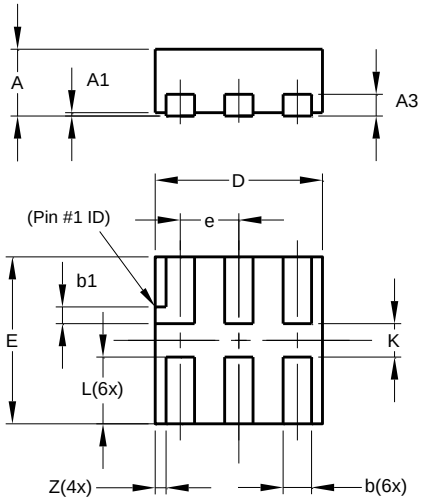


Dimensions	Value (in mm)
C	0.350
G	0.150
G1	0.150
X	0.200
X1	0.900
Y	0.500
Y1	0.525
Y2	0.475
Y3	1.150

Package Outline Dimensions

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

X2-DFN1010-6

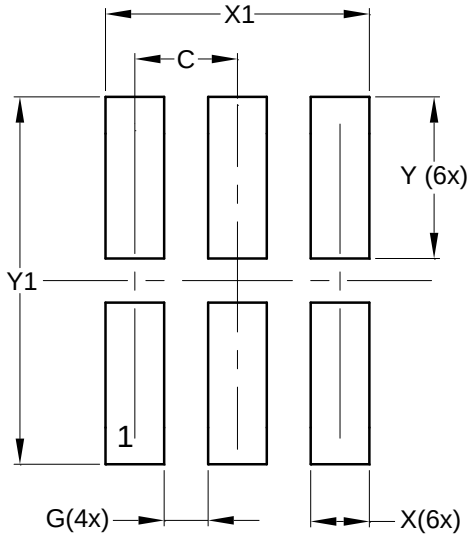


X2-DFN1010-6			
Dim	**Min**	**Max**	**Typ**
A	—	0.40	0.39
A1	0.00	0.05	0.02
A3	—	—	0.13
b	0.14	0.20	0.17
b1	0.05	0.15	0.10
D	0.95	1.05	1.00
E	0.95	1.05	1.00
e	—	—	0.35
L	0.35	0.45	0.40
K	0.15	—	—
Z	—	—	0.065
All Dimensions in mm			

Suggested Pad Layout

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

X2-DFN1010-6

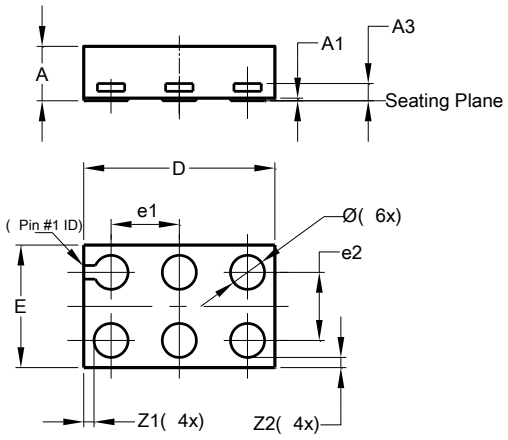


Dimensions	Value (in mm)
C	0.350
G	0.150
X	0.200
X1	0.900
Y	0.550
Y1	1.250

Package Outline Dimensions

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

X2-DFN1409-6 CHIP SCALE ALTERNATIVE

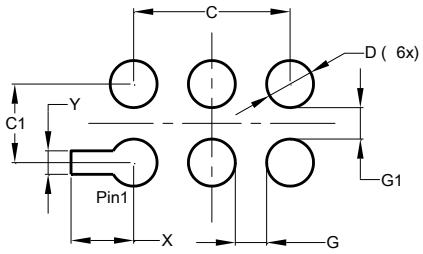


X2-DFN1409-6			
Dim	**Min**	**Max**	**Typ**
A	-	0.40	0.39
A1	0	0.05	0.02
A3	-	-	0.13
Ø	0.20	0.30	0.25
D	1.35	1.45	1.40
E	0.85	0.95	0.90
e1	-	-	0.50
e2	-	-	0.50
Z1	-	-	0.075
Z2	-	-	0.075
All Dimensions in mm			

Suggested Pad Layout

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

X2-DFN1409-6 CHIP SCALE ALTERNATIVE

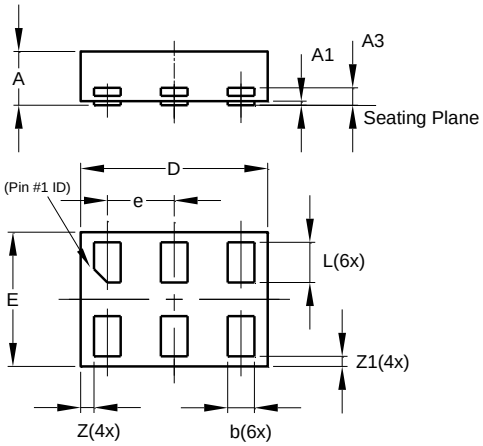


Dimensions	Value (in mm)
C	1.000
C1	0.500
D	0.300
G	0.200
G1	0.200
X	0.400
Y	0.150

Package Outline Dimensions

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

X2-DFN1410-6

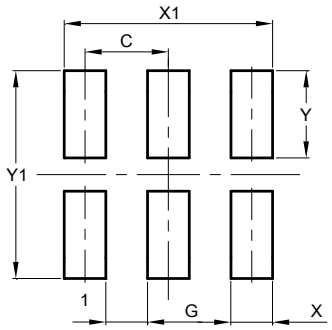


X2-DFN1410-6			
Dim	**Min**	**Max**	**Typ**
A	—	0.40	0.39
A1	0.00	0.05	0.02
A3	—	—	0.13
b	0.15	0.25	0.20
D	1.35	1.45	1.40
E	0.95	1.05	1.00
e	—	—	0.50
L	0.25	0.35	0.30
Z	—	—	0.10
Z1	0.045	0.105	0.075
All Dimensions in mm			

Suggested Pad Layout

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

X2-DFN1410-6



Dimensions	Value (in mm)
C	0.500
G	0.250
X	0.250
X1	1.250
Y	0.525
Y1	1.250

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