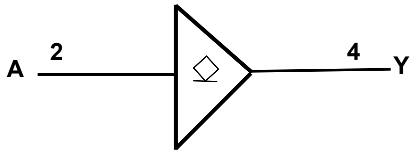
Pin Descriptions

Pin Name	Description
NC	No Connection
A	Data Input
GND	Ground
Y	Data Output
V_{CC}	Supply Voltage

Logic Diagram



Function Table

Input	Output
A	**Y**
H	Z
L	L

Absolute Maximum Ratings (Notes 4 & 5) (@ 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
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 6.5	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: 4. Stresses beyond the absolute maximum can result in immediate failure or reduced reliability. These are stress values and device operation should be within recommend values.

5. 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 6) (@ 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 × 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 × V_{CC}	—	
V_{IL}	Low-Level Input Voltage	V_{CC} = 1.65V to 1.95V	—	0.35 × 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 × V_{CC}	
V_I	Input Voltage		0	5.5	V
V_O	Output Voltage		0	5.5	V
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: 6. 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_{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	—	0.45	
		I_{OL} = 8mA	2.3V	—	—	0.3	—	0.3	
		I_{OL} = 12mA	2.7V	—	—	0.4	—	0.6	
		I_{OL} = 16mA	3V	—	—	0.4	—	0.4	
		I_{OL} = 24mA		—	—	0.55	—	0.55	
		I_{OL} = 32mA	4.5V	—	—	0.55	—	0.55	
I_I	Input Current	V_I = 5.5V or GND	0 to 5.5V	—	±0.1	±5	—	±5	µA
I_{OFF}	Power Down Leakage Current	V_I or V_O = 5.5V	0V	—	—	±10	—	±10	µA
I_{CC}	Supply Current	V_I = 5.5V or GND I_O = 0	5.5V	—	0.1	10	—	10	µA
ΔI_{CC}	Additional Supply Current	Input at V_{CC} – 0.6V	3V to 5.5V	—	—	500	—	500	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 7)	—	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 7)	—	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: 7. Test condition for each of the 8 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.

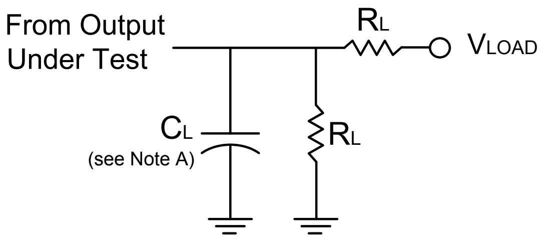
Parameter	From Input	To Output	V_{CC}	T_A = -40°C to +85°C			T_A = -40°C to +125°C		Unit
				Min	Typ	Max	Min	Max	
t_{PD}	A or B	Y	1.8V ± 0.15V	1.0	3.0	6.5	1.0	8.5	ns
			2.5V ± 0.2V	0.5	1.9	4.0	0.5	5.5	
			2.7V	0.5	2.5	4.5	0.5	6.0	
			3.3 V ± 0.3V	0.5	2.3	4.0	0.5	5.5	
			5.0V ± 0.5V	0.5	1.7	3.0	0.5	4.0	

Operating Characteristics

T_A = +25°C

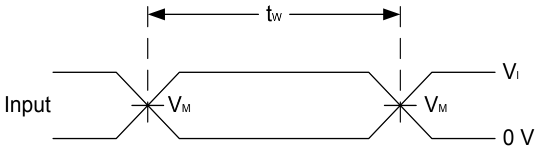
Parameter		Test Conditions	V_{CC} = 1.8V	V_{CC} = 2.5V	V_{CC} = 3.3V	V_{CC} = 5V	Unit
			Typ	Typ	Typ	Typ	
C_{PD}	Power Dissipation Capacitance	f = 10MHz	3	3	4	6	pF

Parameter Measurement Information

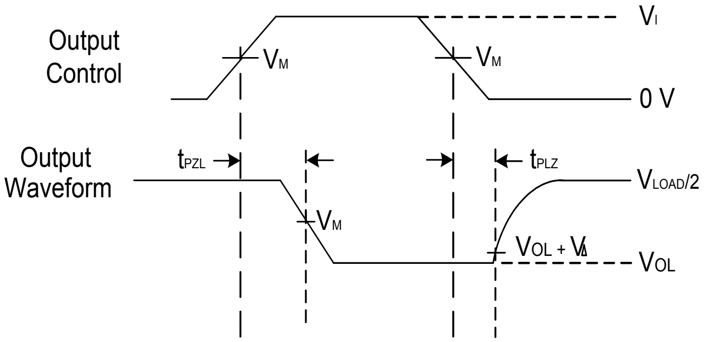


TEST	Condition
t_{PLZ} (Notes D & F)	V_{LOAD}
t_{PZL} (Notes D & E)	V_{LOAD}

V_{CC}	Inputs		V_M	V_{LOAD}	C_L	R_L	V_Δ
	V_I	t_R/t_F					
1.8V±0.15V	V_{CC}	≤2ns	$V_{CC}/2$	2 × V_{CC}	30pF	1kΩ	0.15V
2.5V±0.2V	V_{CC}	≤2ns	$V_{CC}/2$	2 × 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 × V_{CC}	50pF	500Ω	0.3V



Voltage Waveform
Pulse Duration



Voltage Waveform
Propagation Delay Times

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. The inputs are measured one at a time with one transition per measurement.
D. For the open drain device t_{PLZ} and t_{PZL} are the same as t_{PD}.
E. t_{PZL} is measured at V_M.
F. t_{PLZ} is measured at $V_{OL} + V_\Delta$.

Ordering Information (Note 8)

74 LVC 1G 07 XXX - 7

Logic Device

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

Function

07 : 1-Input Buffer with open drain output

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

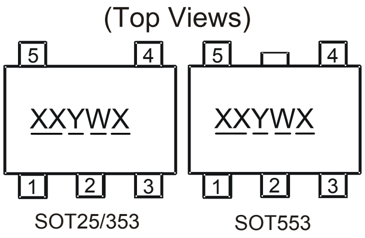
7 : 7” Tape & Reel

Part Number	Package Code	Package (Notes 9 & 10)	7” Tape and Reel	
			Quantity	Part Number Suffix
74LVC1G07W5-7	W5	SOT25	3,000/Tape & Reel	-7
74LVC1G07SE-7	SE	SOT353	3,000/Tape & Reel	-7
74LVC1G07Z-7	Z	SOT553	4,000/Tape & Reel	-7
74LVC1G07FS3-7	FS3	X2-DFN0808-4	5,000/Tape & Reel	-7
74LVC1G07FW5-7	FW5	X1-DFN1010-6 (Type B)	5,000/Tape & Reel	-7
74LVC1G07FW4-7	FW4	X2-DFN1010-6	5,000/Tape & Reel	-7
74LVC1G07FX4-7	FX4	X2-DFN1409-6 Chip scale alternative	5,000/Tape & Reel	-7
74LVC1G07FZ4-7	FZ4	X2-DFN1410-6	5,000/Tape & Reel	-7

Notes: 8. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.
9. 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.
10. The taping orientation is located on our website at https://www.diodes.com/assets/Packaging-Support-Docs/ap02007.pdf.

Marking Information

(1) SOT25, SOT353 and SOT553

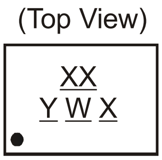


SOT25/353 SOT553

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 : A~Z : Internal Code

Part Number	Package	Identification Code
74LVC1G07W5-7	SOT25	UN
74LVC1G07SE-7	SOT353	UN
74LVC1G07Z-7	SOT553	UN

(2) DFN Packages



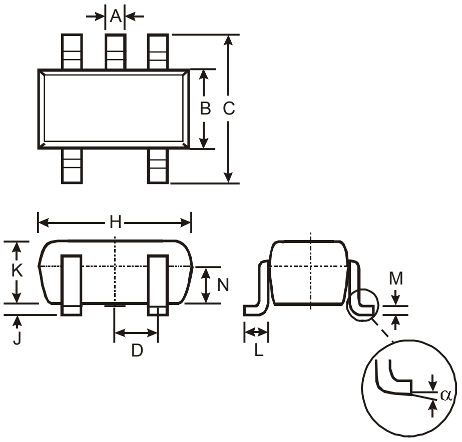
XX : Identification Code
Y : Year 0~9
W : Week : A~Z : 1~26 week;
a~z : 27~52 week;
z represents 52 and 53 week
X : A~Z : Internal Code

Part Number	Package	Identification Code
74LVC1G07FS3-7	X2-DFN0808-4	WN
74LVC1G07FW5-7	X1-DFN1010-6 (Type B)	V6
74LVC1G07FW4-7	X2-DFN1010-6	UN
74LVC1G07FX4-7	X2-DFN1409-6	ME
74LVC1G07FZ4-7	X2-DFN1410-6	UN

Package Outline Dimensions

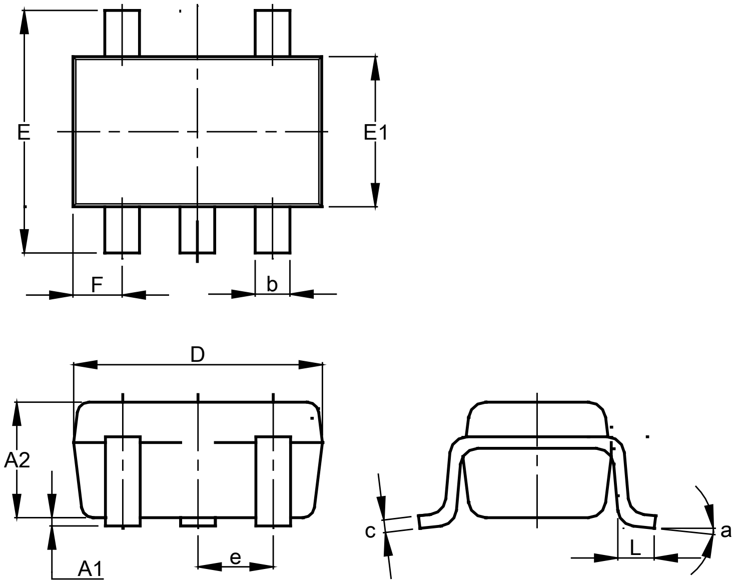
Please see http://www.diodes.com/package-outlines.html for the latest version.

(1) Package Type: 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			

(2) Package Type: SOT353

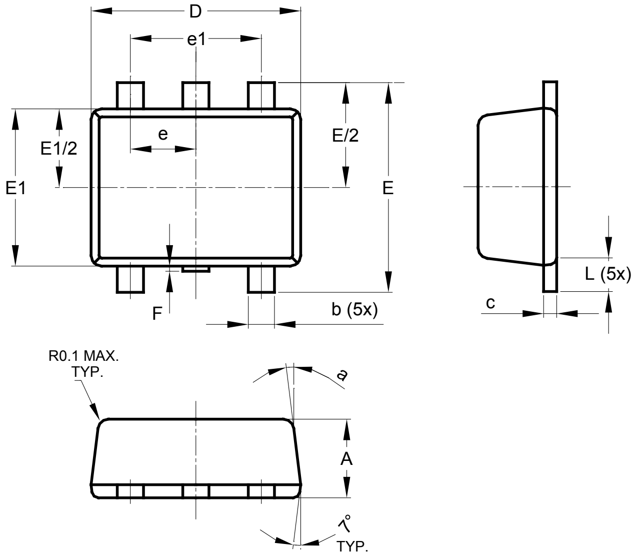


SOT353			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Package Outline Dimensions (continued)

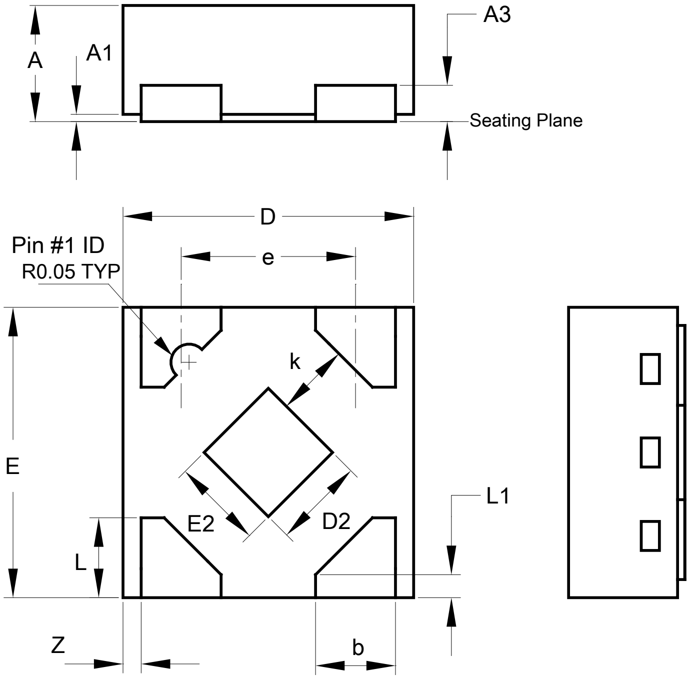
Please see http://www.diodes.com/package-outlines.html for the latest version.

(3) Package Type: 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			

(4) Package Type: X2-DFN0808-4

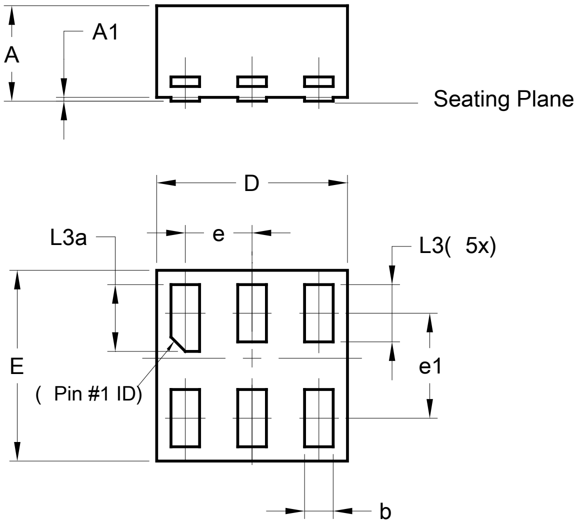


X2-DFN0808-4			
Dim	**Min**	**Max**	**Typ**
A	0.25	0.35	0.30
A1	0	0.04	0.02
A3	-	-	0.13
b	0.17	0.27	0.22
D	0.75	0.85	0.80
D2	0.15	0.35	0.25
E	0.75	0.85	0.80
E2	0.15	0.35	0.25
e	-	-	0.48
k	0.20	-	-
L	0.17	0.27	0.22
L1	0.02	0.12	0.07
z	-	-	0.05
All Dimensions in mm			

Package Outline Dimensions (continued)

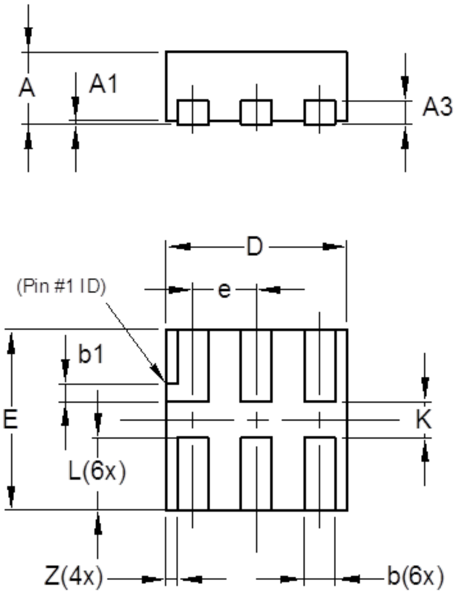
Please see http://www.diodes.com/package-outlines.html for the latest version.

(5) Package Type: 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			

(6) Package Type: X2-DFN1010-6

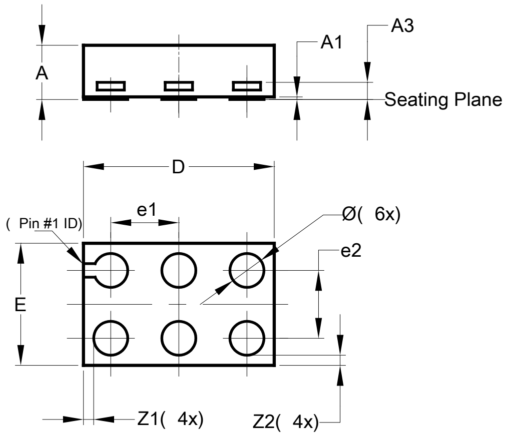


X2-DFN1010-6			
Dim	**Min**	**Max**	**Typ**
A	—	0.40	0.39
A1	0.00	0.05	0.02
A3	—	—	0.13
b	0.14	0.20	0.17
b1	0.05	0.15	0.10
D	0.95	1.05	1.00
E	0.95	1.05	1.00
e	—	—	0.35
L	0.35	0.45	0.40
K	0.15	—	—
Z	—	—	0.065
All Dimensions in mm			

Package Outline Dimensions (continued)

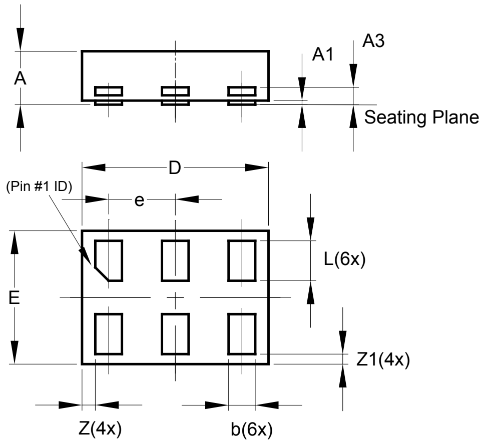
Please see http://www.diodes.com/package-outlines.html for the latest version.

(7) Package Type: X2-DFN1409-6



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			

(8) Package Type: X2-DFN1410-6

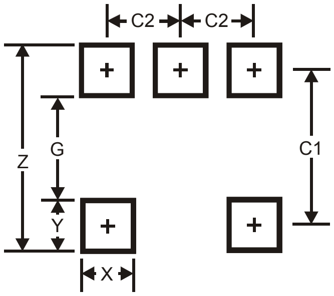


X2-DFN1410-6			
Dim	**Min**	**Max**	**Typ**
A	—	0.40	0.39
A1	0.00	0.05	0.02
A3	—	—	0.13
b	0.15	0.25	0.20
D	1.35	1.45	1.40
E	0.95	1.05	1.00
e	—	—	0.50
L	0.25	0.35	0.30
Z	—	—	0.10
Z1	0.045	0.105	0.075
All Dimensions in mm			

Suggested Pad Layout

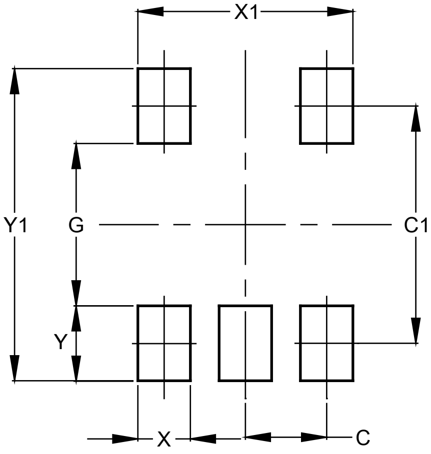
Please see http://www.diodes.com/package-outlines.html for the latest version.

(1) Package Type: SOT25



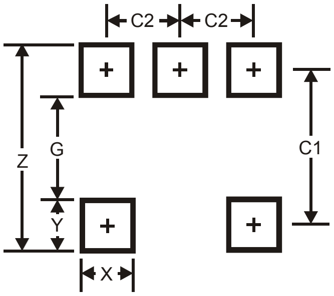
Dimensions	Value
Z	3.20
G	1.60
X	0.55
Y	0.80
C1	2.40
C2	0.95

(2) Package Type: 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

(3) Package Type: SOT553

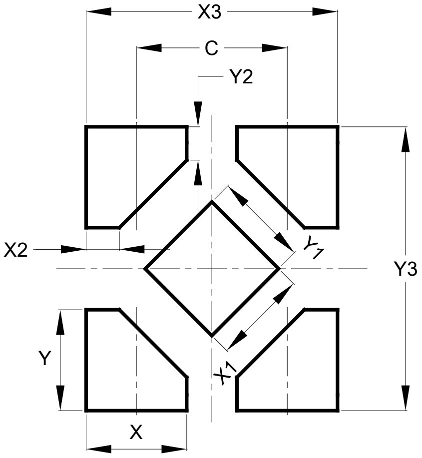


Dimensions	Value
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5

Suggested Pad Layout (continued)

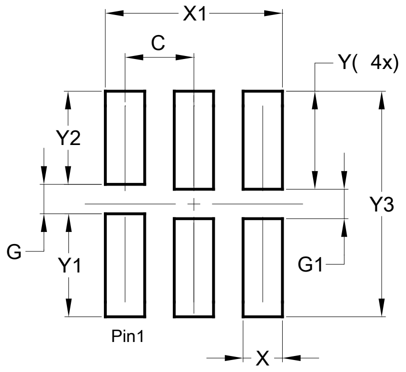
Please see http://www.diodes.com/package-outlines.html for the latest version.

(4) Package Type: X2-DFN0808-4



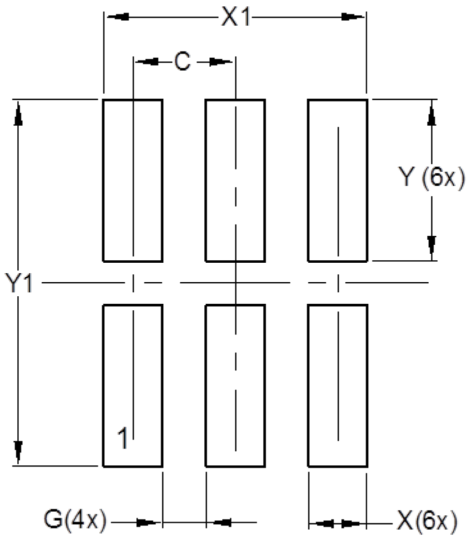
Dimensions	Value
C	0.480
X	0.320
X1	0.300
X2	0.106
X3	0.800
Y	0.320
Y1	0.300
Y2	0.106
Y3	0.900

(5) Package Type: 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

(6) Package Type: X2-DFN1010-6

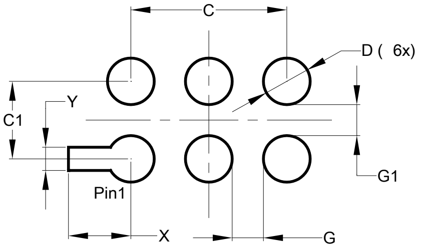


Dimensions	Value (in mm)
C	0.350
G	0.150
X	0.200
X1	0.900
Y	0.550
Y1	1.250

Suggested Pad Layout (continued)

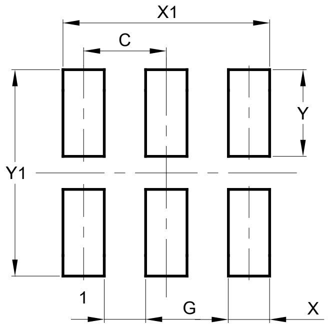
Please see http://www.diodes.com/package-outlines.html for the latest version.

(7) Package Type: X2-DFN1409-6



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

(8) Package Type: 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

Mechanical Data

SOT25

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Mate Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.016 grams (Approximate)

SOT353

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Mate Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.006 grams (Approximate)

SOT553

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Mate Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.003 grams (Approximate)

X2-DFN0808-4

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - NiPdAu Nickel Palladium Gold, Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.001 grams (Approximate)

X1-DFN1010-6 (Type B)

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - NiPdAu Nickel Palladium Gold, Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.001 grams (Approximate)

X2-DFN1010-6

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - NiPdAu Nickel Palladium Gold, Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.001 grams (Approximate)

X2-DFN1409-6

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - NiPdAu Nickel Palladium Gold, Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.002 grams (Approximate)

X2-DFN1410-6

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - NiPdAu Nickel Palladium Gold, Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.002 grams (Approximate)

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