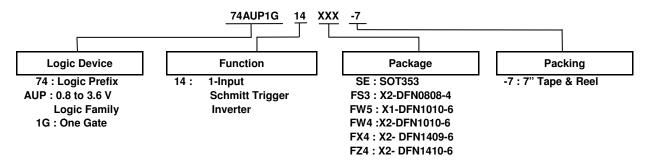


Ordering Information



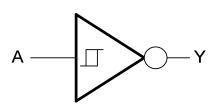
Device	Package	Package	Package	7" Tape	and Reel
Device	Code	(Notes 4 & 5)	Size	Quantity	Part Number Suffix
74AUP1G14SE-7	SE	SOT353	2.0mm x 2.0mm x 1.1mm 0.65 mm lead pitch	3,000/Tape & Reel	-7
74AUP1G14FS3-7	FS3	X2-DFN0808-4	0.8mm x 0.8 mm x 0.35 mm 0.5 mm pad pitch (diamond)	5,000/Tape & Reel	-7
74AUP1G14FW5-7	FW5	X1-DFN1010-6	1.0mm x 1.0mm x 0.5mm 0.35 mm pad pitch	5,000/Tape & Reel	-7
74AUP1G14FW4-7	FW4	X2-DFN1010-6	1.0mm x 1.0mm x 0.4mm 0.35 mm pad pitch	5,000/Tape & Reel	-7
74AUP1G14FX4-7	FX4	X2-DFN1409-6 Chip Scale Alternative	1.4mm x 0.9mm x 0.4mm 0.5 mm pad pitch	5,000/Tape & Reel	-7
74AUP1G14FZ4-7	P1G14FZ4-7 FZ4 X2-DFN1410-6 1.4mm x 1.0mm x 0.4mm 0.5 mm pad pitch		5,000/Tape & Reel	-7	

Notes: 4. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.

Pin Descriptions

Pin Name	Function
NC	No Connection
Α	Data Input
GND	Ground
Υ	Data Output
V _{CC}	Supply Voltage

Logic Diagram



Function Table

Inputs	Output
Α	Υ
Н	L
L	Н

^{5.} The taping orientation is located on our website at http://www.diodes.com/datasheets/ap02007.pdf.



Absolute Maximum Ratings (Notes 6 & 7) (@T_A = +25 °C, unless otherwise specified.)

Symbol	Parameter	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 +4.6	V
VI	Input Voltage Range	-0.5 to +4.6	V
Vo	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 (V _O < 0)	50	mA
lo	Continuous Output Current (V _O = 0 to V _{CC})	±20	mA
Icc	Continuous Current Through V _{CC}	50	mA
I _{GND}	Continuous Current Through GND	-50	mA
TJ	Operating Junction Temperature	-40 to +150	℃
T _{STG}	Storage Temperature	-65 to +150	℃

Notes:

Recommended Operating Conditions (Note 8) (@TA = +25 °C, unless otherwise specified.)

Symbol		Parameter	Min	Max	Unit
V _{CC}	Operating Voltage		0.8	3.6	V
VI	Input Voltage		0	3.6	V
Vo	Output Voltage		0	V _{CC}	V
		$V_{CC} = 0.8V$	_	-20	μΑ
		V _{CC} = 1.1V	_	-1.1	
la	High Lavel Output Current	V _{CC} = 1.4V	_	-1.7	
Іон	High-Level Output Current	V _{CC} = 1.65V	_	-1.9	mA
		$V_{CC} = 2.3V$	_	-3.1	
		V _{CC} = 3.0V	_	-4	
		V _{CC} = 0.8V	_	20	μΑ
		V _{CC} = 1.1V	_	1.1	
	Low-Level Output Current	V _{CC} = 1.4V	_	1.7	
l _{OL}	Low-Level Output Current	V _{CC} = 1.65V	_	1.9	mA
		V _{CC} = 2.3V	_	3.1	
		$V_{CC} = 3.0V$	_	4	
T _A	Operating Free-Air Temperatur	e	-40	125	℃

Note: 8. Unused inputs should be held at V_{CC} or Ground.

^{6.} 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.

^{7.} 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.



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

Compleal	Davamatav	Took Conditions	v	T _A = -	+25℃	T _A = -40°0	C to +85℃	Unit	
Symbol	Parameter	Test Conditions	V _{CC}	Min	Max	Min	Max		
			0.8V	0.4	0.65	0.4	0.65		
			1.1V	0.53	0.9	0.53	0.9		
\/_	Positive-Going Input Threshold		1.4V	0.74	1.11	0.74	1.11	V	
V_{T+}	Voltage	_	1.65V	0.91	1.29	0.91	1.29		
			2.3V	1.37	1.77	1.37	1.77		
			3.0V	1.61	2.32	1.61	2.32		
			0.8V	0.15	0.4	0.15	0.4		
	Negative-Going		1.1V	0.26	0.65	0.26	0.65		
V_{T-}	Input Threshold	_	1.4V	0.39	0.75	0.39	0.75	V	
	Voltage		1.65V	0.47	0.84	0.47	0.84		
			2.3V	0.69	1.04	0.69	1.04		
			3.0V	0.88	1.24	0.88	1.24		
			0.8V	0.07	0.5	0.07	0.5		
			1.1V	0.08	0.46	0.08	0.46		
ΔV_T	Hysteresis	_	1.4V	0.18	0.56	0.18	0.56	V	
	(V _{T+} - V _{T-)}		1.65V	0.27	0.66	0.27	0.66		
			2.3V	0.53	0.92	0.53	0.92	-	
		L 00 A	3.0V	0.79	1.31	0.79	1.31		
		I _{OH} = -20μA	0.8V to 3.6 V	V _{CC} - 0.1	_	V _{CC} - 0.1	_		
		I _{OH} = -1.1mA	1.1V	0.75 x V _{CC}	_	0.7 x V _{CC}	_		
		I _{OH} = -1.7mA	1.4V	1.11	_	1.03	_		
V _{OH}	High-Level Output	I _{OH} = -1.9mA	1.65V	1.32	_	1.30	_	V	
- 011	Voltage	$I_{OH} = -2.3 \text{mA}$	2.3V	2.05	_	1.97	_		
		$I_{OH} = -3.1 \text{mA}$		1.9	_	1.85	_		
		$I_{OH} = -2.7 \text{mA}$	3V	2.72	_	2.67	_		
		$I_{OH} = -4mA$	3 V	2.6	_	2.55	_		
		$I_{OL} = 20\mu A$	0.8V to 3.6V	_	0.1	_	0.1		
		I _{OL} = 1.1mA	1.1V	_	0.3 x V _{CC}	_	0.3 x V _{CC}		
		I _{OL} = 1.7mA	1.4V	_	0.31	_	0.37		
	Low-Level Output	I _{OL} = 1.9mA	1.65V		0.31	_	0.35	1 ,,	
V _{OL}	Voltage	I _{OL} = 2.3mA			0.31	_	0.33	V	
		I _{OL} = 3.1mA	2.3V	_	0.44	_	0.45		
		I _{OL} = 2.7mA		_	0.31	_	0.33	1	
		I _{OL} = 4 mA	3V	_	0.44	_	0.45		
lı	Input Current	V _I = GND to 3.6V	0V to 3.6V	_	± 0.1	_	± 0.5	μA	
loff	Power Down Leakage Current	V_1 or $V_0 = 0V$ to 3.6V	0	_	± 0.2	_	0.6	μΑ	
Δl _{OFF}	Delta Power Down Leakage Current	V_I or $V_O = 0V$ to 3.6V	0V to 0.2V	_	± 0.2	_	0.6	μΑ	
Icc	Supply Current	$V_I = GND \text{ or } V_{CC}, I_O = 0$	0.8V to 3.6V		0.5	_	0.9	μΑ	
ΔI _{CC}	Additional Supply Current	Input at V _{CC} -0.6V	3.3V	_	40	_	50	μA	



Electrical Characteristics (continued) ($@T_A = +25$ °C, unless otherwise specified.)

	_			T _Δ = -40 °C	to +125℃	Unit		
Symbol	Parameter	Test Conditions	V _{CC}	Min	Max			
			0.8V	0.4	0.65			
			1.1V	0.53	0.9			
.,	Positive-Going		1.4V	0.74	1.11	.,		
V_{T+}	Input Threshold Voltage	_	1.65V	0.91	1.29	V		
	Voltago		2.3V	1.37	1.77			
			3.0V	1.61	2.32			
			V8.0	0.15	0.4			
	Negative-Going		1.1V	0.26	0.65			
V_{T-}	Input Threshold		1.4V	0.39	0.75	V		
	Voltage	_	1.65V	0.47	0.84	V		
			2.3V	0.69	1.04			
			3.0V	0.88	1.24			
			V8.0	0.07	0.5			
			1.1V	0.08	0.46			
ΔV_{T}	Hysteresis	_	1.4V	0.18	0.56	V		
Δ ۷	$(V_{T+} - V_{T-})$		1.65V	0.27	0.66	v		
			2.3V	0.53	0.92			
			3.0V	0.79	1.31			
		$I_{OH} = -20\mu A$	0.8V to 3.6V	V _{CC} – 0.11	_			
	l l	$I_{OH} = -1.1 \text{mA}$	1.1V	0.6 x V _{CC}	_			
		$I_{OH} = -1.7mA$	1.4V	0.93	_			
V	High-Level	I _{OH} = -1.9mA	1.65V	1.17	_	V		
V _{OH}	Output Voltage	I _{OH} = -2.3mA	0.01/	1.77	_	V		
		I _{OH} = -3.1mA	2.3V	1.67	_			
		I _{OH} = -2.7mA		2.40	_			
		I _{OH} = -4mA	3V	2.30	_			
		I _{OL} = 20μA	0.8V to 3.6V	_	0.11			
		I _{OL} = 1.1mA	1.1V	_	0.33 x V _{CC}			
		$I_{OL} = 1.7 \text{mA}$	1.4V		0.41			
	Low-Level Output		1.65V		0.39			
V_{OL}	Voltage		1.00 V	_	0.36	V		
	Conago	I _{OL} = 2.3mA	2.3V	_				
		I _{OL} = 3.1mA			0.50			
		I _{OL} = 2.7mA	3V		0.36			
		$I_{OL} = 4mA$		_	0.50			
l _l	Input Current	$V_I = GND \text{ to } 3.6V$	0V to 3.6V		± 0.75	μΑ		
loff	Power Down Leakage Current	V_I or $V_O = 0V$ to 3.6V	0	_	± 3.5	μΑ		
Δl _{OFF}	Delta Power Down Leakage Current	V_I or $V_O = 0V$ to 3.6V	0V to 0.2V	_	± 2.5	μА		
Icc	Supply Current	$V_I = GND \text{ or } V_{CC}, I_O = 0$	0.8V to 3.6V		3.0	μΑ		
Δl _{CC}	Additional Supply Current	Input at V _{CC} -0.6V	3.3V		75	μΑ		



Switching Characteristics

C_L=5pF, See Figure 1

Parameter	From Input	To Output	V _{CC}	7	T _A = +25 °C			T _A = -40 °C to +85 °C		T _A = -40 °C to +125 °C	
Faranietei			V CC	Min	Тур	Max	Min	Max	Min	Max	Unit
			V8.0	_	19.9	_	_	_	_	_	
			1.2V ± 0.1V	2.0	8.5	12.0	2.0	13.1	2.0	13.1	
	A or B	V	1.5V ± 0.1V	1.5	4.3	6.6	1.5	7.1	1.5	7.4	20
t _{pd}	AUID	Y	1.8V ± 0.15V	1.2	3.7	5.4	1.2	6.0	1.2	6.2	ns
			2.5V ± 0.2V	1.0	3.0	4.1	1.0	4.5	1.0	4.7	
			$3.3V \pm 0.3V$	0.8	2.8	3.6	0.8	3.9	0.8	4.0	

C₁=10pF. See Figure 1

Parameter	From Input	To Output	V	1	Γ _A = +25 °	C	T _A = -40 °C to +85 °C		T _A = -40 °C to +125 °C		Unit
rarameter			Vcc	Min	Тур	Max	Min	Max	Min	Max	Ollit
			V8.0	_	23.4	_	_	_	_	_	
			1.2V ± 0.1V	2.5	8.7	13.7	2.5	13.8	2.5	13.9	ns
	Λ or D	Y	1.5V ± 0.1V	2.0	5.0	7.7	2.0	8.2	2.0	8.6	
t _{pd}	A or B		1.8V ± 0.15V	1.7	4.2	6.2	1.7	6.7	1.7	7.1	
			2.5V ± 0.2V	1.4	3.6	4.8	1.4	5.2	1.4	5.5	
			3.3V ± 0.3V	1.2	3.3	4.3	1.2	4.5	1.2	4.7	

C_L=15pF, See Figure 1

Parameter	From	To Output	v	1	Γ _A = +25℃	С	T _A = -40 °C to +85 °C		T _A = -40 °C to +125 °C		Unit
	Input		V _{CC}	Min	Тур	Max	Min	Max	Min	Max	Ollit
		V8.0	_	26.9	_	_	_	_	_		
			1.2V ± 0.1V	2.9	9.2	15.3	2.9	17	2.9	17	- ns
	1 or D	V	1.5V ± 0.1V	2.3	5.5	8.6	2.3	9.4	2.3	9.8	
t _{pd} A or B	AUID	Y	1.8V ± 0.15V	2.1	4.7	7	2.1	7.7	2.1	8.1	
			2.5V ± 0.2V	1.7	4	5.5	1.7	5.9	1.7	6.2	
			$3.3V \pm 0.3V$	1.5	3.8	4.8	1.5	5.2	1.5	5.4	

C_L=30pF, See Figure 1

Parameter	From	To Output	V	1	Γ _A = +25°	C	T _A = -40 °C to +85 °C		T _A = -40 °C to +125 °C		Unit
rarameter	Input		Vcc	Min	Тур	Max	Min	Max	Min	Max	Ollit
			V8.0	_	37.3	_	_	_	_	_	
		or B Y	1.2V ± 0.1V	3.9	11.2	20.7	3.9	22.5	3.9	22.5	- ns
	Λ α « D		1.5V ± 0.1V	3.2	7.1	11.2	3.2	12.3	3.2	12.9	
t _{pd}	AOID		1.8V ± 0.15V	2.9	6.0	9.1	2.9	10.0	2.9	10.6	
			2.5V ± 0.2V	2.5	5.2	6.9	2.5	7.5	2.5	7.9	
			$3.3V \pm 0.3V$	2.3	4.8	6.1	2.3	7.1	2.3	7.4	



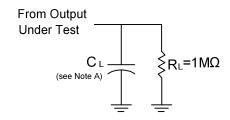
Operating and Package Characteristics (@T_A = +25 ℃, unless otherwise specified.)

	Parameter	Test Conditio	ns	Vcc	Тур	Unit
				0.8V	6.5	
				1.2V ± 0.1V	6.3	
	Power Dissipation	f = 1MH	lz	1.5V ± 0.1V	6.3	
$C_{\sf pd}$	Capacitance	No Loa	d	1.8V ± 0.15V	6.2	pF
				2.5V ± 0.2V	6.2	
				3.3V ± 0.3V	6.1	
Ci	Input Capacitance	V _i = V _{CC} or	GND	0V or 3.3V	1.5	pF
		SOT353	(1)-4-0)	_	371	
		X2-DFN0808-4		_	430	
0	Thermal Resistance	X1-DFN1010-6		_	435	
θ_{JA}	Junction-to-Ambient	X2-DFN1010-6	(Note 9)	_	445	- °C/VV
		X2-DFN1409-6		_	470	
		X2-DFN1410-6		_	460	
		SOT353		_	143	
		X2-DFN0808-4		_	240	
0	Thermal Resistance	X1-DFN1010-6	(NI-+- O)	_	250	00.444
⊎JC	θ _{JC} Junction-to-Case	X2-DFN1010-6	(Note 9)	_	250	~C/W
		X2-DFN1409-6		_	275	
		X2-DFN1410-6		_	265	

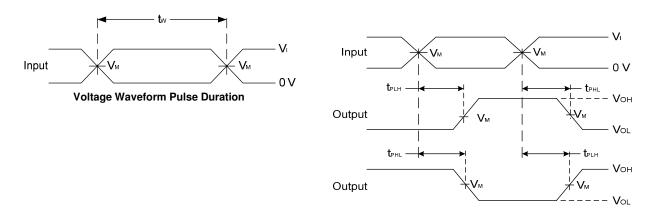
Note: 9. Test condition for each of the six package types: Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.



Parameter Measurement Information



Vcc	Inputs		V	
VCC	VI	t _r /t _f	V _M	CL
V8.0	V _{CC}	≤3ns	V _{CC} /2	5, 10, 15, 30pF
1.2V±0.1V	V _{CC}	≤3ns	V _{CC} /2	5, 10, 15, 30pF
1.5V±0.1V	V _{CC}	≤3ns	V _{CC} /2	5, 10, 15, 30pF
1.8V ±0.15V	V _{CC}	≤3ns	V _{CC} /2	5, 10, 15, 30pF
2.5V±0.2V	V _{CC}	≤3ns	V _{CC} /2	5, 10, 15, 30pF
3.3V±0.3V	V _{CC}	≤3ns	V _{CC} /2	5, 10, 15, 30pF



Voltage Waveform Propagation Delay Times Inverting and Non Inverting Outputs

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_{PLH} and t_{PHL} are the same as $t_{\text{PD.}}$



Marking Information

(1) SOT353

(Top View)

4 XX Y WX2 3

XX: Identification code Y: Year 0~9

<u>W</u>: 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
74AUP1G14SE-7	SOT353	XS

(2) X2-DFN0808-4, X1-DFN1010-6, X2-DFN1010-6 X2-DFN1409-6 and X2-DFN1410-6

(Top View)

XX $\underline{Y}\underline{W}\underline{X}$ XX: Identification Code

 \underline{Y} : Year : 0~9

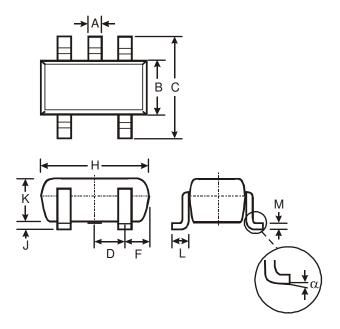
<u>W</u>: Week: A~Z: 1~26 week; a~z: 27~52 week; z represents 52 and 53 week

 \underline{X} : A~Z: Internal code

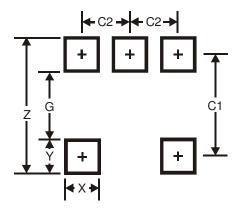
Part Number	Package	Identification Code
74AUP1G14FS3-7	X2-DFN0808-4	YS
74AUP1G14FW5-7	X1-DFN1010-6	Q9
74AUP1G14FW4-7	X2-DFN1010-6	XS
74AUP1G14FX4-7	X2-DFN1409-6	НН
74AUP1G14FZ4-7	X2-DFN1410-6	XS



SOT353 Package Outline Dimensions and Suggested Pad Layout



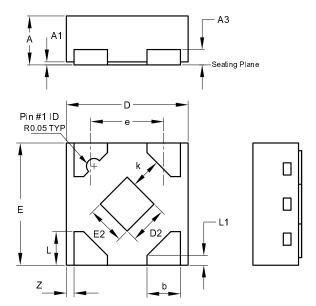
SOT353				
Dim	Min	Max	Тур	
Α	0.10	0.30	0.25	
В	1.15	1.35	1.30	
С	2.00	2.20	2.10	
D		0.65 Typ)	
F	0.40	0.45	0.425	
Н	1.80	2.20	2.15	
J	0	0.10	0.05	
K	0.90	1.00	1.00	
L	0.25	0.40	0.30	
М	0.10	0.22	0.11	
α	0°	8°	-	
All Dimensions in mm				



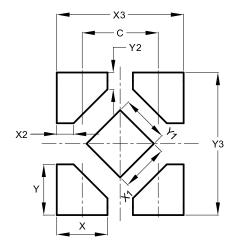
Dimensions	Value (in mm)
Z	2.5
G	1.3
Х	0.42
Υ	0.6
C1	1.9
C2	0.65



X2-DFN0808-4 Package Outline Dimensions and Suggested Pad Layout



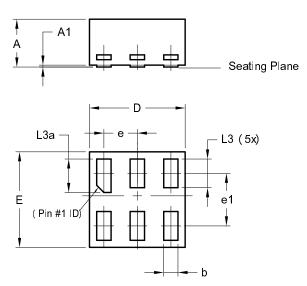
	X2-DFN0808-4				
Dim	Min	Max	Тур		
Α	0.25	0.35	0.30		
A1	0	0.04	0.02		
A3	-	-	0.13		
b	0.17	0.27	0.22		
D	0.75	0.85	0.80		
D2	0.15	0.35	0.25		
Е	0.75	0.85	0.80		
E2	0.15	0.35	0.25		
е	-	-	0.48		
K	0.20	-	-		
L	0.17	0.27	0.22		
L1	0.02	0.12	0.07		
Z	-	-	0.05		
All Dimensions in mm					



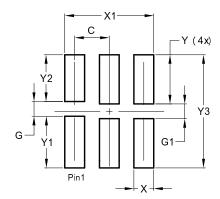
Dimensions	Value
С	0.480
Х	0.320
X1	0.300
X2	0.106
Х3	0.800
Υ	0.320
Y1	0.300
Y2	0.106
Y3	0.900



X1-DFN1010-6 (Type B) Package Outline Dimensions and Suggested Pad Layout



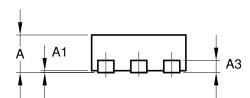
	X1-DFN1010-6 (Type B)				
Dim					
Α	-	0.50	0.39		
A1	-	0.04	-		
b	0.12	0.20	0.15		
D	0.95	1.050	1.00		
Е	0.95	1.050	1.00		
е	0.35 BSC				
e1		0.55 BSC			
L3	0.27	0.30	0.30		
L3a	0.32	0.40	0.35		
All	All Dimensions in mm				

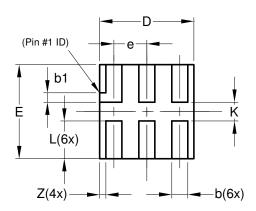


Dimensions	Value (in mm)	
С	0.350	
G	0.150	
G1	0.150	
Х	0.200	
X1	0.900	
Υ	0.500	
Y1	0.525	
Y2	0.475	
Y3	1.150	

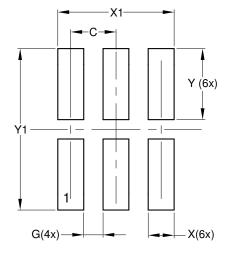


X2-DFN1010-6 Package Outline Dimensions and Suggested Pad Layout





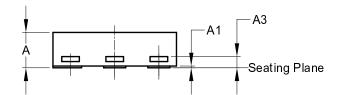
X2-DFN1010-6				
Dim	Min	Max	Тур	
Α	_	0.40	0.39	
A1	0.00	0.05	0.02	
A3	_	_	0.13	
b	0.14	0.20	0.17	
b1	0.05	0.15	0.10	
D	0.95	1.05	1.00	
E	0.95	1.05	1.00	
е	_	_	0.35	
L	0.35	0.45	0.40	
K	0.15	_	_	
Z	_	_	0.065	
All Dimensions in mm				

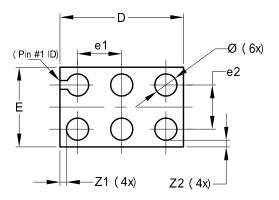


Dimensions	Value (in mm)	
С	0.350	
G	0.150	
Х	0.200	
X1	0.900	
Y	0.550	
V1	1 250	

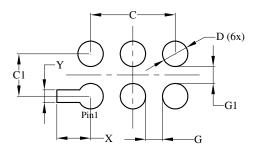


X2-DFN1409-6 Package Outline Dimensions and Suggested Pad Layout





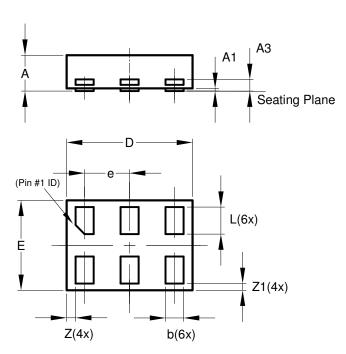
	X2-DFN1409-6			
Dim	Min	Max	Тур	
Α	-	0.40	0.39	
A1	0	0.05	0.02	
A 3	-	1	0.13	
Ø	0.20	0.30	0.25	
D	1.35	1.45	1.40	
Е	0.85	0.95	0.90	
e1	-	-	0.50	
e2	-	-	0.50	
Z1	-	-	0.075	
Z 2	-	-	0.075	
All Dimensions in mm				



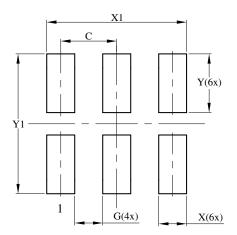
Dimensions	Value (in mm)
С	1.000
C1	0.500
D	0.300
G	0.200
G1	0.200
X	0.400
Υ	0.150



X2-DFN1410-6 Package Outline Dimensions and Suggested Pad Layout



X2-DFN1410-6				
Dim	Min	Max	Тур	
Α	_	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	
Е	0.95	1.05	1.00	
е	_	_	0.50	
L	0.25	0.35	0.30	
Z			0.10	
Z 1	0.045	0.105	0.075	
All Dimensions in mm				



Dimensions	Value (in mm)
C	0.500
G	0.250
Х	0.250
X1	1.250
Υ	0.525
Y1	1.250



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