



74AUP2G34
DUAL BUFFERS

Description

The Advanced Ultra Low Power (AUP) CMOS logic family is designed for low power and extended battery life in portable applications.

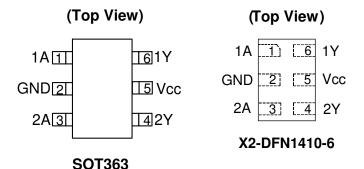
The 74AUP2G34 is composed of two buffers with standard push-pull outputs designed for operation over a power supply range of 0.8V to 3.6V. The device is fully specified for partial power down applications using I_{OFF} . The I_{OFF} circuitry disables the output preventing damaging current backflow when the device is powered down. The gates perform the positive Boolean function:

Y = A

Features

- Advanced Ultra Low Power (AUP) CMOS
- Supply Voltage Range from 0.8V to 3.6V
- ±4mA Output Drive at 3.0V
- Low Static Power Consumption
 - I_{CC} < 0.9μA
- Low Dynamic Power Consumption
 - C_{PD} = 6pF Typical at 3.6V
- Schmitt Trigger Action at All Inputs Make the Circuit Tolerant for Slower Input Rise and Fall Time. The Hysteresis is Typically 250mV at V_{CC} = 3.0V
- I_{OFF} Supports Partial-Power-Down Mode Operation
- ESD Protection per JESD 22
 - Exceeds 200-V Machine Model (A115)
 - Exceeds 2000-V Human Body Model (A114)
 - Exceeds 1000-V Charged Device Model (C101)
- Latch-Up Exceeds 100mA per JESD 78, Class I
- Leadless packages per JESD30E
 - DFN1410 denoted as X2-DFN1410-6
 - DFN1010 denoted as X2-DFN1010-6
 - DFN0910 denoted as X2-DFN0910-6
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

Pin Assignments





Applications

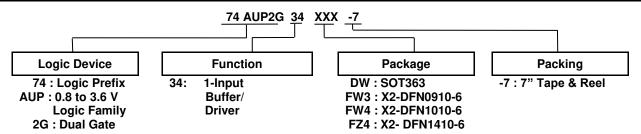
- Suited for Battery and Low Power Needs
- · Wide array of products such as:
 - PCs, Networking, Notebooks, Netbooks, PDAs
 - Tablet Computers, E-readers
 - Computer Peripherals, Hard Drives, CD/DVD ROM
 - TV, DVD, DVR, Set-Top Box
 - Cell Phones, Personal Navigation / GPS
 - MP3 Players ,Cameras, Video 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



Part Number	Package	Package	Package	7" Tape	and Reel
Part Number	Code	(Notes 4 & 5)	Size	Quantity	Part Number Suffix
74AUP2G34DW-7	DW	SOT363	2.0mm X 2.0mm X 1.1mm 0.65 mm lead pitch	3000/Tape & Reel	-7
74AUP2G34FW3-7	FW3	X2-DFN0910-6	0.9mm X 1.0mm X 0.35mm 0.35 mm pad pitch	5000/Tape & Reel	-7
74AUP2G34FW4-7	FW4	X2-DFN1010-6	1.0mm X 1.0mm X 0.4mm 0.35 mm pad pitch	5000/Tape & Reel	-7
74AUP2G34FZ4-7	FZ4	X2-DFN1410-6	1.4mm X 1.0mm X 0.4mm 0.5 mm pad pitch	5000/Tape & Reel	-7

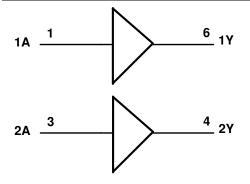
Notes: 4. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.

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

Pin Descriptions

Pin Name	Pin No.	Function
1A	1	Data Input
GND	2	Ground
2A	3	Data Input
2Y	4	Data Output
Vcc	5	Supply Voltage
1Y	6	Data Output

Logic Diagram



Function Table

Inputs	Outputs
Α	Υ
Н	Н
L	L



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
ESD MM	Machine Model ESD Protection	200	V
V _{CC}	Supply Voltage Range	-0.5 to +4.6	V
VI	Input Voltage Range	-0.5 to +4.6	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 (V _O < 0)	-50	mA
Io	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	°C
T _{STG}	Storage Temperature	-65 to +150	°C

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
V_{I}	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	
	High Lovel Output Current	$V_{CC} = 1.4V$	_	-1.7	
ЮН	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	
la.	$V_{I} = I_{I} \ \ \ \ \ \ \ \ $	_	1.7		
IOL	Low-Level Output Current	$V_{CC} = 1.65V$	_	1.9	mA
		$V_{CC} = 2.3V$	_	3.1	
		$V_{CC} = 3.0V$	_	4	
Δt/ΔV	Input Transition Rise or Fall Rate	V _{CC} = 0.8V to 3.6V		200	ns/V
T _A	Operating Free-Air Temperature	1	-40	+125	°C

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.)

Symbol	Parameter	Test Conditions	V	T _A = -	+25°C	T _A = -40	to +85°C	Unit
Symbol	Parameter	rest Conditions	Vcc	Min	Max	Min	Max	Unit
		_	0.8V to 1.65V	0.80 X V _{CC}	_	0.80 X V _{CC}	_	
V _{IH}	High-Level Input	_	1.65V to 1.95V	0.65 X V _{CC}	_	0.65 X V _{CC}	_	V
VIH	Voltage	_	2.3V to 2.7V	1.6	_	1.6	_	v
		_	3.0V to 3.6V	2.0	_	2.0	_	
		_	0.8V to 1.65V	_	0.30 X V _{CC}	_	0.30 X V _{CC}	
VIL	Low-Level Input	_	1.65V to 1.95V	_	0.35 X V _{CC}	_	0.35 X V _{CC}	V
V IL	Voltage	_	2.3V to 2.7V	_	0.7	_	0.7	·
		_	3.0V to 3.6V	_	0.9	_	0.9	
		$I_{OH} = -20\mu A$	0.8V to 3.6V	V _{CC} – 0.1	_	V _{CC} – 0.1	_	
		$I_{OH} = -1.1 \text{mA}$	1.1V	0.75 X V _{CC}	_	0.7 X V _{CC}	_	
		$I_{OH} = -1.7mA$	1.4V	1.11	_	1.03	_	
V	High-Level	I _{OH} = -1.9mA	1.65V	1.32	_	1.3	_	V
V _{OH}	Output Voltage	I _{OH} = -2.3mA	0.01/	2.05	_	1.97	_	V
		I _{OH} = -3.1mA	2.3V	1.9	_	1.85	_	
		I _{OH} = -2.7mA	01/	2.72	_	2.67	_	
		I _{OH} = -4mA	3V	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 Input	I _{OL} = 1.9mA	1.65V	_	0.31	_	0.35	V
V _{OL}	Voltage	I _{OL} = 2.3mA	0.01/	_	0.31	_	0.33	V
		I _{OL} = 3.1mA	2.3V	_	0.44	_	0.45	
		I _{OL} = 2.7mA		_	0.31	_	0.33	
		I _{OL} = 4mA	3V	_	0.44	_	0.45	
Ι _Ι	Input Current	A or B Input V _I = GND to 3.6V	0V to 3.6V	_	± 0.1	_	± 0.5	μΑ
l _{OFF}	Power Down Leakage Current	V_I or $V_O = 0V$ to 3.6V	0V	_	± 0.2	_	± 0.6	μΑ
Δl _{OFF}	Delta Power Down Leakage Current	V_1 or $V_0 = 0V$ 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	μА
ΔI _{CC}	Additional Supply Current	One input at V_{CC} –0.6V Other input at V_{CC} or GND	3.3V	_	40	_	50	μΑ



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

Symbol	Parameter	Test Conditions	V	T _A = -40 1	to +125°C	Unit
Syllibol	Parameter	rest Conditions	V _{CC}	Min	Max	Unit
		_	0.8V to 1.65V	0.80 X V _{CC}	_	
V _{IH}	High-Level Input Voltage	_	1.65V to 1.95V	0.70 X V _{CC}	_	V
VIH	Tright-Level input voltage	_	2.3V to 2.7V	1.6	_	
		_	3.0V to 3.6V	2.0	_	
		_	0.8V to 1.65V	_	0.25 X V _{CC}	
VIL	Low-Level Input Voltage	_	1.65V to 1.95V	_	0.30 X V _{CC}	V
V IL	Low Love input voltage	_	2.3V to 2.7V	_	0.7	
		_	3.0V to 3.6V	_	0.9	
		$I_{OH} = -20\mu A$	0.8V to 3.6V	V _{CC} – 0.11	_	
		$I_{OH} = -1.1 \text{mA}$	1.1V	0.6 X V _{CC}	_	
		$I_{OH} = -1.7mA$	1.4V	0.93	_	
.,	High Laval Output Valtage	I _{OH} = -1.9mA	1.65V	1.17	_	.,
V _{OH}	High Level Output Voltage	I _{OH} = -2.3mA	0.01/	1.77	_	V
		I _{OH} = -3.1mA	2.3V	1.67	_	
		$I_{OH} = -2.7 \text{mA}$	01/	2.40	_	
		I _{OH} = -4mA	3V	2.30	_	
		$I_{OL} = 20\mu A$	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	
	Lavel aval land Waltage	I _{OL} = 1.9mA	1.65V	_	0.39	V
V_{OL}	Low-Level Input Voltage	$I_{OL} = 2.3 \text{mA}$	2.3V	_	0.36	V
		I _{OL} = 3.1mA	2.3V	_	0.50	
		$I_{OL} = 2.7 \text{mA}$	01/	_	0.36	
		I _{OL} = 4mA	3V	_	0.50	
Iı	Input Current	A or B Input V _I = GND to 3.6V	0V to 3.6V	_	± 0.75	μA
I _{OFF}	Power Down Leakage Current	V_1 or $V_0 = 0V$ to 3.6V	0V	_	± 1.0	μΑ
Δl _{OFF}	Delta Power Down Leakage Current	V_1 or $V_0 = 0V$ to 3.6V	0V to 0.2V	_	± 2.5	μΑ
Icc	Supply Current	$V_1 = GND \text{ or } V_{CC}, I_O = 0$	0.8V to 3.6V	_	1.4	μΑ
ΔI _{CC}	Additional Supply Current	Input at V _{CC} –0.6V Other input at V _{CC} or GND	3.3V	_	75	μА

Operating and Package Characteristics

 $T_A = +25^{\circ}C$

F	Parameter	Test Conditions	Vcc	Тур	Unit
			0.8V	5.1	
	Power dissipation		1.2V ± 0.1V	5.2	
0		f = 1MHz	1.5V ± 0.1V	5.2	
C_{pd}	capacitance	No Load	1.8V ± 0.15V	5.5	pF
			2.5V ± 0.2V	5.7	
Cpd capacitance No Load 1.8V ± 0.15V 2.5V ± 0.2V 3.3V ± 0.3V	3.3V ± 0.3V	6.0			
Cı	Input Capacitance	V _i = V _{CC} or GND	0V or 3.3V	2.0	pF
Co	Output Capacitance	V _O = V _{CC} or GND	0V	2.0	pF



Switching Characteristics

C_L = 5pF see Figure 1

Parameter	From	TO OUTPUT	V	T _A = +25°C			$T_A = -40 \text{ to } +85^{\circ}\text{C}$		T _A = -40 to +125°C		Unit
Parameter	Input		V _{CC}	Min	Тур	Max	Min	Max	Min	Max	Ullit
			0.8V	_	14.9	_	_	_	_	_	
			1.2V ± 0.1V	2.6	4.7	10.1	2.0	11.1	2.0	12.2	ns
	۸	Y	1.5V ± 0.1V	2.1	3.4	5.7	1.6	6.5	1.6	7.2	
t _{pd}	Α		1.8V ± 0.15V	1.8	2.9	4.5	1.4	5.2	1.4	5.8	
			2.5V ± 0.2V	1.5	2.3	3.5	1.2	4.2	1.2	4.6	
			3.3V ± 0.3V	1.4	2.1	3.2	1.0	3.8	1.0	4.2	

C_L = 10pF see Figure 1

Parameter	From	то	V		T _A = +25°C		$T_A = -40 \text{ to } +85^{\circ}\text{C}$		T _A = -40 to	+125°C	Unit
Input	OUTPUT	V _{CC}	Min	Тур	Max	Min	Max	Min	Max	Ullit	
			V8.0	_	18.4	_	_	_	_	_	
		Y	1.2V ± 0.1V	3.2	5.6	11.8	2.3	12.8	2.3	13.5	1
	۸		1.5V ± 0.1V	2.6	4.1	6.7	1.9	7.7	1.9	8.5]
t _{pd} A	A		1.8V ± 0.15V	2.3	3.4	5.3	1.7	6.2	1.7	6.9	ns
			2.5V ± 0.2V	2.0	2.9	4.2	1.5	5.0	1.5	5.5	
			$3.3V \pm 0.3V$	1.7	2.6	3.8	1.4	4.6	1.4	5.1	

C_L = 15pF see Figure 1

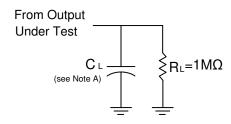
Parameter	From	TO OUTPUT	V		T _A = +25°C			$T_A = -40 \text{ to } +85^{\circ}\text{C}$		T _A = -40 to +125°C	
Input	Input		V _{CC}	Min	Тур	Max	Min	Max	Min	Max	Unit
			V8.0	_	21.9	_	_	_	_	_	
			1.2V ± 0.1V	3.6	6.4	13.8	2.6	15.7	2.6	15.9	
		Y	1.5V ± 0.1V	3.0	4.6	7.6	2.2	8.9	2.2	9.8	
t _{pd}	Α		1.8V ± 0.15V	2.6	3.9	6.0	2.0	7.2	2.0	7.9	ns
			2.5V ± 0.2V	2.3	3.3	4.8	1.8	5.7	1.8	6.3	
			$3.3V \pm 0.3V$	1.8	3.1	4.2	1.6	5.0	1.6	5.5	

 $C_L = 30pF$ see Figure 1

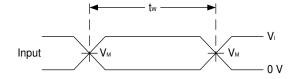
Parameter	From	TO OUTPUT	V		T _A = +25°C			$T_A = -40 \text{ to } +85^{\circ}\text{C}$		T _A = -40 to +125°C	
Input	Input		V _{CC}	Min	Тур	Max	Min	Max	Min	Max	Unit
			V8.0	_	32.1	_	_	_	_	_	
			1.2V ± 0.1V	4.8	8.7	16.3	3.6	18.9	3.6	20.8	
	۸		1.5V ± 0.1V	4.0	6.2	10.3	3.4	12.2	3.4	13.4	
lpd	t _{pd} A	I	1.8V ± 0.15V	3.6	5.2	8.1	3.2	9.8	3.2	10.8	ns
			2.5V ± 0.2V	2.4	4.4	6.4	2.3	7.7	2.3	8.5	1
			$3.3V \pm 0.3V$	2.2	4.2	5.6	2.1	6.5	2.1	7.2	1



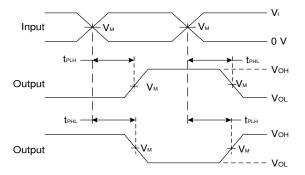
Parameter Measurement Information



	Inputs		V	•
Vcc	VI	t _r /t _f	V _M	C∟
0.8V	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 Pulse Duration



Voltage Waveform Propagation Delay Times Inverting and Non Inverting Outputs

Figure 1 Load Circuit and Voltage Waveforms

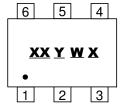
Notes: A. Includes test lead and test apparatus capacitance.

- B. All pulses are supplied at pulse repetition rate ≤ 10 MHz.
- 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) SOT363



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
74AUP2G34DW-7	SOT363	ST

(2) X2-DFN1410-6, X2-DFN1010-6, X2-DFN0910-6

(Top View)

 \underline{XX} : Identification Code \underline{Y} : Year: $0 \sim 9$

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

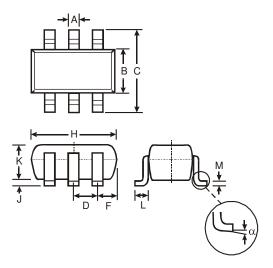
X: A~Z: Internal code

Part Number	Package	Identification Code
74AUP2G34FZ4-7	X2-DFN1410-6	RT
74AUP2G34FW4-7	X2-DFN1010-6	ST
74AUP2G34FW3-7	X2-DFN0910-6	MT

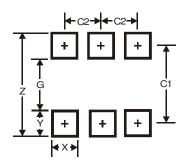


SOT363 Package Outline Dimensions and Suggested Pad Layout

 $Please see AP02002 \ at \ http://www.diodes.com/datasheets/ap02002.pdf \ for \ the \ latest \ version.$



	SOT363				
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		
7	0	0.10	0.05		
Κ	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					

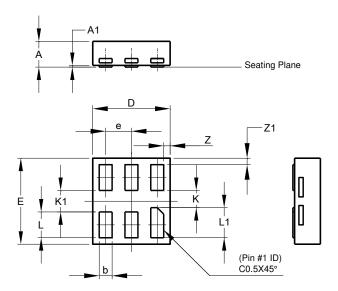


Dimensions	Value (in mm)
Z	2.5
G	1.3
Х	0.42
Υ	0.6
C1	1.9
C2	0.65

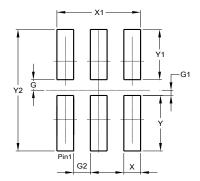


X2-DFN0910-6 Package Outline Dimensions and Suggested Pad Layout

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



X2-DFN0910-6				
Dim	Min	Max	Тур	
Α	-	0.35	0.30	
A1	0	0.03	0.02	
b	0.10	0.20	0.15	
D	0.85	0.95	0.90	
Е	0.95	1.05	1.00	
е	-	-	0.30	
K	0.20	-	-	
K1	0.25	-	-	
L	0.25	0.35	0.30	
L1	0.30	0.40	0.35	
Z	-	-	0.075	
Z1	-	-	0.075	
All Dimensions in mm				

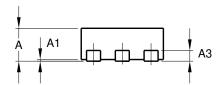


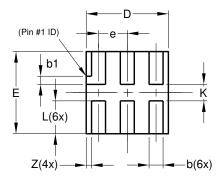
Dimensions	Value (in mm)
G	0.100
G1	0.050
G2	0.150
X	0.150
X1	0.750
Υ	0.525
Y1	0.475
Y2	1.150



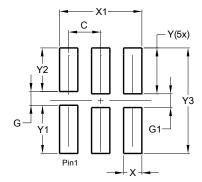
X2-DFN1010-6 Package Outline Dimensions and Suggested Pad Layout

 $Please see AP02002 \ at \ http://www.diodes.com/datasheets/ap02002.pdf \ for \ the \ latest \ version.$





	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		
Е	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					

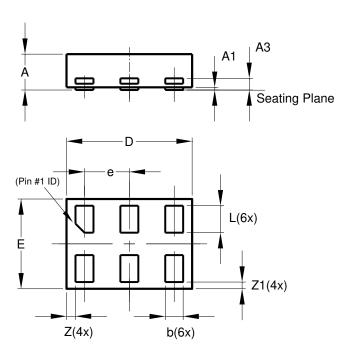


Dimensions	Value (in mm)
С	0.350
G	0.150
G1	0.150
X	0.200
X1	0.900
Υ	0.500
Y1	0.525
Y2	0.475
Y3	1.150

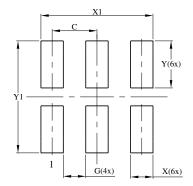


X2-DFN1410-6 Package Outline Dimensions and Suggested Pad Layout

 $Please see AP02002 \ at \ http://www.diodes.com/datasheets/ap02002.pdf \ for \ the \ latest \ version.$



	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	
Z1	0.045	0.105	0.075	
All Dimensions in mm				



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



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