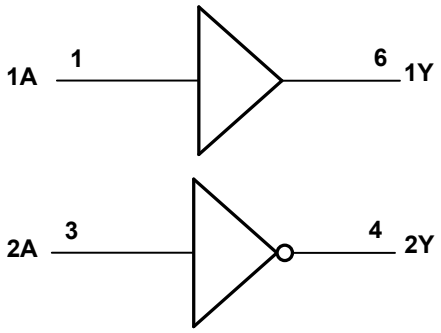
NEW PRODUCT

Pin Descriptions

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

Logic Diagram



Function Tables

Input	Output
1A	**1Y**
H	H
L	L

Input	Output
2A	**2Y**
H	L
L	H

NEW PRODUCT

Absolute Maximum Ratings (Note 4) (@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 4.6	V
V_I	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
I_O	Continuous Output Current (V_O = 0 to V_{CC})	±20	mA
I_{CC}	Continuous Current Through V_{CC}	50	mA
I_{GND}	Continuous Current Through GND	-50	mA
T_J	Operating Junction Temperature	-40 to +150	°C
T_{STG}	Storage Temperature	-65 to +150	°C

Note: 4. 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.

Recommended Operating Conditions (Note 5) (@T_A = +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
V_O	Output Voltage		0	V_{CC}	V
I_{OH}	High-Level Output Current	V_{CC} = 0.8V	—	-20	μA
		V_{CC} = 1.1V	—	-1.1	mA
		V_{CC} = 1.4V	—	-1.7	
		V_{CC} = 1.65V	—	-1.9	
		V_{CC} = 2.3V	—	-3.1	
		V_{CC} = 3.0V	—	-4	
I_{OL}	Low-Level Output Current	V_{CC} = 0.8V	—	20	μA
		V_{CC} = 1.1V	—	1.1	mA
		V_{CC} = 1.4V	—	1.7	
		V_{CC} = 1.65V	—	1.9	
		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	—	-40	+125	°C

Note: 5. Unused inputs should be held at V_{CC} or Ground.

NEW PRODUCT

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

Symbol	Parameter	Test Conditions	V_{CC}	T_A = +25°C		T_A =-40 to +85°C		Unit
				Min	Max	Min	Max	
V_{IH}	High-Level Input Voltage	—	0.8V to 1.65V	0.80 X V_{CC}	—	0.80 X V_{CC}	—	V
		—	1.65V to 1.95V	0.65 X V_{CC}	—	0.65 X V_{CC}	—	
		—	2.3V to 2.7V	1.6	—	1.6	—	
		—	3.0V to 3.6V	2.0	—	2.0	—	
V_{IL}	Low-Level Input Voltage	—	0.8V to 1.65V	—	0.30 X V_{CC}	—	0.30 X V_{CC}	V
		—	1.65V to 1.95V	—	0.35 X V_{CC}	—	0.35 X V_{CC}	
		—	2.3V to 2.7V	—	0.7	—	0.7	
		—	3.0V to 3.6V	—	0.9	—	0.9	
V_{OH}	High-Level Output Voltage	I_{OH} = -20µA	0.8V to 3.6V	V_{CC} – 0.1	—	V_{CC} – 0.1	—	V
		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	—	
		I_{OH} = -1.9mA	1.65V	1.32	—	1.3	—	
		I_{OH} = -2.3mA	2.3V	2.05	—	1.97	—	
		I_{OH} = -3.1mA		1.9	—	1.85	—	
		I_{OH} = -2.7mA	3V	2.72	—	2.67	—	
		I_{OH} = -4mA		2.6	—	2.55	—	
V_{OL}	Low-Level Input Voltage	I_{OL} = 20µA	0.8V to 3.6V	—	0.1	—	0.1	V
		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	
		I_{OL} = 1.9mA	1.65V	—	0.31	—	0.35	
		I_{OL} = 2.3mA	2.3V	—	0.31	—	0.33	
		I_{OL} = 3.1mA		—	0.44	—	0.45	
		I_{OL} = 2.7mA	3V	—	0.31	—	0.33	
		I_{OL} = 4mA		—	0.44	—	0.45	
I_I	Input Current	A or B Input	0V to 3.6V	—	± 0.1	—	± 0.5	µA
I_{OFF}	Power Down	V_I or V_O = 0V to 3.6V	0V	—	± 0.2	—	± 0.6	µA
ΔI_{OFF}	Delta Power	V_I or V_O = 0V to 3.6V	0V to 0.2V	—	± 0.2	—	± 0.6	µA
I_{CC}	Supply Current	V_I = GND or V_{CC}, I_O = 0	0.8V to 3.6V	—	0.5	—	0.9	µA
ΔI_{CC}	Additional Supply	One input at V_{CC} –0.6V Other	3.3V	—	40	—	50	µA

NEW PRODUCT

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

Symbol	Parameter	Test Conditions	V_{CC}	T_A = -40 to 125°C		Unit
				Min	Max	
V_{IH}	High-Level Input Voltage	—	0.8V to 1.65V	0.80 X V_{CC}	—	V
		—	1.65V to 1.95V	0.70 X V_{CC}	—	
		—	2.3V to 2.7V	1.6	—	
		—	3.0V to 3.6V	2.0	—	
V_{IL}	Low-Level Input Voltage	—	0.8V to 1.65V	—	0.25 X V_{CC}	V
		—	1.65V to 1.95V	—	0.30 X V_{CC}	
		—	2.3V to 2.7V	—	0.7	
		—	3.0V to 3.6V	—	0.9	
V_{OH}	High-Level Output Voltage	I_{OH} = -20µA	0.8V to 3.6V	V_{CC} – 0.11	—	V
		I_{OH} = -1.1mA	1.1V	0.6 X V_{CC}	—	
		I_{OH} = -1.7mA	1.4V	0.93	—	
		I_{OH} = -1.9mA	1.65V	1.17	—	
		I_{OH} = -2.3mA	2.3V	1.77	—	
		I_{OH} = -3.1mA		1.67	—	
		I_{OH} = -2.7mA	3V	2.40	—	
		I_{OH} = -4mA		2.30	—	
V_{OL}	Low-Level Input Voltage	I_{OL} = 20µA	0.8V to 3.6V	—	0.11	V
		I_{OL} = 1.1mA	1.1V	—	0.33 X V_{CC}	
		I_{OL} = 1.7mA	1.4V	—	0.41	
		I_{OL} = 1.9mA	1.65V	—	0.39	
		I_{OL} = 2.3mA	2.3V	—	0.36	
		I_{OL} = 3.1mA		—	0.50	
		I_{OL} = 2.7mA	3V	—	0.36	
		I_{OL} = 4mA		—	0.50	
I_I	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_I or V_O = 0V to 3.6V	0V	—	± 1.0	µA
ΔI_{OFF}	Delta Power Down Leakage Current	V_I or V_O = 0V to 3.6V	0V to 0.2V	—	± 2.5	µA
I_{CC}	Supply Current	V_I = GND or V_{CC}, I_O = 0	0.8V to 3.6V	—	1.4	µA
ΔI_{CC}	Additional Supply Current	Input at V_{CC} –0.6V Other input at V_{CC} or GND	3.3V	—	75	µA

Operating and Package Characteristics

T_A = +25°C

Parameter		Test Conditions	V_{CC}	Typ	Unit
C_{pd}	Power dissipation capacitance	f = 1MHz No Load	0.8V	5.1	pF
			1.2V ± 0.1V	5.2	
			1.5V ± 0.1V	5.2	
			1.8V ± 0.15V	5.5	
			2.5V ± 0.2V	5.7	
			3.3V ± 0.3V	6.0	
C_I	Input Capacitance	V_I = V_{CC} or GND	0V or 3.3V	2.0	pF
C_O	Output Capacitance	V_O = V_{CC} or GND	0V	3.5	pF

NEW PRODUCT

Switching Characteristics

C_L = 5pF see Figure 1

Parameter	From Input	TO OUTPUT	V_{CC}	T_A = +25°C			T_A = -40 to +85°C		T_A = -40 to +125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
t_{pd}	A	Y	0.8V		16.0						ns
			1.2V ± 0.1V	2.4	5.0	10.3	2.0	11.4	2.0	12.6	
			1.5V ± 0.1V	1.8	3.6	6.4	1.6	7.4	1.6	8.2	
			1.8V ± 0.15V	1.5	2.9	5.0	1.4	5.9	1.4	6.5	
			2.5V ± 0.2V	1.2	2.4	3.9	1.1	4.5	1.1	5.0	
			3.3V ± 0.3V	1.1	2.1	3.2	1.0	3.9	1.0	4.3	

C_L = 10pF see Figure 1

Parameter	From Input	TO OUTPUT	V_{CC}	T_A = +25°C			T_A = -40 to +85°C		T_A = -40 to +125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
t_{pd}	A	Y	0.8V		19.8						ns
			1.2V ± 0.1V	2.8	5.9	12.2	2.3	13.7	2.3	15.1	
			1.5V ± 0.1V	2.3	4.2	7.5	1.9	8.7	1.9	9.6	
			1.8V ± 0.15V	2.0	3.5	5.9	1.7	7.0	1.7	7.7	
			2.5V ± 0.2V	1.7	2.9	4.6	1.5	5.4	1.5	6.0	
			3.3V ± 0.3V	1.6	2.7	3.8	1.4	4.5	1.4	5.1	

C_L = 15pF see Figure 1

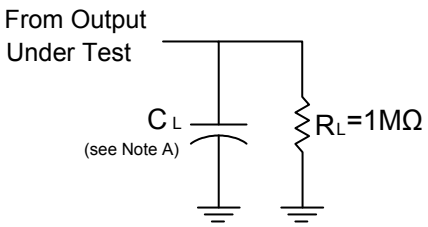
Parameter	From Input	TO OUTPUT	V_{CC}	T_A = +25°C			T_A = -40 to +85°C		T_A = -40 to +125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
t_{pd}	A	Y	0.8V		23.3						ns
			1.2V ± 0.1V	3.2	6.7	13.0	2.6	15.8	2.6	17.4	
			1.5V ± 0.1V	2.6	4.7	8.6	2.2	10.0	2.2	11.0	
			1.8V ± 0.15V	2.3	4.0	6.7	2.0	8.0	2.0	8.8	
			2.5V ± 0.2V	2.1	3.3	5.1	1.8	6.1	1.8	6.8	
			3.3V ± 0.3V	2.0	3.1	4.2	1.6	5.0	1.6	5.5	

C_L = 30pF see Figure 1

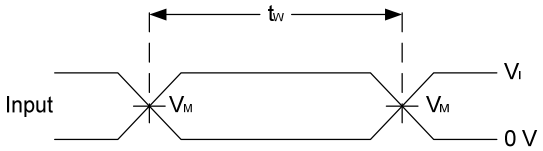
Parameter	From Input	TO OUTPUT	V_{CC}	T_A = +25°C			T_A = -40 to +85°C		T_A = -40 to +125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
t_{pd}	A	Y	0.8V		33.6						ns
			1.2V ± 0.1V	4.4	8.9	16.3	3.6	19.0	3.6	20.9	
			1.5V ± 0.1V	3.6	6.3	10.8	3.2	12.9	3.2	14.2	
			1.8V ± 0.15V	3.2	5.3	9.0	2.9	10.5	2.9	11.6	
			2.5V ± 0.2V	2.4	4.5	6.5	2.6	7.6	2.6	8.5	
			3.3V ± 0.3V	2.2	4.2	5.6	2.2	6.2	2.2	7.2	

NEW PRODUCT

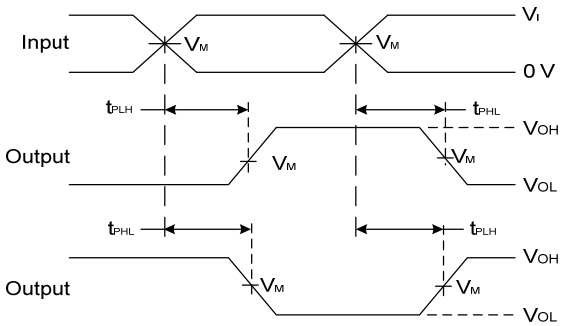
Parameter Measurement Information



V_{CC}	Inputs		V_M	C_L
	V_I	t_r/t_f		
0.8 V	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



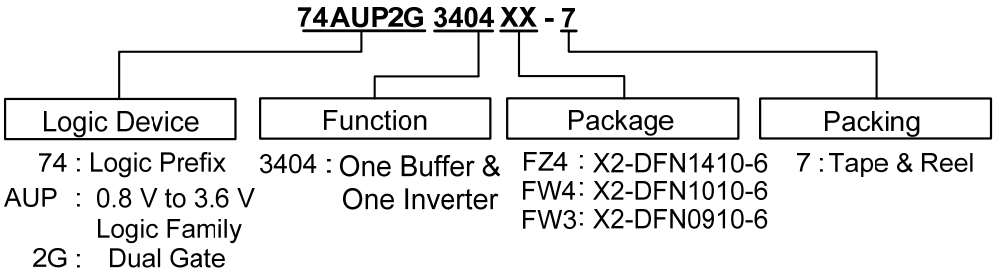
Voltage Waveform Propagation Delay Times
Inverting and Non Inverting Outputs

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_{PD}.

NEW PRODUCT

Ordering Information

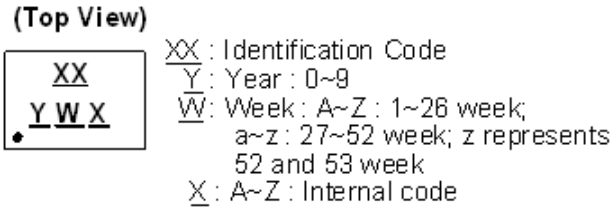


Device	Package Code	Packaging (Note 7)	7" Tape and Reel	
			Quantity	Part Number Suffix
74AUP2G3404FZ4-7	FZ4	X2-DFN1410-6	5000/Tape & Reel	-7
74AUP2G3404FW4-7	FW4	X2-DFN1010-6	5000/Tape & Reel	-7
74AUP2G3404FW3-7	FW3	X2-DFN0910-6	5000/Tape & Reel	-7

Note: 7. The taping orientation is located on our website at http://www.diodes.com/datasheets/ap02007.pdf
8. For packaging details, go to our website at http://www.diodes.com/products/packages.html

Marking Information

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



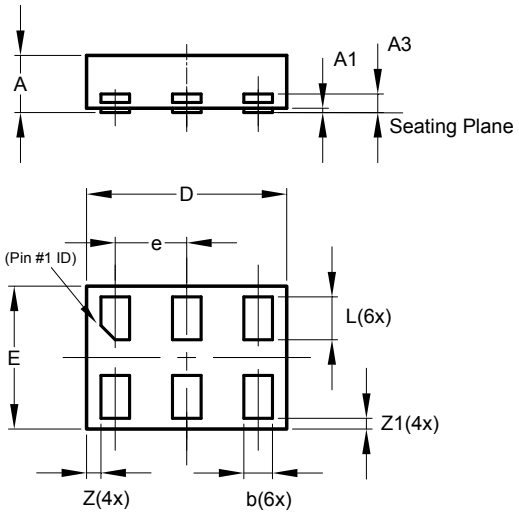
Part Number	Package	Identification Code
74AUP2G3404FZ4	X2-DFN1410-6	RU
74AUP2G3404FW4	X2-DFN1010-6	SU
74AUP2G3404FW3	X2-DFN0910-6	MU

NEW PRODUCT

Package Outline Dimensions (All dimensions in mm.)

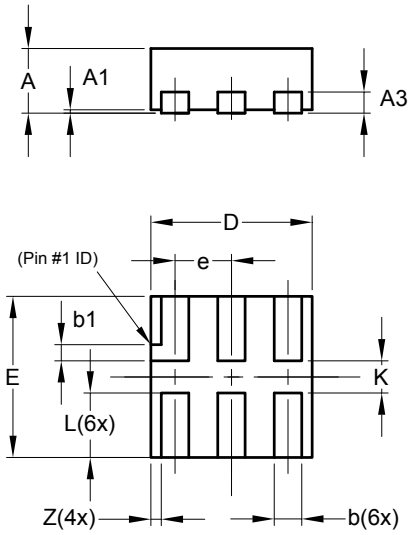
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.

(1) 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			

(2) Package Type: X2-DFN1010-6



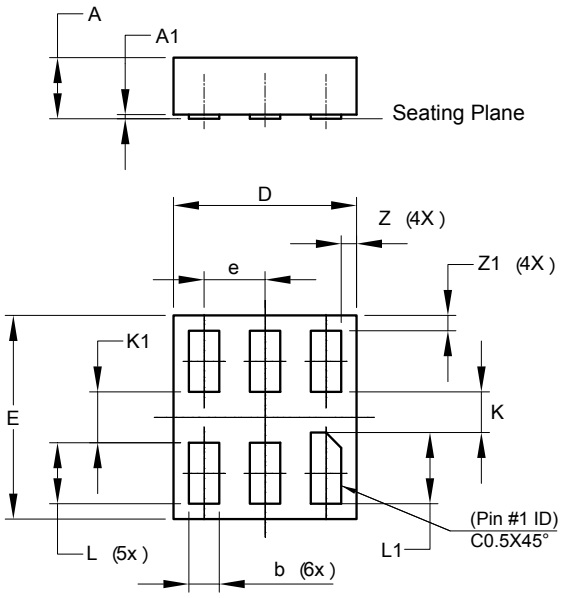
X2-DFN1010-6			
Dim	**Min**	**Max**	**Typ**
A	—	0.40	0.39
A1	0.00	0.05	0.02
A3	—	—	0.13
b	0.14	0.20	0.17
b1	0.05	0.15	0.10
D	0.95	1.05	1.00
E	0.95	1.05	1.00
e	—	—	0.35
L	0.35	0.45	0.40
K	0.15	—	—
Z	—	—	0.065
All Dimensions in mm			

NEW PRODUCT

Package Outline Dimensions (cont.) (All dimensions in mm.)

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

(3) Package Type: X2-DFN0910-6



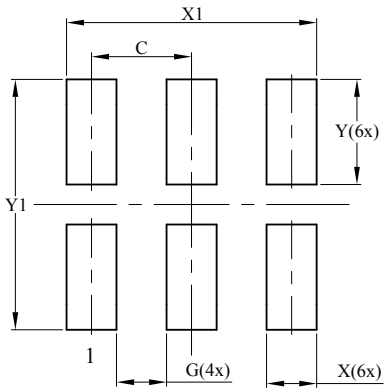
X2-DFN0910-6			
Dim	**Min**	**Max**	**Typ**
A	-	0.35	0.30
A1	0	0.03	0.02
b	0.10	0.20	0.15
D	0.85	0.95	0.90
E	0.95	1.05	1.00
e	-	-	0.30
K	0.20	-	-
K1	0.25	-	-
L	0.25	0.35	0.30
L1	0.30	0.40	0.35
Z	-	-	0.075
Z1	-	-	0.075
All Dimensions in mm			

NEW PRODUCT

Suggested Pad Layout

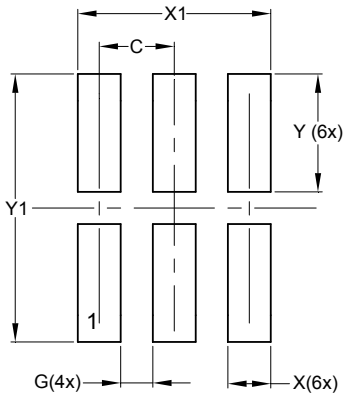
Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.

(1) Package Type X2-DFN1410-6



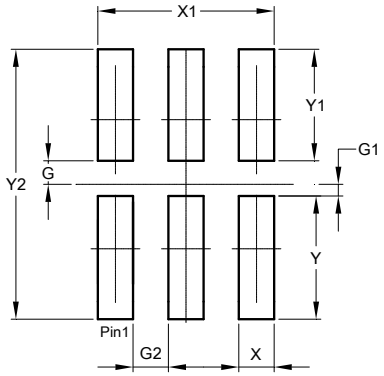
Dimensions	Value (in mm)
C	0.500
G	0.250
X	0.250
X1	1.250
Y	0.525
Y1	1.250

(2) 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

(3) Package Type: X2-DFN0910-6



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

NEW PRODUCT

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LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or

2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

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