

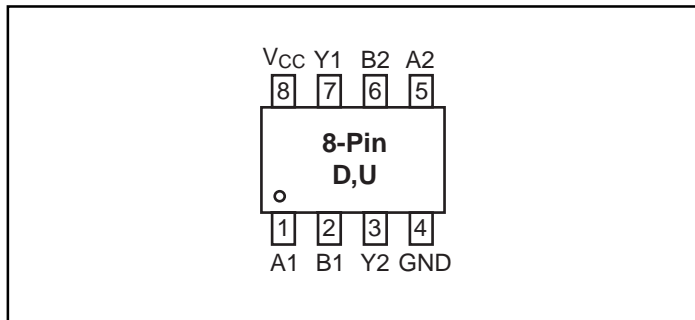
**Features**

- High-Speed:  $t_{pD} = 2.6\text{ns}$  typical into  $50\text{pF}$  @  $5\text{V } V_{CC}$
- Broad Operating Range:  $V_{CC} = 1.65\text{V} - 5.5\text{V}$
- Power down high-impedance inputs/outputs
- High Output Drive:  $\pm 24\text{mA}$  at  $3\text{V } V_{CC}$
- Package: 8-pin space saving US8 (D)  
                   8-pin space saving MSOP (U)

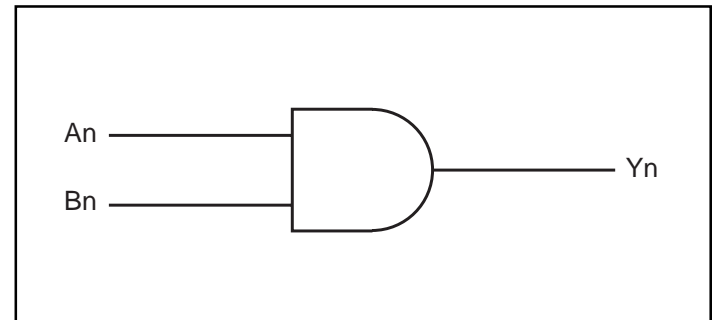
**Description**

Pericom Semiconductor's PI74STX2G08 is a dual 2-input and gate that operates over the  $1.65\text{V}$  to  $5.5\text{V } V_{CC}$  operating range.

**Pinout**



**Block Diagram**



**Pin Description**

Pin Names	Description
An	Inputs
Bn	Inputs
Yn	Outputs

**Recommended Operating Conditions<sup>(1)</sup>**

Parameter	Condition	Min.	Max.	Units
Supply Voltage ( $V_{CC}$ )		1.65	5.5	V
Input Voltage ( $V_{IN}$ )		0	5.5	
Output Voltage ( $V_{OUT}$ )		0	$V_{CC}$	
Operating Temperature		-40	85	°C
Input Rise and Fall Time ( $t_r, t_f$ )	$V_{CC} = 1.8\text{V}, 2.5\text{V} \pm 0.2\text{V}$	0	20	ns/V
	$V_{CC} = 3.3\text{V}, \pm 0.3\text{V}$	0	10	
	$V_{CC} = 5.0\text{V}, \pm 0.5\text{V}$	0	5	

**Function Table**

Inputs		Output
A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

**Note:**

H = HIGH Logic Level  
 L = LOW Logic Level

**Note:**

1. Unused inputs must be held HIGH or LOW. They may not float.

**Absolute Maximum Ratings**

Supply Voltage (V <sub>CC</sub> ) .....	-0.5V to +7V	DC Output Diode Current (I <sub>OK</sub> ) .....	-50mA to 20mA
DC Input Voltage (V <sub>IN</sub> ) <sup>(1)</sup> .....	-0.5V to +7V	DC Output Current (I <sub>OUT</sub> ) .....	±50mA
Voltage Range Applied to Any Output in the Power-Off State, V <sub>OUT</sub> <sup>(1)</sup> .....	-0.5V to +7V	DC V <sub>CC</sub> /GND Current (I <sub>CC</sub> /I <sub>GND</sub> ) .....	±100mA
Voltage Range Applied to Any Output in the High or Low State, V <sub>OUT</sub> <sup>(1)</sup> .....	-0.5V to V <sub>CC</sub> +0.5V	Storage Temperature (T <sub>STG</sub> ) .....	-65°C to +150°C
DC Input Diode Current (I <sub>IK</sub> ) .....	-50mA to 20mA	Junction Lead Temperature (I <sub>OS</sub> ) .....	260°C
		Power Dissipation: MSOP .....	300mW
		US8 .....	200mW

**Note:**

Absolute maximum ratings are DC values beyond which the device may be damaged or have its useful life impaired. The datasheet specifications should be met, without exception, to ensure that the system design is reliable over its power supply, temperature, and output/input loading variables. Pericom does not recommend operation outside datasheet specifications.

1. The input negative voltage and output voltage ratings may be exceeded if the input and output current ratings are observed.

**DC Electrical Characteristics** (Over supply voltage and operating temperature ranges, unless otherwise specified)

Symbol	Parameter	V <sub>CC</sub> (V)	Conditions		T <sub>A</sub> = +25°C			T <sub>A</sub> = -40°C to +85°C		Units
					Min.	Typ.†	Max.	Min.	Max.	
V <sub>IH</sub>	High Level Input Voltage	1.65-1.95 2.3-5.5			0.75V <sub>CC</sub> 0.70V <sub>CC</sub>			0.75V <sub>CC</sub> 0.7V <sub>CC</sub>		V
V <sub>IL</sub>	Low Level Input Voltage	1.65-1.95 2.3-5.5					0.25V <sub>CC</sub> 0.3V <sub>CC</sub>	0.25V <sub>CC</sub> 0.30V <sub>CC</sub>		
V <sub>OH</sub>	High Level Output Voltage	1.65	V <sub>IN</sub> = V <sub>IH</sub>	I <sub>OH</sub> = -100μA	1.55	1.65		1.55		
		2.3			2.2	2.3		2.2		
		3.0			2.9	3.0		2.9		
		4.5			4.4	4.5		4.4		
		1.65			1.29	1.50		1.29		
2.3	I <sub>OH</sub> = -4mA	1.9	2.10	1.9						
3.0	I <sub>OH</sub> = -8mA	2.4	2.69	2.4						
3.0	I <sub>OH</sub> = -16mA	2.3	2.51	2.3						
4.5	I <sub>OH</sub> = -24mA	3.8	4.02	3.8						
V <sub>OL</sub>	Low Level Output Voltage	1.65	V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub>	I <sub>OH</sub> = 100μA		0.0	0.1		0.1	
		2.3			0.0	0.1		0.1		
		3.0			0.0	0.1		0.1		
		4.5			0.0	0.1		0.1		
		1.65			I <sub>OH</sub> = 4mA	0.07	0.24		0.24	
2.3	I <sub>OH</sub> = 8mA	0.11	0.3		0.3					
3.0	I <sub>OH</sub> = 16mA	0.18	0.4		0.4					
3.0	I <sub>OH</sub> = 24mA	0.28	0.55		0.55					
4.5	I <sub>OH</sub> = 32mA	0.32	0.55		0.55					
I <sub>IN</sub>	Input Leakage Current	0-5.5V	V <sub>IN</sub> = 5.5V or GND				±0.1		±1.0	μA
I <sub>OFF</sub>	Power Off Leakage Current	0.0	V <sub>IN</sub> or V <sub>OUT</sub> = 5.5V				±1		±10	
I <sub>CC</sub>	Quiescent Supply Current	1.65-5.5	V <sub>IN</sub> = 5.5V, GND				1		10	

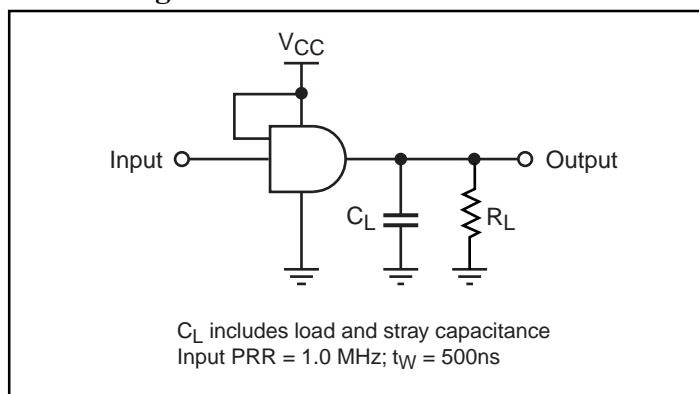
### AC Electrical Characteristics

Symbol	Parameters	V <sub>CC</sub> (V)	Conditions	T <sub>A</sub> = +25°C			T <sub>A</sub> = -40°C to +85°C		Units	Fig No
				Min.	Typ.	Max.	Min.	Max.		
t <sub>PLH</sub> , t <sub>PHL</sub>	Propagation Delay	1.8 ± 0.15	C <sub>L</sub> = 15pF, R <sub>L</sub> = 1Mohm	2.0		10.5	2.0	11.0	ns	1 3
		2.5 ± 0.2		1.0		5.8	1.0	6.2		
		3.3 ± 0.3		0.8		3.9	0.8	4.3		
		5.0 ± 0.5		0.5		3.1	0.5	3.3		
t <sub>PLH</sub> , t <sub>PHL</sub>	Propagation Delay	3.3 ± 0.3	C <sub>L</sub> = 50pF, R <sub>L</sub> = 500 Ohms	1.2		4.8	1.2	5.2		1 3
		5.0 ± 0.5		0.8		3.7	0.8	4.0		
C <sub>IN</sub>	Input Capacitance	0			2.5				pF	
C <sub>PD</sub>	Power Dissipation Capacitance <sup>(2)</sup>	3.3			15					
		5.0			19				2	

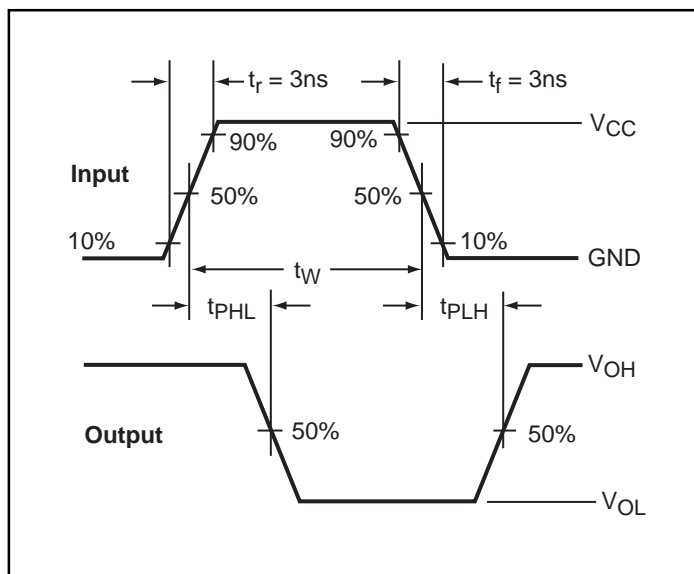
#### Notes:

2. C<sub>PD</sub> is defined as the value of the internal equivalent capacitance which is derived from dynamic operating current consumption (I<sub>CCD</sub>) at no output loading and operating at 50% duty cycle (see Figure 2). C<sub>PD</sub> is related to I<sub>CCD</sub> dynamic operating current by the expression: I<sub>CCD</sub> = (C<sub>PD</sub>)(V<sub>CC</sub>)(f<sub>IN</sub>) + (I<sub>CC</sub> static).

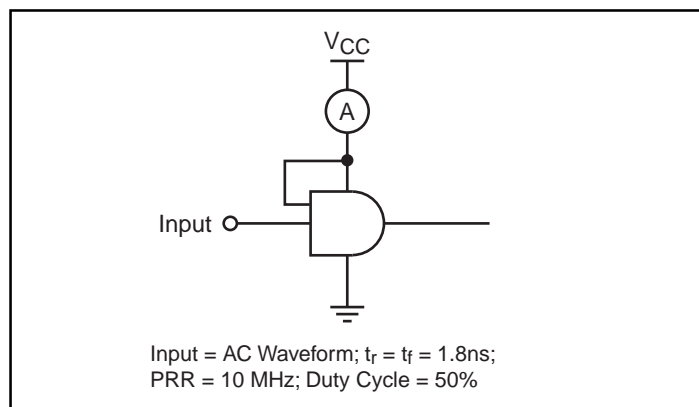
### AC Loading and Waveforms



**Figure 1. AC Test Circuit**

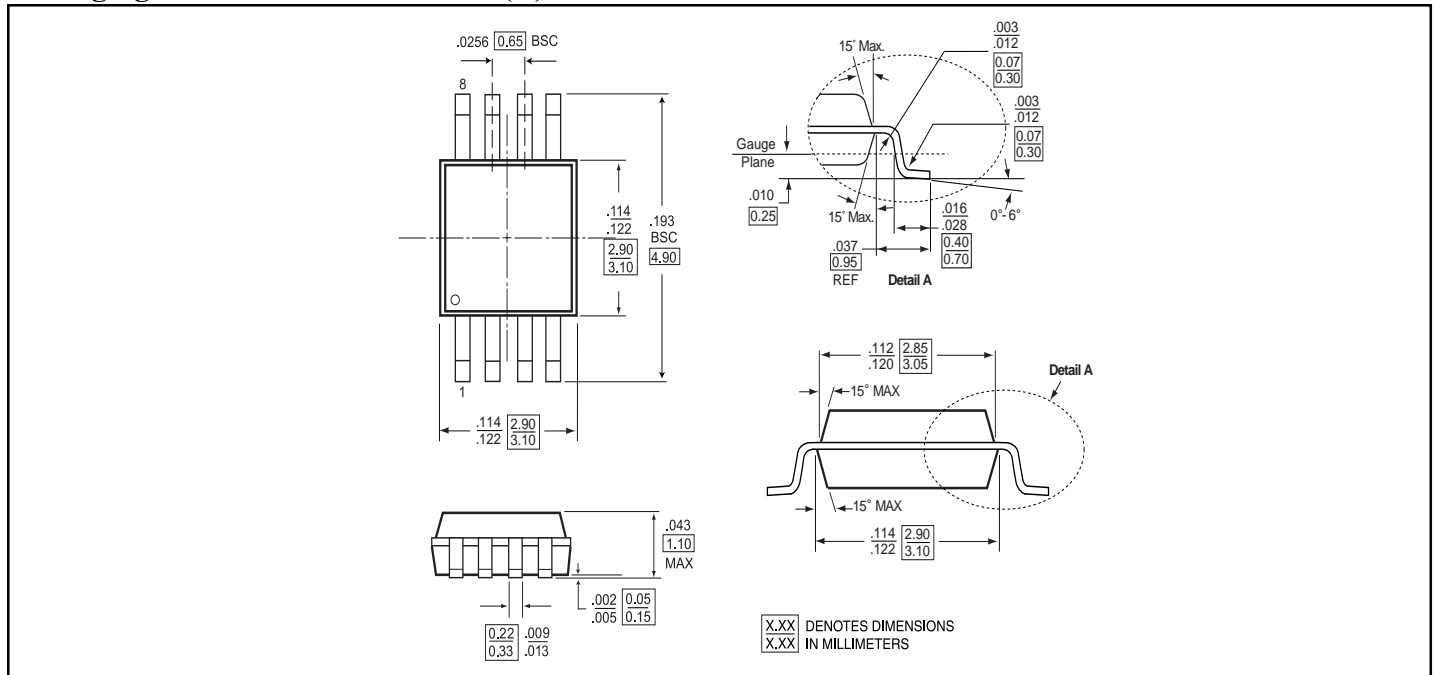


**Figure 3. AC Waveforms**

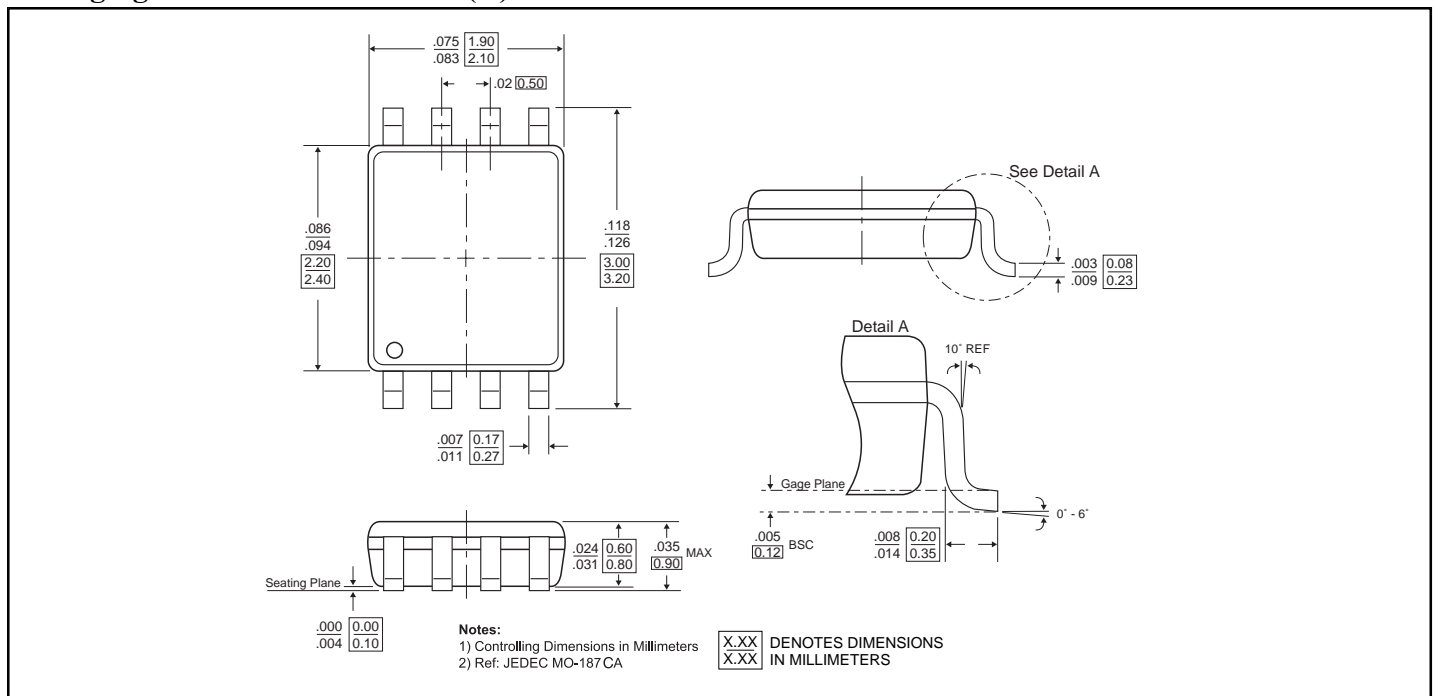


**Figure 2. I<sub>CCD</sub> Test Circuit**

**Packaging Mechanical: 8-Pin MSOP (U)**



**Packaging Mechanical: 8-Pin US8 (D)**



**Ordering Information**

<b>Ordering Code</b>	<b>Package Code</b>	<b>Package Description</b>
PI74SXT2G08UX	U	8-pin MSOP
PI74SXT2G08UEX	U	Pb-free & Green, 8-pin MSOP
PI74SXT2G08DX	D	8-pin US8
PI74SXT2G08DEX	D	Pb-free & Green, 8-pin US8

**Notes:**

1. Thermal characteristics can be found on the company web site at [www.pericom.com/packaging/](http://www.pericom.com/packaging/)
2. X = Tape and reel