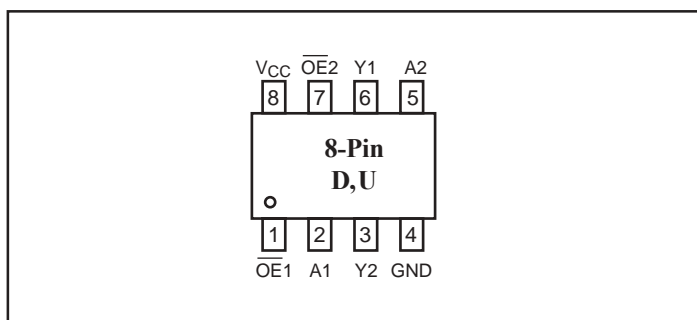


## Features

- 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  $3\text{V } V_{CC}$
- Available Packages:
  - 8-pin space saving US8 (D)
  - 8-pin space saving MSOP (U)

## Pinout



## Pin Description

Pin Names	Description
$\overline{\text{OEn}}$	Enable Inputs for Outputs
An	Inputs
Yn	Outputs

## Function Table

Inputs		Output
$\overline{\text{OE}}$	An	Yn
L	L	L
L	H	H
H	L	Z
H	H	Z

### Note:

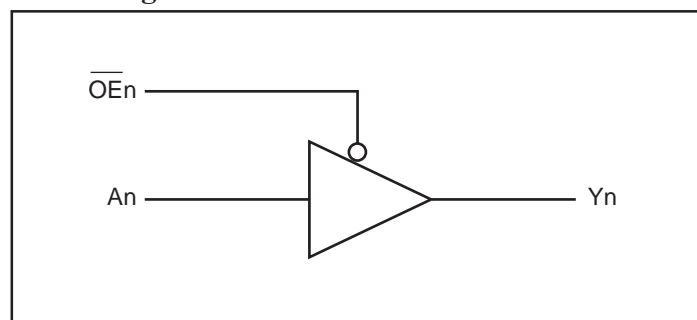
H = HIGH Logic Level  
L = LOW Logic Level  
Z = 3-State

## Description

The PI74STX2G125 is a dual buffer with 3-state outputs that operate over the  $1.65\text{V}$  to  $5.5\text{V } V_{CC}$  operating range.

Pericom's PI74STX series of products are produced using the Company's advanced submicron technology.

## Block Diagram



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

Parameter	Condition	Min.	Max.	Units
Supply Voltage ( $V_{CC}$ )		1.65	5.5	
Input Voltage ( $V_{IN}$ )		0	5.5	V
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	

### Note:

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

### Absolute Maximum Ratings

Supply Voltage ( $V_{CC}$ ) .....	-0.5V to +7V	DC Output Diode Current ( $I_{OK}$ ) .....	-50mA to 20mA
DC Input Voltage ( $V_{IN}$ ) .....	-0.5V to +7V	DC Output Current ( $I_{OUT}$ ) .....	±50mA
Voltage Range Applied to Any Output in the High Impedance or Power-Off State, $V_{OUT}^{(1)}$ .....	-0.5V to +7V	DC $V_{CC}/GND$ Current ( $I_{CC}/I_{GND}$ ) .....	±100mA
Voltage Range Applied to Any Output in the High or Low State, $V_{OUT}^{(1)}$ .....	-0.5V to $V_{CC}+0.5V$	Storage Temperature ( $T_{STG}$ ) .....	-65°C to +150°C
DC Input Diode Current ( $I_{IK}$ ) .....	-50mA to 20mA	Junction Lead Temperature (IOS) .....	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.

- 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	$V_{CC}$ (V)	Conditions		$T_A = +25^\circ C$			$T_A = -40 \text{ to } +85^\circ C$		Units
					Min.	Typ.	Max.	Min.	Max.	
$V_{IH}$	HIGH Level Input Voltage	1.65-1.95 2.3-5.5			0.75 $V_{CC}$ 0.7 $V_{CC}$			0.75 $V_{CC}$ 0.7 $V_{CC}$		V
$V_{IL}$	LOW Level Input Voltage	1.65-1.95 2.3-5.5					0.25 $V_{CC}$ 0.3 $V_{CC}$		0.25 $V_{CC}$ 0.30 $V_{CC}$	
$V_{OH}$	HIGH Level Output Voltage	1.65	$V_{IN} = V_{IL}$	$I_{OH} = -100\mu A$	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	1.51		1.29		
2.3	1.9	2.12		1.9						
3.0	2.4	2.71		2.4						
3.0	2.3	2.55		2.3						
4.5	3.8	4.06		3.8						
$V_{OL}$	LOW Level Output Voltage	1.65	$V_{IN} = V_{IH}$	$I_{OL} = 100\mu A$		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				$I_{OL} = 4mA$	0.06	0.24		0.24
		2.3				$I_{OL} = 8mA$	0.10	0.3		0.3
		3.0				$I_{OL} = 16mA$	0.18	0.4		0.4
		3.0				$I_{OL} = 24mA$	0.27	0.55		0.55
		4.5				$I_{OL} = 32mA$	0.30	0.55		0.55
		$I_{IN}$			Input Leakage Current	0-5.5	$V_{IN} = 5.5V, GND$			
$I_{OZ}$	3-State Output Leakage	1.65-5.5	$V_{IN} = V_{IH}$ or $V_{IL}$ $V_{OUT} = 0$ or 5.5V				±0.5		±5	
$I_{OFF}$	Power Off Leakage Current	0.0	$V_{IN}$ or $V_{OUT} = 5.5V$				±1		±10	
$I_{CC}$	Quiescent Supply Current	1.65-5.5	$V_{IN} = 5.5V, GND$				1		10	

### AC Electrical Characteristics

Symbol	Parameter	V <sub>CC</sub> (V)	Conditions	T <sub>A</sub> = +25°C			T <sub>A</sub> = -40 to +85°C		Units	Fig. No.
				Min.	Typ.	Max.	Min.	Max.		
t <sub>PLH</sub> , t <sub>PHL</sub>	Propagation Delay, An to Yn	1.8 ±0.15	C <sub>L</sub> = 15pF, R <sub>D</sub> = 1Mohm, S <sub>1</sub> = Open	2.0		12.0	2.0	13.0	ns	1
		2.5 ±0.2		1.0		7.5	1.0	8.0		3
		3.3 ±0.3		0.8		5.2	0.8	5.5		
		5.0 ±0.5		0.5		4.5	0.5	4.8		
t <sub>PLH</sub> , t <sub>PHL</sub>	Propagation Delay, An to Yn	3.3 ±0.3	C <sub>L</sub> = 50pF, R <sub>D</sub> = 500ohm, S <sub>1</sub> = Open	1.2		5.7	1.2	6.0		1
		5.0 ±0.5		0.8		5.0	0.8	5.3		3
t <sub>OSLH</sub> , t <sub>OSSL</sub>	Output to Output Skew <sup>(2)</sup>	3.3 ±0.3	C <sub>L</sub> = 50pF R <sub>D</sub> = 500ohm S <sub>1</sub> = Open			1.0		1.0		1
		5.0 ±0.5				0.8		0.8		3
t <sub>PZL</sub> , t <sub>PZH</sub>	Output Enable Time	1.8 ±0.15	C <sub>L</sub> = 50pF, R <sub>D</sub> = 500ohm, R <sub>U</sub> = 500, S <sub>1</sub> = GND for t <sub>PZH</sub> S <sub>1</sub> = V <sub>IN</sub> for t <sub>PZL</sub> V <sub>IN</sub> = 2 x V <sub>CC</sub>	3.0		14.0	3.0	15.0		1
		2.5 ±0.2		1.8		8.5	1.8	9.0		3
		3.3 ±0.3		1.2		6.2	1.2	6.5		
		5.0 ±0.5		0.8		5.5	0.8	5.8		
t <sub>PLZ</sub> , t <sub>PHZ</sub>	Output Disable Time	1.8 ±0.15	C <sub>L</sub> = 50pF, R <sub>D</sub> = 500ohm, R <sub>U</sub> = 500ohm, S <sub>1</sub> = GND for t <sub>PHZ</sub> S <sub>1</sub> = V <sub>IN</sub> for t <sub>PLZ</sub> V <sub>IN</sub> = 2 x V <sub>CC</sub>	2.5		12.0	2.5	13.0	1	
		2.5 ±0.2		1.5		8.0	1.5	8.5	3	
		3.3 ±0.3		0.8		5.7	0.8	6.0		
		5.0 ±0.5		0.3		4.7	0.3	5.0		
C <sub>IN</sub> , C <sub>OUT</sub>	Input Capacitance Output Capacitance	0 5.0			2.4 4.8			pF		
C <sub>PD</sub>	Power Dissipation Capacitance <sup>(3)</sup>	3.3 5.0			15 20				2	

**Notes:**

2. Parameter guaranteed by design.

$$t_{OSLH} = |t_{PLHmax} - t_{PLHmin}|$$

$$t_{OSSL} = |t_{PHLmax} - t_{PHLmin}|$$

3. 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

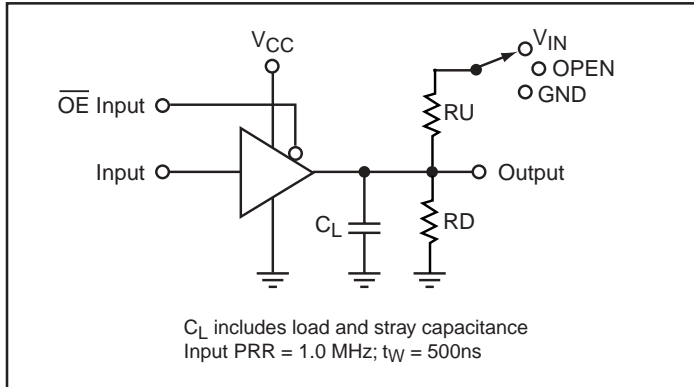


Figure 1. AC Test Circuit

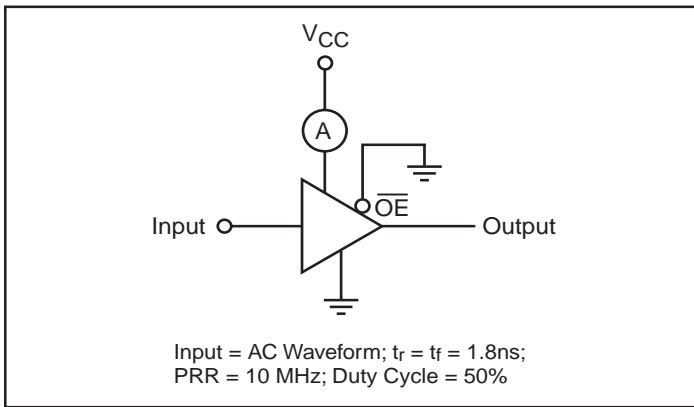


Figure 2. ICCD Test Circuit

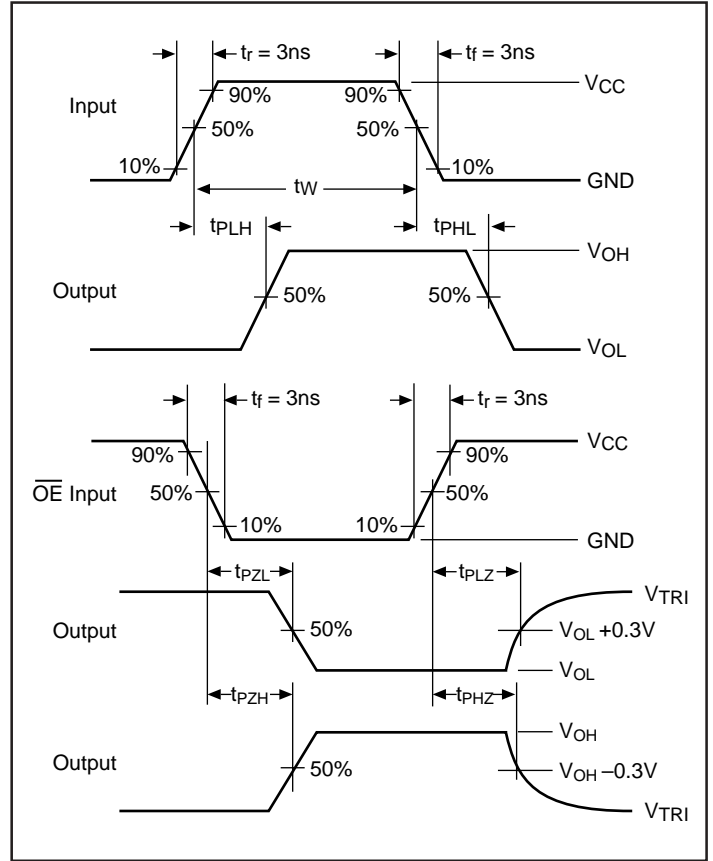
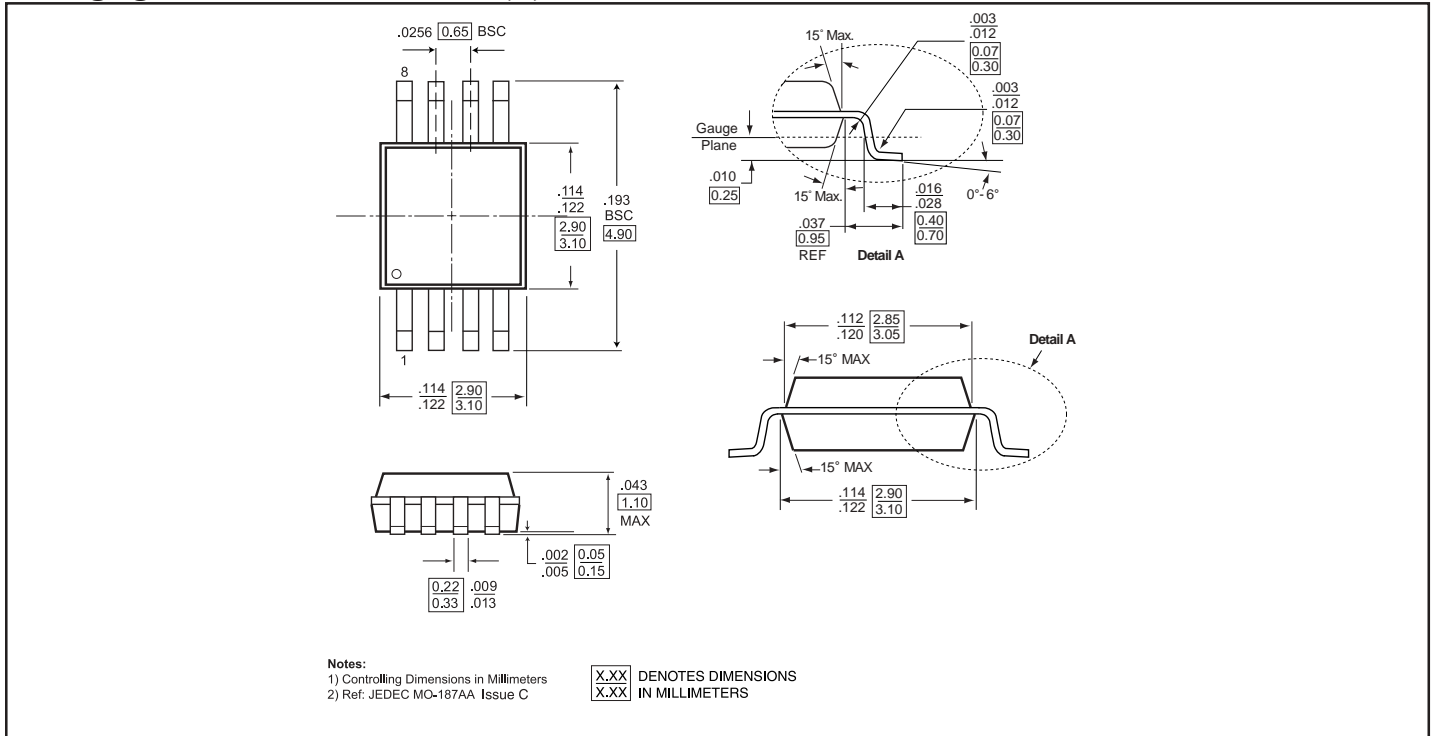
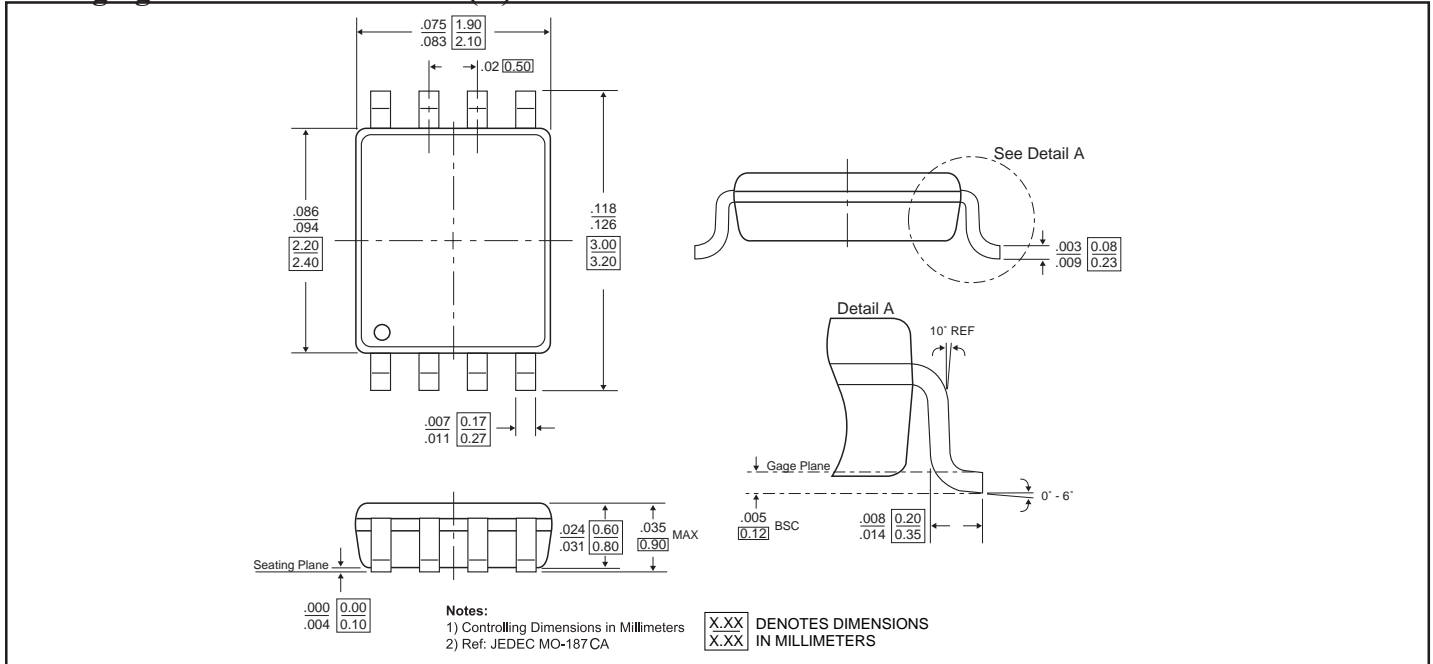


Figure 3. AC Waveforms

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



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



Thermal Characteristics can be found on the web: <http://www.pericom.com/packaging/mechanicals.php>

**Ordering Information**

Part	Pin-Package	Top Marking	Operating Range
PI74STX2G125UX	8-Pin - MSOP	74STX, 2G125	-40°C to 85°C
PI74STX2G125DX	8-Pin - US8	STX, 2G25	-40°C to 85°C

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