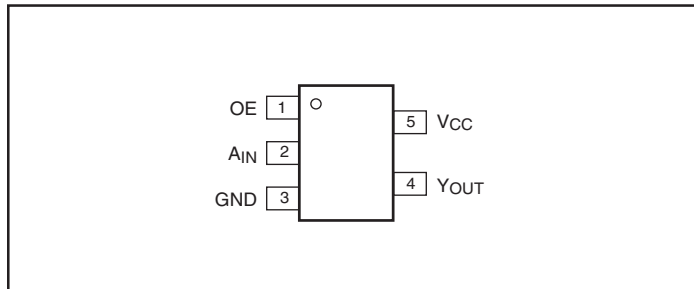


## Features

- High-speed:  $t_{PD} = 2.3\text{ns}$  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  $3\text{V } V_{CC}$
- Packaging (Pb-free & Green available):
  - 5-pin SOT23 (T)
  - 5-pin SC70 (C)

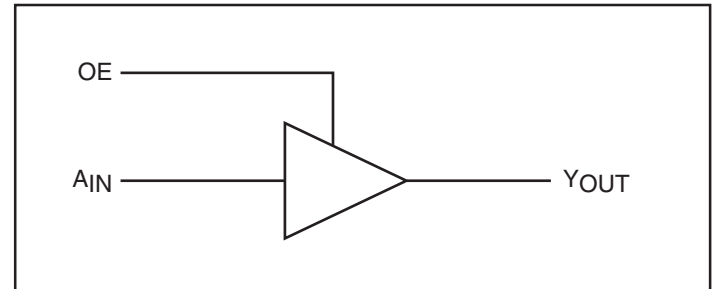
## Pin Configuration



## Description

The PI74STX1G126 is a buffer with 3-state output that operates over the  $1.65\text{V}$  to  $5.5\text{V } V_{CC}$  operating range.

## Block Diagram



## Pin Description

| Pin Names | Description |
|-----------|-------------|
| $A_{IN}$  | Input       |
| OE        | Input       |
| $Y_{OUT}$ | Output      |

## Function Table

| Inputs |          | Output    |
|--------|----------|-----------|
| OE     | $A_{IN}$ | $Y_{OUT}$ |
| H      | L        | L         |
| H      | H        | H         |
| L      | X        | Z         |

### Notes:

H = HIGH Logic Level  
L = LOW Logic Level  
Z = HIGH Impedance

## 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        |       |

### Notes:

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

## Absolute Maximum Ratings

|                                      |               |                                               |                 |
|--------------------------------------|---------------|-----------------------------------------------|-----------------|
| Supply Voltage ( $V_{CC}$ )          | −0.5V to +6V  | DC $V_{CC}$ /GND Current ( $I_{CC}/I_{GND}$ ) | ±50mA           |
| DC Input Voltage ( $V_{IN}$ )        | −0.5V to +6V  | Storage Temperature ( $T_{STG}$ )             | −65°C to +150°C |
| DC Output Voltage ( $V_{OUT}$ )      | −0.5V to +6V  | Junction Lead Temperature (IOS)               | 200°C           |
| DC Input Diode Current ( $I_{IK}$ )  | −50mA to 20mA | Power Dissipation SOT23                       | 200mW           |
| DC Output Diode Current ( $I_{OK}$ ) | −50mA to 20mA | SC70                                          | 150mW           |
| DC Output Current ( $I_{OUT}$ )      | ±50mA         |                                               |                 |

### 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.

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

| Symbol    | Parameter                 | $V_{CC}$ (V)         | Conditions                          |                            | $T_A = +25^\circ\text{C}$    |      |                              | $T_A = -40 \text{ to } +85^\circ\text{C}$ |                              | Units         |
|-----------|---------------------------|----------------------|-------------------------------------|----------------------------|------------------------------|------|------------------------------|-------------------------------------------|------------------------------|---------------|
|           |                           |                      |                                     |                            | Min.                         | Typ. | Max.                         | Min.                                      | Max.                         |               |
| $V_{IH}$  | HIGH Level Input Voltage  | 1.65-1.95<br>2.3-5.5 |                                     |                            | $0.75V_{CC}$<br>$0.70V_{CC}$ |      |                              | $0.75V_{CC}$<br>$0.70V_{CC}$              |                              | V             |
| $V_{IL}$  | LOW Level Input Voltage   | 1.65-1.95<br>2.3-5.5 |                                     |                            |                              |      | $0.25V_{CC}$<br>$0.30V_{CC}$ |                                           | $0.25V_{CC}$<br>$0.30V_{CC}$ |               |
| $V_{OH}$  | HIGH Level Output Voltage | 1.65                 | $V_{IN} = V_{IL}$                   | $I_{OH} = -100\mu\text{A}$ | 1.55                         | 1.65 |                              | 1.55                                      |                              |               |
|           |                           | 1.8                  |                                     |                            | 1.7                          | 1.79 |                              | 1.7                                       |                              |               |
|           |                           | 2.3                  |                                     |                            | 2.2                          | 2.29 |                              | 2.2                                       |                              |               |
|           |                           | 3.0                  |                                     |                            | 2.9                          | 2.99 |                              | 2.9                                       |                              |               |
|           |                           | 4.5                  |                                     |                            | 4.4                          | 4.5  |                              | 4.4                                       |                              |               |
|           |                           | 1.65                 |                                     | $I_{OH} = -4\text{mA}$     | 1.29                         | 1.52 |                              | 1.29                                      |                              |               |
|           |                           | 2.3                  |                                     | $I_{OH} = -8\text{mA}$     | 1.9                          | 2.13 |                              | 1.9                                       |                              |               |
|           |                           | 3.0                  |                                     | $I_{OH} = -16\text{mA}$    | 2.4                          | 2.71 |                              | 2.4                                       |                              |               |
|           |                           | 3.0                  |                                     | $I_{OH} = -24\text{mA}$    | 2.3                          | 2.55 |                              | 2.3                                       |                              |               |
|           |                           | 4.5                  |                                     | $I_{OH} = -32\text{mA}$    | 3.8                          | 4.20 |                              | 3.8                                       |                              |               |
| $V_{OL}$  | LOW Level Output Voltage  | 1.65                 | $V_{IN} = V_{IH}$                   | $I_{OL} = 100\mu\text{A}$  |                              | 0.01 | 0.1                          |                                           | 0.1                          |               |
|           |                           | 2.3                  |                                     |                            |                              | 0.01 | 0.1                          |                                           | 0.1                          |               |
|           |                           | 3.0                  |                                     |                            |                              | 0.01 | 0.1                          |                                           | 0.1                          |               |
|           |                           | 3.0                  |                                     |                            |                              | 0.00 | 0.1                          |                                           | 0.1                          |               |
|           |                           | 4.5                  |                                     |                            |                              | 0.00 | 0.1                          |                                           | 0.1                          |               |
|           |                           | 1.65                 |                                     | $I_{OL} = 4\text{mA}$      |                              | 0.08 | 0.24                         |                                           | 0.24                         |               |
|           |                           | 1.8                  |                                     | $I_{OL} = 8\text{mA}$      |                              | 0.10 | 0.3                          |                                           | 0.3                          |               |
|           |                           | 2.3                  |                                     | $I_{OL} = 16\text{mA}$     |                              | 0.18 | 0.4                          |                                           | 0.4                          |               |
|           |                           | 3.0                  |                                     | $I_{OL} = 24\text{mA}$     |                              | 0.28 | 0.55                         |                                           | 0.55                         |               |
|           |                           | 4.5                  |                                     | $I_{OL} = 32\text{mA}$     |                              | 0.28 | 0.55                         |                                           | 0.55                         |               |
| $I_{IN}$  | Input Leakage Current     | 0-5.5                | $V_{IN} = 5.5\text{V}, \text{GND}$  |                            | −1                           |      | 1                            | −1                                        | 1                            | $\mu\text{A}$ |
| $I_{OFF}$ | Power Off Leakage Current | 0.0                  | $V_{IN}$ or $V_{OUT} = 5.5\text{V}$ |                            | −1                           |      | 1                            | −1                                        | 1                            |               |
| $I_{CC}$  | Quiescent Supply Current  | 1.65-5.5             | $V_{IN} = 5.5\text{V}, \text{GND}$  |                            |                              |      | 2.0                          |                                           | 20                           |               |

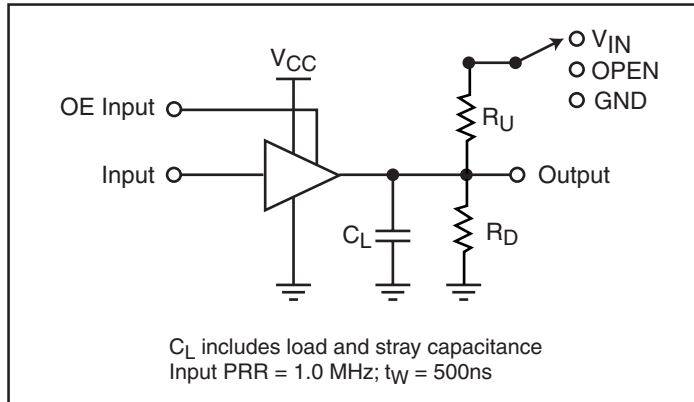
## AC Electrical Characteristics

| 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> ,<br>t <sub>PHL</sub> | Propagation Delay                            | 1.8 ±0.15<br>2.5 ±0.2<br>3.3 ±0.3<br>5.0 ±0.5 | C <sub>L</sub> = 15pF, R <sub>D</sub> = 1 Mohm,<br>S <sub>1</sub> = Open                                                                                                                                                    | 0.7<br>0.5<br>0.5<br>0.5 | 4.5<br>2.7<br>2.1<br>1.7 | 5.4<br>3.6<br>2.9<br>2.2  | 0.7<br>0.5<br>0.5<br>0.5      | 5.9<br>4.0<br>3.2<br>2.4  | ns    | 1<br>3   |
| t <sub>PLH</sub> ,<br>t <sub>PHL</sub> | Propagation Delay                            | 3.3 ±0.3<br>5.0 ±0.5                          | C <sub>L</sub> = 50pF, R <sub>D</sub> = 500 ohms,<br>S <sub>1</sub> = Open                                                                                                                                                  | 0.5<br>0.5               | 3.0<br>2.3               | 4.2<br>3.2                | 0.5<br>0.5                    | 4.6<br>3.5                |       | 1<br>3   |
| t <sub>PZL</sub> ,<br>t <sub>PZH</sub> | Output Enable Time                           | 1.8 ±0.15<br>2.5 ±0.2<br>3.3 ±0.3<br>5.0 ±0.5 | C <sub>L</sub> = 50pF, R <sub>D</sub> = 500 ohms,<br>R <sub>U</sub> = 500 ohms, S <sub>1</sub> = GND for t <sub>PZH</sub><br>S <sub>1</sub> = V <sub>IN</sub> for t <sub>PZL</sub><br>V <sub>IN</sub> = 2 x V <sub>CC</sub> | 2<br>1.5<br>1.5<br>0.8   | 8.2<br>4.4<br>3.1<br>2.2 | 11.8<br>6.8<br>4.8<br>3.3 | 2<br>1.5<br>1.5<br>1.5        | 12.3<br>7.5<br>5.3<br>3.6 |       | 1<br>3   |
| t <sub>PLZ</sub> ,<br>t <sub>PHZ</sub> | Output Disable Time                          | 1.8 ±0.15<br>2.5 ±0.2<br>3.3 ±0.3<br>5.0 ±0.5 | C <sub>L</sub> = 50pF, R <sub>D</sub> = 500 ohms,<br>R <sub>U</sub> = 500 ohms, S <sub>1</sub> = GND for t <sub>PHZ</sub><br>S <sub>1</sub> = V <sub>IN</sub> for t <sub>PLZ</sub><br>V <sub>IN</sub> = 2 x V <sub>CC</sub> | 2<br>1.5<br>1.0<br>0.8   | 7.3<br>4.7<br>3.6<br>2.6 | 9.2<br>5.0<br>4.0<br>3.2  | 2<br>1.5<br>1.5<br>1.5        | 9.7<br>5.5<br>4.4<br>3.5  |       | 1<br>3   |
| C <sub>IN</sub> ,<br>C <sub>OUT</sub>  | Input Capacitance<br>Output Capacitance      | V <sub>IN</sub> = 0<br>V <sub>OUT</sub> = 0   |                                                                                                                                                                                                                             |                          | 4<br>8                   |                           |                               |                           | pF    |          |
| C <sub>PD</sub>                        | Power Dissipation Capacitance <sup>(1)</sup> | 3.3<br>5.0                                    |                                                                                                                                                                                                                             |                          | 17<br>19                 |                           |                               |                           |       | 2        |

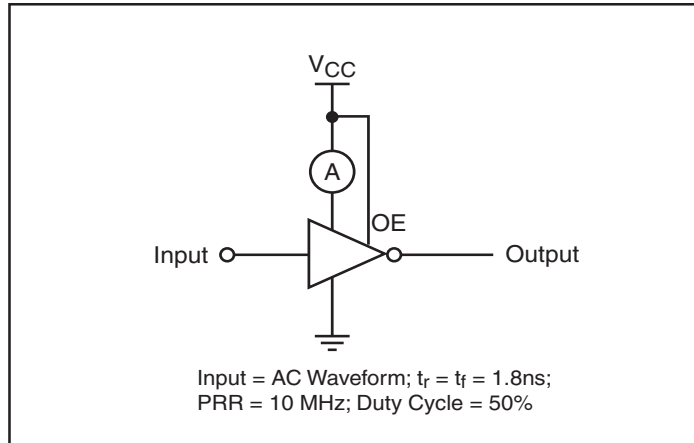
### Notes:

- 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).

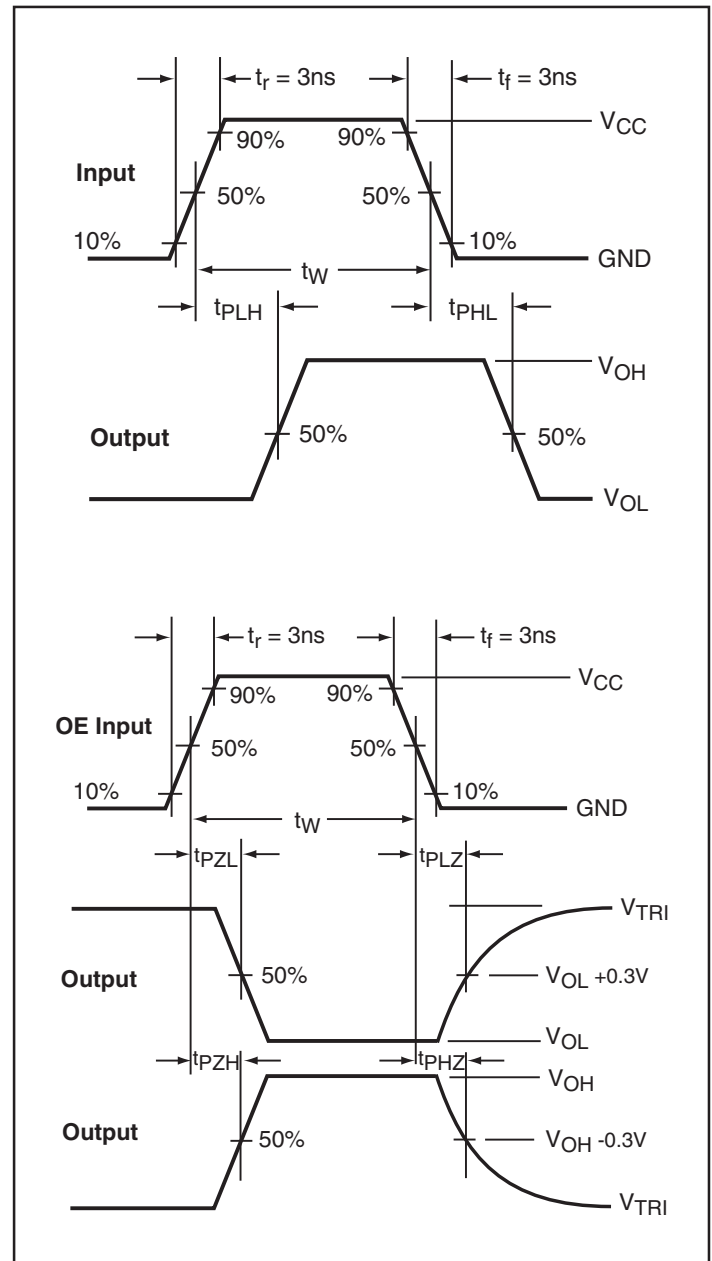
## AC Loading and Waveforms



**Figure 1. AC Test Circuit**



**Figure 2.  $I_{CCD}$  Test Circuit**



**Figure 3. AC Waveforms**

Technical drawing of a mechanical part showing three views: top, side, and end view. The top view shows a rectangular part with dimensions: width .110 [2.80] / .118 [3.00], height .059 [1.50] / .068 [1.75], and a central slot width .102 [2.60] / .118 [3.00]. The side view shows a height of .075 [1.90] BSC and a width of .037 [0.95] BSC. The end view shows a width of .110 [2.80] / .118 [3.00] and a height of .057 [1.45] MAX. A SEATING PLANE is indicated at the bottom. A note states: X.XX DENOTES DIMENSIONS IN MILLIMETERS.

Technical drawing of a mechanical part, showing five views: Top View, Front View, Side View, and two Detail Views.

**Top View:** Shows a rectangular part with five pins (1, 2, 3, 4, 5) and dimensions: .079 [2.00] BSC, .051 [1.30] BSC, .049 [1.25] BSC, .083 [2.10] BSC, .026 [0.65] BSC, .006 [0.15] [0.30], .011 [0.30].

**Front View:** Shows a profile with a .110 MAX dimension and a .004 tolerance.

**Side View:** Shows a profile with a .017 [0.42] REV dimension.

**Detail View 1 (Top Left):** Shows a cross-section of a pin with dimensions: .051 [1.30] BSC, .006 [0.15] [0.30], .011 [0.30].

**Detail View 2 (Bottom Right):** Shows a cross-section of a pin with dimensions: .010 [0.26] [0.46], .018 [0.46], .017 [0.42] REV, .006 [0.15] [0.30], .011 [0.30].

**Other Dimensions:** .079 [2.00] BSC, .051 [1.30] BSC, .049 [1.25] BSC, .083 [2.10] BSC, .026 [0.65] BSC, .006 [0.15] [0.30], .011 [0.30], .010 [0.26] [0.46], .018 [0.46], .017 [0.42] REV, .006 [0.15] [0.30], .011 [0.30].

**Notes:** SEE VIEW A, GUAGE PLANE, SEATING PLANE, 0°-8°, 4°-10°.

**Legend:** XXX DENOTES DIMENSIONS IN MILLIMETERS



### Ordering Information

| Ordering Code   | Package Code | Package Description           | Top Marking            |
|-----------------|--------------|-------------------------------|------------------------|
| PI74STX1G126TX  | T            | 5-pin, SOT23                  | BB                     |
| PI74STX1G126TEX | T            | Pb-free & Green, 5-pin, SOT23 | $\overline{\text{BB}}$ |
| PI74STX1G126CX  | C            | 5-pin, SC70                   | BB                     |
| PI74STX1G126CEX | C            | Pb-free & Green, 5-pin, SC70  | $\overline{\text{BB}}$ |

**Notes:**

- Thermal characteristics can be found on the company web site at [www.pericom.com/packaging/](http://www.pericom.com/packaging/)
- E = Pb-free & Green
- Adding an X suffix = Tape/Reel