

**Features**

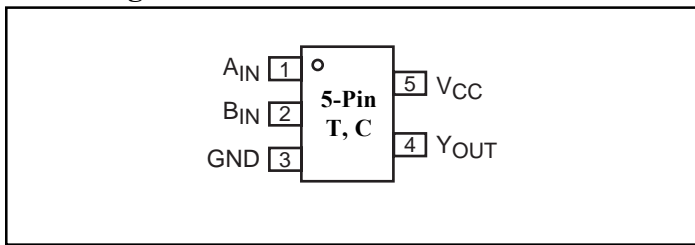
- High-speed:  $t_{PD} = 2.4\text{ns}$  typical into  $50\text{pF}$  @  $5\text{V } V_{CC}$
- Broad operating range:  $V_{CC} = 1.65\text{V} - 5.5\text{V}$
- Power down high-impedance inputs/outputs
- High output drive:  $\pm 24\text{mA}$  at  $3\text{V } V_{CC}$
- Packaging:
  - 5-pin SOT23 (T)
  - 5-pin SC70 (C)

**Description**

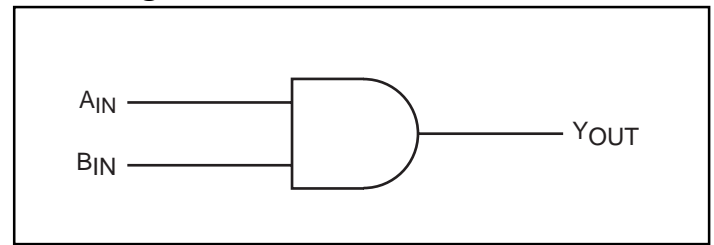
The PI74STX1G08 is a 2-Input AND Gate that operates over the  $1.65\text{V}$  to  $5.5\text{V } V_{CC}$  operating range.

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

**Pin Configuration**



**Block Diagram**



**Pin Description**

Pin Names	Description
A <sub>IN</sub>	Input
B <sub>IN</sub>	Input
Y <sub>OUT</sub>	Output

**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 <sub>IN</sub>	B <sub>IN</sub>	Y <sub>OUT</sub>
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 ( $V_{CC}$ )	-0.5V to +6V	DC $V_{CC}/GND$ Current ( $I_{CC}/I_{GND}$ )	$\pm 50\text{mA}$
DC Input Voltage ( $V_{IN}$ )	-0.5V to +6V	Storage Temperature ( $T_{STG}$ )	$-65^{\circ}\text{C}$ to $+150^{\circ}\text{C}$
DC Output Voltage ( $V_{OUT}$ )	-0.5V to +6V	Junction Lead Temperature (IOS)	$200^{\circ}\text{C}$
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 ( $I_{OUT}$ )	$\pm 50\text{mA}$		

**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		$T_A = +25^{\circ}\text{C}$			$T_A = -40$ to $+85^{\circ}\text{C}$		Units	
					Min.	Typ.	Max.	Min.	Max.		
$V_{IH}$	HIGH Level Input Voltage	1.65-1.95 2.3-5.5			$0.75V_{CC}$ $0.70V_{CC}$			$0.75V_{CC}$ $0.70V_{CC}$		V	
$V_{IL}$	LOW Level Input Voltage	1.65-1.95 2.3-5.5					$0.25V_{CC}$ $0.30V_{CC}$	$0.25V_{CC}$ $0.30V_{CC}$			
$V_{OH}$	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		
		1.8			0.01	0.1		0.1			
		2.3			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
		2.3				$I_{OL} = 8\text{mA}$		0.10	0.3		0.3
		3.0				$I_{OL} = 16\text{mA}$		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	$V_{IN} = 5.5\text{V}, GND$		-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	$V_{IN} = 5.5\text{V}, GND$				2.0		20		

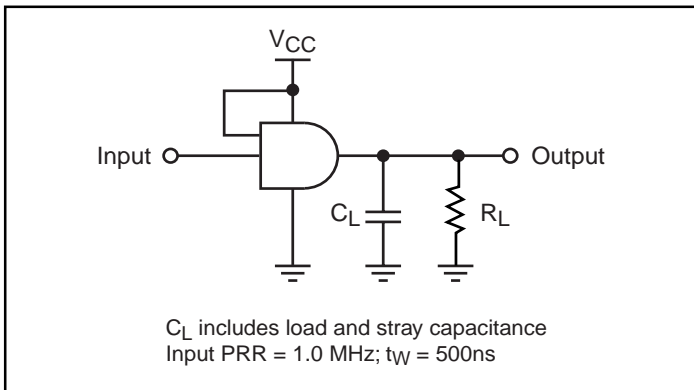
### AC Electrical Characteristics

Symbol	Parameter	V <sub>CC</sub> (V)	Conditions	T <sub>A</sub> = +25°C			T <sub>A</sub> = -40°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> = 1M ohm	0.7	5.5	6.5	0.7	7.1	ns	1
		2.5 ±0.2		0.5	3.2	4.1	0.5	4.5		
		3.3 ±0.3		0.5	2.5	3.3	0.5	3.6		3
		5.0 ±0.5		0.5	2.0	2.6	0.5	2.9		
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	0.5	3.3	4.4	0.5	4.9	pF	1
		5.0 ±0.5		0.5	2.4	3.3	0.5	3.7		
C <sub>IN</sub>	Input Capacitance	0			4					
C <sub>PD</sub>	Power Dissipation Capacitance <sup>(3)</sup>	3.3			20					2
		5.0			30					

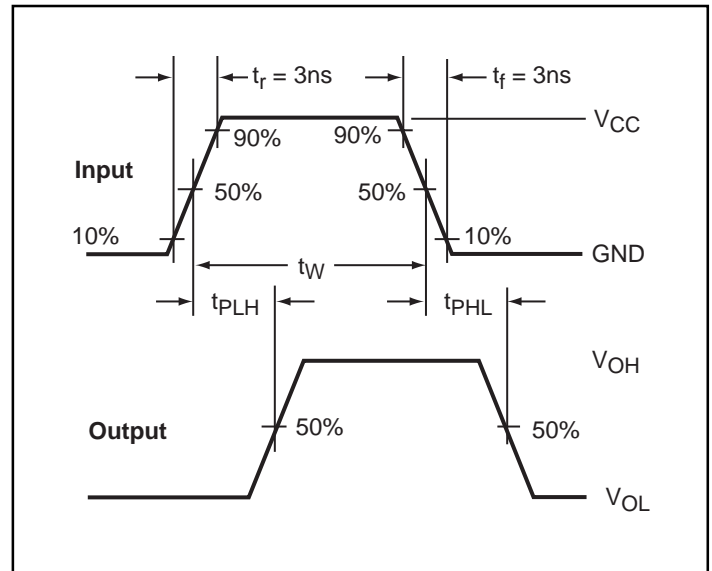
**Notes:**

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).

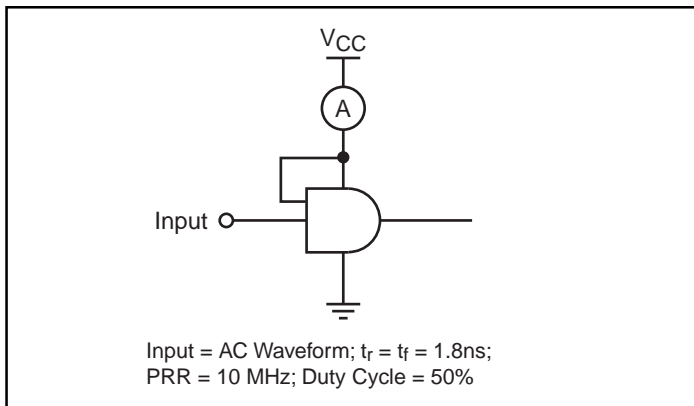
### AC Loading and Waveforms



**Figure 1. AC Test Circuit**

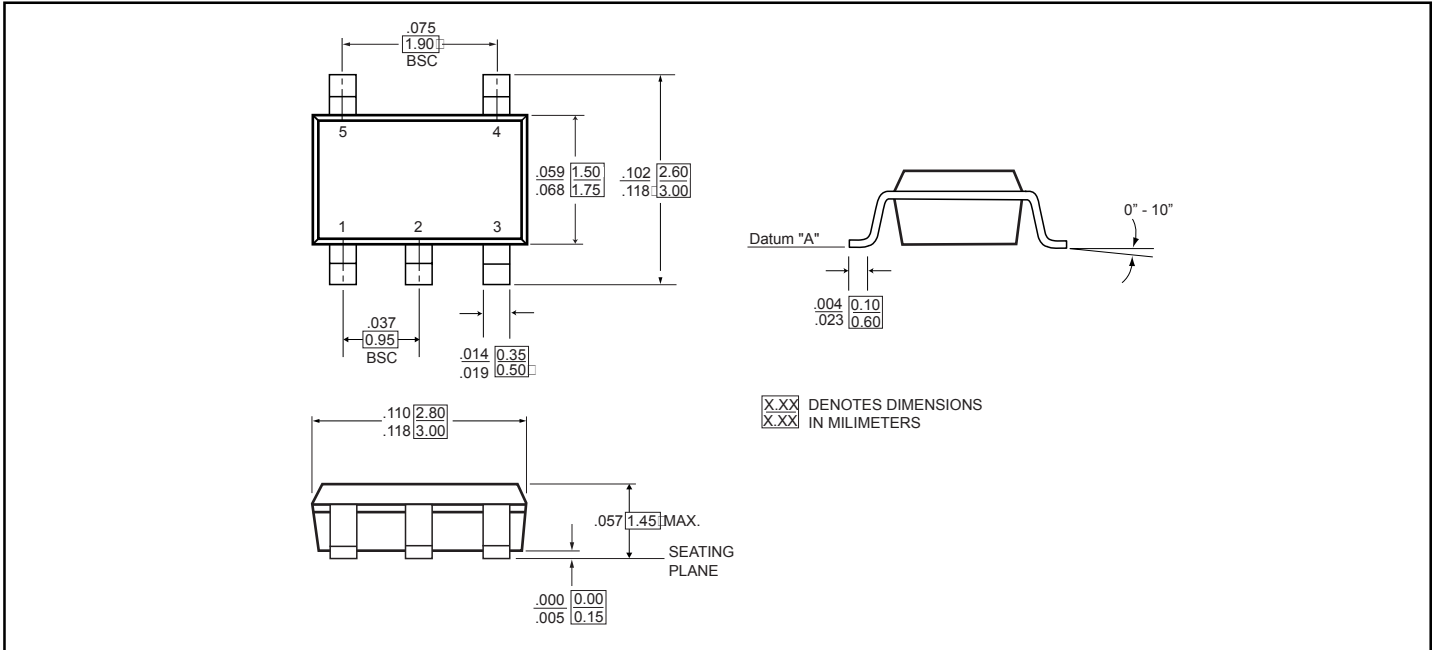


**Figure 3. AC Waveforms**

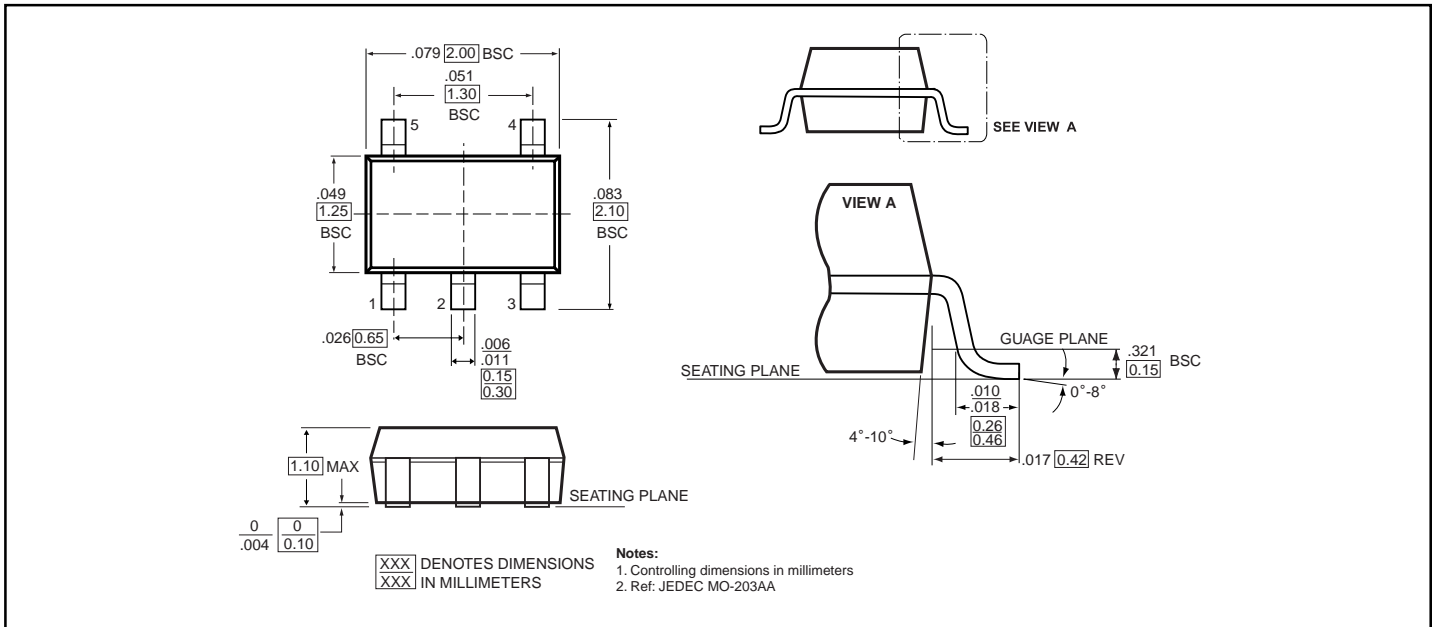


**Figure 2. I<sub>CCD</sub> Test Circuit**

**Packaging Mechanical: 5-Pin SOT23 (T)**



**Packaging Mechanical: 5-Pin SC70 (C)**



**Ordering Information**

Ordering Code	Package Code	Package Description	Top Marking
PI74STX1G08TX	T	5-pin, SOT23	B8
PI74STX1G08CX	C	5-pin, SC70	B8

**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