

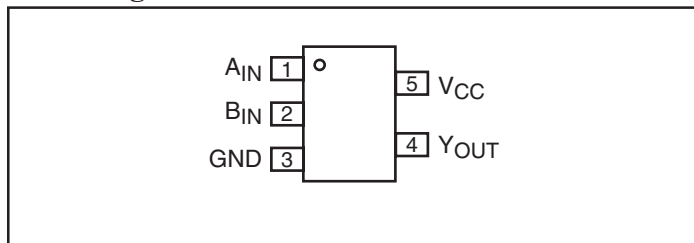
Features

- High-speed: $t_{PD} = 2.4\text{ns}$ typical into 50pF @ $5\text{V } V_{CC}$
- 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)

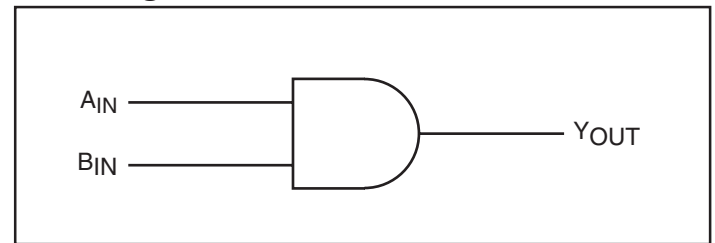
Description

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

Pin Configuration



Block Diagram



Pin Description

Pin Names	Description
A_{IN}	Input
B_{IN}	Input
Y_{OUT}	Output

Function Table

Inputs		Output
A_{IN}	B_{IN}	Y_{OUT}
L	L	L
L	H	L
H	L	L
H	H	H

Notes:

H = HIGH Logic Level
 L = LOW Logic Level

Recommended Operating Conditions⁽¹⁾

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 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	μA
		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	$V_{IN} = 5.5\text{V}, \text{GND}$		–1		1	–1	1	μA
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 _{CC} (V)	Conditions	T _A = +25°C			T _A = -40°C to +85°C		Units	Fig. No.
				Min.	Typ.	Max.	Min.	Max.		
t _{PLH} , t _{PHL}	Propagation Delay	1.8 ±0.15 2.5 ±0.2 3.3 ±0.3 5.0 ±0.5	C _L = 15pF, R _L = 1M-ohm	0.7 0.5 0.5 0.5	5.5 3.2 2.5 2.0	6.5 4.1 3.3 2.6	0.7 0.5 0.5 0.5	7.1 4.5 3.6 2.9	ns	1 3
t _{PLH} , t _{PHL}	Propagation Delay	3.3 ±0.3 5.0 ±0.5	C _L = 50pF, R _L = 500-ohm	0.5 0.5	3.3 2.4	4.4 3.3	0.5 0.5	4.9 3.7		1 3
C _{IN}	Input Capacitance	0			4				pF	
C _{PD}	Power Dissipation Capacitance ⁽¹⁾	3.3 5.0			20 30					2

Notes:

1. C_{PD} is defined as the value of the internal equivalent capacitance which is derived from dynamic operating current consumption (I_{CCD}) at no output loading and operating at 50% duty cycle (see Figure 2). C_{PD} is related to I_{CCD} dynamic operating current by the expression:

$$I_{CCD} = (C_{PD})(V_{CC})(f_{IN}) + (I_{CC} \text{ static}).$$

AC Loading and Waveforms

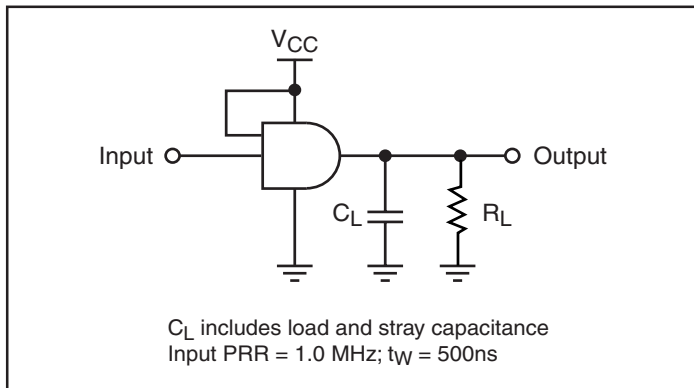


Figure 1. AC Test Circuit

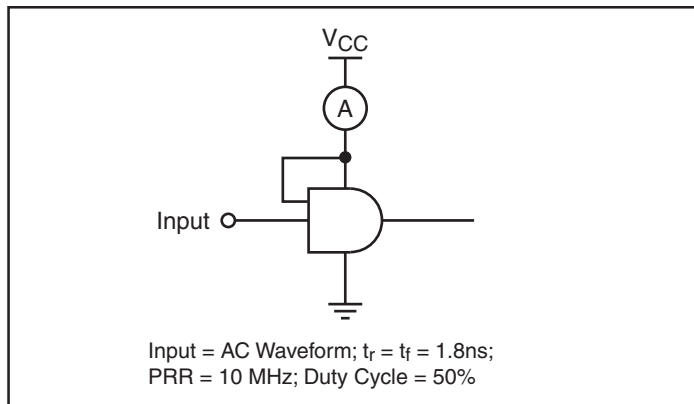


Figure 2. I_{CCD} Test Circuit

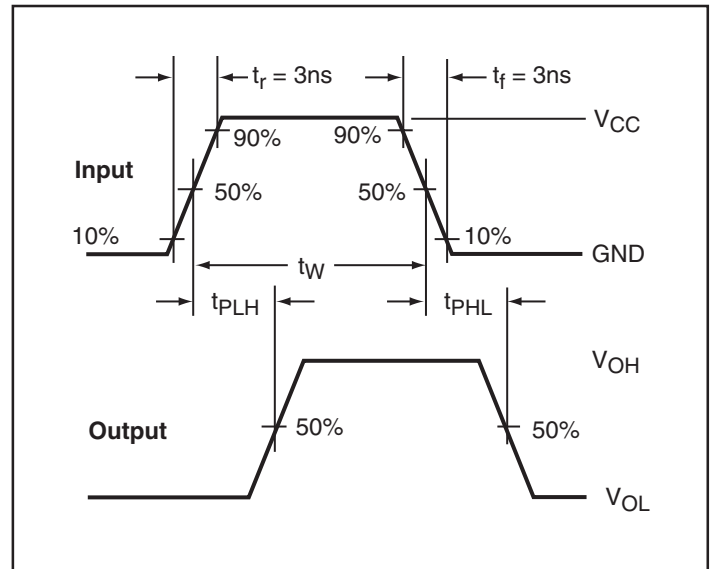


Figure 3. AC Waveforms

Technical drawing of a component with three views: top, side, and end view.

Top View Dimensions:

- Overall width: $.075$ (1.90 BSC)
- Overall height: $.059$ (1.50) / $.068$ (1.75)
- Distance from top edge to hole center: $.102$ (2.60) / $.118$ (3.00)
- Distance from bottom edge to hole center: $.037$ (0.95 BSC)
- Distance between holes: $.014$ (0.35) / $.019$ (0.50)

Side View Dimensions:

- Overall height: $.057$ (1.45) MAX.
- Seating Plane

End View Dimensions:

- Overall width: $.110$ (2.80) / $.118$ (3.00)
- Distance from seating plane to bottom: $.000$ (0.00) / $.005$ (0.15)

Notes:

- Datum "A" is indicated on the side view.
- X.XX DENOTES DIMENSIONS IN MILLIMETERS

Ordering Code	Package Code	Package Description	Top Marking
PI74STX1G08TX	T	5-pin, SOT23	B8
PI74STX1G08CX	C	5-pin, SC70	B8
PI74STX1G08TEX	T	Pb-free & Green 5-pin, SOT23	B8
PI74STX1G08CEX	C	Pb-free & Green 5-pin, SC70	B8

- Thermal characteristics can be found on the company web site at www.pericom.com/packaging/
- E = Pb-free & Green
- X = Tape and reel