

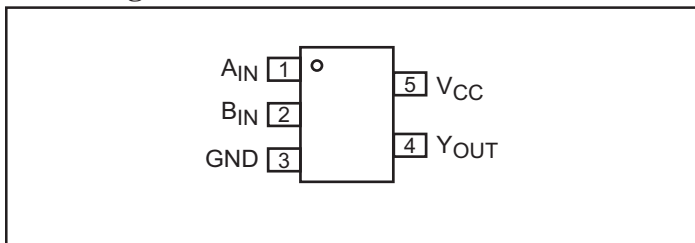
Features

- 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)

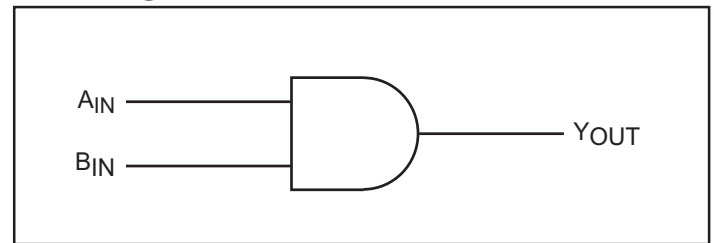
Description

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

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	

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

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})	± 50 mA
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})	± 50 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		$T_A = +25^\circ\text{C}$			$T_A = -40 \text{ to } +85^\circ\text{C}$		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										
		4.5			4.4	4.5		4.4										
V_{OL}	LOW Level Output Voltage	1.65	$V_{IN} = V_{IH}$	$I_{OH} = -4\text{mA}$ $I_{OH} = -8\text{mA}$ $I_{OH} = -16\text{mA}$ $I_{OH} = -24\text{mA}$ $I_{OH} = -32\text{mA}$	1.29	1.52		1.29										
		2.3			1.9	2.13		1.9										
		3.0			2.4	2.71		2.4										
		3.0			2.3	2.55		2.3										
		4.5			3.8	4.20		3.8										
		4.5			3.8	4.20		3.8										
I_{IN}	Input Leakage Current	0-5.5	$V_{IN} = 5.5\text{V}, GND$		-1		1	-1	1	μA								
		I_{OFF}			Power Off Leakage Current	0.0	$V_{IN} \text{ or } V_{OUT} = 5.5\text{V}$		-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 _{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	C _L = 15pF, R _L = 1M-ohm	0.7	5.5	6.5	0.7	7.1	ns	1 3
		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		
		5.0 ±0.5		0.5	2.0	2.6	0.5	2.9		
t _{PLH} , t _{PHL}	Propagation Delay	3.3 ±0.3	C _L = 50pF, R _L = 500-ohm	0.5	3.3	4.4	0.5	4.9	pF	1 3
		5.0 ±0.5		0.5	2.4	3.3	0.5	3.7		
C _{IN}	Input Capacitance	0			4					
C _{PD}	Power Dissipation Capacitance ⁽¹⁾	3.3 5.0			20 30					2

Notes:

- 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} static).

AC Loading and Waveforms

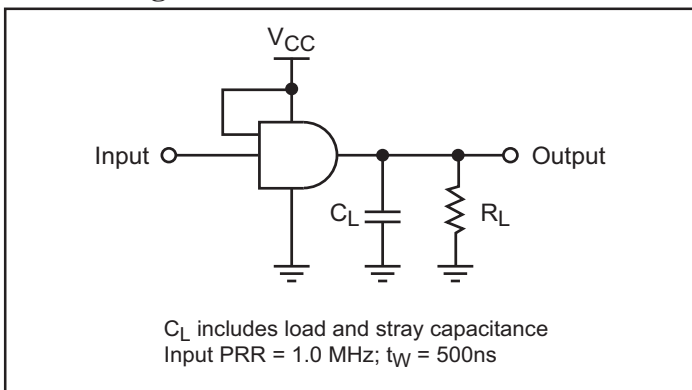


Figure 1. AC Test Circuit

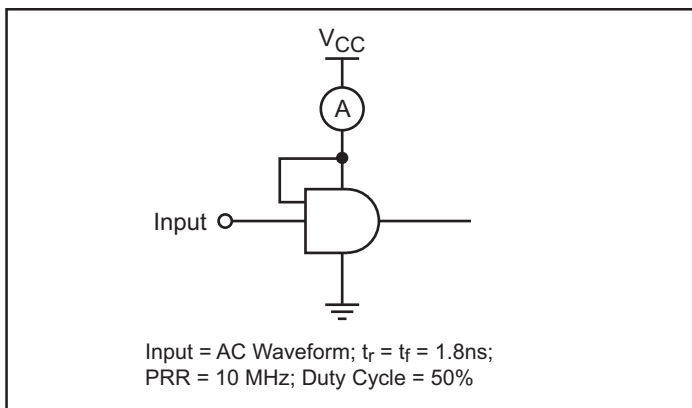


Figure 2. I_{CCD} Test Circuit

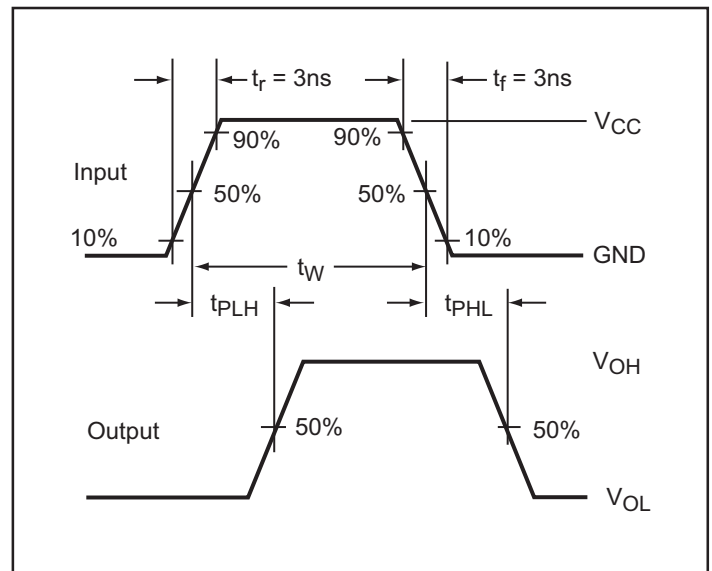
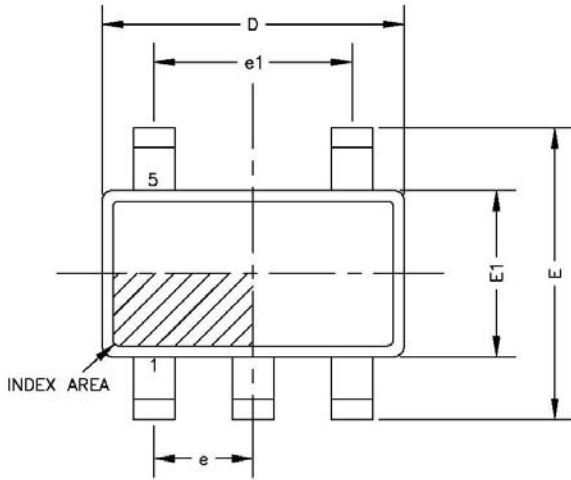
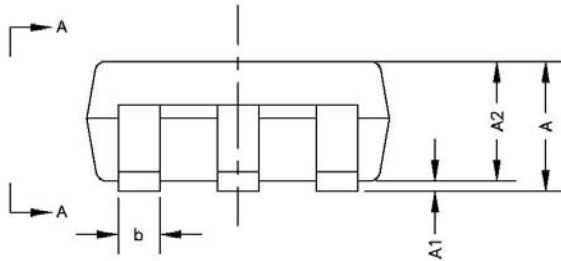


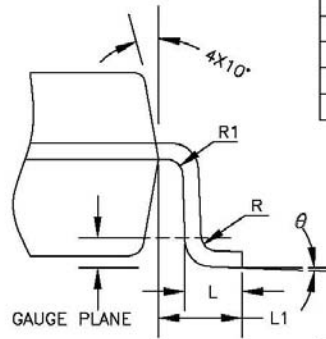
Figure 3. AC Waveforms



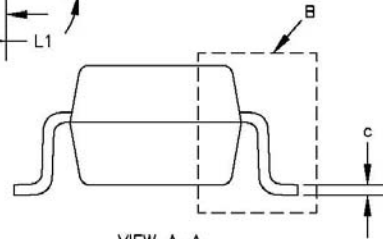
TOP VIEW



SIDE VIEW



DETAIL B



VIEW A-A

SYMBOLS	MIN.	NOM.	MAX.
A	—	—	1.45
A1	0.00	—	0.15
A2	0.90	1.15	1.30
b	0.35	—	0.50
c	0.08	—	0.22
D	2.80	2.90	3.00
E	2.60	2.80	3.00
E1	1.50	1.60	1.75
L	0.30	0.45	0.60
L1	0.60 REF		
R	0.10	—	—
R1	0.10	—	0.25
θ	0°	4°	8°
e	0.95 BSC		
e1	1.90 BSC		

NOTE :

1. ALL DIMENSIONS IN MILLIMETERS. ANGLES IN DEGREES.
2. DIMENSIONS EXCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
3. REFER EIAJ SC74A AND JEDEC MO-178.

