

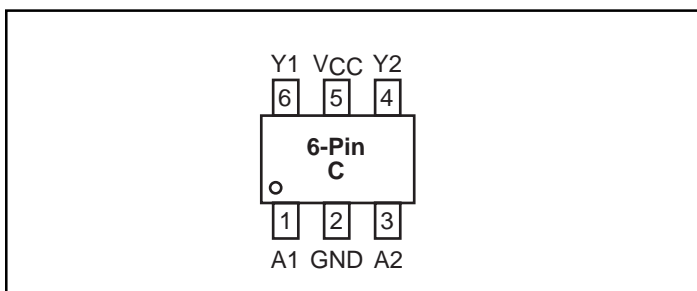
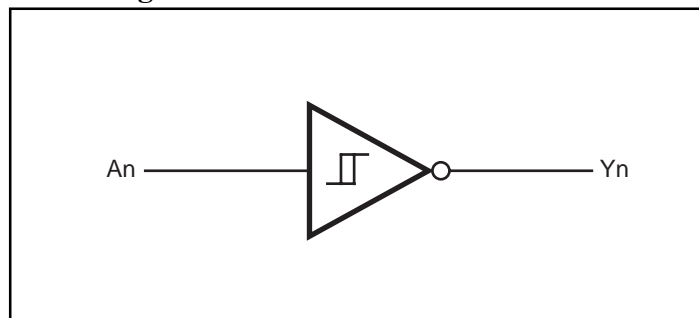
**Features**

- High-Speed:  $t_{PD} = 3.2\text{ns}$  typical into  $50\text{pF}$  @  $5\text{V } V_{CC}$
- Broad Operating Range:  $V_{CC} = 1.65\text{V}$  to  $5.5\text{V}$
- Power down high-impedance inputs/outputs
- High Output Drive:  $\pm 24\text{mA}$  at  $3\text{V } V_{CC}$
- Package: 6-pin space saving SC70 (C)

**Description**

The PI74STX2G14 is a Dual Schmitt-Trigger inverter 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.

**PI74STX2G14**

**Block Diagram**

**Pin Description**

Pin Names	Description
An	Inputs
Yn	Outputs

**Function Table**

Inputs	Output
A	Y
L	H
H	L

**Note:**

H = HIGH Logic Level  
L = LOW Logic Level

**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	

**Note:**

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

### Absolute Maximum Ratings

Supply Voltage (V <sub>CC</sub> ) ..... -0.5V to +7V	DC Output Diode Current (I <sub>OK</sub> ) ..... -50mA to 20mA
DC Input Voltage (V <sub>IN</sub> <sup>(1)</sup> ) ..... -0.5V to +7V	DC Output Current (I <sub>OUT</sub> ) ..... ±50mA
Voltage Range Applied to Any Output in the Power-Off State, V <sub>OUT</sub> <sup>(1)</sup> ..... -0.5V to +7V	DC V <sub>CC</sub> /GND Current (I <sub>CC</sub> /I <sub>GND</sub> ) ..... ±100mA
Voltage Range Applied to Any Output in the High or Low State, V <sub>OUT</sub> <sup>(1)</sup> ..... -0.5V to V <sub>CC</sub> +0.5V	Storage Temperature (T <sub>STG</sub> ) ..... -65°C to +150°C
DC Input Diode Current (I <sub>IK</sub> ) ..... -50mA to 20mA	Junction Lead Temperature (I <sub>OS</sub> ) ..... 260°C
	Power Dissipation SC70 ..... 150mW

**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.

1. 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 <sub>CC</sub> (V)	Conditions		TA = +25°C			TA = -40°C to +85°C		Units
					Min.	Typ.	Max.	Min.	Max.	
V <sub>P</sub>	Positive Threshold Voltage	1.65			0.6	1.05	1.4	0.6	1.4	V
		1.8			0.7	1.11	1.5	0.7	1.5	
		2.3			1.0	1.32	1.8	1.0	1.8	
		3.0			1.3	1.61	2.2	1.3	2.2	
		4.5			1.9	2.26	3.1	1.9	3.1	
		5.5			2.2	2.49	3.6	2.2	3.6	
V <sub>N</sub>	Negative Threshold Voltage	1.65			0.2	0.65	0.8	0.2	0.8	
		1.8			0.25	0.70	0.9	0.25	0.9	
		2.3			0.40	0.86	1.15	0.40	1.15	
		3.0			0.6	1.05	1.5	0.6	1.5	
		4.5			1.0	1.42	2.0	1.0	2.0	
		5.5			1.2	1.54	2.3	1.2	2.3	
V <sub>H</sub>	Hysteresis Voltage	1.65			0.1	0.40	0.9	0.1	0.9	
		1.8			0.15	0.41	1.0	0.15	1.0	
		2.3			0.25	0.46	1.1	0.25	1.1	
		3.0			0.4	0.56	1.2	0.4	1.2	
		4.5			0.6	0.85	1.5	0.6	1.5	
		5.5			0.7	0.96	1.7	0.7	1.7	
V <sub>OH</sub>	HIGH Level Output Voltage	1.65	V <sub>IN</sub> = V <sub>IL</sub>	I <sub>OH</sub> = -100µA	1.55	1.65		1.55		
		1.8			1.7	1.8	1.7			
		2.3			2.2	2.3	2.2			
		3.0			2.9	3.0	2.9			
		4.5			4.4	4.5	4.4			
		4.5					4.4			
	1.65		I <sub>OH</sub> = -4mA	1.29	1.48		1.29			
	2.3		I <sub>OH</sub> = -8mA	1.9	2.09		1.9			
	3.0		I <sub>OH</sub> = -16mA	2.4	2.67		2.4			
	3.0		I <sub>OH</sub> = -24mA	2.3	2.48		2.3			
	4.5		I <sub>OH</sub> = -32mA	3.8	4.00		3.8			

### DC Electrical Characteristics

(Over supply voltage and operating temperature ranges, unless otherwise specified) (continued)

Symbol	Parameter	V <sub>CC</sub> (V)	Conditions		T <sub>A</sub> = +25°C			T <sub>A</sub> = -40 to +85°C		Units
					Min.	Typ.	Max.	Min.	Max.	
V <sub>OL</sub>	LOW Level Output Voltage	1.65	V <sub>IN</sub> = V <sub>IH</sub>	I <sub>OL</sub> = 100μA		0.0	0.1		0.1	V
		1.8			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 <sub>OL</sub> = 4mA		0.06	0.24		0.24	
		2.3		I <sub>OL</sub> = 8mA		0.10	0.3		0.3	
		3.0		I <sub>OL</sub> = 16mA		0.17	0.4		0.4	
		3.0		I <sub>OL</sub> = 24mA		0.26	0.55		0.55	
		4.5		I <sub>OL</sub> = 32mA		0.29	0.55		0.55	
I <sub>IN</sub>	Input Leakage Current	0 to 5.5	V <sub>IN</sub> = 5.5V, GND				±0.1		±1.0	μA
I <sub>OFF</sub>	Power Off Leakage Current	0.0	V <sub>IN</sub> or V <sub>OUT</sub> = 5.5V				±1		±10	
I <sub>CC</sub>	Quiescent Supply Current	1.65-5.5	V <sub>IN</sub> = 5.5V, 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	1.65	C <sub>L</sub> = 15pF, R <sub>L</sub> = 1MΩ	2.5		13.1	2.5	14.5	ns	1 3
		1.8		2.5		10.9	2.5	12.0		
		2.5 ±0.2		1.8		7.4	1.8	8.1		
		3.3 ±0.3		1.5		5.0	1.5	5.5		
		5.0 ±0.5		1.0		4.1	1.0	4.5		
t <sub>PLH</sub> , t <sub>PHL</sub>	Propagation Delay	3.3 ±0.3	C <sub>L</sub> = 50pF, R <sub>L</sub> = 500Ω	1.8		6.0	1.8	6.6	pF	1 3
		5.0 ±0.5		1.2		4.9	1.2	5.4		
C <sub>IN</sub>	Input Capacitance	0			2.5					
C <sub>PD</sub>	Power Dissipation Capacitance <sup>(3)</sup>	3.3			15.0				pF	2
		5.0			19.0					

#### 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

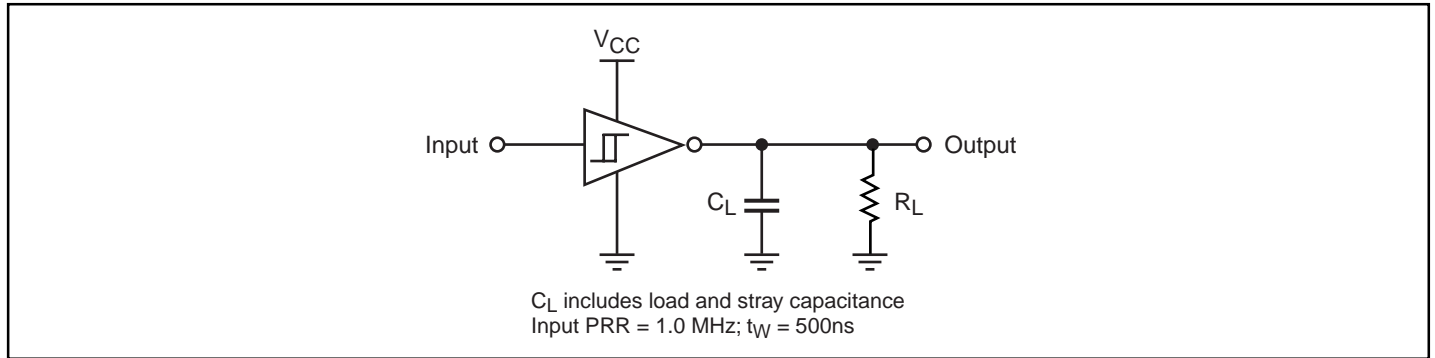


Figure 1. AC Test Circuit

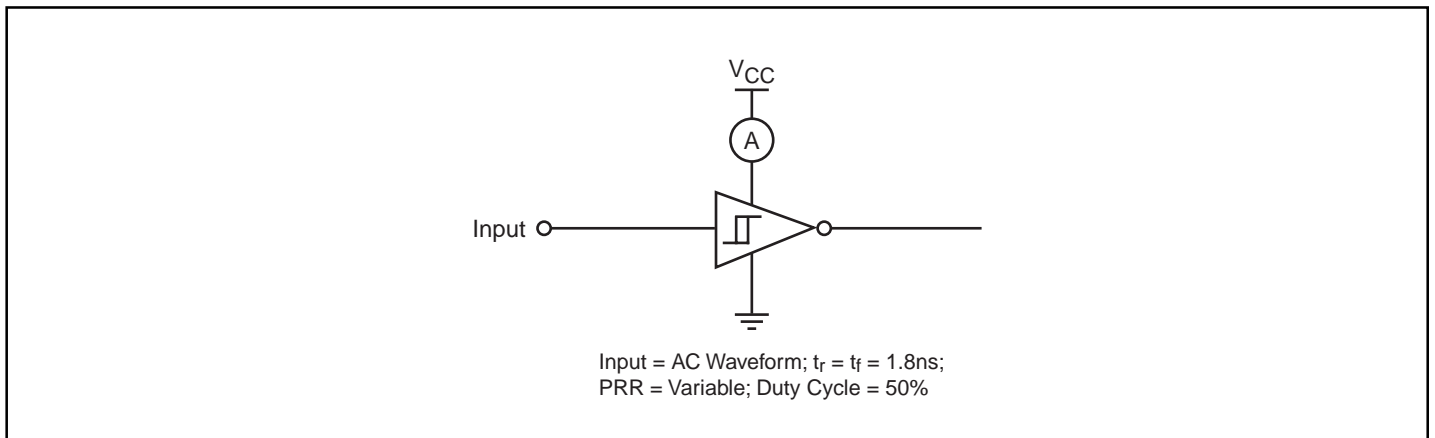


Figure 2. ICCD Test Circuit

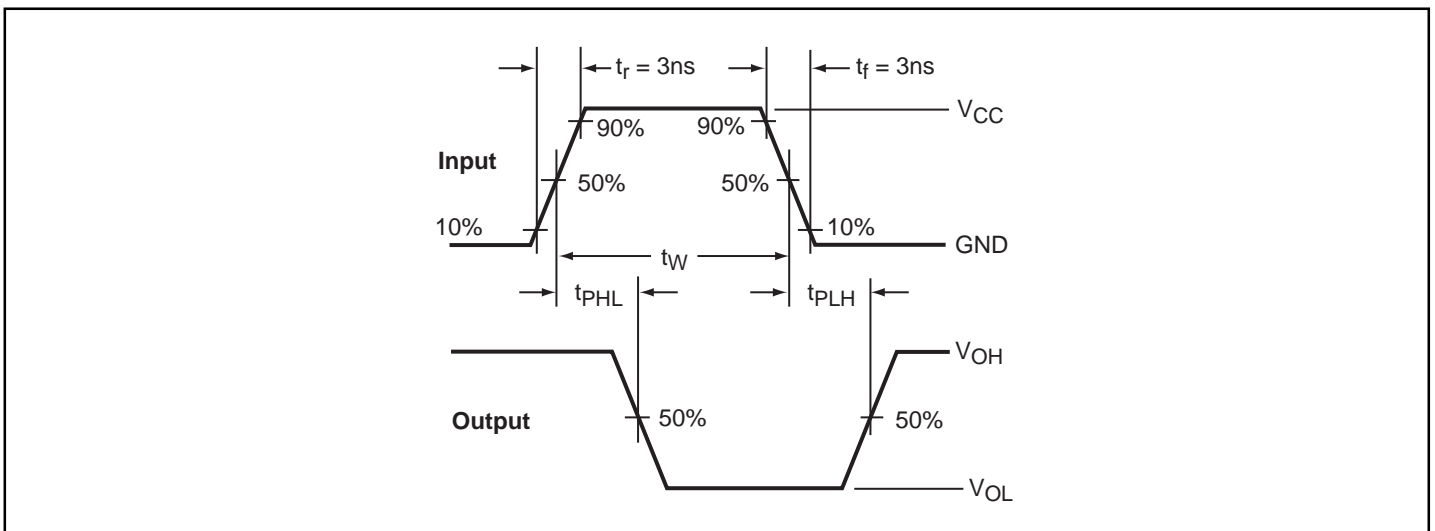
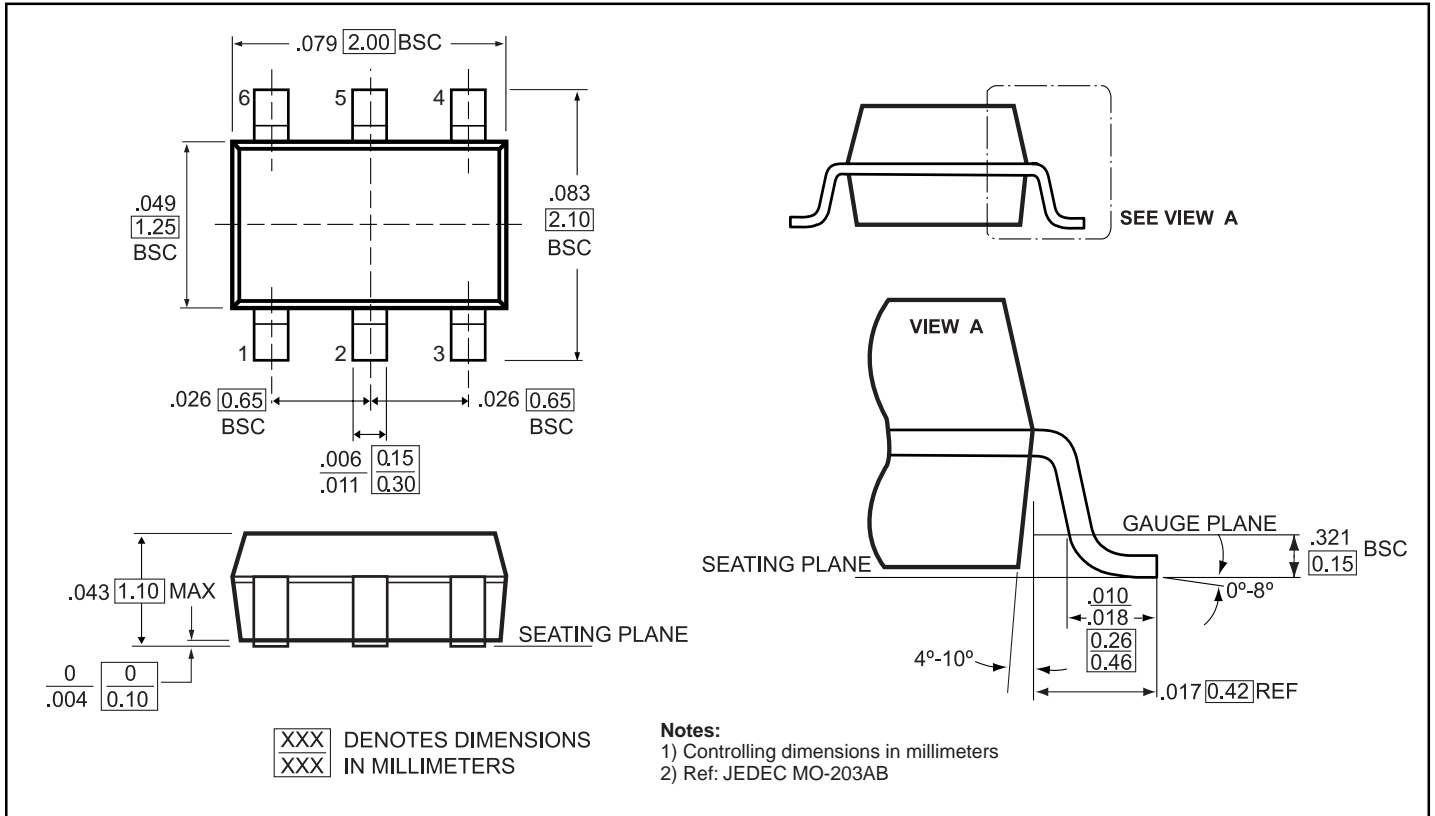


Figure 3. AC Waveforms

**Packaging Mechanical: 6-Pin SC70 (C)**



**Ordering Information**

Ordering Code	Package Code	Package Description	Top Marking
PI74STX2G14X	C	6-pin SC70	DC