

Recommended Operating Conditions⁽⁵⁾

		Min.	Max.	Units	
V _{CC}	Supply Voltage	Operating	2.7	3.6	V
V _{IH}	High-level Input Voltage	V _{CC} = 2.7V to 3.6V	2.0		
V _{IL}	Low-level Input Voltage	V _{CC} = 2.7V to 3.6V		0.8	
V _I	Input Voltage		0	5.5	
V _O	Output Voltage	High or Low State	0	V _{CC}	
		3-State	0	5.5	
I _{OH}	High-level output current	V _{CC} = 2.7V		- 12	mA
		V _{CC} = 3.0V to 3.6V		- 24	
I _{OL}	Low-level output current	V _{CC} = 2.7V		12	
		V _{CC} = 3.0V to 3.6V		24	
Δt/ΔV	Input transition rise or fall rate			6	ns/V
Δt/ΔV _{CC}	Power-up ramp rate		150		μs/V
T _A	Operating free-air temperature		- 40	85	°C

Notes: 5. All unused inputs must be held at V_{CC} or GND to ensure proper device operation.

DC Electrical Characteristics (Over the Operating Range, $T_A = -40^\circ\text{C} + 85^\circ\text{C}$)

Parameters	Description	Test Conditions		Min.	Max.	Units
V_{IK}	Clamp Diode Voltage	$V_{CC} = 2.7\text{V}$	$I_I = -18\text{mA}$		-1.2V	V
V_{OH}	Output High Voltage	$V_{CC} = 2.7\text{V}$ to 3.6V	$I_{OH} = -100\mu\text{A}$	$V_{CC} - 0.2\text{V}$		
		$V_{CC} = 2.7\text{V}$	$I_{OH} = -12\text{mA}$	2.2		
		$V_{CC} = 3\text{V}$	$I_{OH} = -12\text{mA}$	2.4		
			$I_{OH} = -24\text{mA}$	2.2		
V_{OL}	Output Low Voltage	$V_{CC} = 2.7\text{V}$ to 3.6V	$I_{OL} = 100\mu\text{A}$		0.2	
		$V_{CC} = 2.7\text{V}$	$I_{OL} = 12\text{mA}$		0.4	
		$V_{CC} = 3\text{V}$	$I_{OL} = 12\text{mA}$		0.4	
			$I_{OL} = 24\text{mA}$		0.55	
I_I	Input Leakage Current	Control Inputs	$V_{CC} = 0\text{V}$ to 3.6V	$V_I = 0\text{V}$ to 5.5V		
		A or B Ports ⁽⁶⁾	$V_{CC} = 3.6\text{V}$	$V_I = 5.5\text{V}$		± 5
				$V_I = V_{CC}$		
$V_I = \text{GND}$						
$I_{I(\text{HOLD})}$	Data Input Hold Current (A or B ports)	$V_{CC} = 3\text{V}$	$V_I = 0.8\text{V}$	75		
			$V_I = 2\text{V}$	-75		
		$V_{CC} = 3.6\text{V}^{(7)}$	$V_I = 0$ to 3.6V		± 500	
I_{OFF}	Power Off Output Leakage Current	$V_{CC} = 0\text{V}$	V_I or $V_O = 0\text{V}$ to 5.5V		± 5	μA
I_{OZPU}	Power-Up 3-State Current	$V_{CC} = 0\text{V}$ to 1.5V	$V_O = 0.5\text{V}$ to 5.5V , $\overline{\text{OE}} = \text{don't care}$		± 5	
I_{OZPD}	Power-Down 3-State Current	$V_{CC} = 1.5\text{V}$ to 0V	$V_O = 0.5\text{V}$ to 5.5V , $\overline{\text{OE}} = \text{don't care}$		± 5	
I_{CC}	Quiescent Power Supply Current	$V_{CC} = 2.7\text{V}$ to 3.6V	$V_I = V_{CC}$ or GND	$I_O = 0$	100	
			$3.6\text{V} \leq V_I \leq 5.5\text{V}^{(8)}$			
ΔI_{CC}	Increase in I_{CC}	$V_{CC} = 3.0\text{V}$ to 3.6V	One input at $V_{CC} - 0.6\text{V}^{(9)}$ Other inputs at V_{CC} or GND		500	

- Notes:**
6. For I/O ports, Input Leakage Current (I_I) includes the 3-state Output Leakage Current. Unused pins are at V_{CC} or GND.
 7. This is the maximum bus-hold dynamic current. It is the minimum overdrive current required to switch the input from one state to another.
 8. This applies in the disabled state only.
 9. This is the increase in supply current for each input that is at the specified TTL voltage level rather than V_{CC} or GND.

Capacitance

Parameters	Description	Test Conditions	Typ. ⁽¹⁰⁾	Units
C _{IN}	Control Input Capacitance	V _{CC} = 3.3V, V _I = V _{CC} or GND	3.3	pF
C _{IO}	Input/Output Capacitance	V _{CC} = 3.3V, V _O = V _{CC} or GND	7.8	
C _{PD}	Power Dissipation Capacitance ⁽¹¹⁾	V _{CC} = 3.3V, V _I = 0V or V _{CC} , f = 10 MHz	33	

Notes:

10. All typical values are measured at V_{CC} = 3.3V, T_A = 25°C.

11. 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, C_{PD} is related to I_{CCD} dynamic operating current by the expression: I_{CCD} = (C_{PD})(V_{CC})(f_{IN}) + (I_{CCstatic}).

Switching Characteristics Over Operating Range

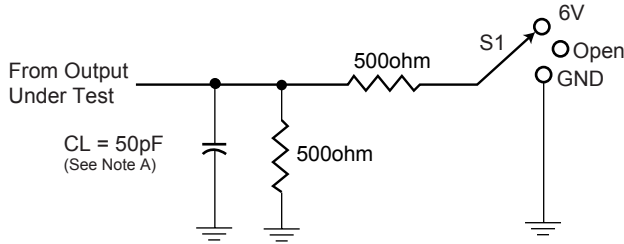
Parameters	Description	From (Input)	To (Output)	V _{CC} = 3.3V ±0.3V		V _{CC} = 2.7V		Units
				C _L = 50pF, R _L = 500Ω		C _L = 50pF, R _L = 500Ω		
				Min.	Max.	Min.	Max.	
t _{PLH}	Propagation Delay	A or B	B or A	1.0	5.4	1.0	5.8	ns
t _{PHL}				1.0	5.4	1.0	5.8	
t _{PZH}	Output Enable Time	OE	A or B	1.0	7.0	1.0	7.9	
t _{PZL}				1.0	7.0	1.0	7.9	
t _{PHZ}	Output Disable Time	OE	A or B	1.0	5.4	1.0	5.8	
t _{PLZ}				1.0	5.4	1.0	5.8	
t _{SK(O)}	Output to Output Skew ⁽¹²⁾				0.5			

Notes:

12. Skew between any two outputs, switching in the same direction.

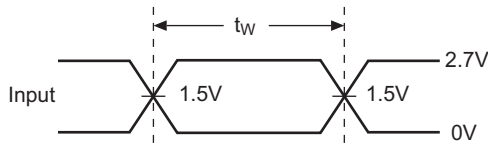
PARAMETER MEASUREMENT INFORMATION

$V_{CC} = 2.7V \text{ and } 3.3V \pm 0.3V$

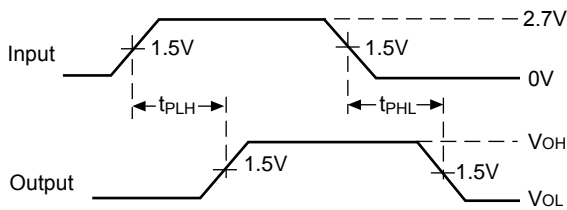


Load Circuit

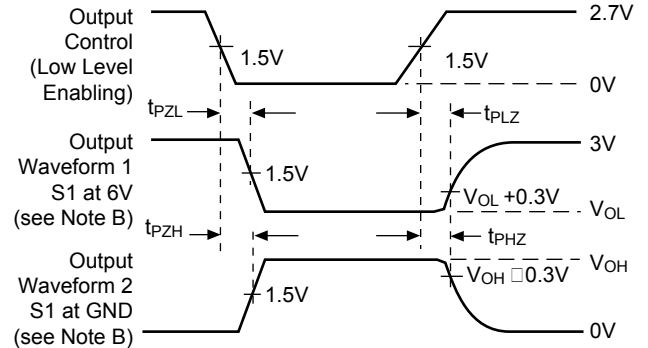
Test	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	6V
t_{PHZ}/t_{PZH}	GND



**Voltage Waveforms
Pulse Duration**



**Voltage Waveforms
Propagation Delay Times**



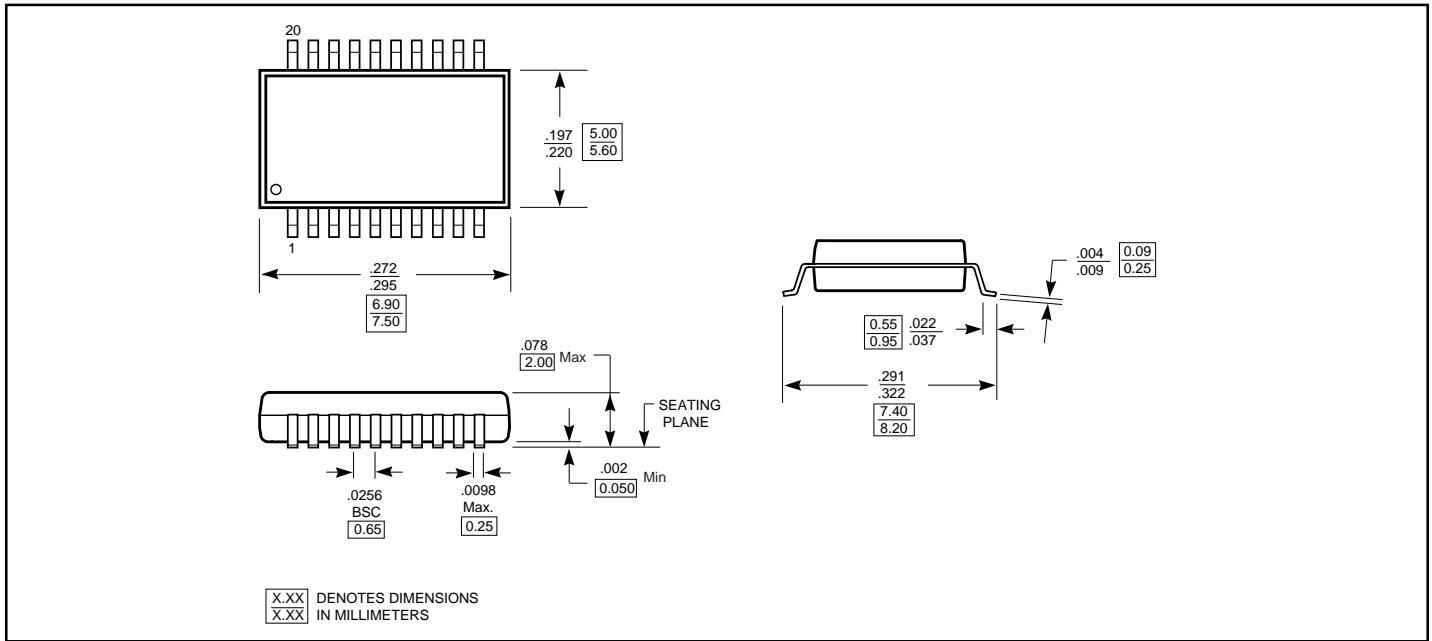
**Voltage Waveforms
Enable and Disable Times**

Figure 1. Load Circuit and Voltage Waveforms

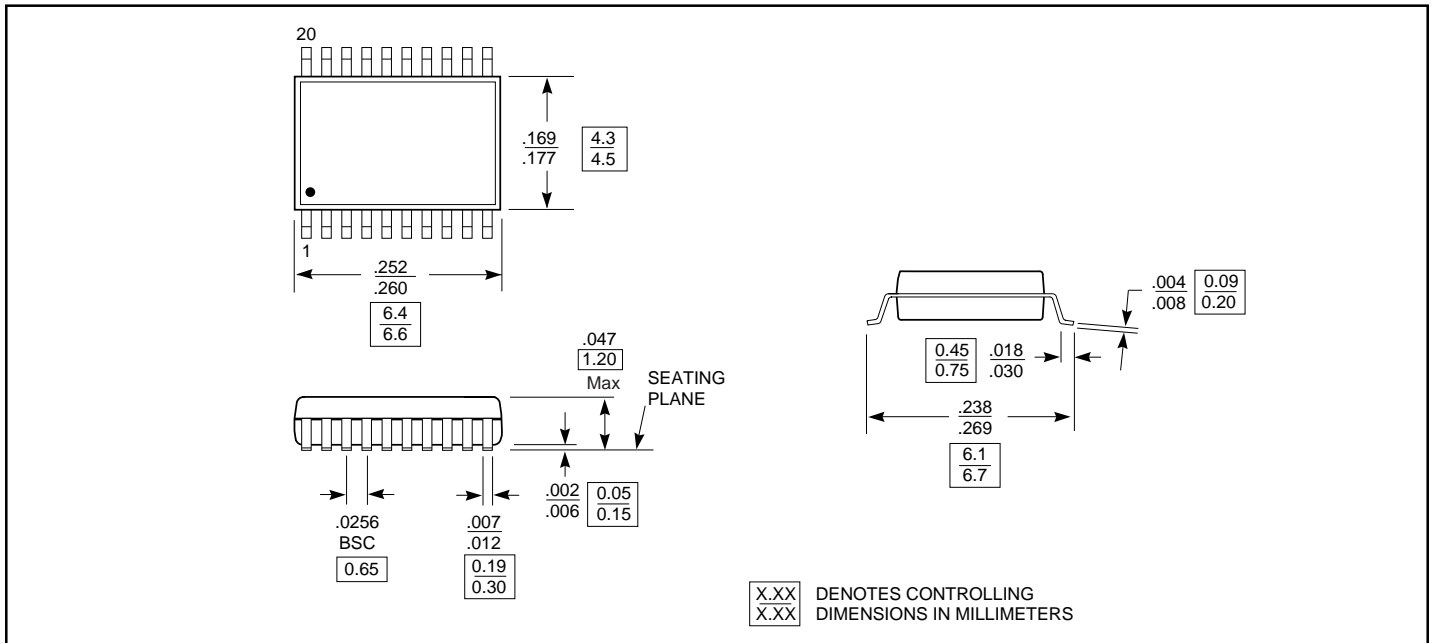
Notes:

- A. C_L includes probe and jig capacitance.
- B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control.
 Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
- C. All input impulses are supplied by generators having the following characteristics: $PRR \leq 10 \text{ MHz}$, $Z_O = 50\text{ohm}$, $t_R \leq 2.5\text{ns}$, $t_F \leq 2.5\text{ns}$.
- D. The outputs are measured one at a time with one transition per measurement.

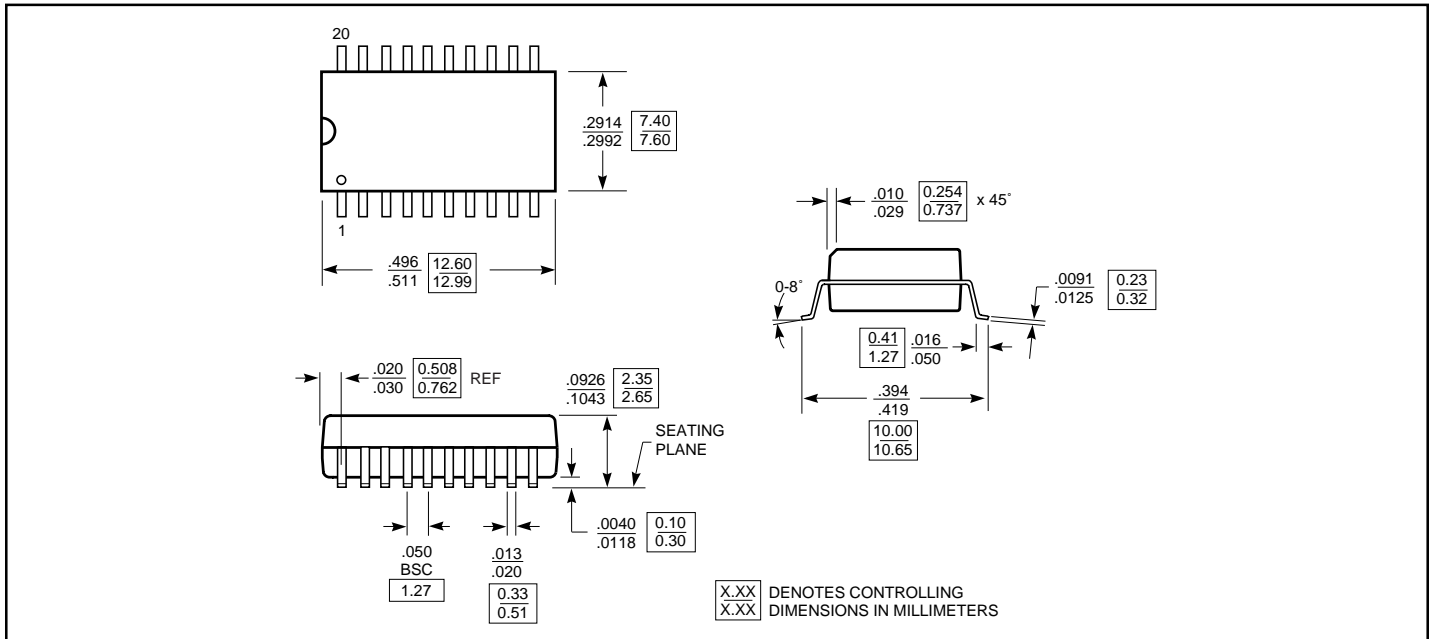
Packaging Mechanical: 20-pin SSOP (H)



Packaging Mechanical: 20-pin TSSOP (L)



Packaging Mechanical: 20-pin SOIC (S)



Ordering Information

Ordering Data	Description
PI74LVCTH245H	20-pin, 209-mil wide plastic SSOP
PI74LVCTH245L	20-pin, 173-mil wide plastic TSSOP
PI74LVTCH245S	20-pin, 300-mil wide plastic SOIC

Notes:

- Thermal characteristics can be found on the company web site at <http://www.pericom.com/packaging/mechanicals.php>