

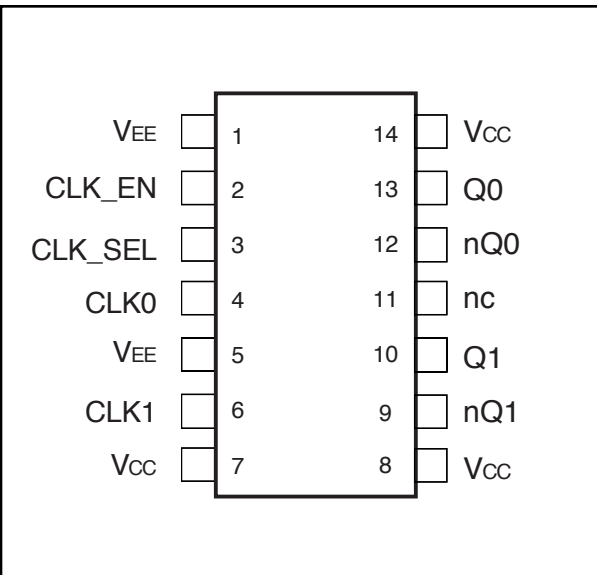


# PO74HSTL85352A

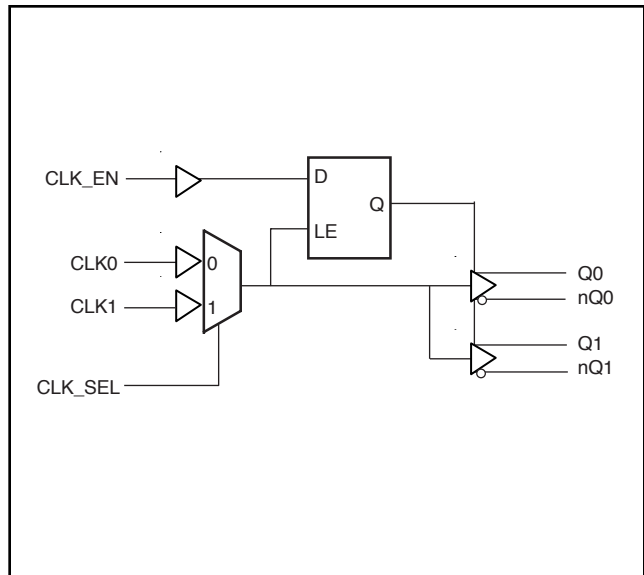
## 300MHz TTL/CMOS Potato Chip

FEATURES:	DESCRIPTION:
<ul style="list-style-type: none"> <li>. Patented Technology</li> <li>. Two HSTL differential outputs</li> <li>. Two single LVTTTL/LVC MOS inputs</li> <li>. Operating frequency up to 300MHz with 15 pf load</li> <li>. Very low output pin to pin skew &lt; 30ps</li> <li>. 3.2-ns propagation delay (max)</li> <li>. 2.4V to 3.6V power supply</li> <li>. Industrial temperature range: -40°C to 85°C</li> <li>. 14-pin TSSOP package</li> </ul>	<p>The PO74HSTL85352A is a low-skew, 1-to-2 differential fanout buffer targeted to meet the requirements of high-performance clock and data distribution applications. The device is implemented on CMOS technology and has a fully differential internal architecture that is optimized to achieve low signal skews at operating frequencies of up to 300MHz .</p> <p>The device features two single-ended input paths that are multiplexed internally. This mux is controlled by the CLK_SEL pin. The PO74HSTL85352A functions as a signal-level translator and fanout on LVC MOS / LVTTTL single-ended signal to two pair of HSTL differential loads. Since the PO74HSTL85352A introduces negligible jitter to the timing budget, it is the ideal choice for distributing high frequency, high precision clocks across back-planes and boards in communication systems.</p>

### Pin Configuration



### Logic Block Diagram





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### Pin Definitions

Pin	Name	I/O	Type	Description
7,8,14	VCC	VCC	Power	Power supply, positive connection
11	NC			No connect
3	CLK_SEL	I,PD	LVC MOS	Input clock select with pull down resistor
2	CLK_EN	I,PU	LVC MOS	Clock enabled
4	CLK0	I,PD	LVC MOS, LV TTL	LVC MOS, LV TTL clock Input
6	CLK1	I,PD	LVC MOS, LV TTL	LVC MOS, LV TTL clock Input
1,5	VEE	GND	Power	Power Ground
12,9	Q[0:1]#	O	HSTL	Complement output
13,10	Q[0:1]	O	HSTL	Ture output

### Control Input Function Table

Inputs			Outputs	
CLK_EN	CLK_SEL	Selected Source	Q0, Q1	nQ0, nQ1
0	0	CLK0	Disabled; LOW	Disabled; HIGH
0	1	CLK1	Disabled; LOW	Disabled; HIGH
1	0	CLK0	Enabled	Enabled
1	1	CLK1	Enabled	Enabled

### Function Table

Inputs	Outputs	
CLK0 or CLK1	Q0, Q1	nQ0, nQ1
0	LOW	HIGH
1	HIGH	LOW

### Pin Characteristics

Symbol	Parameter	Test Conditions	Minimum	Typical	Maximum	Units
C <sub>IN</sub>	Input Capacitance			4		pF
R <sub>PULLUP</sub>	Input Pullup Resistor			88		KΩ
R <sub>PULLDOWN</sub>	Input Pulldown Resistor			88		KΩ



## 300MHz TTL/CMOS Potato Chip

### Maximum Ratings

Description	Max	Unit
Storage Temperature	-65 to 150	°C
Operation Temperature	-40 to 85	°C
Operation Voltage	-0.5 to +4.6	V
Input Voltage	-0.5 to +5.5	V
Output Voltage	-0.5 to V <sub>cc</sub> +0.5	V

**Note:**

stresses greater than listed under Maximum Ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability specification is not implied.

### DC Electrical Characteristics

Symbol	Description	Test Conditions	Min	Typ	Max	Unit
<b>V<sub>OH</sub></b>	Output High voltage	V <sub>cc</sub> =3V V <sub>in</sub> =V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OH</sub> = -12mA	<b>2.4</b>	<b>3</b>	-	<b>V</b>
<b>V<sub>OL</sub></b>	Output Low voltage	V <sub>cc</sub> =3V V <sub>in</sub> =V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OH</sub> =12mA	-	<b>0.3</b>	<b>0.5</b>	<b>V</b>
<b>V<sub>IK</sub></b>	Clamp diode voltage	V <sub>cc</sub> = Min. And I <sub>IN</sub> = -18mA	-	<b>-0.7</b>	<b>-1.2</b>	<b>V</b>

Multiple Supplies: The Voltage on any input or I/O pin cannot exceed the power pin during power-up. Power supply sequencing is NOT required.

**Notes:**

1. For conditions shown as Max. or Min., use appropriate value specified under Electrical Characteristics for the applicable device type.
2. Typical values are at V<sub>cc</sub> = 3.3V, 25 °C ambient.
3. This parameter is guaranteed but not tested.
4. Not more than one output should be shorted at one time. Duration of the test should not exceed one second.
5. V<sub>oH</sub> = V<sub>cc</sub> – 0.6V at rated current

**300MHz TTL/CMOS Potato Chip****Power Supply Characteristics**

Symbol	Description	Test Conditions (1)	Min	Typ	Max	Unit
<b>IccQ</b>	Quiescent Power Supply Current	Vcc=Max, Vin=Vcc or GND	-	<b>0.1</b>	<b>30</b>	<b>uA</b>

**Notes:**

1. For conditions shown as Max. or Min., use appropriate value specified under Electrical Characteristics for the applicable device type.
2. Typical values are at Vcc = 3.3V, 25°C ambient.
3. This parameter is guaranteed but not tested.
4. Not more than one output should be shorted at one time. Duration of the test should not exceed one second.

**Switching Characteristics**

Symbol	Description	Test Conditions (1)	Max	Unit
<b>tpD</b>	Propagation Delay CLKA or CLKB to Output pair	CL = 15pF	<b>3.2</b>	<b>ns</b>
<b>tr/tf</b>	Rise/Fall Time	0.8V – 2.0V	<b>0.8</b>	<b>ns</b>
<b>tsk(o)</b>	Output Pin to Pin Skew (Same Package)	CL = 15pF, 125MHz	<b>30</b>	<b>ps</b>
<b>tsk(pp)</b>	Output Skew (Different Package)	CL = 15pF, 125MHz	<b>350</b>	<b>ps</b>
<b>fmax</b>	Input Frequency	CL =15pF	<b>300</b>	<b>MHz</b>

**Notes:**

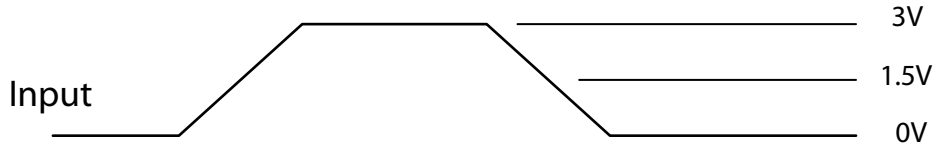
1. See test circuits and waveforms.
2. tpLH, tpHL, tsk(p), and tsk(o) are production tested. All other parameters guaranteed but not production tested.
3. Airflow of 1m/s is recommended for frequencies above 133MHz



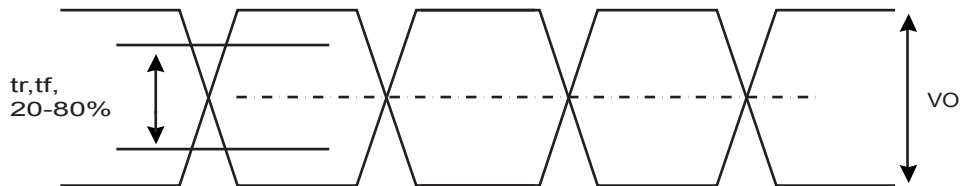
## 300MHz TTL/CMOS Potato Chip

### Test Waveforms

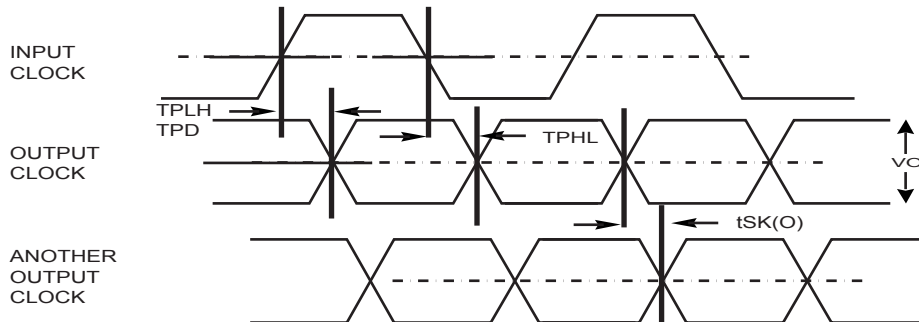
**FIGURE 1.**  
LVTTTL/LVCMOS INPUT WAVEFORM DEFINITION



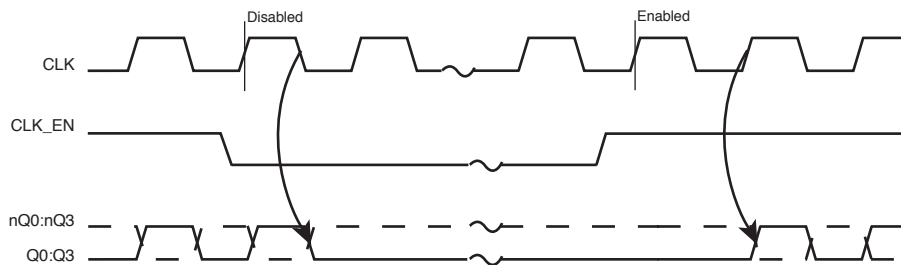
**FIGURE 2.**  
HSTL OUTPUT



**FIGURE 3.**  
Propagation Delay, Output pulse skew, and output-to-output skew for D to output pair



**FIGURE 4.**  
CLK\_EN Timing Diagram

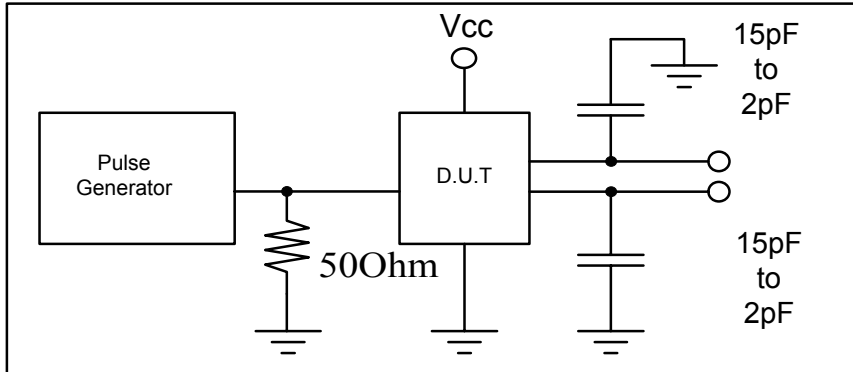




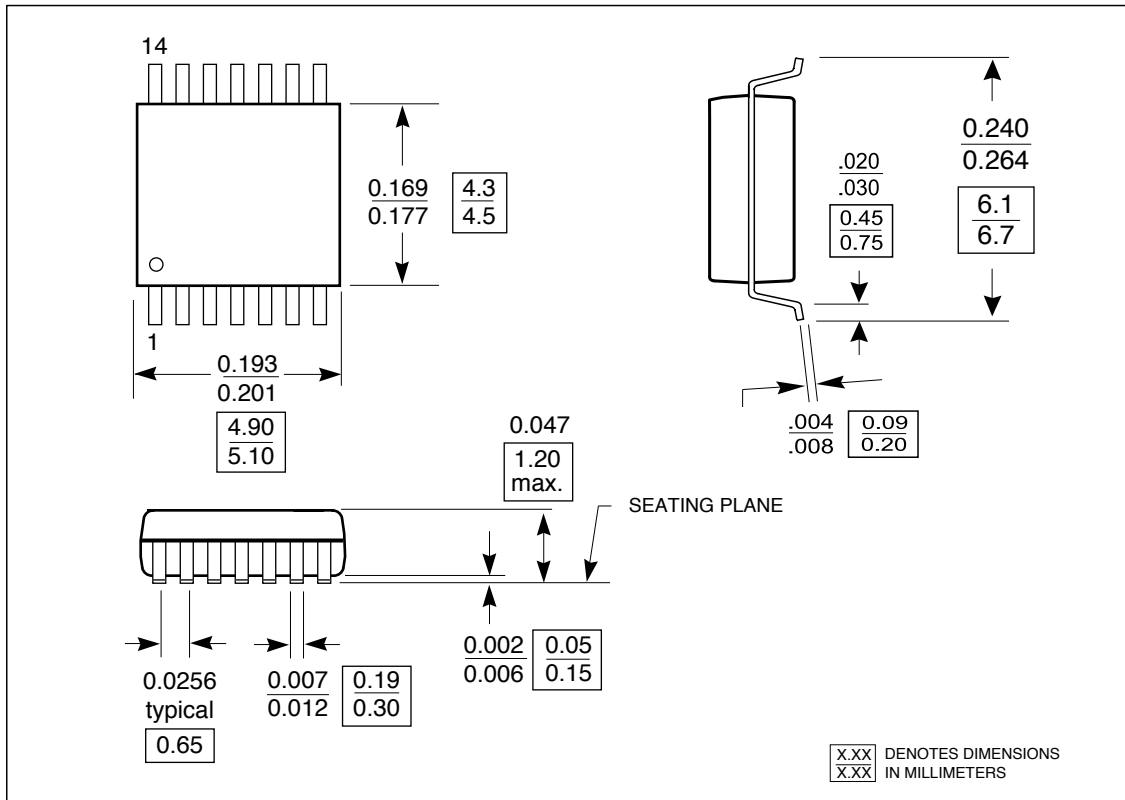
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### Test Circuit



### Packaging Mechanical Drawing: 14 pin TSSOP





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### IC Ordering Information

Ordering Code	Package		Top-Marking	T <sub>A</sub>
PO74HSTL85352ASU for Tube	14pin 173mil TSSOP	Pb-free & Green	PO74HSTL85352AS	-40°C to 85°C
PO74HSTL85352ASR for Tape & Reel	14pin 173mil TSSOP	Pb-free & Green	PO74HSTL85352AS	-40°C to 85°C

### IC Package Information

PACKAGE CODE	PACKAGE TYPE	TAPE WIDTH (mm)	TAPE PITCH (mm)	TAPE & REEL PIN 1 LOCATION	TAPE TRAILER LENGTH	QTY PER TAPE	TAPE LEADER LENGTH	QTY PER TUBE
T	14pin 173mil TSSOP	12	8	Top Left Corner	39 (12")	3000	64 (20")	96