

Product Features

- Functionally compatible with FCT3, LVT, and 74 series 16240 families of products
- 3-State outputs
- 5V Tolerant inputs and outputs
- 2.0V-3.6V V_{CC} supply operation
- Balanced sink and source output drives (24mA)
- Low ground bounce outputs
- Power down High Impedance inputs and outputs
- Supports live insertion
- ESD Protection exceeds 2000V, Human Body Model
200V, Machine Model
- Packages available:
 - 48-pin 240-mil wide plastic TSSOP (A)
 - 48-pin 300-mil wide plastic SSOP (V)

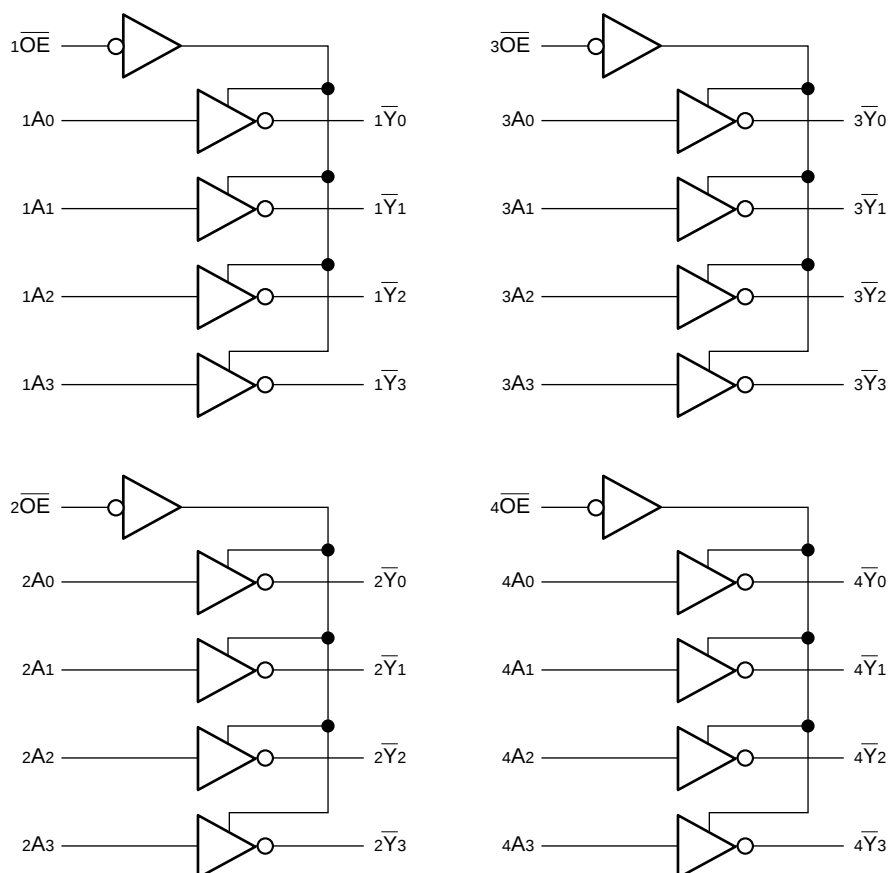
Product Description

Pericom Semiconductor's PI74LCX series of logic circuits are produced in the Company's advanced 0.6 micron CMOS technology, achieving industry leading speed grades.

The PI74LCX16240 is an inverting 16-bit buffer/line driver designed for applications driving high-capacitance loads and low impedance backplanes. This high-speed, low power device offers bus/backplane interface capability and a flow-through organization for ease of board layout. This device is designed with three-state controls to operate in a Quad-Nibble, Dual-Byte, or a single 16-bit word mode.

The PI74LCX16240 can be driven from either 3.3V or 5.0V devices allowing this device to be used as a translator in a mixed 3.3V/5.0V system.

Logic Block Diagram



Product Pin Description

Pin Name	Description
$\overline{xOE}$	3-State Output Enable Inputs (Active LOW)
xAx	Inputs
$x\overline{Y}x$	3-State Outputs
GND	Ground
Vcc	Power

Product Pin Configuration

$1\overline{OE}$	1	48	$2\overline{OE}$
$1\overline{Y}0$	2	47	$1A0$
$1\overline{Y}1$	3	46	$1A1$
GND	4	45	GND
$1\overline{Y}2$	5	44	$1A2$
$1\overline{Y}3$	6	43	$1A3$
Vcc	7	42	Vcc
$2\overline{Y}0$	8	41	$2A0$
$2\overline{Y}1$	9	40	$2A1$
GND	10	39	GND
$2\overline{Y}2$	11	38	$2A2$
$2\overline{Y}3$	12	37	$2A3$
$3\overline{Y}0$	13	36	$3A0$
$3\overline{Y}1$	14	35	$3A1$
GND	15	34	GND
$3\overline{Y}2$	16	33	$3A2$
$3\overline{Y}3$	17	32	$3A3$
Vcc	18	31	Vcc
$4\overline{Y}0$	19	30	$4A0$
$4\overline{Y}1$	20	29	$4A1$
GND	21	28	GND
$4\overline{Y}2$	22	27	$4A2$
$4\overline{Y}3$	23	26	$4A3$
$4\overline{OE}$	24	25	$3\overline{OE}$

Truth Table⁽¹⁾

Inputs ⁽¹⁾		Outputs ⁽¹⁾
$\overline{xOE}$	xAx	$x\overline{Y}x$
L	L	H
L	H	L
H	X	Z

Note:

- H = High Voltage Level
X = Don't Care,
L = Low Voltage Level
Z = High Impedance

Maximum Ratings

(Above which the useful life may be impaired. For user guidelines, not tested.)

Storage Temperature	–65°C to +150°C
Ambient Temperature with Power Applied	–40°C to +85°C
Supply Voltage to Ground Potential (Inputs & V _{CC} Only)	–0.5V to +7.0V
Supply Voltage to Ground Potential (Outputs & D/O Only) ...	–0.5V to +7.0V
DC Input Voltage	–0.5V to +7.0V
DC Output Current	120mA
Power Dissipation	1.0W

Note:

Stresses greater than those 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.

Recommended Operating Conditions

Symbol	Parameter		Min.	Max.	Units
V _{CC}	Supply Voltage	Operating	2.0	3.6	V
		Data Retention	1.5	3.6	
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} /I _{OL}	Output Current	V _{CC} = 3.0V-3.6V	—	±24	mA
		V _{CC} = 2.7V	—	±12	
T _A	Free-Air Operating Temperature		–40	+85	°C
Δt/ΔV	Input Edge Rate	V = 0.8V-2.0V, V _{CC} = 3.0V	0	10	ns/V

DC Electrical Characteristics (Over the Operating Range, $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$, $V_{CC} = 2.7\text{V}$ to 3.6V)

Parameters	Description	Test Conditions ⁽¹⁾		Min.	Typ ⁽²⁾	Max.	Units
V _{IH}	Input HIGH Voltage	Guaranteed Logic HIGH Level		2.0	—	—	V
V _{IL}	Input LOW Voltage	Guaranteed Logic LOW Level		—	—	0.8	
V _{OH}	Output HIGH Voltage	V _{CC} = 2.7-3.6	I _{OH} = −0.1mA	V _{CC} -0.2	—	—	
		V _{CC} = 2.7	I _{OH} = −12mA	2.2	—	—	
		V _{CC} = 3.0	I _{OH} = −18mA	2.4	—	—	
			I _{OH} = −24mA	2.2	—	—	
V _{OL}	Output LOW Voltage	V _{CC} = 2.7-3.6	I _{OL} = 0.1mA	—	—	0.2	
		V _{CC} = 2.7	I _{OL} = 12mA	—	—	0.4	
		V _{CC} = 3.0	I _{OL} = 16 mA	—	—		
			I _{OL} = 24mA	—	—	0.55	
V _{IK}	Clamp Diode Voltage	V _{CC} = Min., I _{IN} = −18mA		—	−0.7	−1.2	
I _I	Input Leakage Current	0 ≤ V _I ≤ 5.5V	V _{CC} = 2.7-3.6	—	—	±5	μA
I _{OZ}	3-State Output Leakage	0 ≤ V _O ≤ 5.5V V _I = V _{IH} or V _{IL}	V _{CC} = 2.7-3.6	—	—		
I _{OFF}	Power Down Disable	V _{CC} = 0V, V _{IN} or V _{OUT} ≤ 5.5V		—	—	10	
I _{CC}	Quiescent Power Supply Current	V _{CC} = Max.	V _{IN} = GND or V _{CC}	—	0.1		
ΔI _{CC}	Quiescent Power Supply Current TTL Inputs HIGH	V _{CC} = Max.	V _{IN} = V _{CC} − 0.6V ⁽³⁾	—	—	500	

Notes:

- For Max. or Min. conditions, use appropriate value specified under Electrical Characteristics for the applicable device type.
- Typical values are at $V_{CC} = 3.3\text{V}$, $+25^\circ\text{C}$ ambient.
- Per TTL driven input; all other inputs at V_{CC} or GND.

Capacitance

Parameters	Description	Test Conditions	Typ.	Units
C_{IN}	Input Capacitance	$V_{CC} = \text{Open}, V_I = 0\text{V}$ or V_{CC}	7	pF
C_{OUT}	Output Capacitance	$V_{CC} = 3.3\text{V}, V_I = 0\text{V}$ or V_{CC}	8	
C_{PD}	Power Dissipation Capacitance	$V_{CC} = 3.3\text{V}, V_I = 0\text{V}$ or $V_{CC}, F = 10\text{ MHz}$	20	

Switching Characteristics over Operating Range

Parameters	Description	Conditions	V _{CC} = 3.3V ±0.3V		V _{CC} = 2.7V		Units
			Min.	Max.	Min.	Max.	
t _{PLH}	Propagation Delay D _{XX} to O _{XX}	C _L = 50pF R _L = 500Ω	1.5	4.8	1.5	5.6	ns
t _{PZH} t _{PZL}	Output Enable time		1.5	5.4	1.5	6.0	
t _{PHZ} t _{PLZ}	Output Disable Time		1.5	5.3	1.5	5.4	
t _{SK(O)}	Output Skew ⁽¹⁾		—	1.0	—	—	

Note:

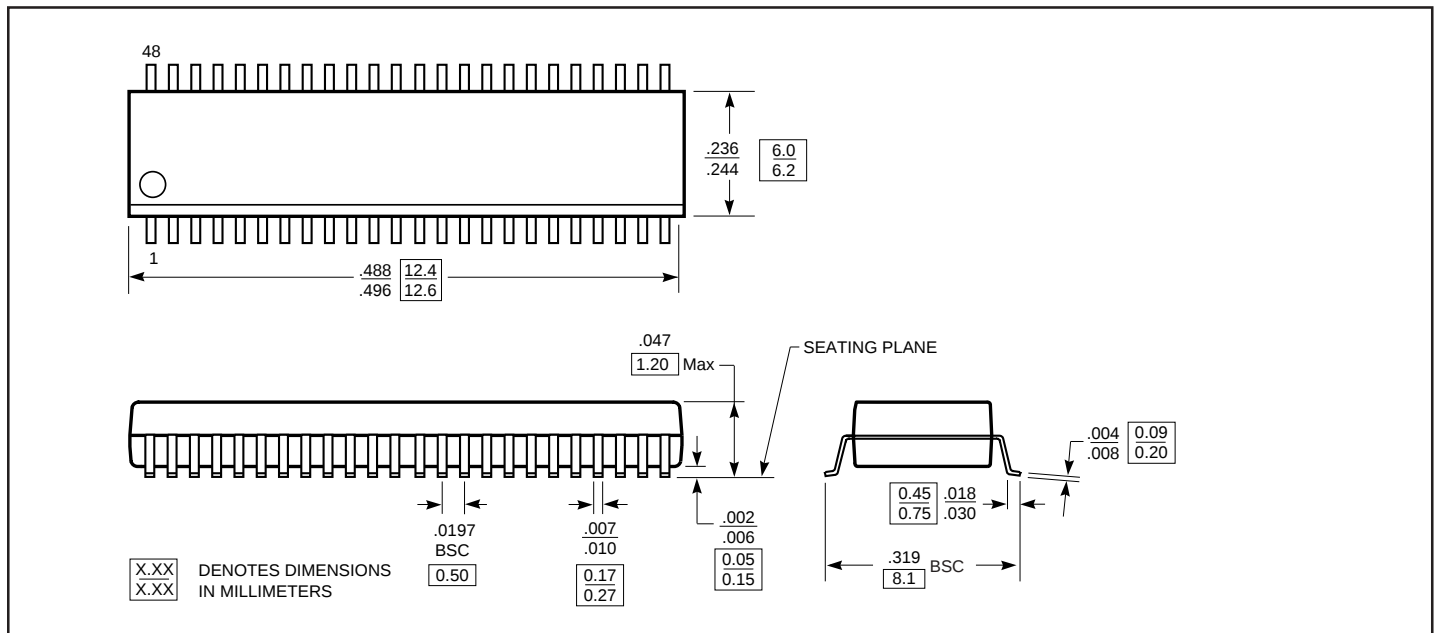
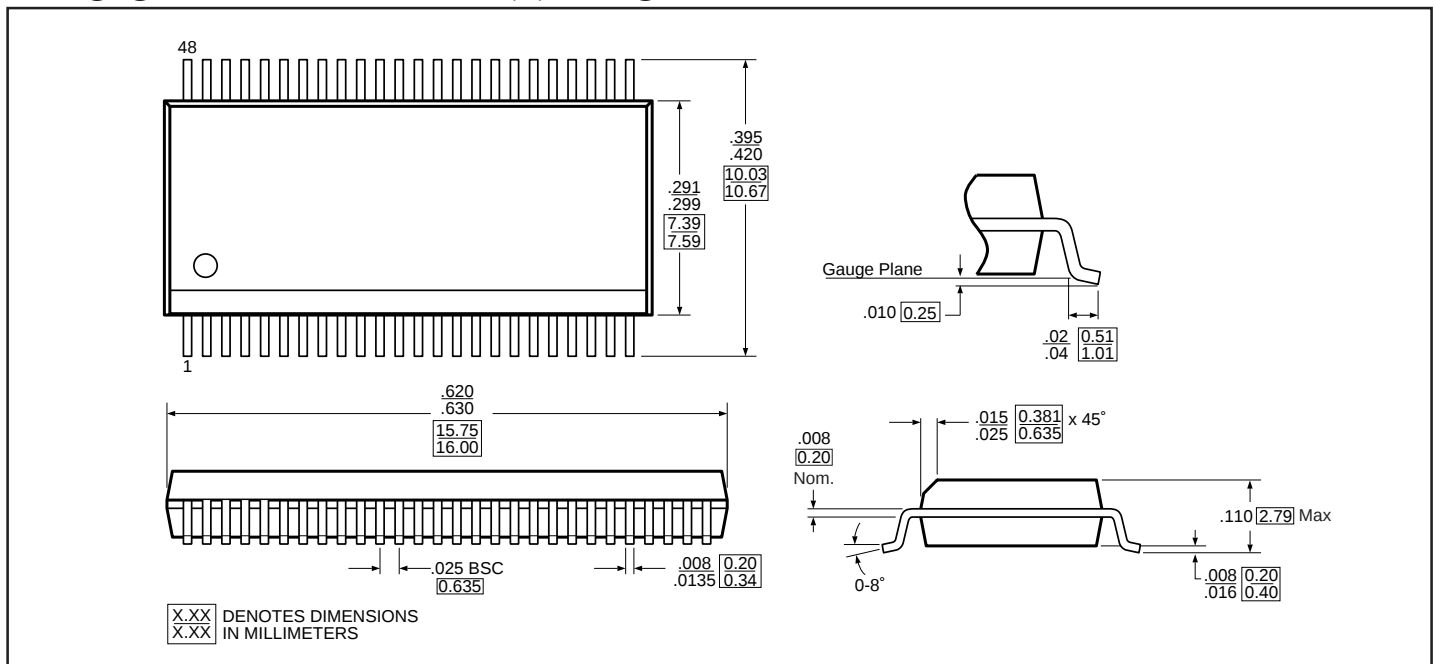
1. Skew between any two outputs, of the same package, switching in the same direction.

Dynamic Switching Characteristics (T_A = +25°C)

Parameters	Description	Test Conditions ⁽¹⁾	Typical	Units
V _{OLP}	Dynamic LOW Peak Voltage	V _{CC} = 3.3V, C _L = 50 pF V _{IH} = 3.3V, V _{IL} = 0V	0.8	V
V _{OLV}	Dynamic LOW Valley Voltage			

Note:

1. Measured with n–1 outputs switching from High-to-Low or Low-to-High. The remaining output is measured in the LOW state.

Packaging Mechanical: 48-Pin TSSOP (A) Package

Packaging Mechanical: 48-Pin SSOP (V) Package

Ordering Information

Ordering Code	Description
PI74LCX16240A	48-Pin 240-mil wide Plastic TSSOP (A)
PI74LCX16240V	48-Pin 300-mil wide Plastic SSOP (V)