

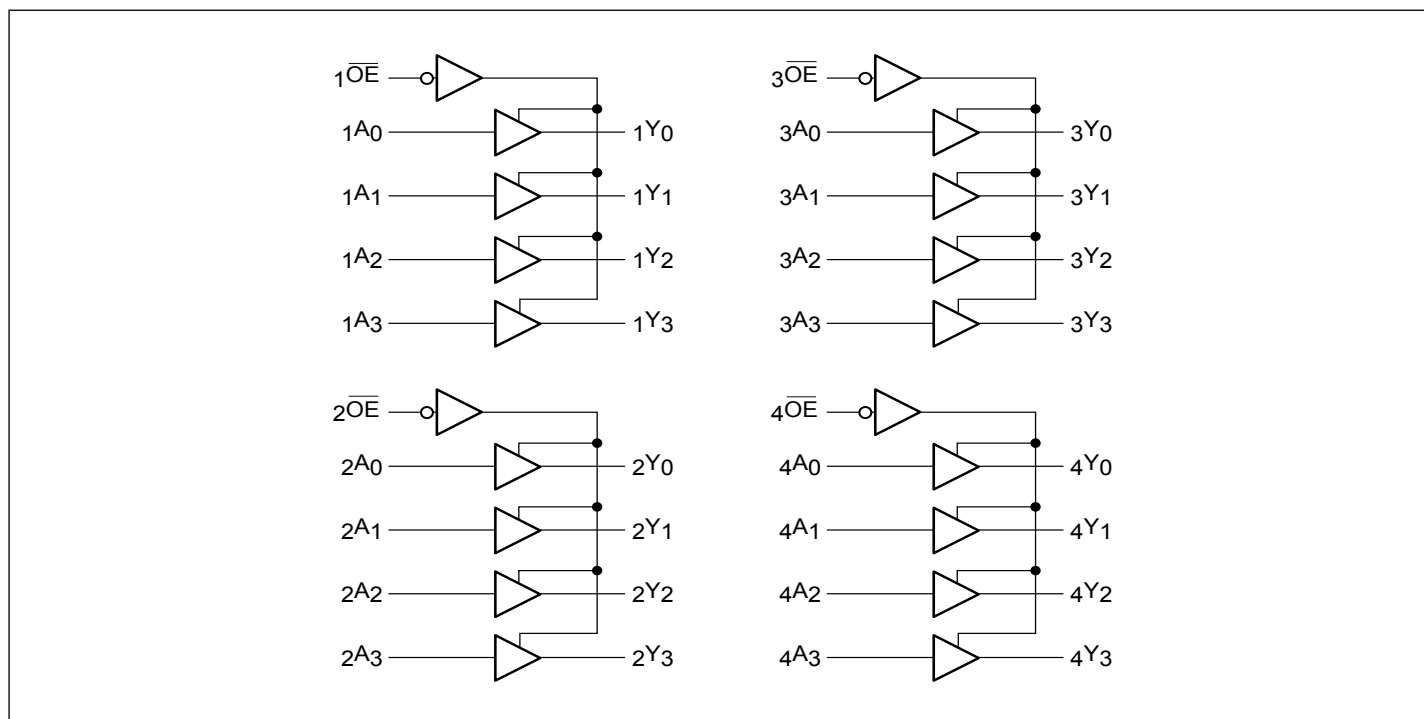
Fast CMOS 16-Bit Buffer/Line Drivers
Features

- High-speed, low-power devices with high-current drive $V_{CC} = 5V \pm 10\%$
- Hysteresis on all inputs
- Device models available upon request
- Balanced output drivers: $\pm 24mA$
- Reduced system switching noise
- Typical VOLP (Output Ground Bounce) $< 0.6V$ at $V_{CC} = 5V$, $T_A = 25^\circ C$
- Packaging (Pb-free & Green):
 - 48-pin 240-mil wide plastic TSSOP (A)
 - 48-pin 300-mil wide plastic SSOP (V)

Description

Pericom Semiconductor's PI74FCT162244T is a non-inverting 16-bit buffer/line drivers designed for applications driving high capacitance loads and low impedance backplanes. These high-speed, low power devices offer bus/backplane interface capability and a flow-through organization for ease of board layout. These devices are designed with three-state controls to operate in a Quad-Nibble, Dual-Byte, or a single 16-bit word mode.

The PI74FCT162244T has $\pm 24mA$ balanced output drivers. It is designed with current limiting resistors at its outputs to control the output edge rate resulting in lower ground bounce and undershoot. This eliminates the need for external terminating resistors for most interface applications.

Block Diagram


Pinout Table

Pin Name	Description
\overline{xOE}	3-State Output Enable Inputs (Active LOW)
xAx	Inputs ⁽¹⁾
xYx	3-State Outputs
GND	Ground
VCC	Power

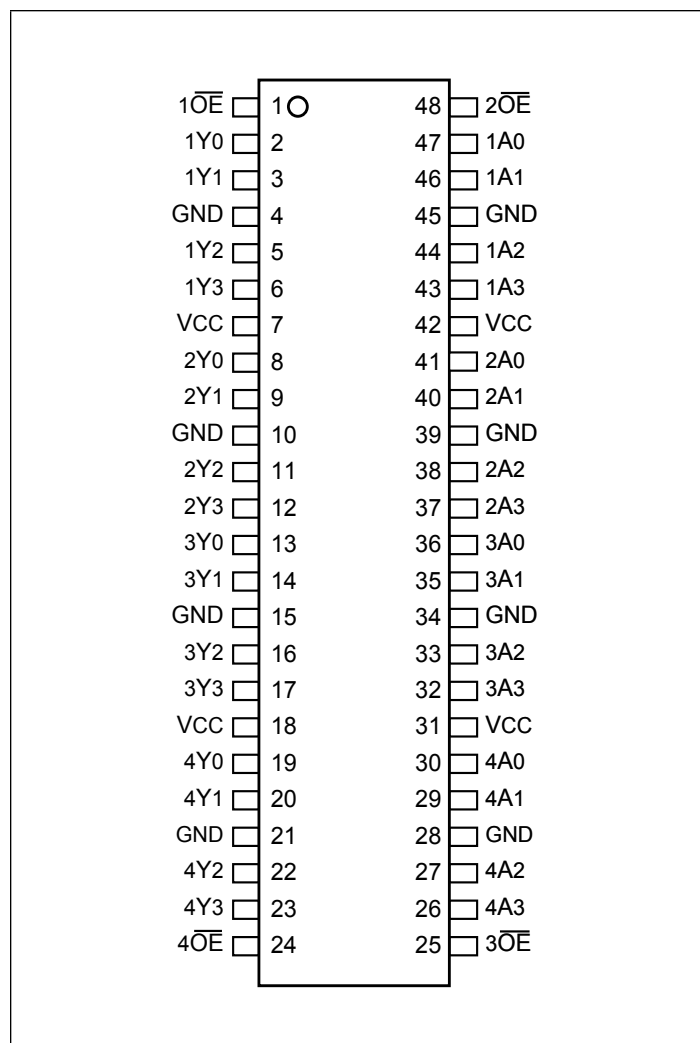
Truth Table⁽¹⁾

Inputs ⁽¹⁾		Outputs ⁽¹⁾
\overline{xOE}	xAx	xYx
L	L	L
L	H	H
H	X	Z

Notes:

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

Pin Configuration



Absolute Maximum Ratings (Over operating free-air temperature range)

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

Stress beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device.

DC Electrical Characteristics (Over the Operating Range, T_A = -40°C to +85°C, V_{CC} = 5.0V ±5%)

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		
I _{IH}	Input HIGH Current	Standard Input, V _{CC} = Max.	V _{IN} = V _{CC}		1	μA	
		Standard I/O, V _{CC} = Max.	V _{IN} = V _{CC}		1		
I _{IL}	Input LOW Current	Standard Input, V _{CC} = Max.	V _{IN} = GND		-1		
		Standard I/O, V _{CC} = Max.	V _{IN} = GND		-1		
I _{OZH} I _{OZL}	High Impedance Output Current	V _{CC} = Max.	V _{OUT} = 2.7V		1		
			V _{OUT} = 0.5V		-1		
V _{IK}	Clamp Diode Voltage	V _{CC} = Min., I _{IN} = -18 mA		-0.7	-1.2	V	
I _{OS}	Short Circuit Current	V _{CC} = Max. ⁽³⁾ , V _{OUT} = GND	-80	-140	-320	mA	
I _O	Output Drive Current	V _{CC} = Max. ⁽³⁾ , V _{OUT} = 2.5V	-50		-180		
V _H	Input Hysteresis			100		mV	
V _{OH}	Output HIGH Voltage	V _{CC} = Min., V _{IN} = V _{IH} or V _{IL}	I _{OH} = -24mA	2.4	3.3	V	
V _{OL}	Output LOW Voltage	V _{CC} = Min., V _{IN} = V _{IH} or V _{IL}	I _{OH} = 24mA		0.3		0.55
I _{ODL}	Output LOW Current	V _{CC} = 5V, V _{IN} = V _{IH} OR V _{IL} , V _{OUT} = 1.5V ⁽³⁾		60	115	150	mA
I _{ODH}	Output HIGH Current	V _{CC} = 5V, V _{IN} = V _{IH} OR V _{IL} , V _{OUT} = 1.5V ⁽³⁾		-60	-115	-680	

Notes:

- For Max. or Min. conditions, use appropriate value specified under Electrical Characteristics for the applicable device type.
- Typical values are at V_{CC} = 5.0V, +25°C ambient and maximum loading.
- Not more than one output should be shorted at one time. Duration of the test should not exceed one second.

Capacitance ($T_A = 25^\circ\text{C}$, $f = 1\text{ MHz}$)

Parameters ⁽³⁾	Description	Test Conditions	Typ	Max	Units
C_{IN}	Input Capacitance	$V_{IN} = 0V$	4.5	7.5	pF
C_{OUT}	Output Capacitance	$V_{OUT} = 0V$	5.5	8.0	

Notes:

1. This parameter is determined by device characterization but is not production tested.

Power Supply Characteristics

Parameters	Description	Test Conditions ⁽¹⁾	Min	Typ ⁽²⁾	Max	Units
I_{CC}	Quiescent Power Supply Current	$V_{CC} = \text{Max.}$				μA
ΔI_{CC}	Supply Current per Input @ TTL HIGH	$V_{IN} = \text{GND or } V_{CC}$		0.1	500	
		$V_{IN} = 3.4V^{(3)}$		0.5	1.5	mA
I_{CCD}	Supply Current per Input per MHz ⁽⁴⁾	$V_{CC} = \text{Max.},$ Outputs Open, $\overline{xOE} = \text{GND},$ $LE = V_{CC}$ One Bit Toggling, 50% Duty Cycle				
		$V_{IN} = V_{CC},$ $V_{IN} = \text{GND}$		60	100	$\mu\text{A}/\text{MHz}$
I_C	Total Power Supply Current ⁽⁶⁾	$V_{CC} = \text{Max.},$ Outputs Open, $f_I = 10\text{MHz},$ 50% Duty Cycle, $\overline{xOE} = \text{GND},$ $LE = V_{CC},$ One Bit Toggling		0.6	$1.5^{(5)}$	mA
			$V_{IN} = V_{CC},$ $V_{IN} = \text{GND}$		0.9	
		$V_{CC} = \text{Max.},$ Outputs Open, $f_I = 2.5\text{MHz},$ 50% Duty Cycle, $\overline{xOE} = \text{GND},$ 16 Bits Toggling		2.4	$4.5^{(5)}$	
			$V_{IN} = V_{CC},$ $V_{IN} = \text{GND}$		6.4	
		$V_{IN} = 3.4V,$ $V_{IN} = \text{GND}$				

Notes:

1. For conditions shown as Max. or Min., use appropriate value specified under Electrical Characteristics for the applicable device.
2. Typical values are at V_{CC} = 5.0V, +25°C ambient.
3. Per TTL driven input (V_{IN} = 3.4V); all other inputs at V_{CC} or GND.
4. This parameter is not directly testable, but is derived for use in Total Power Supply Calculations.
5. Values for these conditions are examples of the I_{CC} formula. These limits are guaranteed but not tested.
6. $I_C = I_{\text{QUIESCENT}} + I_{\text{INPUTS}} + I_{\text{DYNAMIC}}$
 $I_C = I_{\text{CC}} + \Delta I_{\text{CC}} D_H N_T + I_{\text{CCD}} (f_{\text{CP}/2} + f_I N_I)$
 I_{CC} = Quiescent Current
 ΔI_{CC} = Power Supply Current for a TTL High Input (V_{IN} = 3.4V)
 D_H = Duty Cycle for TTL Inputs High
 N_T = Number of TTL Inputs at D_H
 I_{CCD} = Dynamic Current Caused by an Input Transition Pair (HLH or LHL)
 f_{CP} = Clock Frequency for Register Devices (Zero for Non-Register Devices)
 f_I = Input Frequency
 N_I = Number of Inputs at f_I
 All currents are in milliamps and all frequencies are in megahertz.

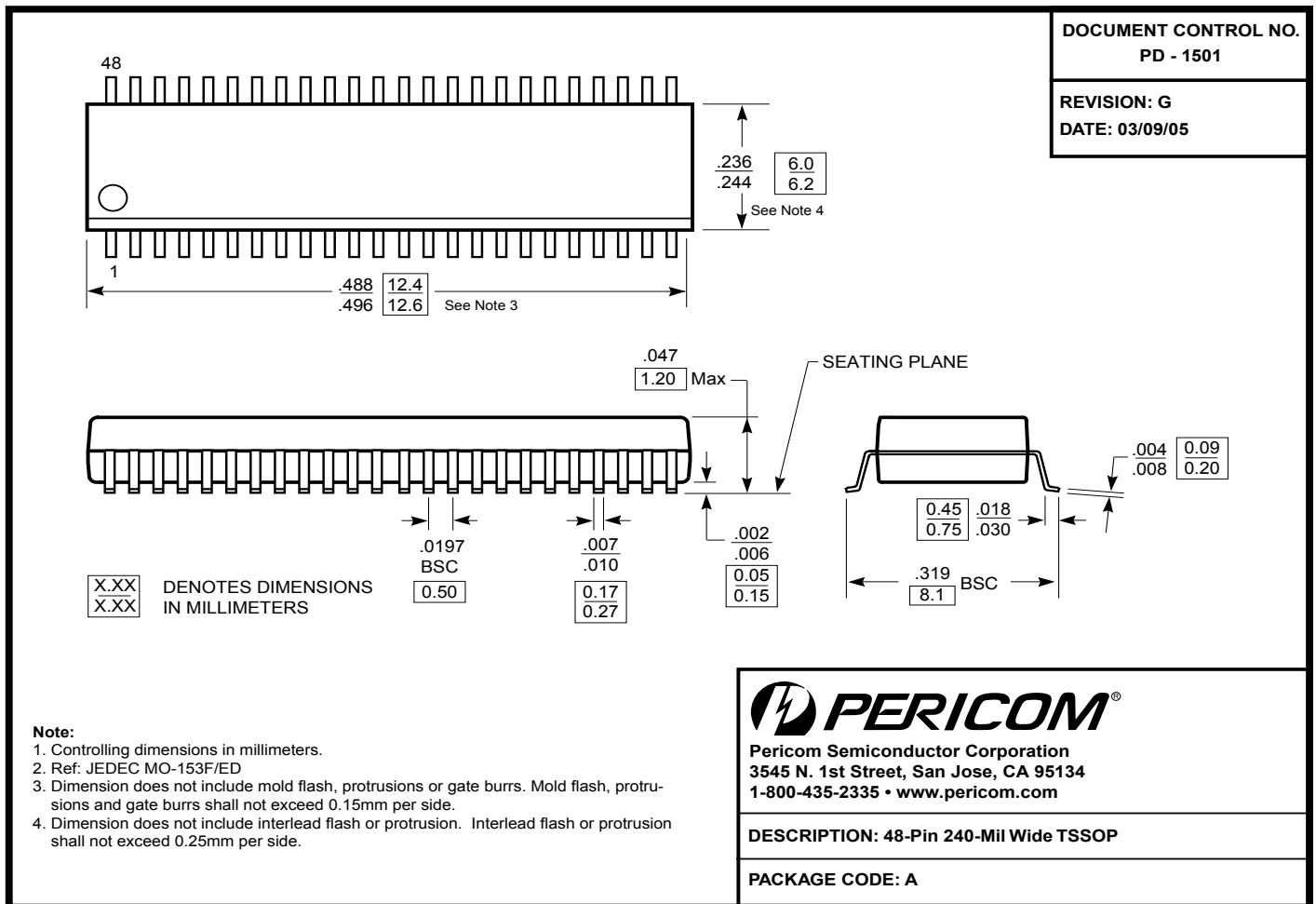
Switching Characteristics over Operating Range

Parameters	Description	Test Conditions	162244T		162244AT		162244CT		162244ET		Units
			Com.		Com.		Com.		Com.		
			Min	Max	Min	Max	Min	Max	Min	Max	
t _{PLH} t _{PHL}	Propagation Delay ⁽¹⁾ xAx to xYx	C _L = 50 pF R _L = 500Ω	15	6.5	15	4.8	15	4.1	15	3.2	ns
t _{PZH} t _{PZL}	Output Enable Time xOE to xYx		1.5	8.0	1.5	6.2	1.5	5.8	1.5	4.4	
t _{PHZ} t _{PLZ}	Output Disable Time ⁽²⁾ OE to O _N		1.5	7.0	1.5	5.6	1.5	5.2	1.5	4.0	
t _{SK(O)}	Output Skew ⁽³⁾			0.5		0.5		0.5		0.5	

Notes:

1. Minimum limits are guaranteed but not tested on Propagation Delays.
2. This parameter guaranteed but not production tested.
3. Skew between any two outputs, of the same package, switching in the same direction. This parameter is guaranteed by design.

Packaging Mechanical: 48-Pin TSSOP (A)



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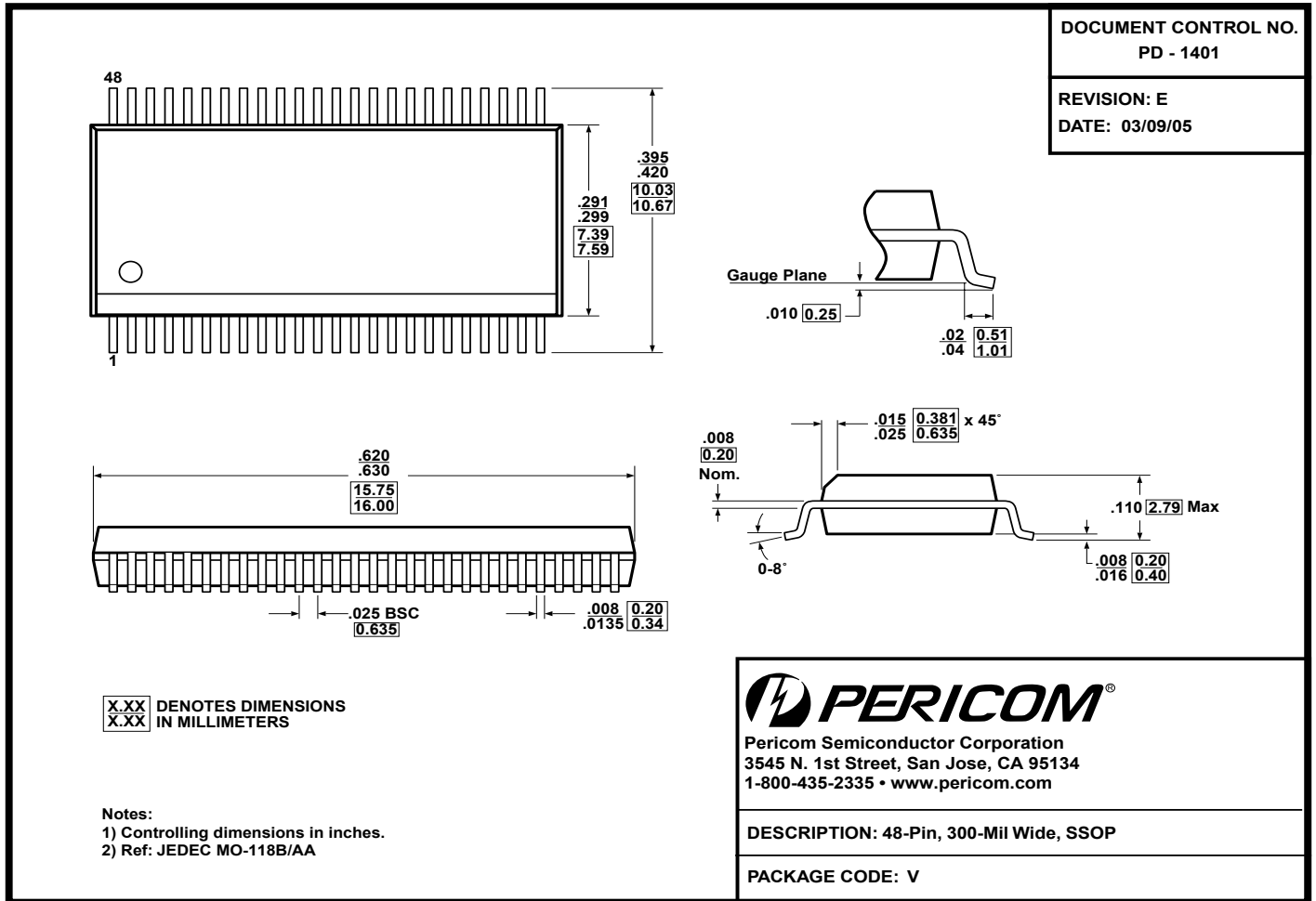


Pericom Semiconductor Corporation
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DESCRIPTION: 48-Pin 240-Mil Wide TSSOP

PACKAGE CODE: A

Packaging Mechanical: 48-Pin SSOP (V)



Ordering Information

Ordering Code	Package Code	Speed Grade	Package Type
PI74FCT162244TAE	A	Blank	Pb-free & Green, 48-pin 240-mil wide TSSOP
PI74FCT162244TVE	V	Blank	Pb-free & Green, 48-pin 300-mil wide SSOP
PI74FCT162244ATAE	A	A	Pb-free & Green, 48-pin 240-mil wide TSSOP
PI74FCT162244CTVE	V	C	Pb-free & Green, 48-pin 300-mil wide SSOP

1. Thermal characteristics can be found on the company web site at www.pericom.com/packaging/
2. E = Pb-free & Green
3. Adding an X suffix = Tape/Reel