Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

3.3V, 16-Bit, 2-Port *NanoSwitch*™

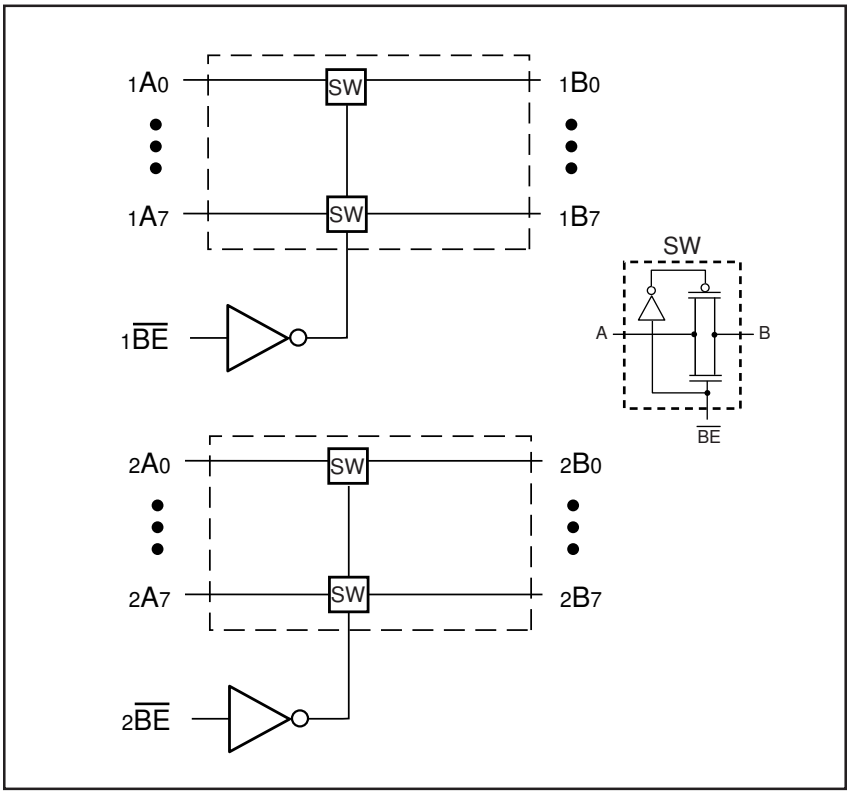
Features

- Near-Zero propagation delay
- 5-ohm switches connect inputs to outputs
- Fast Switching Speed - 4ns max.
- Pin compatible with 74 series 16245
- Operating V_{CC} Range: 3.0V to 3.6V
- Industrial operating temperature: –40°C to +85°C
- Packaging (Pb-free & Green available):
  – 48-pin 240-mil wide thin plastic TSSOP (A)
  – 48-pin 300-mil wide plastic SSOP (V)

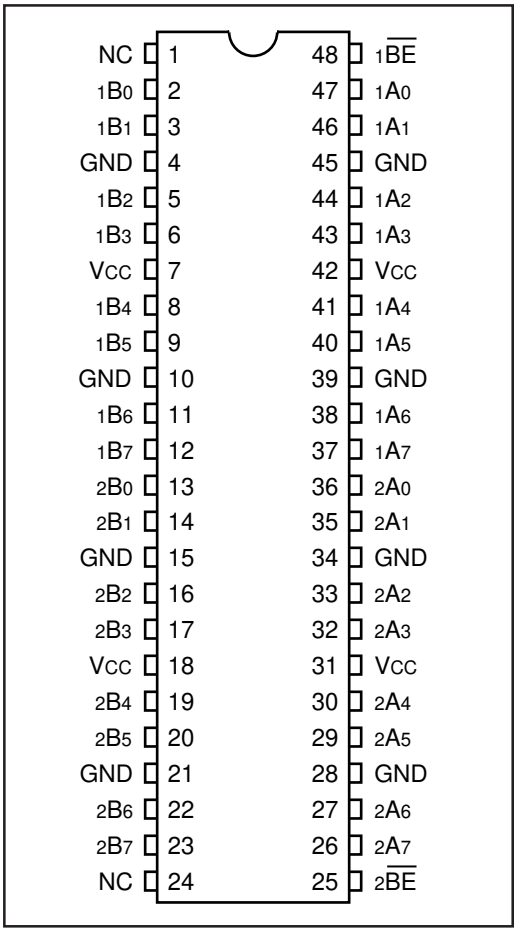
Description

Pericom Semiconductor's PI3B16245 is a 3.3 volt, hot-insertion, 16-bit, 2-port bus switch that is pin compatible with the 74 series 16245 16-bit transceiver. Two enable signals ($n\overline{BE}$) turn the switches on similar to the enable signals of the 16245. The bus switch creates no additional propagation delay or additional ground bounce noise.

Block Diagram



Pin Configuration



Truth Table[1]

Function	$n\overline{BE}$	nA0-7
Disconnect	H	Hi-Z
Connect	L	nB0-7

Note:
1. H = High Voltage Level
   L = Low Voltage Level
   Hi-Z = High Impedance

Pin Description

Pin Name	I/O	Description
$n\overline{BE}$	I	Bus Output Enable (Active Low)
nA0-nA7	I/O	Bus A
nB0-nB7	I/O	Bus B

Maximum Ratings

(Above which 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 Range	–0.5V to +4.6V
DC Input Voltage	–0.5V to +4.6V
DC Output Current	120mA
Power Dissipation	0.5W

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.

DC Electrical Characteristics (Over the Operating Range, T_A = –40°C to +85°C, V_{CC} = 3.0V 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	–0.5		0.8	
I_{IH}	Input HIGH Current	V_{CC} = Max., V_{IN} = V_{CC}			±1	µA
I_{IL}	Input LOW Current	V_{CC} = Max., V_{IN} = GND			±1	
I_{OZH}	High Impedance Output Current	0 ≤ A, B ≤ V_{CC}			±1	
V_{IK}	Clamp Diode Voltage	V_{CC} = Min., I_{IN} = –18mA		–0.7	–1.2	V
R_{ON}	Switch ON Resistance(3)	V_{CC} = Min., V_{IN} = 0.0V, I_{ON} = 48mA		5	8	Ω
		V_{CC} = Min., V_{IN} = 2.4V, I_{ON} = 15mA		10	15	

Capacitance (T_A = 25°C, f = 1 MHz)

Parameters(4)	Description	Test Conditions	Typ.	Units
C_{IN}	Input Capacitance	V_{IN} = 0V	3.0	pF
C_{OFF}	A/B Capacitance, Switch Off		8.5	
C_{ON}	A/B Capacitance, Switch On		17.0	

Notes:
1. For Max. or Min. conditions, use appropriate value specified under Electrical Characteristics for the applicable device type.
2. Typical values are at V_{CC} = 3.3V, T_A = 25°C ambient and maximum loading.
3. Measured by the voltage drop between A and B pin at indicated current through the switch. On-Resistance is determined by the lower of the voltages on the two (A,B) pins.
4. This parameter is determined by device characterization but is not production tested.

Power Supply Characteristics

Parameters	Description	Conditions(1)		Min.	Type(2)	Max.	Units
I_{CC}	Quiescent Power Supply Current	V_{CC} = Max.	V_{IN} = GND or V_{CC}	—	—	10	µA
ΔI_{CC}	Supply Current per Input @ TTL HIGH	V_{CC} = Max.	V_{IN} = 3.0V(3)	—	—	750	
I_{CCD}	Supply Current per Input per MHz(4)	V_{CC} = Max., A and B Pins Open Control Input Toggling 50% Duty Cycle		—	—	0.25	mA/ MHz

Notes:
1. For Max. or Min. conditions, use appropriate value specified under Electrical Characteristics for the applicable device.
2. Typical values are at V_{CC} = 3.3V, +25°C ambient.
3. Per TTL driven input (control inputs only); A and B pins do not contribute to I_{CC}.
4. This current applies to the control inputs only and represent the current required to switch internal capacitance at the specified frequency. The A and B inputs generate no significant AC or DC currents as they transition. This parameter is not tested, but is guaranteed by design.

Switching Characteristics over Operating Range

Parameters	Description	Conditions(1)	Com.		Units
			Min.	Max.	
t_{PLH} t_{PHL}	Propagation Delay(2,3) Ax to Bx, Bx to Ax	C_L = 50pF R_L = 500Ω		0.25	ns
t_{PZH} t_{PZL}	Bus Enable Time $\overline{BE}$x to Ax or Bx	C_L = 50pF; R_L = 500Ω	1	4.5	
t_{PHZ} t_{PLZ}	Bus Disable Time $\overline{BE}$x to Ax or Bx	C_L = 50pF; R_L = 500Ω	1	5.0	

Notes:
1. See test circuit and waveforms.
2. This parameter is guaranteed but not tested on Propagation Delays.
3. The bus switch contributes no propagational delay other than the RC delay of the On-Resistance of the switch and the load capacitance. The time constant for the switch alone is of the order of 0.25ns for 50pF load. Since this time constant is much smaller than the rise/fall times of typical driving signals, it adds very little propagational delay to the system. Propagational delay of the bus switch when used in a system is determined by the driving circuit on the driving side of the switch and its interaction with the load on the driven side.

Applications Information

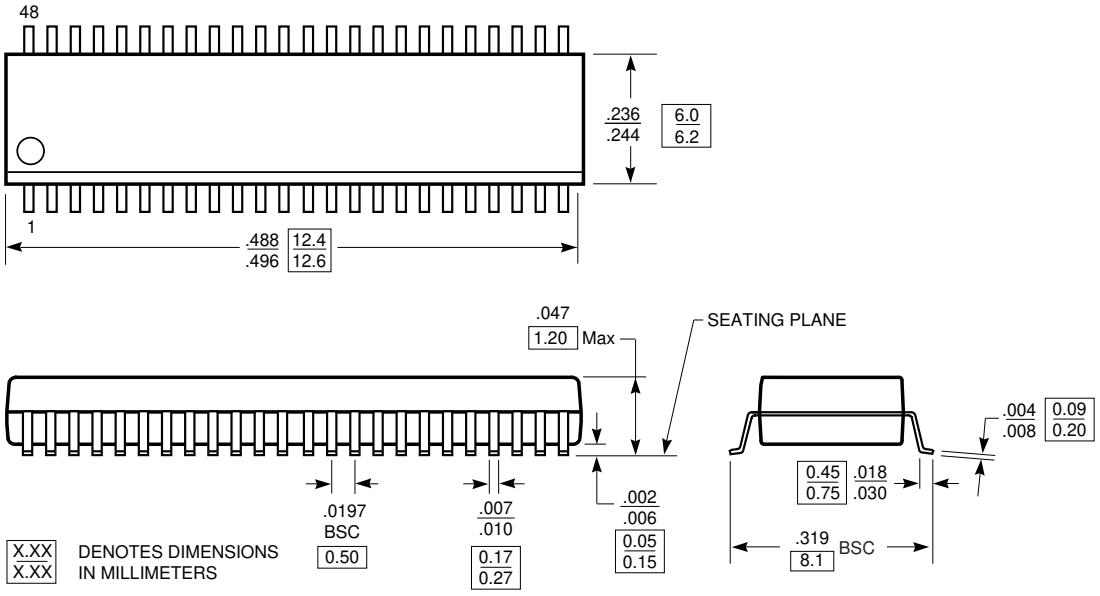
Logic Inputs

Logic control inputs can be driven up to +5.5V regardless of the supply voltage. For example, given a 5.0V supply, the control or select pins may be driven low to 0V and high to 5.5V. Driving the control or select pins Rail-toRail® minimizes power consumption.

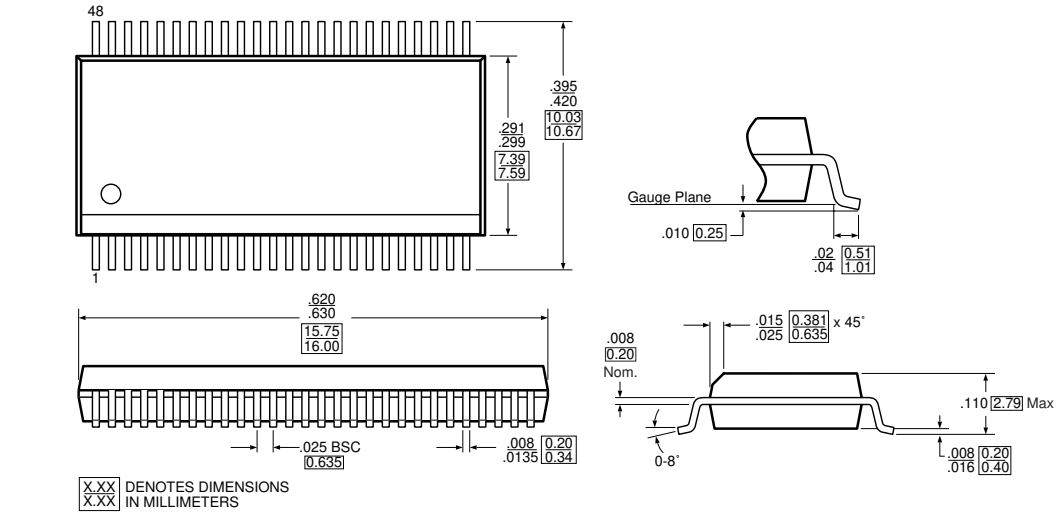
Power-Supply Sequencing and Hot Plug Information

Proper power-supply sequencing is recommended for all CMOS devices. Always apply V_{CC} and GND before applying signals to the input/output or control pins.

Packaging Mechanical: 48-pin 240 Mil-Wide Thin Plastic TSSOP (A)



Packaging Mechanical: 48-pin 300 Mil-Wide Plastic SSOP (V)



Ordering Information

Ordering Code	Package Code	Package Type
PI3B16245A	A	48-pin TSSOP
PI3B16245AE	A	Pb-free & Green, 48-pin TSSOP
PI3B16245V	V	48-pin SSOP
PI3B16245VE	V	Pb-free & Green, 48-pin SSOP

Notes:
1. Thermal characteristics can be found on the company web site at www.pericom.com/packaging/
2. X = Tape and reel