3.3V, Hot Insertion, 8-Bit, 2-Port *NanoSwitch*™

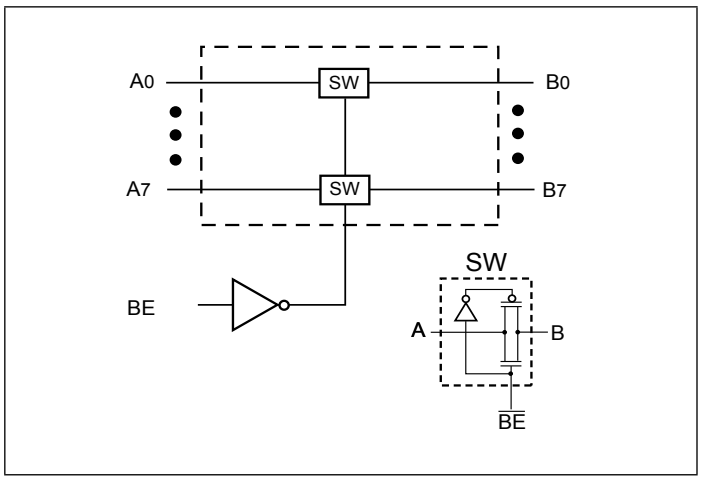
Features

- Near-Zero propagation delay
- 5-ohm switches connect inputs to outputs
- Fast Switching Speed: 4.5ns (max.)
- Ultra-Low Quiescent Power (0.2µA Typical)
  - Ideally suited for notebook applications
- TTL-compatible control of inputs levels
- ESD protection (2kV Human Body Model and 200V Machine Model)
- Packaging (Pb-free & Green):
  - 20-pin QSOP (Q)
  - 20-pin TSSOP (L)
  - 20-pin SOIC (S)

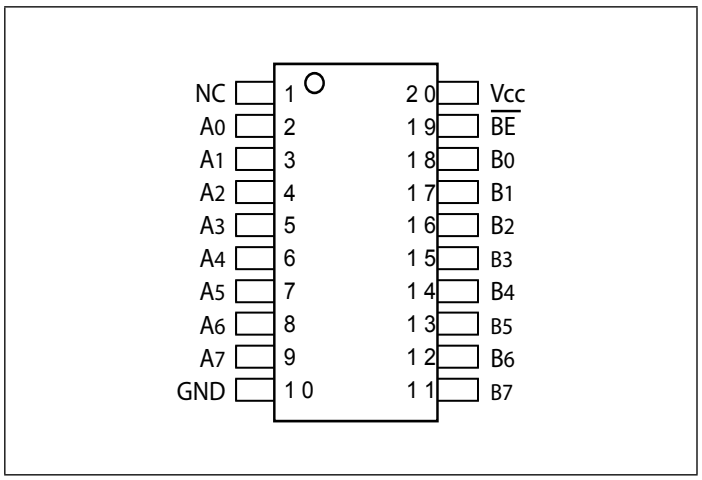
Description

Pericom Semiconductor's PI3B3245 is a 3.3V 8-bit, 2-port bus switch designed with a low On-Resistance (5-ohm) allowing inputs to be connected directly to outputs. The bus switch creates no additional propagational delay or additional ground bounce noise. The switches are turned ON by the Bus Enable ($\overline{BE}$) input signal.

Block Diagram



Pin Configuration



Truth Table

Function	$\overline{BE}$	A0-7
Disconnect	H	Hi-Z
Connect	L	B0-7

Note:

H = High Voltage Level, L = Low Voltage Level, Hi-Z = High Impedance

Pin Description

Pin Name	Description
$\overline{BE}$	Bus Enable Input (Active LOW)
A0-7	Bus A
B0-7	Bus B
GND	Ground
V_{CC}	Power

Absolute Maximum Ratings

Parameter	Min.	Max.	Units
Storage Temperature	-65	150	°C
Ambient Temperature with Power Applied	-40	85	°C
Supply Voltage to Ground Potential	-0.5	4.6	V
DC Input Voltage	-0.5	4.6	V
DC Output Current	-	120	mA
Power Dissipation	-	0.5	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 $+85°C$, $V_{CC} = 3.3V \pm 10\%$)

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	V
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	µA
I_{OZH}	High Impedance Output Current	$0 \le A_N, B_N \le V_{CC}$			±1	µA
V_{IK}	Clamp Diode Voltage	V_{CC} = Min., I_{IN} = –18 mA			-1.2	V
R_{ON}	Switch On Resistance[3]	V_{CC} = Min., V_{IN} = 0.0V, I_{ON} = 48mA or 64mA		5	8	Ω
		V_{CC} = Min, V_{IN} = 2.4V, I_{ON} = 15mA		10	17	

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.

Capacitance ($T_A = 25°C$, f = 1 MHz)

Parameters[1]	Description	Test Conditions	Typ	Units
C_{IN}	Input Capacitance	V_{IN} = 0V	3.0	pF
C_{OFF}	A/B Capacitance, Switch Off	V_{IN} = 0V	8.0	pF
C_{ON}	A/B Capacitance, Switch On	V_{IN} = 0V	16.0	pF

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} = Max.	V_{IN} = GND or V_{CC}		0.1	3.0	µA
ΔI_{CC}	Supply Current per Input HIGH	V_{CC} = Max.	V_{IN} = 3.0V[3]			750	µA

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 input only); A and B pins do not contribute to I_{CC}.

Switching Characteristics over Operating Range

Parameters	Description	Test Conditions	Com.		Units
			Min	Max	
t_{PLH} t_{PHL}	Propagation Delay[1,2] Ax to Bx, Bx to Ax	CL = 50 pF RL = 500Ω		0.25	ns
t_{PZH} t_{PZL}	Bus Enable Time $\overline{BE}$ to Ax or Bx		1.0	4.0	
t_{PHZ} t_{PLZ}	Bus Disable Time $\overline{BE}$ to Ax or Bx		1.0	4.5	

Notes:
1. This parameter is guaranteed but not tested on Propagation Delays.
2. 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 0.25 ns for 50 pF 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

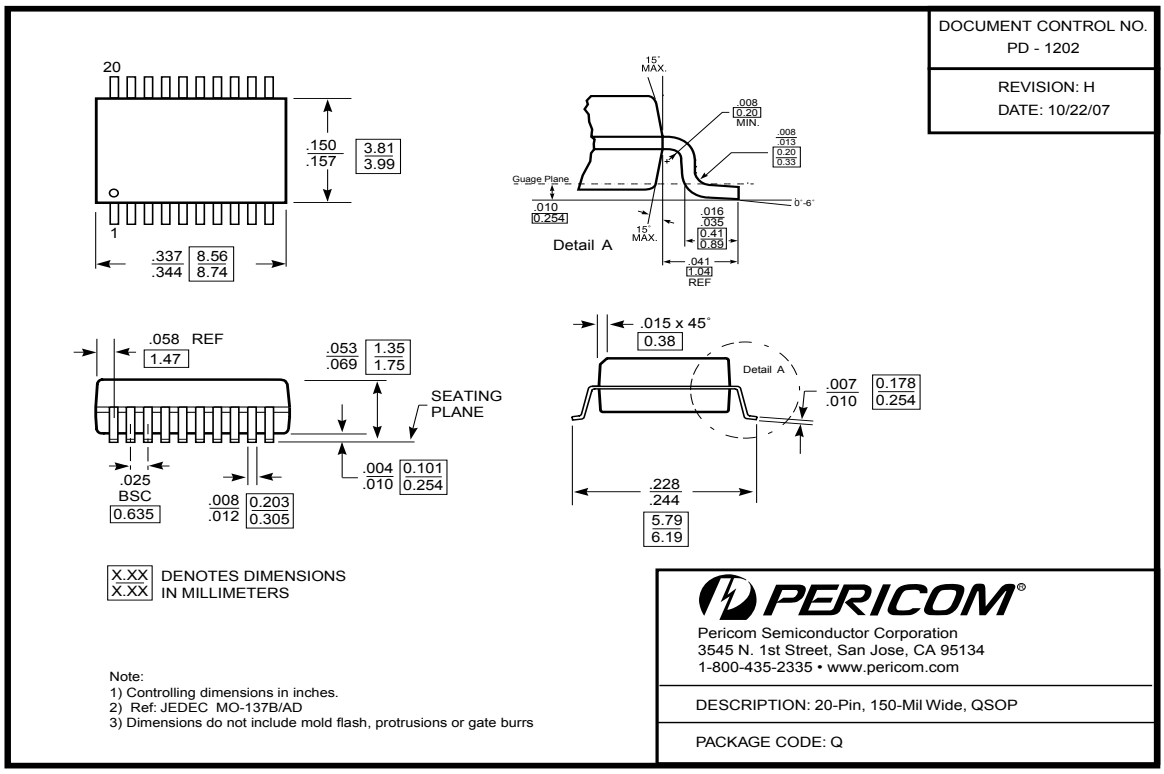
The logic control inputs can be driven up to +3.6V regardless of the supply voltage. For example, given a + 3.3V supply, A_N may be driven low to 0V and high to 3.6V. Driving B_N Rail-to-Rail® minimizes power consumption.

Power-Supply Sequencing and Hot-Plug Information

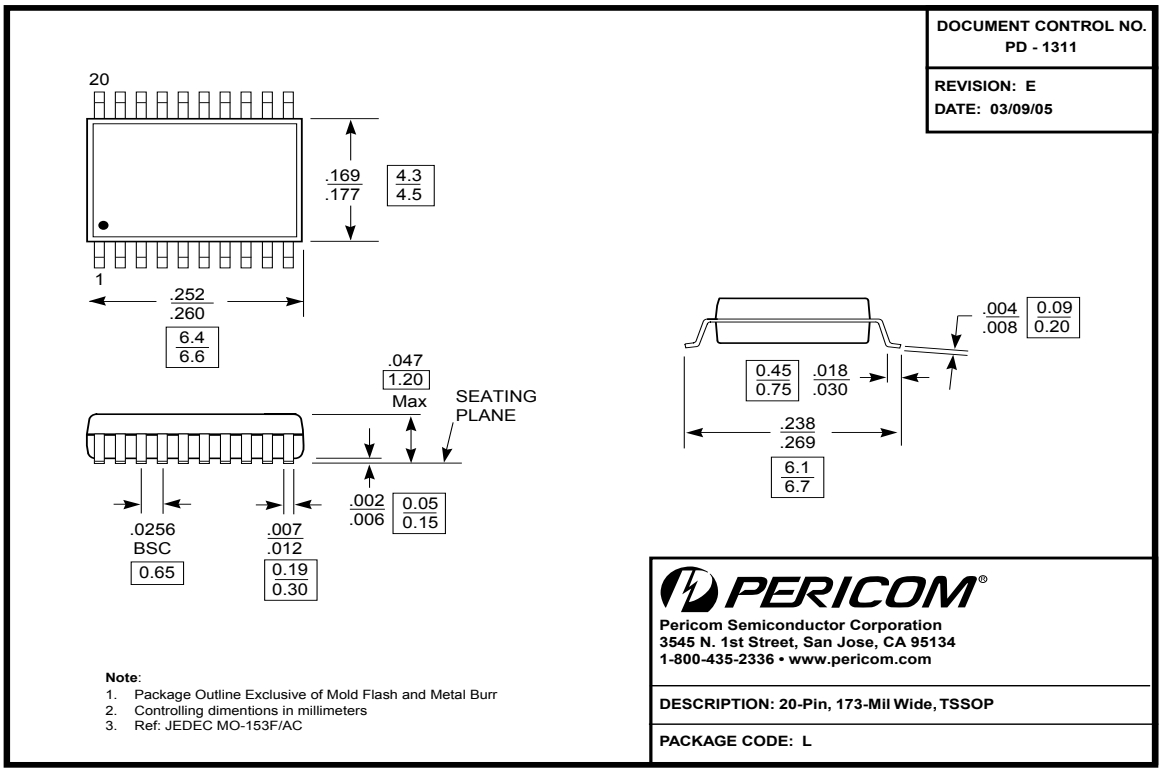
Proper power-supply sequencing is recommended for all CMOS devices. Always apply V_{CC} and GND before applying signals to input/output or control pins.

Rail-to-Rail is a registeredtrademark of Nippon Motorola, Ltd.

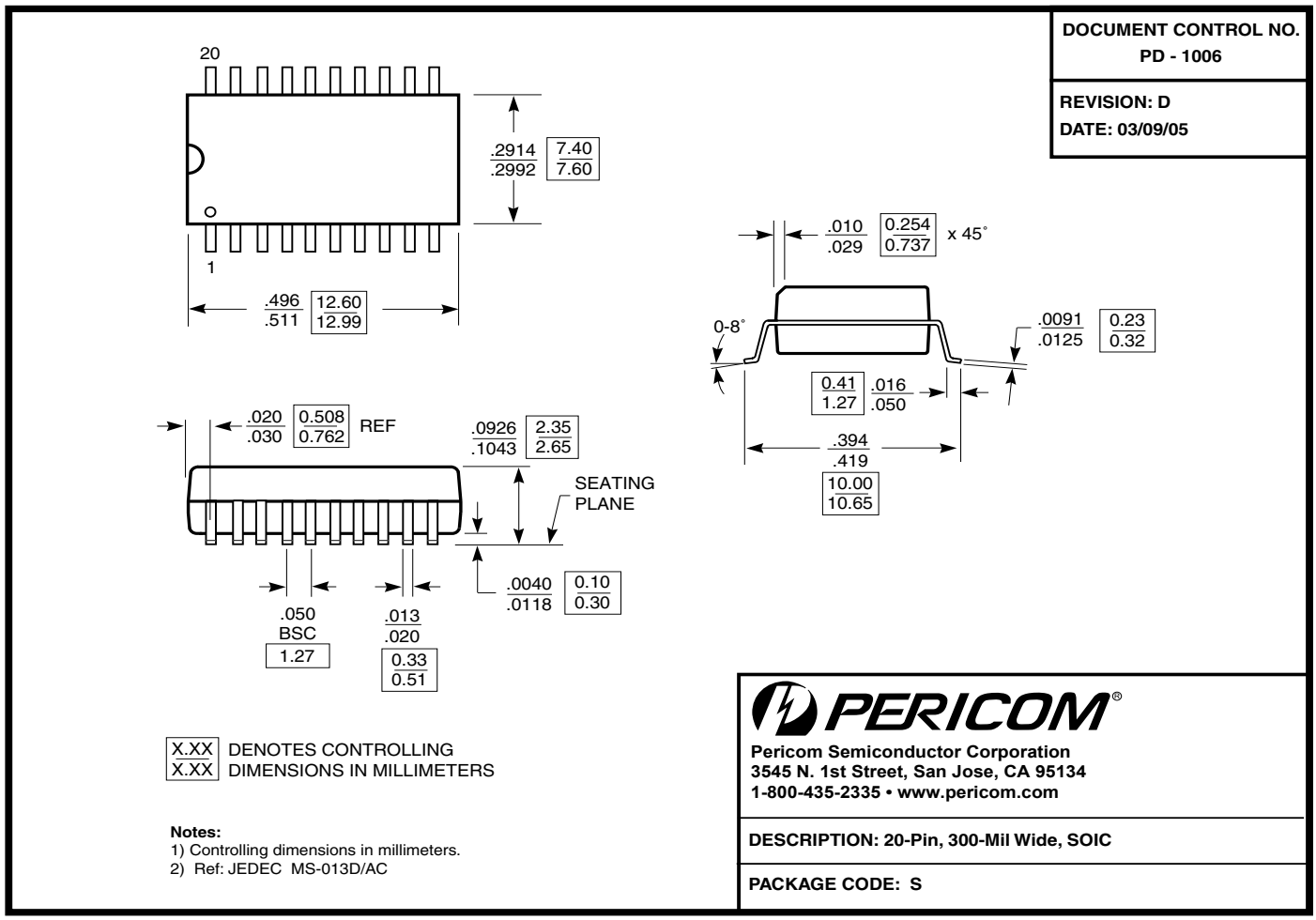
Packaging Mechanical: 20-Pin QSOP (Q)



Packaging Mechanical: 20-Pin TSSOP (L)



Packaging Mechanical: 20-Pin SOIC (S)



Ordering Information

Ordering Code	Package Code	Package Type
PI3B3245QE	Q	Pb-free & Green, 20-pin QSOP
PI3B3245LE	L	Pb-free & Green, 20-pin TSSOP
PI3B3245SE	S	Pb-free & Green, 20-pin SOIC

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

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