PI3C3861-A

2.5V/3.3V, High Bandwidth, Hot-Insertion, 10-Bit, 2-Port, Bus Switch

Features

- Near-Zero propagation delay
- 5-ohm switches connect inputs to outputs
- High bandwidth (>400 MHz)
- Rail-to-rail 2.5V or 3.3V switching
- 5V I/O Tolerant
- 2.5V Supply Voltage Operation
- Permits Hot-Insertion
- Packaging (Pb-free & Green Available):
  – 24-pin 150-mil wide plastic QSOP (Q)
  – 24-pin 173-mil wide plastic TSSOP (L)

Applications

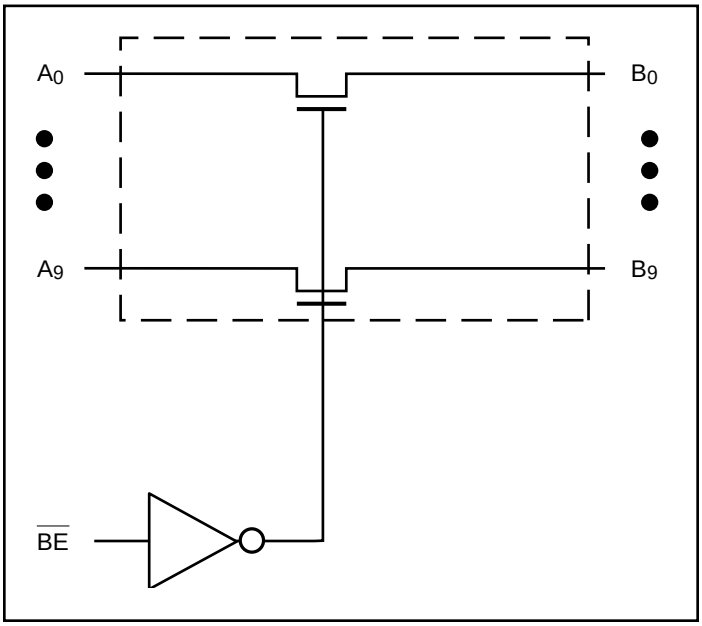
- High bandwidth data switching
- Hot Docking

Description

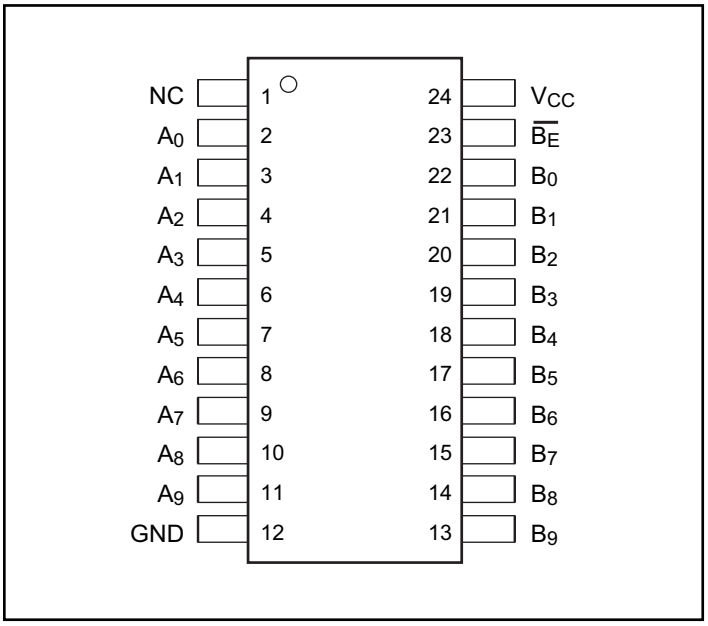
Pericom Semiconductor's PI3C series of logic circuits are produced using the company's advance submicron CMOS technology, achieving industry leading performance.

The PI3C3861-A is a 10-bit, 2.5volt or 3.3 volt, 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. This device is very userful in switching signals that have high bandwidth (>400 MHz).

Block Diagram



Pin Configuration



Truth Table[1]

Function	$\overline{BE}$	A0–9
Disconnect	H	Hi-Z
Connect	L	$B_{0–9}$

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

Pin Description

Pin Name	Description
$\overline{BE}$	Bus Enable Input (Active LOW)
$A_{0–9}$	Bus A
$B_{0–9}$	Bus B
GND	Ground
V_{CC}	Power

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 & Vcc Only)	–0.5V to +4.6V
Supply Voltage to Ground Potential (Outputs & D/O Only)	–0.5V to +4.6V
DC Input Voltage	–0.5V to +5.5V
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 Operating Range, T_A = –40°C to +85°C, V_{CC} = 3.3V ±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	
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		–0.73	–1.2	V
R_{ON}	Switch On-Resistance[3]	V_{CC} = Min., V_{IN} = 0V, I_{ON} = 48mA		5	7	Ω
		V_{CC} = Min., V_{IN} = 2.4V, I_{ON} = 15mA		8	15	

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	6.0	pF
C_{OFF}	A/B Capacitance, Switch Off		5.0	
C_{ON}	A/B Capacitance, Switch On		10.0	

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