WINSOURCE ELECTRONICS

THE DATASHEET OF

PI3B16224B

3.3V, 12-Bit to 24-Bit DeMux/Mux *NanoSwitch*™

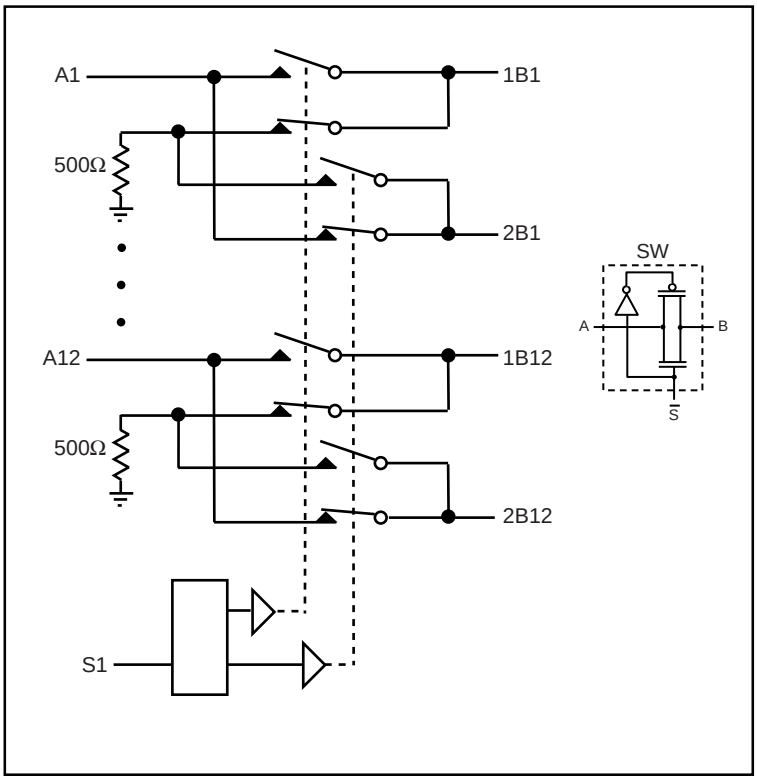
Features

- R_{ON} is 5-ohm typical at 3.3V
- Low power: 10µW
- Industrial operating temperature: –40°C to +85°C
- Near zero propagation delay
- Fast switching speed: 4.5ns max.
- V_{CC} operating range: 3.0V to 3.6V
- 500 -ohm pulldown to unconnected B port
- Series 25-ohm resistor option on all outputs
- Make-before-break action
- Packaging (Pb-free & Green available):
  – 40-pin BQSOP (B)

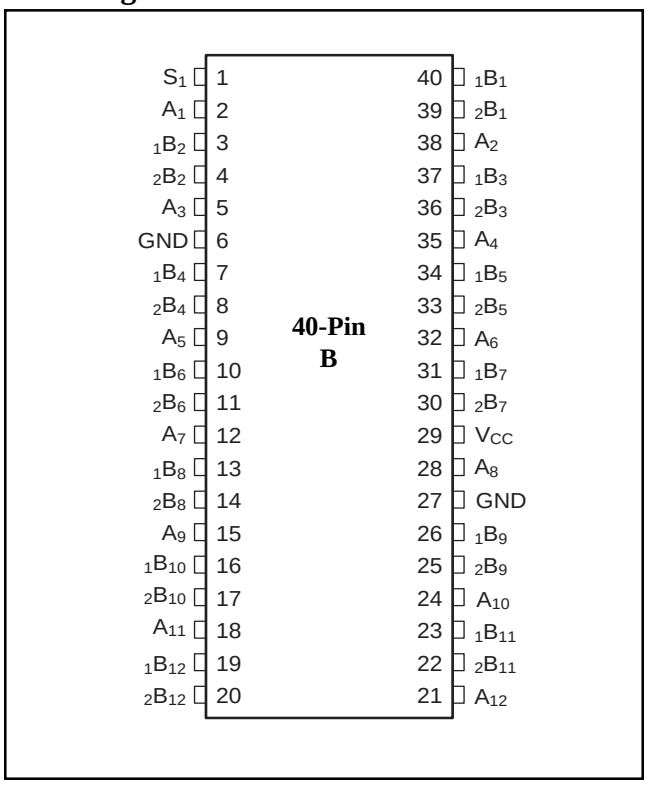
Description

Pericom Semiconductor's PI3B16224 is a 3.3V, 12-bit to 24-bit mux/demux bus switch designed with a low On-Resistance allowing inputs to be connected directly to outputs.

Block Diagram



Pin Configuration



Truth Table[1]

Function	S1	A
A to 1B	L	1B
A to 2B	H	2B

Maximum Ratings

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

Storage Temperature Range, T_{STG}	–65ºC to +150ºC
Ambient Temperature with Power Applied	–40ºC to +85ºC
Supply Voltage Range, to Ground Potential	–0.5V to +4.6V
Input Voltage Range	–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 = –40ºC to +85ºC, V_{CC} = 3.0 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	V_{CC} = Min., V_{IN} = 0.0V, I_{ON} = 12mA		5	8	Ω
R_{ON}	Switch On Resistance	V_{CC} = Min., V_{IN} = 2.4V, I_{ON} = 12mA		10	15	
C_{IN}	Input Capacitance	V_{IN} = 0V, 25°C, f = 1 MHz			3.0	pF
C_{ON}	A/B Capacitance	V_{IN} = 0V, 25°C, f = 1 MHz			25.0	
I_{CC}	Power Supply Quiescent				10	µA

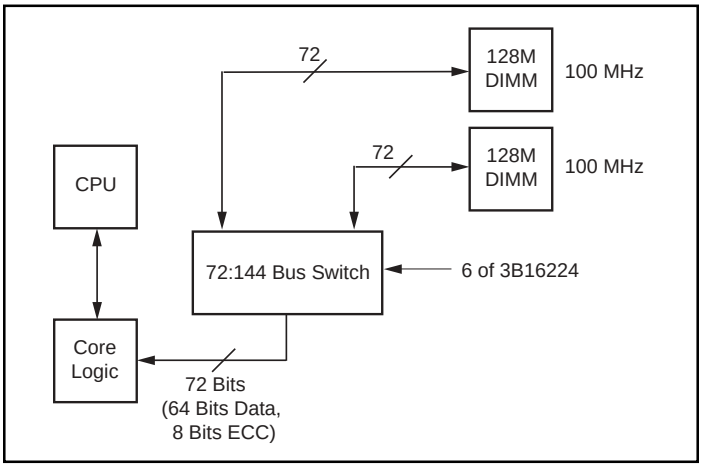
Notes:
1. Typical values are shown at V_{CC} = 3.3V, +25°C ambient and maximum loading.

Switching Electrical Characteristics (T_A = –40ºC to +85ºC, V_{CC} = 3.0 to 3.6V)

			PI3B16224		
			Com.		
Parameters	Description	Test Conditions	Min.	Max.	Units
t_{PLH}	Propagation Delay Ax to xBx	C_L = 50pF, R_L = 500 ohms[1,2,3]	–	250	ps
t_{PE}	Bus Enable	C_L = 50pF, R_L = 500 ohms[3]	1	4.5	ns
t_{PD}	Bus Disable		1	5.0	
t_M	Make-before-break time	C_L = 50pF, R_L = 500 ohms[1]	0	2	

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 0.25ns 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.
3. See test circuit and waveforms.

Application Circuit



Memory Switching Application

Application Information

Logic Inputs

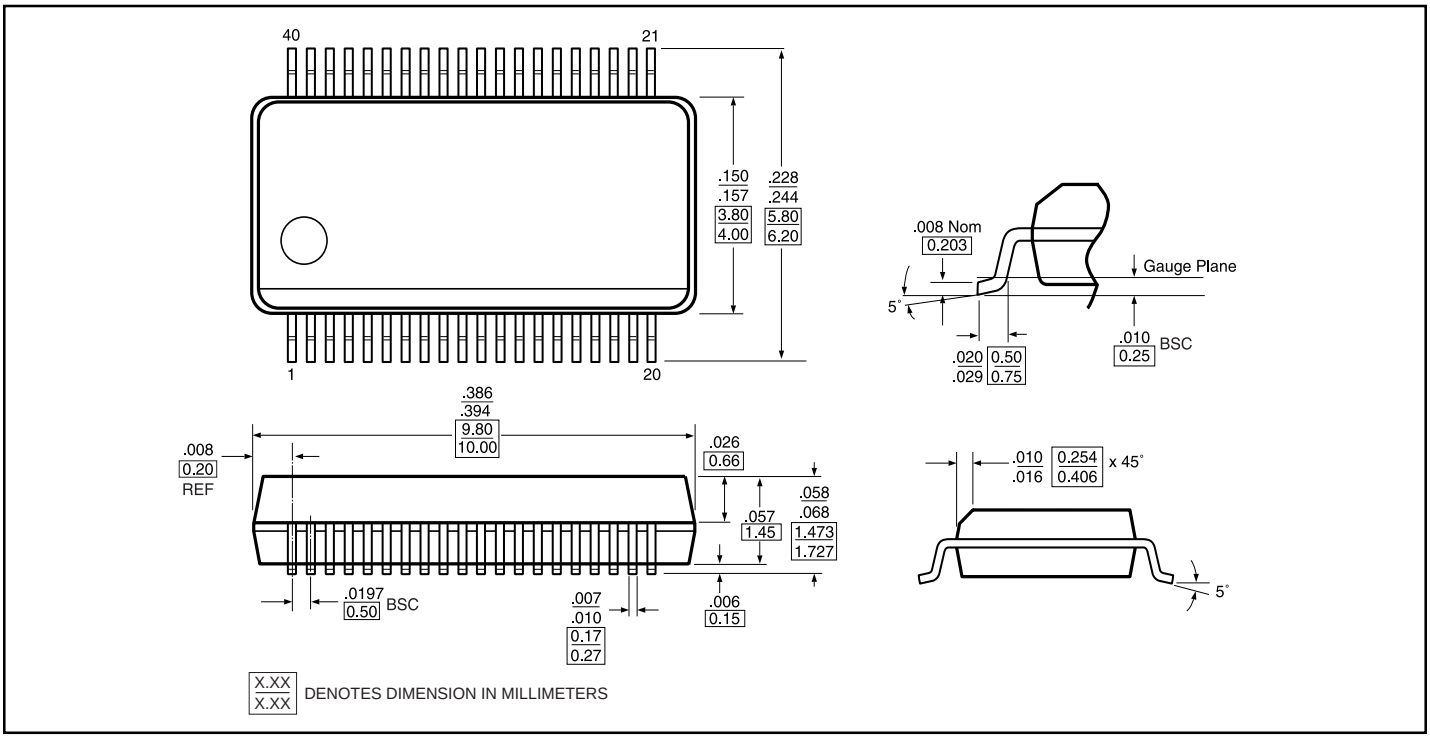
The logic control inpus can be driven up to +3.6V regardless of the supply voltage. For example, given a +3.3V supply, IN may be driven LOW to 0V and HIGH to 3.6V. Driving IN Rail-toRail minimizes power consumption.

Power-Supply Sequencing and Hot Plug Information

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

Rail-to-Rail is a registered trademark of Nippon Motorola, Ltd

Packaging Mechanical: 40-pin BQSOP (B)



Ordering Information

Ordering Code	Package Code	Package Description
PI3B16224B	B	40-pin BQSOP
PI3B16224BE	B	Pb-free & Green, 40-pin BQSOP

Notes:
1. Thermal Characteristics can be found on the world wide web at: www.pericom.com/packaging/

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- View PI3B16224B on WIN SOURCE
- Diodes Incorporated Information

Optimize Your Supply Chain with WIN SOURCE Solutions

- Global Sourcing Solution
- Obsolete Management
- Cost Control Management
- Shortage Management
- Alternative Solution
- Excess Inventory Management