

3.3V, Low Capacitance 16-Bit to 32-Bit Mux/DeMux NanoSwitch™

Features

- R_{ON} is 8-ohm (typ.)
- Pulldown on B Ports
- Low Power: 1mW
- Industrial Operation Temperature: -40°C to 85°C
- Near-Zero Propagation Delay
- Switching Speed: 4.5ns (max.)
- Channel on capacitance: 11pF (typ.)
- V_{CC} Operating Range: $3.3\text{V} \pm 10\%$
- $>100\text{MHz}$ Bandwidth
- Packaging (Pb-free & Green available):
– 56-pin 240-mil wide plastic TSSOP (A)

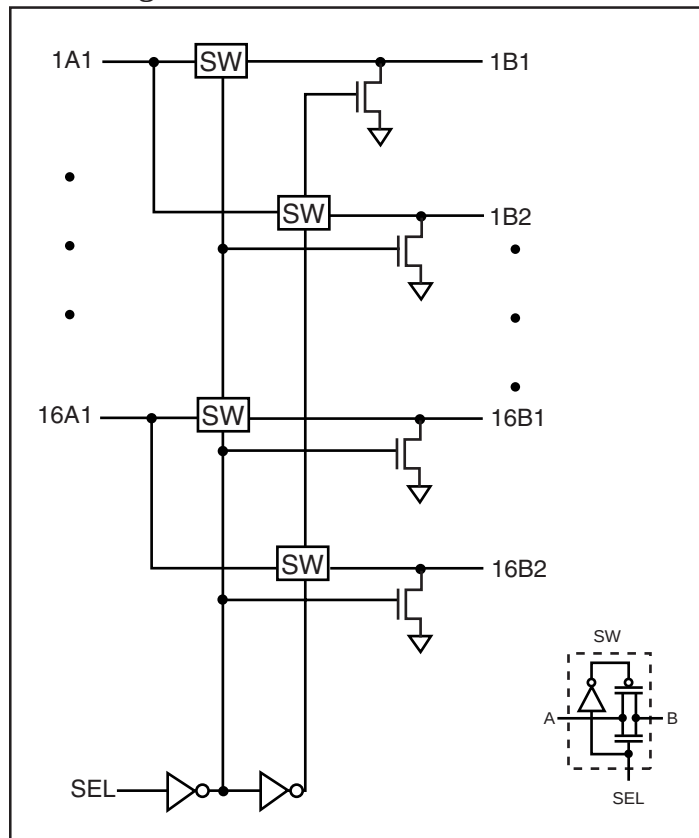
Description

Pericom Semiconductor's PI3B16234 is a 16-bit to 32-bit Mux/DeMux switch. Industry leading advantages include almost zero propagation delay of 500ps because of 8-ohm channel resistance and low I/O capacitance. A1 port demultiplexes to either port B1 or B2. The switch is bidirectional.

Application

- Memory Switching

Block Diagram



Pin Configuration

NC	1	56	V_{CC}
1B1	2	55	1A1
2B1	3	54	1B2
2A1	4	53	2B2
3B1	5	52	3A1
4B1	6	51	3B2
4A1	7	50	4B2
GND	8	49	GND
5B1	9	48	5A1
6B1	10	47	5B2
6A1	11	46	6B2
7B1	12	45	7A1
8B1	13	44	7B2
8A1	14	43	8B2
9B1	15	42	9A1
10B1	16	41	9B2
10A1	17	40	10B2
11B1	18	39	11A1
12B1	19	38	11B2
12A1	20	37	12B2
V_{CC}	21	36	GND
13B1	22	35	13A1
14B1	23	34	13B2
14A1	24	33	14B2
15B1	25	32	15A1
16B1	26	31	15B2
16A1	27	30	16B2
SEL	28	29	NC

Function Table

SEL	FUNCTION
L	nA1 to nB1
H	nA1 to nB2

Note: n = 1–16

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 Range	–0.3V 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 ($V_{CC} = 3.3V \pm 10\%$, $T_A = -40^\circ C$ to $85^\circ C$)

Parameters	Description	Test Conditions	Min.	Typ ⁽¹⁾	Max.	Units
V_{IH}	TTL Input HIGH Voltage	SEL	2.0			V
V_{IL}	Input LOW Voltage		–0.5		0.8	
I_{IH}	Input High Current		–1		1	μA
I_{IL}	Input Low Current		–1		1	
R_{ON}	Switch ON Resistance	$V_{CC} = \text{Min.}, V_{IN} = 0.0V, I_{ON} = 12mA$ $V_{CC} = \text{Min.}, V_{IN} = 2.4V, I_{ON} = 8mA$		8 12	12 23	Ω
I_O	B Port Pulldown Current	$V_{CC} = \text{Min.}, V_O = V_{CC}$ SEL = HIGH for B1, SEL = LOW for B2	2.5			mA
C_{IN}	Input Capacitance	$V_{IN} = 0V$		2.6	3.3	pF
C_{ON}	A/B Capacitance, Switch On			11	14	
I_{CC}	Power Supply Quiescent				20	μA
ΔI_{CC}	Supply current per inupt @ TTL HIGH	$V_{CC} = \text{Max.}, V_{IN} = 3V$			2.5	mA

Notes:

- Typical values are shown at $V_{CC} = 3.3V$, $+25^\circ C$ ambient and maximum loading.

AC Electrical Characteristics ($V_{CC} = 3.3V \pm 10\%$, $T_A = -40^\circ C$ to $85^\circ C$)

Parameters	Description	Test Condition	Min.	Typ.	Max.	Units
t_{PLH}	Propagation Delay	$C_L = 25pF, R_L = 500\text{-ohm}^{(1)}$			500	ps
t_{PHL}						
t_{pE}	Bus Disable	$C_L = 25pF, R_L = 500\text{-ohm}$	1.3		4.5	ns
t_{pD}						

Notes:

- Guaranteed by design.

Applications Information

Logic Inputs

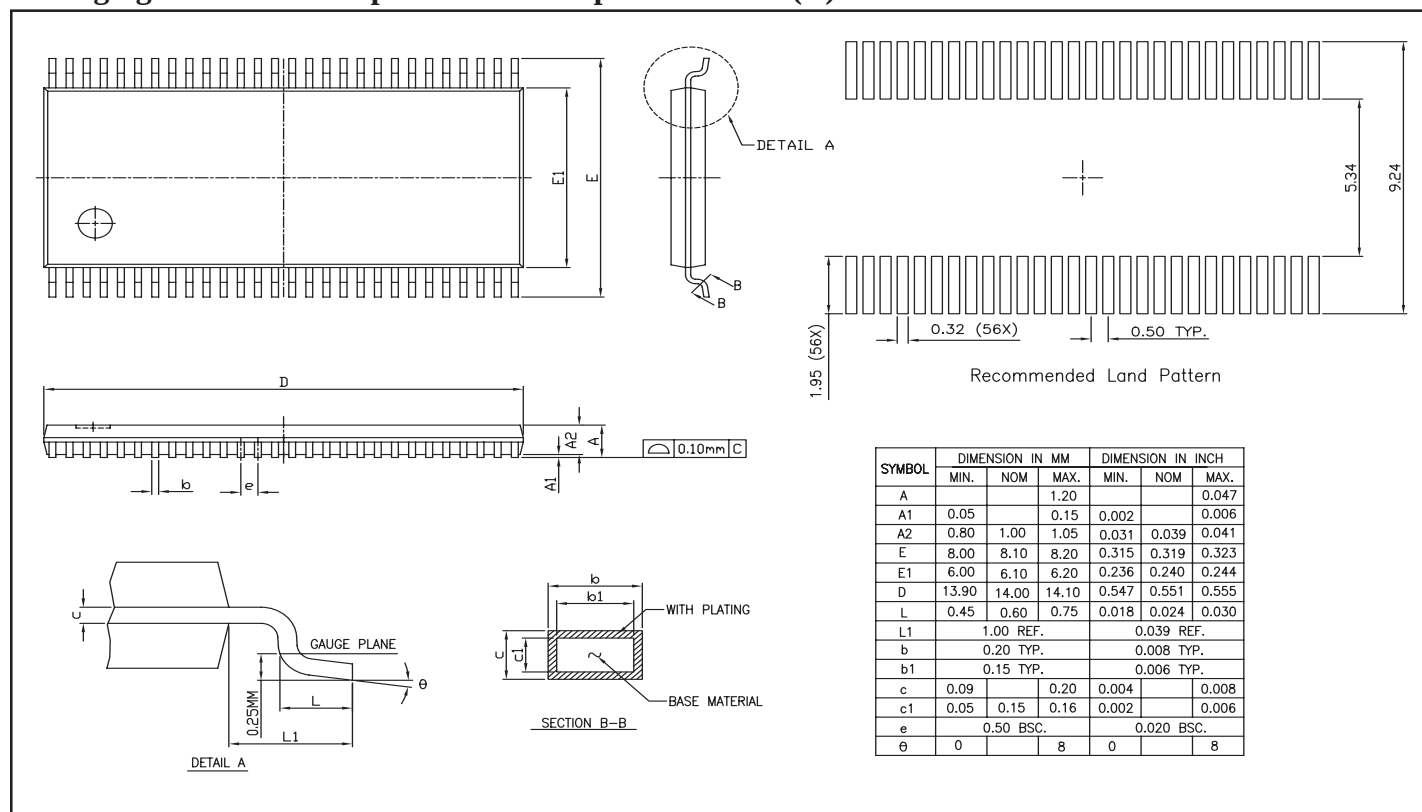
The logic control inputs can be driven up to +3.6V regardless of the supply voltage. For example, given a +3.3V supply, IN may be driven low to 0V and high to 3.6V. Driving IN Rail-to-Rail® minimizes power consumption.

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 registered trademark of Nippon Motorola, Ltd.

Packaging Mechanical: 56-pin 240-mil wide plastic TSSOP (A)



Ordering Information

Ordering Code	Package Code	Package Type
PI3B16234A	A	56-pin TSSOP
PI3B16234AE	A	Pb-free & Green, 56-pin TSSOP

Notes:

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