PI5C16211

24-Bit Bus Switch

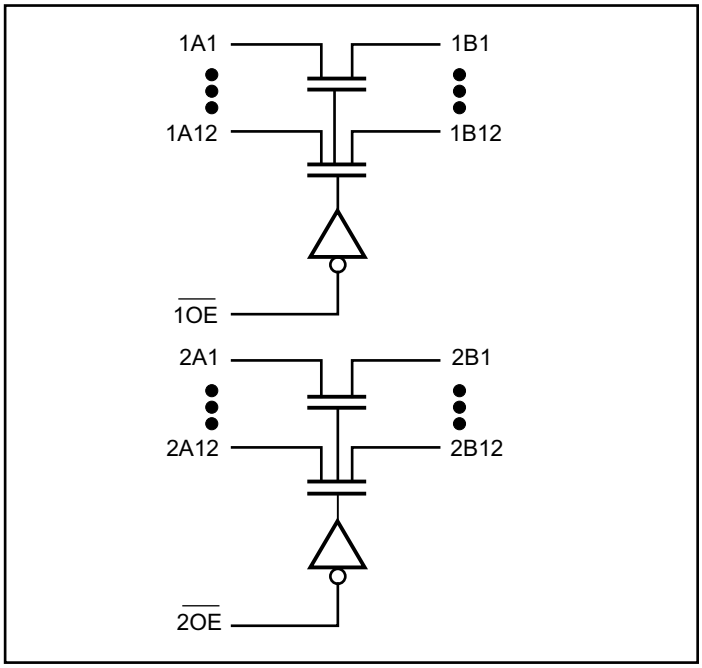
Features

- Near-Zero propagation delay
- 5Ω switch connects inputs to outputs
- Direct bus connection when switches are ON
- Ultra-low quiescent power (0.2µA typical)
  – Ideally suited for notebook applications
- Industrial operating temperature: –40°C to +85°C
- Packaging (Pb-free & Green available):
  – 56-pin 240-mil wide thin plastic TSSOP

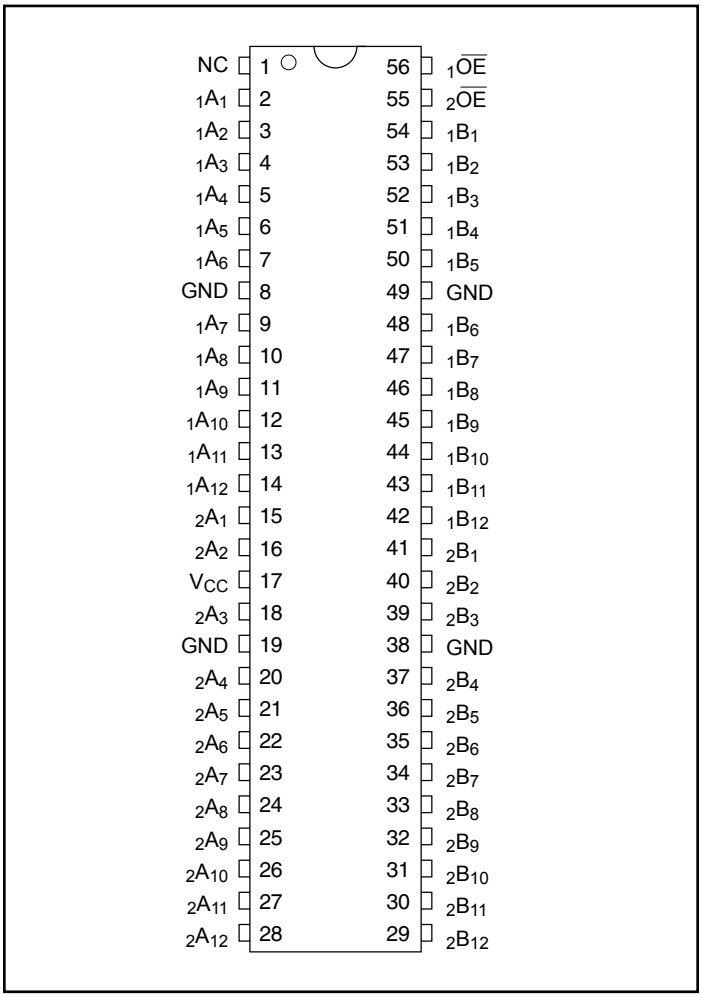
Description

Pericom Semiconductor's PI5C16211 is a 24-bit bus switch designed with a low On-Resistance allowing inputs to be connected directly to outputs. This device operates as a 24-bit or a 12-bit bus switch, which provides high speed bus switching.

Block Diagram



Pin Configuration



Truth Table[1]

$_1\overline{OE}$	$_2\overline{OE}$	$_1$A, $_1$B, I/Os	$_2$A, $_2$B, I/Os
L	L	$_1$A = $_1$B	$_2$A = $_2$B
L	H	$_1$A = $_1$B	Z
H	L	Z	$_2$A = $_2$B
H	H	Z	Z

Notes:
1. H = High Voltage Level, L = Low Voltage Level, Z = High Impedance

Pin Description

Pin Name	I/O	Description
x$\overline{OE}$	I	Output Enables
xAx	I/O	Bus A
xBx	I/O	Bus B

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 & V_{CC} Only)	–0.5V to +7.0V
Supply Voltage to Ground Potential (Outputs & D/O Only)	–0.5V to +7.0V
DC Input Voltage	–0.5V to +7.0V
DC Output Current	120mA
Power Dissipation	1.4W

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} = 5V ±10%)

Parameters	Description	Test Conditions	Min.	Typ(1)	Max.	Units
V_{IK}	Clamp Diode Voltage	V_{CC} = 4.5V, I_I = –18mA			1.2	V
I_I	Input LOW Current	V_{CC} = 5.5V, V_I = V_{CC} or GND			10	µA
		V_{CC} = 0V, V_I = 5.5V			±1	
I_{CC}	Quiescent Power Supply Current	V_{CC} = 5.5V, V_I = V_{CC} or GND			3.0	
ΔI_{CC}	Supply Current per Control Input @ TTL High	V_{CC} = 5.5V, One input at 3.4V, other inputs at V_{CC} or GND			2.5	mA
C_I(2)	Control Input Capacitance	V_I = 3V or 0			4.5	pF
$C_{IO(OFF)}$(2)	A/B Switch OFF Capacitance	V_O = 3V or 0, OE = V_{CC}			5.5	
R_{ON}	Switch On Resistance(3)	V_{CC} = 4.0V, V_I = 2.4V, I_i = 15 mA		14	20	Ω
		V_{CC} = 4.5V, V_I = 0V, I_i = 64 mA		5	7	
		V_{CC} = 4.5V, V_I = 0V, I_i = 30 mA		5	7	
		V_{CC} = 4.5V, $_I$ = 2.4V, I_i = 15 mA		8	12	

Notes:
1. Typical values are at V_{CC} = 5.0V, T_A = 25°C ambient and maximum loading.
2. This parameter is determined by device characterization but is not production tested.
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.

Power Supply Characteristics

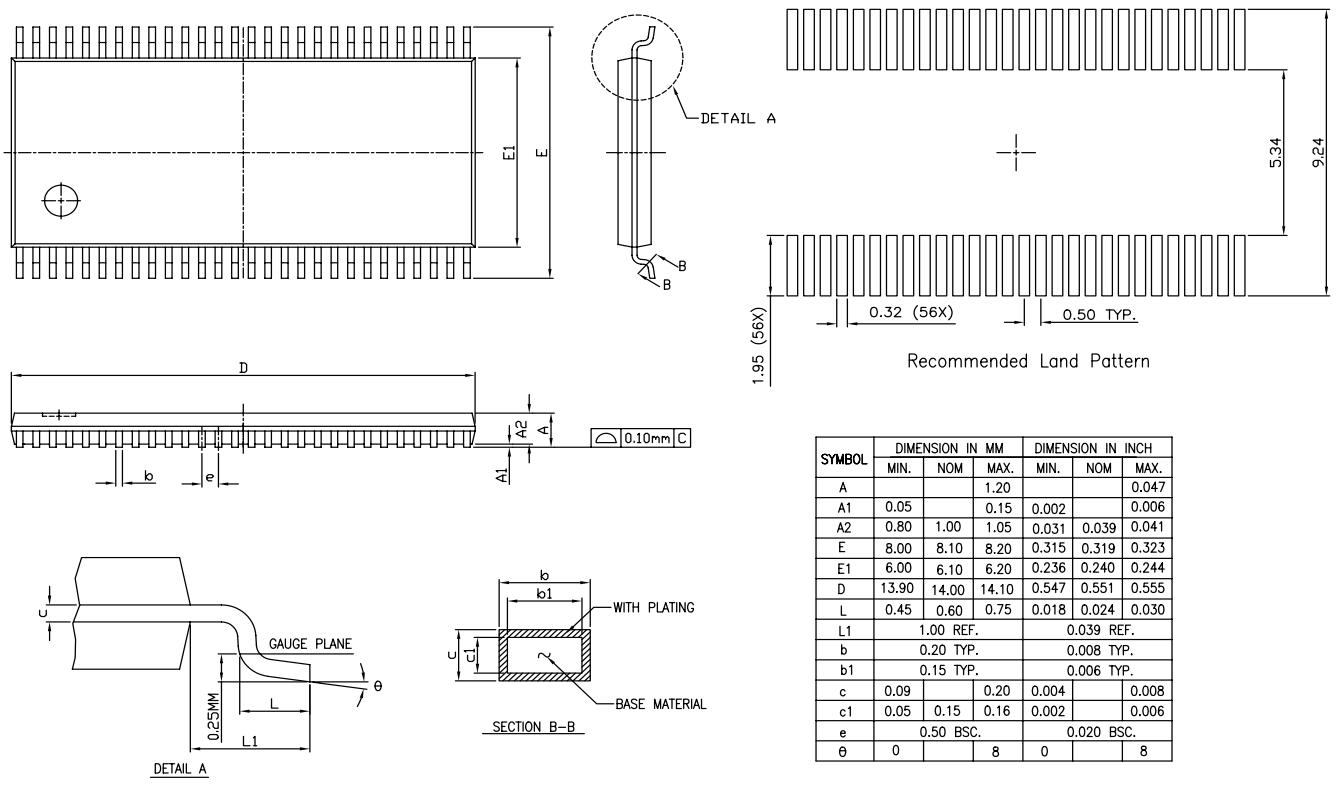
Parameters	Description	Min.	Typ.(1)	Max.	Units
V_{CC}	Supply Voltage	4.0		5.5	V
V_{IH}	High Level Input Voltage	2.0			
V_{IL}	Low Level Input voltage			0.8	
T_A	Operating Free-Air Tempertaure	–40		85	°C

Note:
1. Typical values are at V_{CC} = 5.0V, +25°C ambient.

Switching Characteristics over Operating Range

Parameters	From (Input)	To (Output)	Test Conditions	V_{CC} = 5V ±0.5V		V_{CC} = 4V		Units
				Min.	Max.	Min.	Max.	
t_{PD}(1)	A or B	B or A	C_L = 50pF R_L = 500Ω		0.25		0.25	ns
t_{EN}	$\overline{OE}$	A or B		1.5	9.3		10.1	
t_{DIS}	$\overline{OE}$	A or B		1.5	8.5		7.1	

Notes:
1. This parameter is guaranteed but not tested on Propagation Delays. 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.



SYMBOL	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM	MAX.	MIN.	NOM	MAX.
A			1.20			0.047
A1	0.05		0.15	0.002		0.006
A2	0.80	1.00	1.05	0.031	0.039	0.041
E	8.00	8.10	8.20	0.315	0.319	0.323
E1	6.00	6.10	6.20	0.236	0.240	0.244
D	13.90	14.00	14.10	0.547	0.551	0.555
L	0.45	0.60	0.75	0.018	0.024	0.030
L1	1.00 REF.			0.039 REF.		
b	0.20 TYP.			0.008 TYP.		
b1	0.15 TYP.			0.006 TYP.		
c	0.09		0.20	0.004		0.008
c1	0.05	0.15	0.16	0.002		0.006
e	0.50 BSC.			0.020 BSC.		
θ	0		8	0		8

Notes:
1. Controlling dimensions in millimeters.
2. Ref: JEDEC MO-153F/EE
3. Package Outline Exclusive of Mold Flash and Metal Burr

PERICOM Semiconductor Corporation

DATE: 09/11/06

DESCRIPTION: 56-pin, 240-mil wide TSSOP

PACKAGE CODE: A56

DOCUMENT CONTROL #: PD-1502 **REVISION: M**

06-0736

Note:
- For latest package info, please check: http://www.pericom.com/products/packaging/mechanicals.php

Ordering Information

Ordering Code	Package Type	Package Description
PI5C16211AE	A	Pb-free & Green, 56-pin 240-mil wide 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