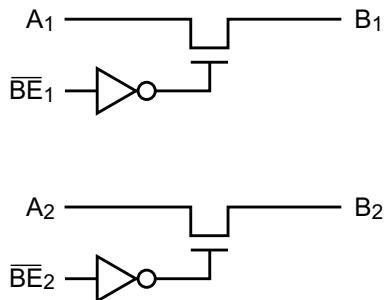
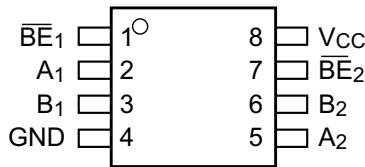


**2-Bit Bus Switch with Active Low Enables**
**Features**

- Near zero propagation delay
- 5-ohm switches connect inputs to outputs
- Direct bus connection when switches are ON
- Ultra Low Quiescent Power (0.2 $\mu$ A typical)
  - Ideally suited for notebook applications
- Packages available (Pb-free and Green available):
  - 8-pin, 173-mil wide plastic TSSOP (L)

**Description**

The PI5C3306 is a 2-bit bus switch designed with two 5-ohm bus switches with fast individual enables. When enabled via the associated Bus Enable (BE) pin, the "A" pin is directly connected to the "B" pin for that particular gate. The bus switch introduces no additional propagation delay or additional ground bounce noise. The PI5C3306 device has active LOW enables.

**Logic Block Diagram**

**Product Pin Configuration**

**Pin Description**

| Pin Name                       | Description   |
|--------------------------------|---------------|
| BE <sub>n</sub>                | Switch Enable |
| A <sub>2</sub> .A <sub>1</sub> | Bus A         |
| B <sub>2</sub> .B <sub>1</sub> | Bus B         |
| V <sub>CC</sub>                | Power         |
| GND                            | Ground        |

**Truth Table (1)**

| BE <sub>n</sub> | A <sub>n</sub> | B <sub>n</sub> | V <sub>CC</sub> | Function   |
|-----------------|----------------|----------------|-----------------|------------|
| X*              | Hi-Z           | Hi-Z           | GND             | Disconnect |
| H               | Hi-Z           | Hi-Z           | V <sub>CC</sub> | Disconnect |
| L               | B <sub>n</sub> | A <sub>n</sub> | V <sub>CC</sub> | Connect    |

**Notes:**

1. H=High Voltage Level, L=Low Voltage Level

2. Hi-Z=High Impedance, X=Don't Care

\*A pull-up resistor should be provided for power-up protection.

## 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 .....     | -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, $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$ , $V_{CC} = 5.0\text{V} \pm 10\%$ )

| Parameters | Description                         | Test Conditions <sup>(1)</sup>  | Min. | Typ. <sup>(2)</sup> | Max.    | Units         |
|------------|-------------------------------------|---|------|---------------------|---------|---------------|
| $V_{IH}$   | Input HIGH Voltage                  | Guaranteed logic HIGH level   | 2.0  |                     | 0.8     | V             |
| $V_{IL}$   | Input LOW Voltage                   | Guaranteed logic LOW level  | -0.5 |                     |         |               |
| $I_{IH}$   | Input HIGH Current                  | $V_{CC} = \text{Max.}$ , $V_{IN} = V_{CC}$  |      | $\pm 1$             | $\pm 1$ | $\mu\text{A}$ |
| $I_{IL}$   | Input LOW Current                   | $V_{CC} = \text{Max.}$ , $V_{IN} = \text{GND}$  |      |                     |         |               |
| $I_{OZ}$   | High Impedance Output Current       | $0 \leq A, B \leq V_{CC}$   |      | $\pm 1$             | $\pm 1$ | $\mu\text{A}$ |
| $V_H$      | Input Hysteresis at Control Pins    | 300   |      |                     | mV      |               |
| $R_{ON}$   | Switch on Resistance <sup>(3)</sup> | $V_{CC} = 4.5\text{V}$ , $V_{IN} = 0.0\text{V}$ , $I_{ON} = 30\text{mA}$ or $64\text{mA}$ |      | 5                   | 7       | $\Omega$      |
|            |                                     | $V_{CC} = 4.5\text{V}$ , $V_{IN} = 2.4\text{V}$ , $I_{ON} = 15\text{mA}$                  |      |                     | 10      | 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  $V_{CC} = 5.0\text{V}$ ,  $T_A = 25^\circ\text{C}$  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 ( $T_A = 25^\circ\text{C}$ , $f = 1\text{ MHz}$ )

| Parameters <sup>(1)</sup> | Description                 | Test Conditions      | Typ. | Units |
|---------------------------|-----------------------------|----------------------|------|-------|
| $C_{IN}$                  | Input Capacitance           | $V_{IN} = 0\text{V}$ | 3    | pF    |
| $C_{OFF}$                 | A/B Capacitance, Switch Off |                      | 5    |       |
| $C_{ON}$                  | A/B Capacitance, Switch On  |                      | 10   |       |

### Notes:

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

## Power Supply Characteristics

| Parameters      | Description                      | Test Conditions <sup>(1)</sup> | Min.                              | Typ. <sup>(2)</sup> | Max. | Units         |
|-----------------|----------------------------------|--------------------------------|-----------------------------------|---------------------|------|---------------|
| $I_{CC}$        | Quiescent Power Supply Current   | $V_{CC} = \text{Max.}$         | $V_{IN} = \text{GND}$ or $V_{CC}$ | 0.1                 | 3.0  | $\mu\text{A}$ |
| $\Delta I_{CC}$ | Quiescent Current per Input HIGH |                                | $V_{IN} = 3.4\text{V}^{(3)}$      |                     | 2.5  | mA            |

### Notes:

1. For Max. or Min. conditions, use appropriate value specified under Electrical Characteristics for the applicable device.
2. Typical values are at  $V_{CC} = 5.0\text{V}$ ,  $+25^\circ\text{C}$  ambient.
3. Per TTL driven input ( $V_{IN} = 3.4\text{V}$ , control inputs only); A and B pins do not contribute to  $I_{CC}$ .

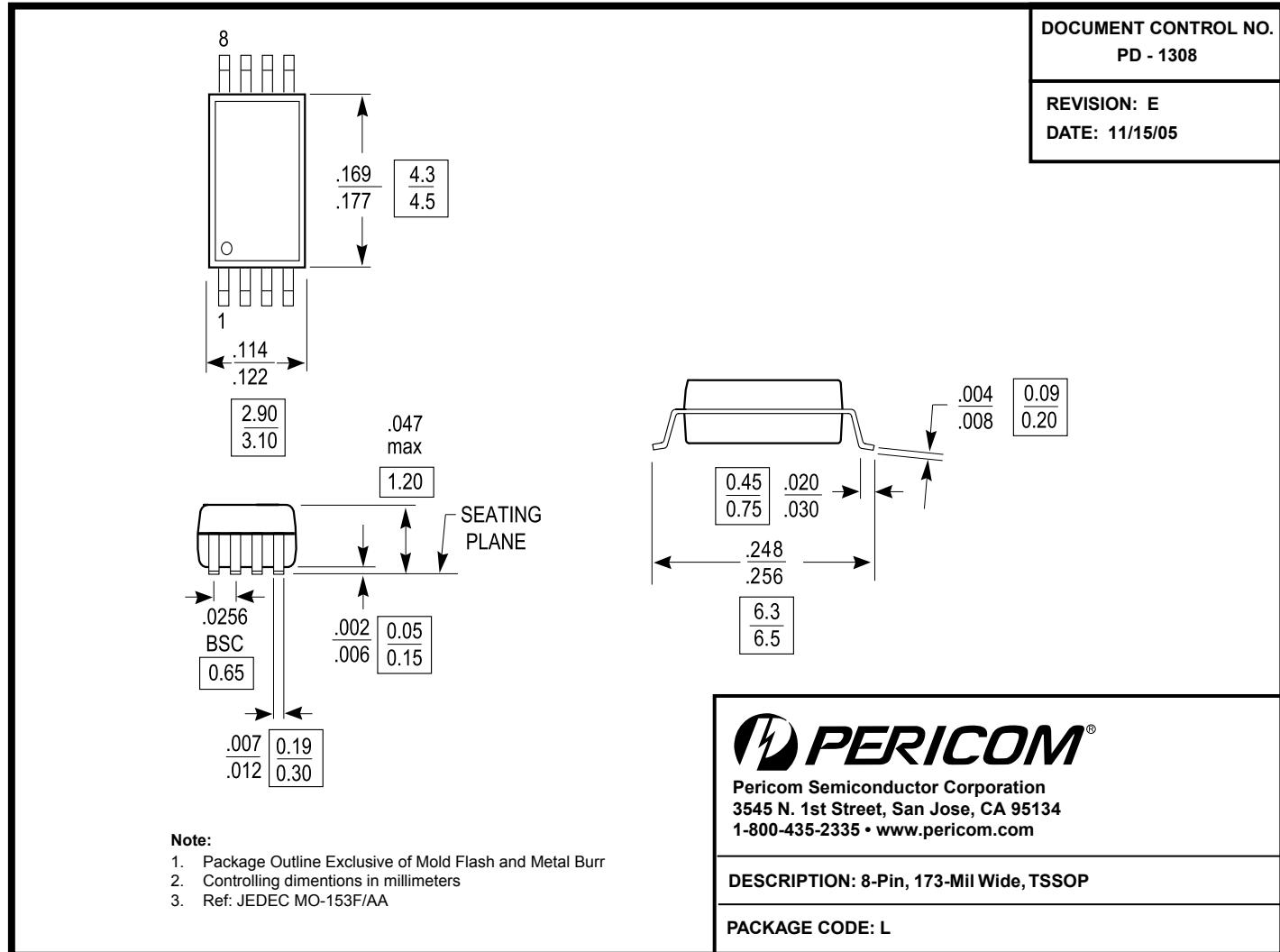
**Switching Characteristics over Operating Range**

| Parameters             | Description                                       | Conditions   | PI5C3306               |      |               |      | Units |  |
|------------------------|---|--|------------------------|------|---------------|------|-------|--|
|                        |   |  | $V_{CC} = 5V \pm 10\%$ |      | $V_{CC} = 4V$ |      |       |  |
|                        |   |  | Min.                   | Max. | Min.          | Max. |       |  |
| $t_{PLH}$<br>$t_{PHL}$ | Propagation Delay <sup>(1,2)</sup> A to B, B to A | $C_L = 50pF$<br>$R_L = 500\Omega$<br>$R_P^{(3)} = 500\Omega$ |                        | 0.25 |               | 0.25 | ns    |  |
| $t_{PZH}$<br>$t_{PZL}$ | Bus Enable Time                                   |  | 1.0                    | 4.9  |               | 5.5  |       |  |
| $t_{PHZ}$<br>$t_{PLZ}$ | Bus Disable Time                                  |  | 1.0                    | 4.2  |               | 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 0.25ns 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. RP terminates to 7V supply for  $t_{PZL}$  and  $t_{PLZ}$  measurement.

## Packaging Mechanical: 8-pin TSSOP (L)



## Ordering Information

| Ordering Code | Packaging Code | Package Description          |
|---------------|----------------|------------------------------|
| PI5C3306LE    | L              | Pb-free & Green, 8-pin TSSOP |

## Notes:

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