

### 16-Bit 1.2-2.5V to 3.3V Level Shifting Transceiver with 3-State Outputs

#### Features

- PI74AVC164245 is designed for low voltage operation: 1.2V - 2.5V to 3.3V
- Industrial operation at  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- • Packaging (Pb-free & Green available):
  - 48-pin plastic 300-mil SSOP (V)
  - 48-pin plastic 240-mil TSSOP (A)
  - 48-pin plastic 173-mil TVSOP (K)

#### Truth Table (each 8-bit section)

| Inputs                 |     | Operation       |
|------------------------|-----|-----------------|
| $\overline{\text{OE}}$ | DIR |                 |
| L                      | L   | B data to A bus |
| L                      | H   | A data to B bus |
| H                      | X   | Isolation       |

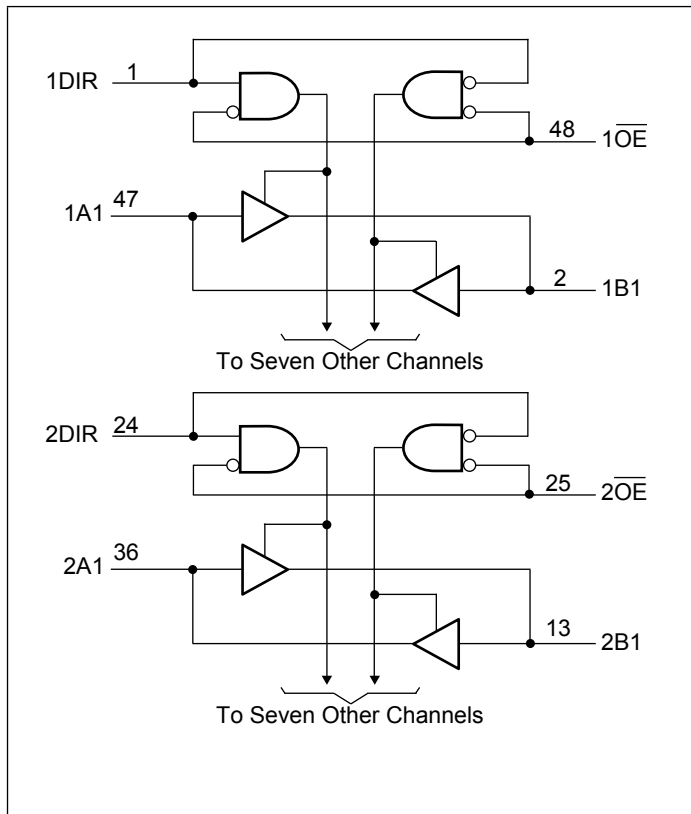
#### Description

Pericom Semiconductor's PI74AVC164245, a 16-bit (dual-octal) noninverting bus transceiver, contains two separate supply rails: B port ( $V_{\text{CCB}}$ ), set at 3.3V, and A port ( $V_{\text{CCA}}$ ), set to operate at 1.2-2.5V. This arrangement permits translation from a 1.2-2.5V to 3.3V environment and vice versa.

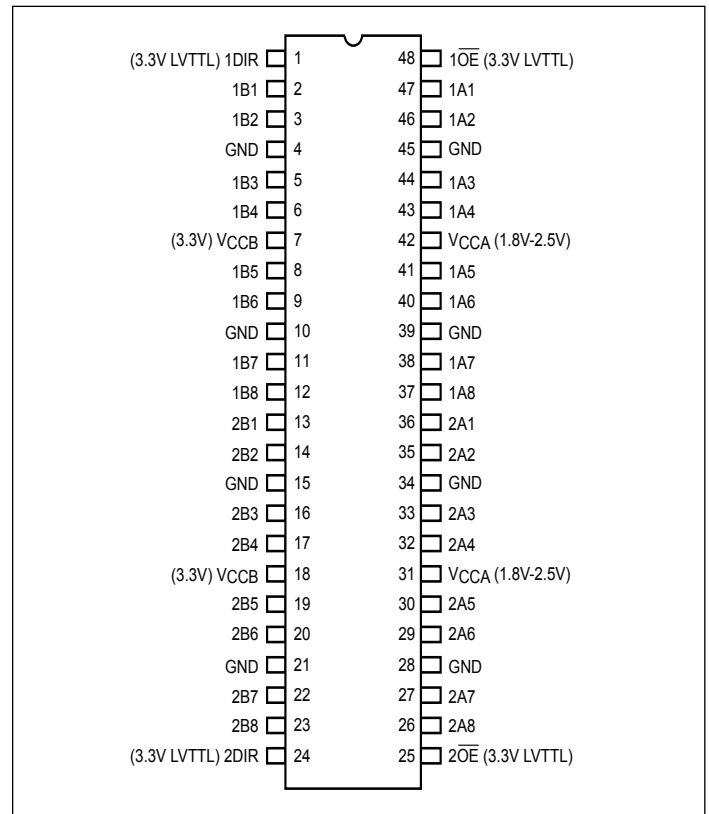
The PI74AVC164245 is designed for asynchronous communication between data buses.

To ensure the high impedance state during power up or power down, the output-enable ( $\overline{\text{OE}}$ ) input should be tied to  $V_{\text{CC}}$  through a pullup resistor: the minimum value of the resistor is determined by the current-sinking capability of the driver.

#### Block Diagram



#### Pin Configuration (28-Pin TQFN)



## Maximum Ratings

(Absolute maximum ratings over operating free-air temperature range from  $V_{CCB}$  at 3.3V &  $V_{CCA}$  at 1.5 - 2.5V, unless otherwise

### 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.

|                                              |                                                            |                                                                           |                    |
|----------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------|--------------------|
| Supply Voltage Range                         | $V_{CCA}$ .....-0.5V to 3.8V                               | Continuous output current, $I_O$ .....                                    | $\pm 50\text{mA}$  |
|                                              | $V_{CCB}$ .....-0.5V to 4.6V                               | Continuous current through each $V_{CC}$ or GND .....                     | $\pm 100\text{mA}$ |
| Input Voltage Range, $V_I$                   | Except I/O ports <sup>(1)</sup> ..-0.5V to 4.6V            | Package thermal impedance, $\theta_{JA}$ <sup>(3)</sup> : A package ..... | 89°C/W             |
|                                              | I/O port A <sup>(2)</sup> ..-0.5V to $V_{CCA}+0.5\text{V}$ | K package .....                                                           | 58°C/W             |
|                                              | I/O port B <sup>(1)</sup> ..-0.5V to $V_{CCB}+0.5\text{V}$ | V package .....                                                           | 94°C/W             |
|                                              |                                                            | Storage temperature range, $T_{STG}$ .....                                | -65°C to 150°C     |
| Input Clamp Current $I_{IK}(V_I < 0)$ .....  | -50mA                                                      |                                                                           |                    |
| Output Clamp Current $I_{OK}(V_O < 0)$ ..... | -50mA                                                      |                                                                           |                    |

## Recommended Operating Conditions for $V_{CCB}$ at 3.3V<sup>(4)</sup>

|                     |                                    | Min. | Max.      | Units |
|---------------------|------------------------------------|------|-----------|-------|
| $V_{CCB}$           | Supply voltage                     | 3.0  | 3.6       | V     |
| $V_{IH}$            | High-level voltage                 | 2    |           |       |
| $V_{IL}$            | Low-level voltage                  |      | 0.8       |       |
| $V_{IB}$            | Input Voltage                      | 0    | $V_{CCB}$ |       |
| $V_{OB}$            | Output Voltage                     | 0    | $V_{CCB}$ |       |
| $I_{OH}$            | High-level output current          |      | -12       | mA    |
| $I_{OL}$            | Low-level output current           |      | 12        |       |
| $\Delta t/\Delta v$ | Input transition rise or fall rate |      | 10        | ns/V  |
| $T_A$               | Operating free-air temperature     | -40  | 85        | °C    |

### Recommended Operating Conditions for $V_{CCA}$ at 2.5V<sup>(4)</sup>

|                     |                                    |                            | Min. | Max.      | Units |
|---------------------|------------------------------------|----------------------------|------|-----------|-------|
| $V_{CCA}$           | Supply voltage                     |                            | 2.3  | 2.7       | V     |
| $V_{IH}$            | High-level voltage                 | $V_{CCA} = 2.3V$ to $2.7V$ | 1.7  |           |       |
| $V_{IL}$            | Low-level voltage                  | $V_{CCA} = 2.3V$ to $2.7V$ |      | 0.7       |       |
| $V_{IA}$            | Input Voltage                      |                            | 0    | $V_{CCA}$ |       |
| $V_{OA}$            | Output Voltage                     |                            | 0    | $V_{CCA}$ |       |
| $I_{OH}$            | High-level output current          | $V_{CCA} = 2.3V$           |      | -8        | mA    |
|                     |                                    | $V_{CCA} = 2.7V$           |      | -12       |       |
| $I_{OL}$            | Low-level output current           | $V_{CCA} = 2.3V$           |      | 8         |       |
|                     |                                    | $V_{CCA} = 2.7V$           |      | 12        |       |
| $\Delta t/\Delta v$ | Input transition rise or fall rate |                            |      | 10        | ns/V  |
| $T_A$               | Operating free-air temperature     |                            | -40  | 85        | °C    |

#### Notes:

1. This value is limited to 4.6V maximum.
2. This value is limited to 3.8V maximum.
3. The package thermal impedance is calculated in accordance with JESD 51.
4. To ensure proper device operation, all unused device inputs must be held at the associated  $V_{CC}$  or GND.

### Recommended Operating Conditions for $V_{CCA}$ at 1.8V<sup>(4)</sup>

|                     |                                    |                              | Min.                  | Max.                  | Units |
|---------------------|------------------------------------|------------------------------|-----------------------|-----------------------|-------|
| $V_{CCA}$           | Supply voltage                     |                              | 1.65                  | 1.95                  | V     |
| $V_{IH}$            | High-level voltage                 | $V_{CCA} = 1.65V$ to $1.95V$ | $0.65 \times V_{CCA}$ |                       |       |
| $V_{IL}$            | Low-level voltage                  | $V_{CCA} = 1.65V$ to $1.95V$ |                       | $0.35 \times V_{CCA}$ |       |
| $V_{IB}$            | Input Voltage                      |                              | 0                     | $V_{CCA}$             |       |
| $V_{OA}$            | Output Voltage                     |                              | 0                     | $V_{CCA}$             |       |
| $I_{OH}$            | High-level output current          | $V_{CCA} = 1.65V$            |                       | -4                    | mA    |
|                     |                                    | $V_{CCA} = 1.95V$            |                       | -8                    |       |
| $I_{OL}$            | Low-level output current           | $V_{CCA} = 1.65V$            |                       | 4                     |       |
|                     |                                    | $V_{CCA} = 1.95V$            |                       | 8                     |       |
| $\Delta t/\Delta v$ | Input transition rise or fall rate |                              |                       | 10                    | ns/V  |
| $T_A$               | Operating free-air temperature     |                              | -40                   | 85                    | °C    |

#### Notes:

1. To ensure proper device operation, all unused device inputs must be held at the associated VCC or GND.

**Electrical Characteristics** ( $V_{CCB}$ ) (Over recommended operating free-air temperature range for  $V_{CCB} = 3.3V$ )

| Parameter          |                | Test Conditions                                                  | $V_{CCB}$    | Min. | Typ. | Max.     | Units   |
|--------------------|----------------|------------------------------------------------------------------|--------------|------|------|----------|---------|
| $V_{OH}$ (A to B)  |                | $I_{OH} = -100\mu A$                                             | 3.0V         | 2.8  |      |          | V       |
|                    |                |                                                                  | 3.6V         | 3.4  |      |          |         |
|                    |                | $I_{OH} = -12mA$                                                 | 3.0V         | 2.2  |      |          |         |
|                    |                |                                                                  | 3.6V         | 2.8  |      |          |         |
| $V_{OL}$ (A to B)  |                | $I_{OL} = -100\mu A$                                             | 3.0V         |      |      | 0.2      | V       |
|                    |                |                                                                  | 3.6V         |      |      | 0.2      |         |
|                    |                | $I_{OL} = -12mA$                                                 | 3.0V         |      |      | 0.5      |         |
|                    |                |                                                                  | 3.6V         |      |      | 0.5      |         |
| $I_I$              | Control Inputs | $V_I = V_{CCB}$ or GND                                           | 3.6V         |      |      | $\pm 5$  | $\mu A$ |
| $I_{OZ}^{\dagger}$ | A or B ports   | $V_O = V_{CCB}$ or GND                                           | 3.6V         |      |      | $\pm 10$ |         |
| $I_{CC}$           |                | $V_I = V_{CCB}$ or GND, $I_O = 0$                                | 3.6V         |      |      | 20       |         |
| $\Delta I_{CC}^*$  |                | One input at $V_{CCB} - 0.6V$ , Other inputs at $V_{CCB}$ or GND | 3.0V to 3.6V |      |      | 500      |         |
| $C_I$              | Control Inputs | $V_I = V_{CCB}$ or GND                                           | 3.3V         |      | 4.5  |          | pF      |
| $C_{IO}$           | A or B ports   | $V_O = V_{CCB}$ or GND                                           | 3.3V         |      | 6.5  |          |         |

**Notes:**

$\dagger$  Typical values are measured at  $V_{CC} = 3.3V$ ,  $T_A = 25^\circ C$

$\ddagger$  For I/O ports, the parameter  $I_{OZ}$  includes the input leakage current.

\* This is the increase in supply current for each input that is at one of the specified TTL voltage levels rather than at 0 or the associated  $V_{CC}$ .

**Electrical Characteristics** ( $V_{CCA}$ ) (Over recommended operating free-air temperature range for  $V_{CCA} = 2.5V$ )

| Parameter           |                | Test Conditions                                                     | $V_{CCA}$    | Min.           | Typ.† | Max.     | Units   |
|---------------------|----------------|---------------------------------------------------------------------|--------------|----------------|-------|----------|---------|
| $V_{OH}$ (B to A)   |                | $I_{OH} = -100\mu A$                                                | 2.3V to 2.7V | $V_{CC} - 0.1$ |       |          | V       |
|                     |                |                                                                     | 2.3V         | 1.7            |       |          |         |
|                     |                | $I_{OH} = -8mA$                                                     | 2.7V         | 2.0            |       |          |         |
|                     |                |                                                                     | 2.7V         | 1.8            |       |          |         |
| $V_{OL}$ (B to A)   |                | $I_{OL} = -100\mu A$                                                | 2.3V to 2.7V |                |       | 0.2      | V       |
|                     |                | $I_{OL} = -8mA$                                                     | 2.3V         |                |       | 0.4      |         |
|                     |                | $I_{OL} = -12mA$                                                    | 2.7V         |                |       | 0.5      |         |
| $I_I$               | Control Inputs | $V_I = V_{CCA}$ or GND                                              | 2.7V         |                |       | $\pm 5$  | $\mu A$ |
| $I_{OZ}^{\ddagger}$ | A or B ports   | $V_O = V_{CCB}$ or GND                                              | 2.7V         |                |       | $\pm 10$ |         |
| $I_{CC}$            |                | $V_I = V_{CCA}$ or GND, $I_O = 0$                                   | 2.7V         |                |       | 30       |         |
| $\Delta I_{CC}^*$   |                | One input at $V_{CCA} - 0.6V$ ,<br>Other inputs at $V_{CCA}$ or GND | 2.3V to 2.7V |                |       | 500      |         |
| $C_I$               | Control Inputs | $V_I = V_{CCA}$ or GND                                              | 2.5V         |                | 4.5   |          | pF      |
| $C_{IO}$            | A or B ports   | $V_O = V_{CCA}$ or GND                                              | 2.5V         |                | 6.5   |          |         |

**Notes:**

† Typical values are measured at  $V_{CC} = 3.3V$ ,  $T_A = 25^\circ C$

‡ For I/O ports, the parameter  $I_{OZ}$  includes the input leakage current.

\* This is the increase in supply current for each input that is at one of the specified TTL voltage levels rather than at 0 or the associated  $V_{CC}$ .

**Electrical Characteristics** ( $V_{CCA}$ ) (Over recommended operating free-air temperature range for  $V_{CCA} = 1.8V$ )

| Parameter         |                | Test Conditions                                                   | $V_{CCA}$      | Min.           | Typ.** | Max.     | Units   |
|-------------------|----------------|-------------------------------------------------------------------|----------------|----------------|--------|----------|---------|
| $V_{OH}$ (B to A) |                | $I_{OH} = -100\mu A$                                              | 1.65V to 1.95V | $V_{CC} - 0.1$ |        |          | V       |
|                   |                | $I_{OH} = -4mA$                                                   | 1.65V          | 1.3            |        |          |         |
|                   |                |                                                                   | 1.95V          | 1.4            |        |          |         |
|                   |                | $I_{OH} = -8mA$                                                   | 1.95V          | 1.3            |        |          |         |
| $V_{OL}$ (B to A) |                | $I_{OL} = 100\mu A$                                               | 1.65V          |                |        | 0.2      | V       |
|                   |                | $I_{OL} = 4mA$                                                    | 1.95V          |                |        | 0.3      |         |
|                   |                | $I_{OL} = 8mA$                                                    | 1.95V          |                |        | 0.4      |         |
| $I_{OZ}^{***}$    | A or B ports   | $V_O = V_{CCA}$ or GND                                            | 1.95V          |                |        | $\pm 5$  | $\mu A$ |
| $I_{CC}$          |                | $V_I = V_{CCA}$ or GND, $I_O = 0$                                 | 1.95V          |                |        | $\pm 20$ |         |
| $\Delta I_{CC}^*$ |                | One input at $V_{CCA} - 6V$ ,<br>Other inputs at $V_{CCA}$ or GND | 1.65V to 1.95V |                |        | 300      |         |
| $C_I$             | Control Inputs | $V_I = V_{CCA}$ or GND                                            | 1.8V           |                | 4.5    |          | pF      |
| $C_{IO}$          | A or B ports   | $V_O = V_{CCA}$ or GND                                            | 1.8V           |                | 6.5    |          |         |

**Notes:**

- \* The increase in supply current for each input at one of the specified TTL voltage levels rather than at the associated  $V_{CC}$ .
- \*\* Typical values are measured at  $V_{CC} = 2.5V$  or  $1.8V$ ,  $T_A = 25^\circ C$
- \*\*\* For I/O ports, the parameter  $I_{OZ}$  includes the input leakage current.

### Recommended Operating Conditions for $V_{CCA}$ at 1.2V

|                     |                                    |                  | Min.                  | Typ. | Max.                  | Units |
|---------------------|------------------------------------|------------------|-----------------------|------|-----------------------|-------|
| $V_{CCA}$           | Supply voltage                     |                  |                       | 1.2V |                       | V     |
| $V_{IH}$            | High-level voltage                 | $V_{CCA} = 1.2V$ | $0.65 \times V_{CCA}$ |      |                       |       |
| $V_{IL}$            | Low-level voltage                  | $V_{CCA} = 1.2V$ |                       |      | $0.35 \times V_{CCA}$ |       |
| $V_{IB}$            | Input Voltage                      |                  | 0                     |      | $V_{CCA}$             |       |
| $V_{OA}$            | Output Voltage                     |                  | 0                     |      | $V_{CCA}$             |       |
| $I_{OH}$            | High-level output current          | $V_{CCA} = 1.2V$ |                       | -2   |                       | mA    |
| $I_{OL}$            | Low-level output current           | $V_{CCA} = 1.2V$ |                       | 2    |                       |       |
| $\Delta t/\Delta v$ | Input transition rise or fall rate |                  |                       |      | 10                    | ns/V  |
| $T_A$               | Operating free-air temperature     |                  | -40                   |      | 85                    | °C    |

#### Notes:

1. To ensure proper device operation, all unused device inputs must be held at the associated  $V_{CC}$  or GND.

### Electrical Characteristics ( $V_{CCA}$ ) (Over recommended operating free-air temperature range for $V_{CCA} = 1.2V$ )

| Parameter         | Test Conditions     | $V_{CCA}$                         | Min. | Typ.    | Max. | Units   |
|-------------------|---------------------|-----------------------------------|------|---------|------|---------|
| $V_{OH}$ (B to A) | $I_{OH} = -2mA$     | 1.2V                              |      | 1.1V    |      |         |
| $V_{OL}$ (B to A) | $I_{OL} = 100\mu A$ | 1.2V                              |      | 0.1     |      |         |
|                   | $I_{OL} = 2mA$      | 1.2V                              |      | 0.1     |      |         |
| $I_{OZ}^{**}$     | A or B ports        | $V_O = V_{CCA}$ or GND            | 1.2V | $\pm 5$ |      | $\mu A$ |
| $I_{CC}$          |                     | $V_I = V_{CCA}$ or GND, $I_O = 0$ | 1.2V | 10      |      |         |
| $C_I$             | Control Inputs      | $V_I = V_{CCA}$ or GND            | 1.2V | 4.5     |      | pF      |
| $C_{IO}$          | A or B ports        | $V_O = V_{CCA}$ or GND            | 1.2V | 6.5     |      |         |

#### Notes:

\* The increase in supply current for each input at one of the specified TTL voltage levels rather than at the associated  $V_{CC}$ .

\*\* For I/O ports, the parameter  $I_{OZ}$  includes the input leakage current.

**Switching Characteristics** ( $C_L$  = see Figures 1,2,3)

| Parameter                         | From<br>(Input) | To<br>(Output) | PI74AVC164245                     |      |                                  |      | PI74AVC164245A                |                                   |      |                                  | Units |    |
|-----------------------------------|-----------------|----------------|-----------------------------------|------|----------------------------------|------|-------------------------------|-----------------------------------|------|----------------------------------|-------|----|
|                                   |                 |                | V <sub>CCA</sub> = 3.3V ±0.3V     |      |                                  |      | V <sub>CCA</sub> = 3.3V ±0.3V |                                   |      |                                  |       |    |
|                                   |                 |                | V <sub>CCA</sub> = 1.8V<br>±0.15V |      | V <sub>CCA</sub> = 2.5V<br>±0.2V |      | V <sub>CCA</sub> = 1.2V       | V <sub>CCA</sub> = 1.8V<br>±0.15V |      | V <sub>CCA</sub> = 2.5V<br>±0.2V |       |    |
|                                   |                 |                | Min.                              | Max. | Min.                             | Max. | Typ.                          | Min.                              | Max. | Min.                             | Max.  |    |
| t <sub>PD</sub>                   | A               | B              | 1.5                               | 4.6  | 1.5                              | 4.2  | 3.5                           | 1.5                               | 3.5  | 1.0                              | 3.0   | ns |
|                                   | B               | A              | 1.5                               | 4.4  | 1.5                              | 4.0  | 3.0                           | 1.5                               | 3.5  | 1.0                              | 2.8   |    |
| t <sub>EN</sub>                   | OE              | B              | 1.7                               | 5.5  | 1.7                              | 4.5  | 2.8                           | 1.7                               | 4.5  | 1.2                              | 3.5   |    |
| t <sub>DIS</sub>                  | OE              | B              | 1.5                               | 5.5  | 1.5                              | 4.5  | 2.2                           | 1.5                               | 4.5  | 1.0                              | 3.5   |    |
| t <sub>EN</sub>                   | OE              | A              | 1.7                               | 5.5  | 1.7                              | 4.5  | 4.2                           | 1.7                               | 4.5  | 1.2                              | 3.5   |    |
| t <sub>DIS</sub>                  | OE              | A              | 2.0                               | 5.5  | 2.0                              | 4.5  | 3.3                           | 2.0                               | 4.5  | 1.5                              | 3.5   |    |
| t <sub>SK(O)</sub> <sup>(1)</sup> |                 |                |                                   |      |                                  | 0.5  |                               |                                   |      |                                  | 0.3   |    |
| t <sub>SK(b)</sub> <sup>(1)</sup> |                 |                |                                   |      |                                  | 0.3  |                               |                                   |      |                                  | 0.25  |    |

**Notes:**

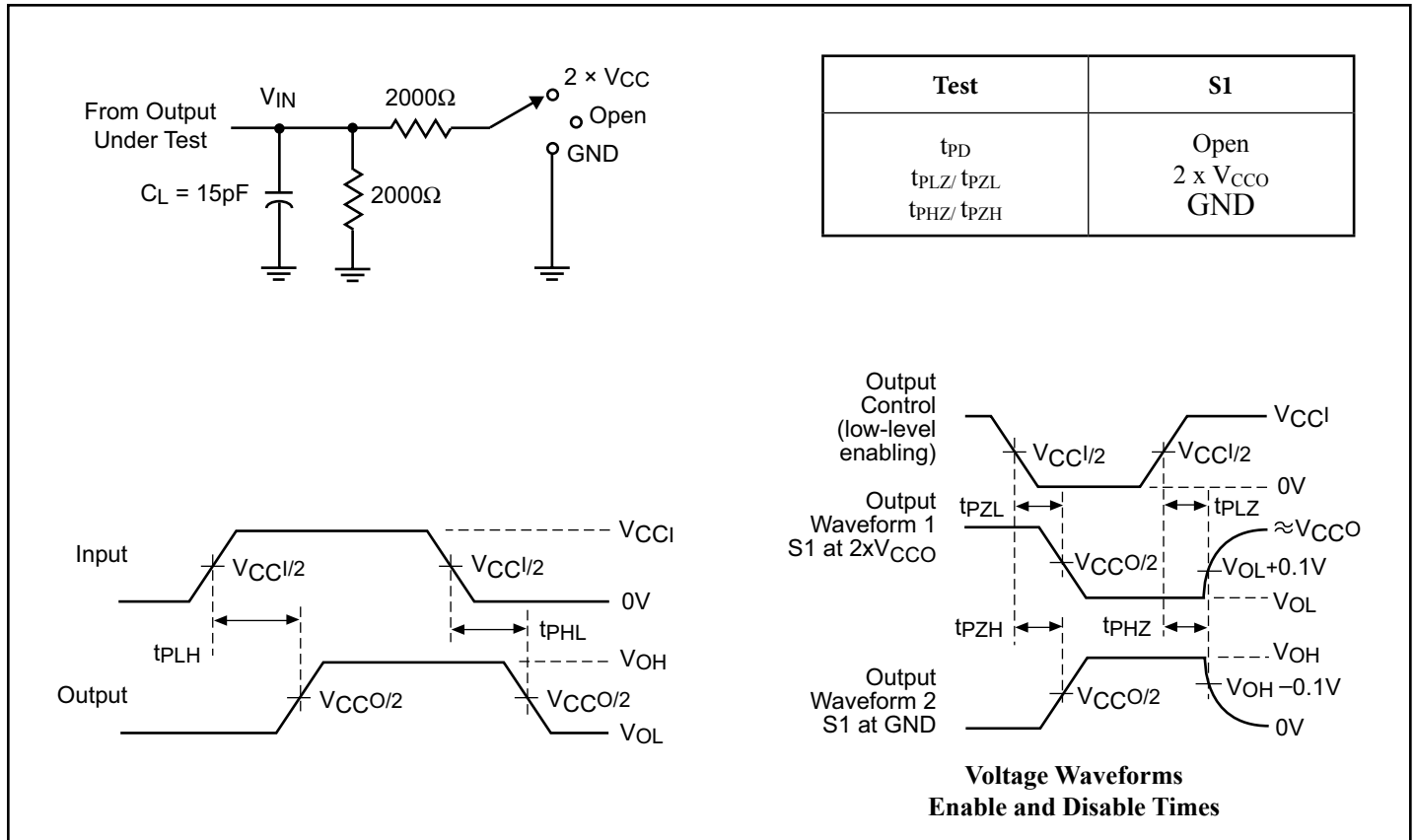
1. This is the skew between any two outputs of the same package, and switching in the same direction. For  $t_{SK(O)}$ , Output 1 and Output 2 are any two outputs. For  $t_{SK(b)}$ , Output 1 and Output 2 are on the same bank.

**Operating Conditions for  $T_A = 25^\circ C$**

| Parameters                             |                          | Test Conditions | $V_{CCA} = 2.5V$<br>$V_{CCB} = 3.3V$ | Units |
|----------------------------------------|--------------------------|-----------------|--------------------------------------|-------|
|                                        |                          |                 | Typical                              |       |
| $C_{PD}$ Power Dissipation Capacitance | Outputs Enabled (A or B) | $C_L = 30pF$    | 56                                   | pF    |
|                                        | Outputs Disabled         | $F = 10MHz$     | 6                                    |       |



**Parameter Measurement Information,  $V_{CCO} = 1.2V$**



**Figure 1. Load Circuit and Voltage Waveforms**

**Notes:**

$C_L$  includes probe and jig capacitance.

Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control.

Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.

All input pulses are supplied by generators having the following characteristics:  $PRR \leq 10Mz$ ,  $Z_O = 50\Omega$ ,  $t_r \leq 2.5ns$ ,  $t_f \leq 2.5ns$ .

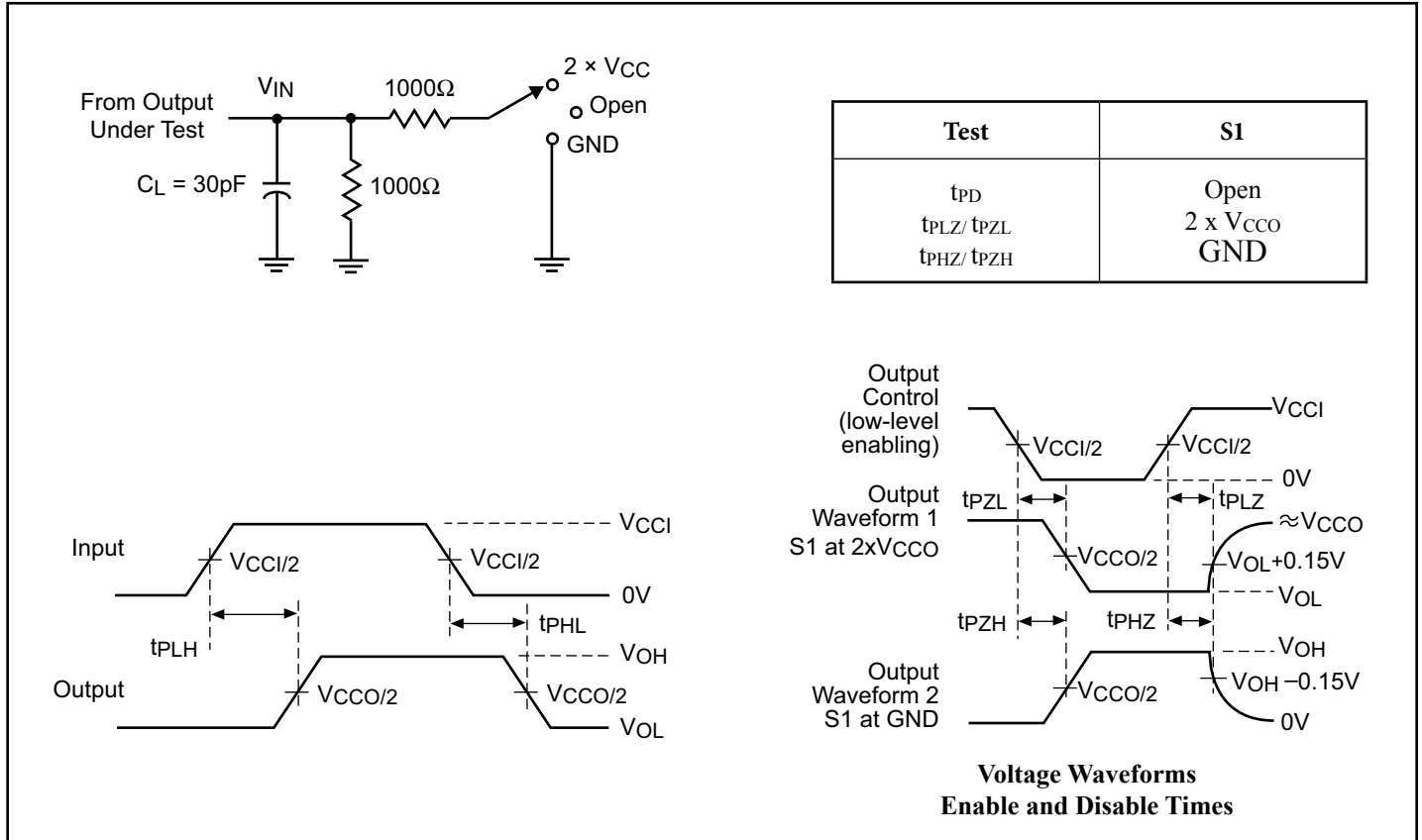
The outputs are measured one at a time with one transition per measurement.

$t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{DIS}$ .

$t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{EN}$ .

$t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{PD}$ .

**Parameter Measurement Information,  $V_{CCO} = 1.8V \pm 0.15V$**



**Figure 1. Load Circuit and Voltage Waveforms**

**Notes:**

$C_L$  includes probe and jig capacitance.

Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control.

Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.

All input pulses are supplied by generators having the following characteristics:  $PRR \leq 10Mz$ ,  $Z_O = 50\Omega$ ,  $t_R \leq 2.5ns$ ,  $t_F \leq 2.5ns$ .

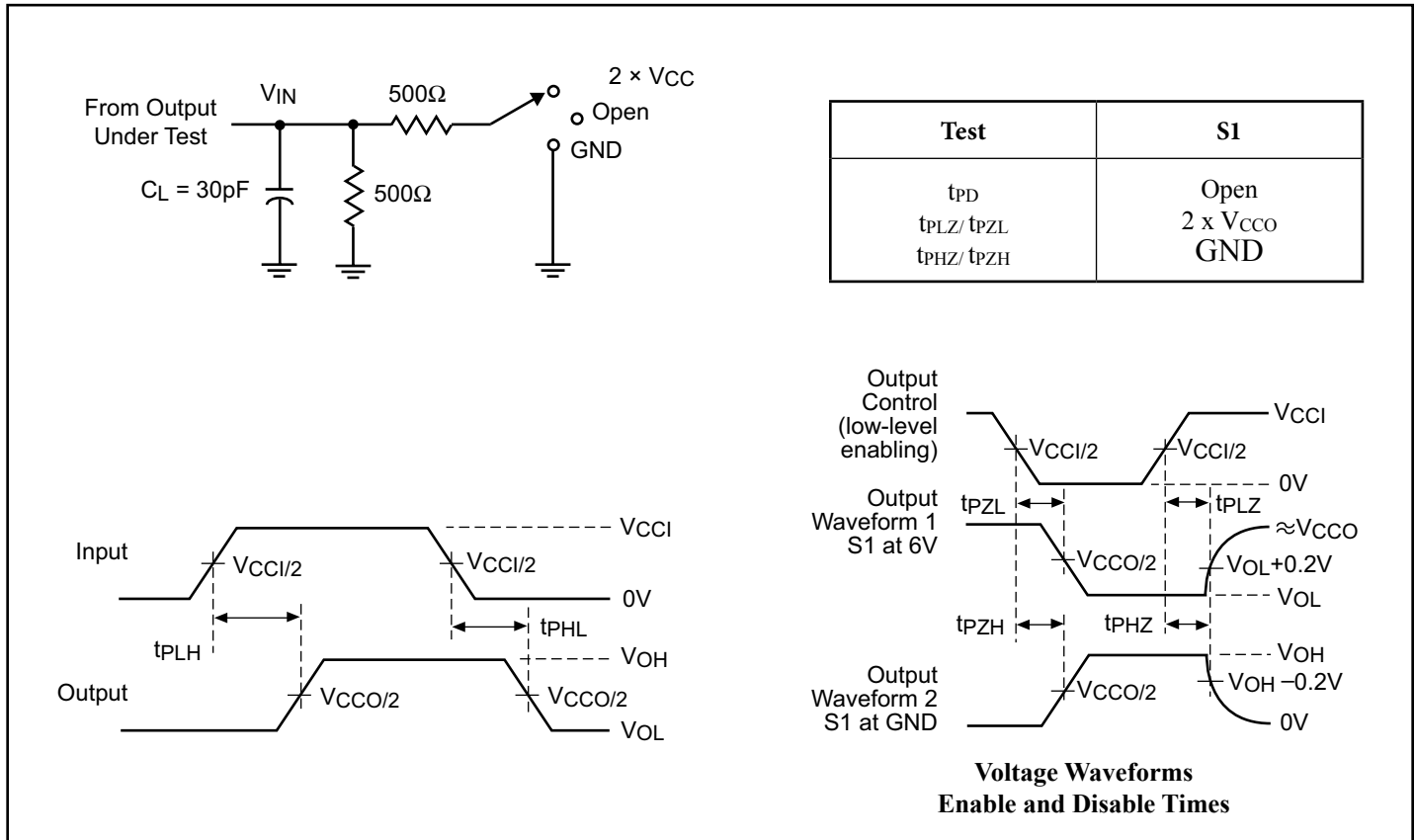
The outputs are measured one at a time with one transition per measurement.

$t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{DIS}$ .

$t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{EN}$ .

$t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{PD}$ .

**Parameter Measurement Information,  $V_{CCO} = 2.5V \pm 0.2V$**



**Figure 1. Load Circuit and Voltage Waveforms**

**Notes:**

$C_L$  includes probe and jig capacitance.

Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control.

Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.

All input pulses are supplied by generators having the following characteristics:  $PRR \leq 10Mz$ ,  $Z_O = 50\Omega$ ,  $t_R \leq 2.5ns$ ,  $t_F \leq 2.5ns$ .

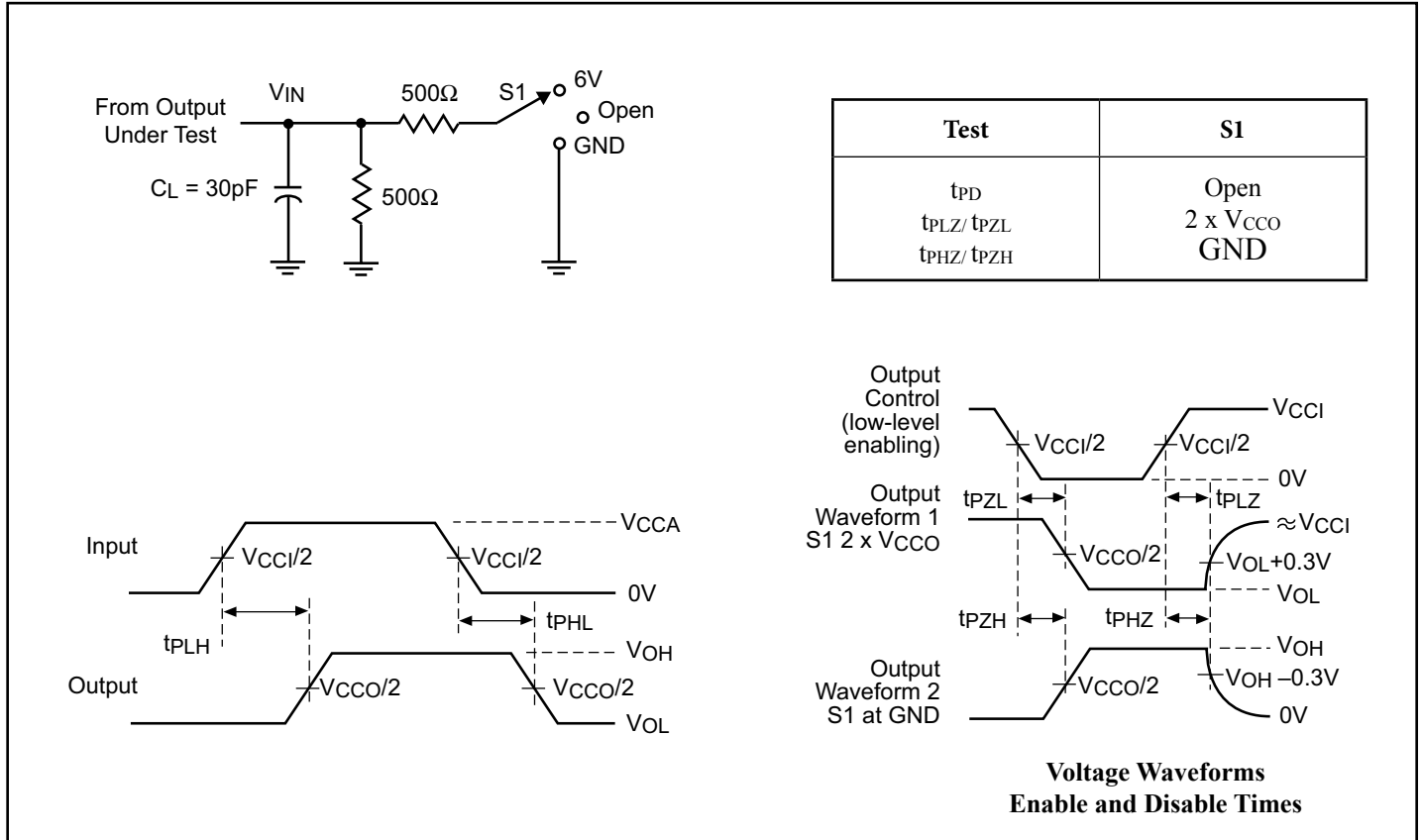
The outputs are measured one at a time with one transition per measurement.

$t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{DIS}$ .

$t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{EN}$ .

$t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{PD}$ .

**Parameter Measurement Information,  $V_{CCO} = 3.3V \pm 0.3V$**



**Figure 1. Load Circuit and Voltage Waveforms**

**Notes:**

$C_L$  includes probe and jig capacitance.

Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control.

Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.

All input pulses are supplied by generators having the following characteristics:  $PRR \leq 10Mz$ ,  $Z_O = 50\Omega$ ,  $t_R \leq 2.5ns$ ,  $t_F \leq 2.5ns$ .

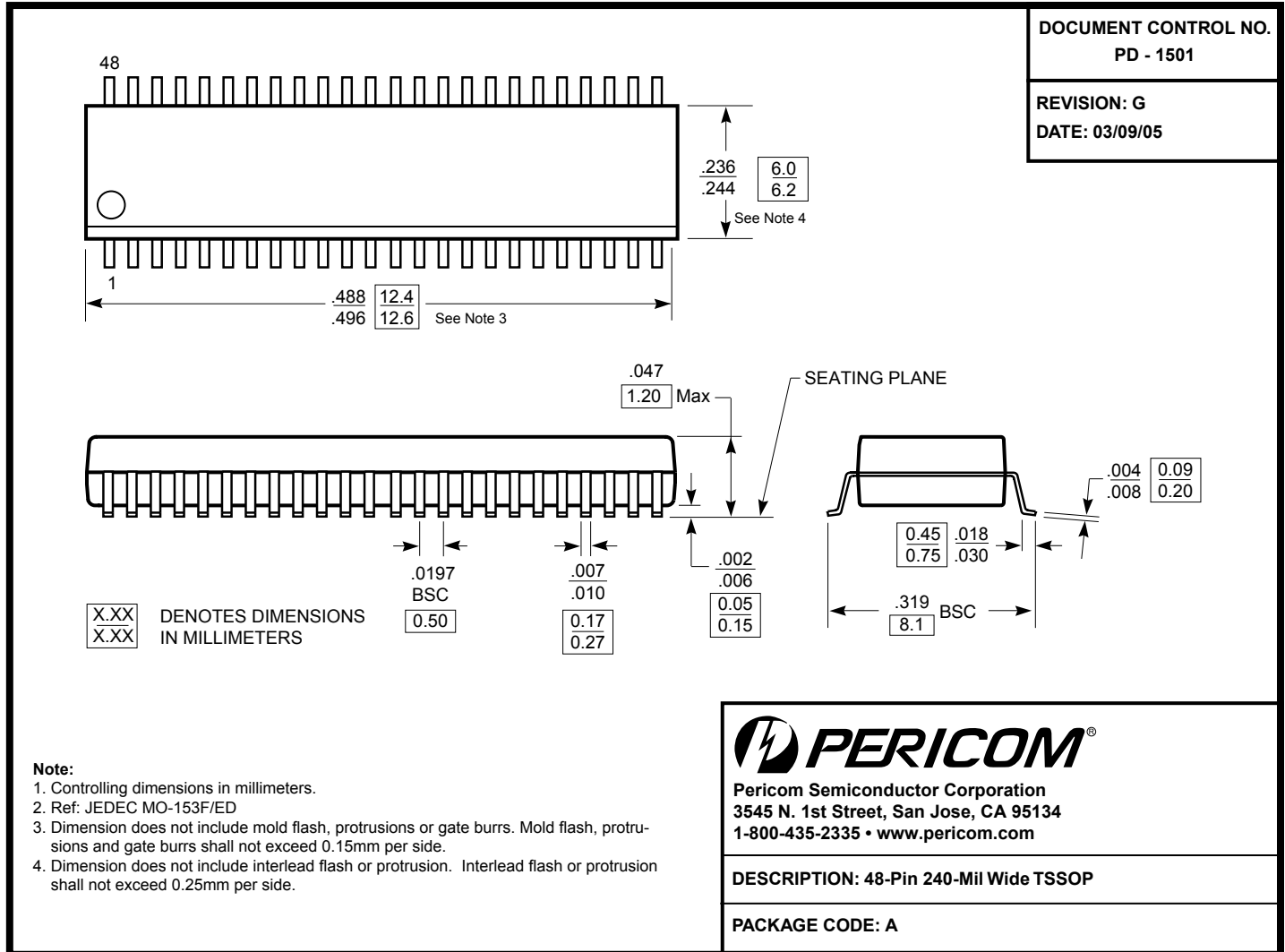
The outputs are measured one at a time with one transition per measurement.

$t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{DIS}$ .

$t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{EN}$ .

$t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{PD}$ .

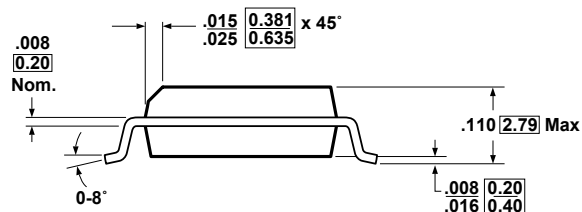
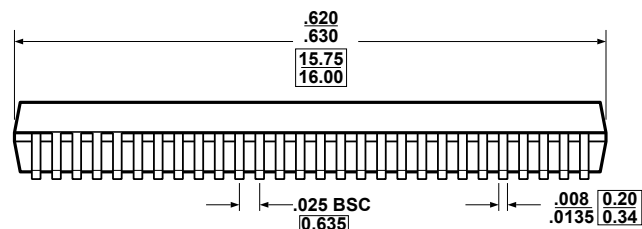
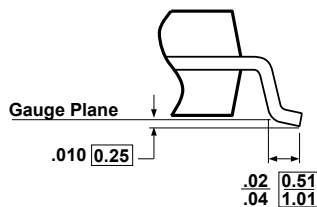
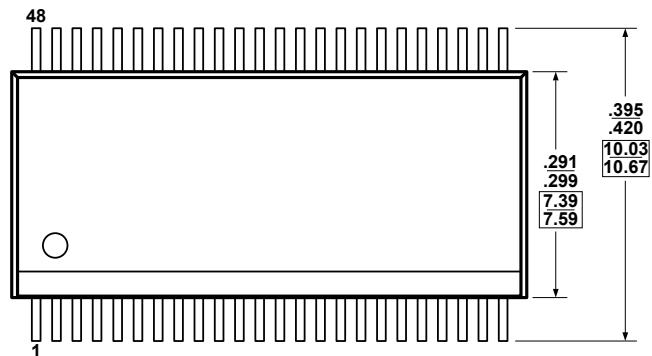
**Packaging Mechanical: 48-Pin TSSOP (A)**



### Packaging Mechanical: 48-Pin TSSOP (V)

DOCUMENT CONTROL NO.  
PD - 1401

REVISION: E  
DATE: 03/09/05



X.XX DENOTES DIMENSIONS  
IN MILLIMETERS

**Notes:**

- 1) Controlling dimensions in inches.
- 2) Ref: JEDEC MO-118B/AA

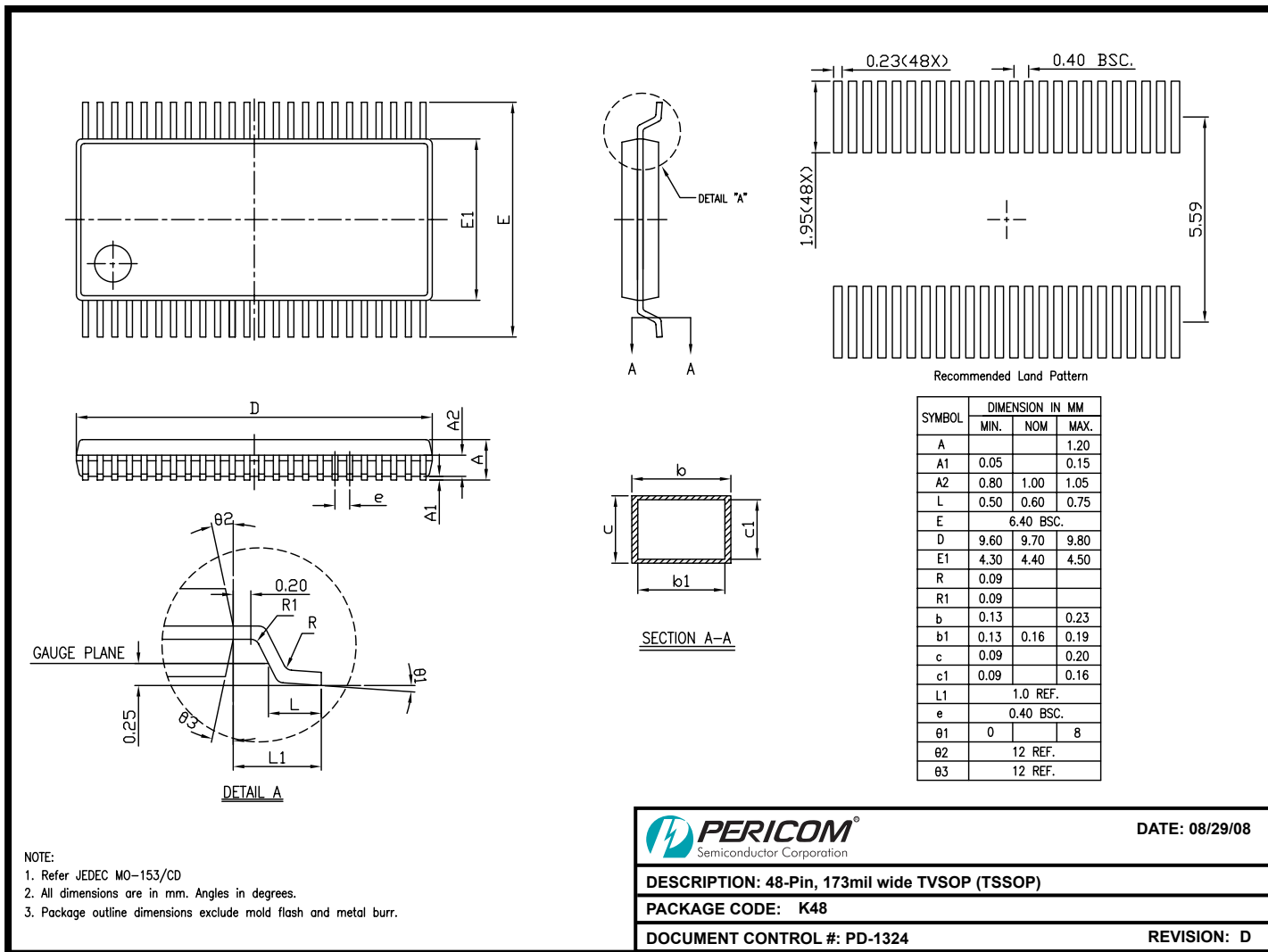


Pericom Semiconductor Corporation  
3545 N. 1st Street, San Jose, CA 95134  
1-800-435-2335 • www.pericom.com

DESCRIPTION: 48-Pin, 300-Mil Wide, SSOP

PACKAGE CODE: V

## Packaging Mechanical: 48-Pin TSSOP (K)



08-0442



DATE: 08/29/08

DESCRIPTION: 48-Pin, 173mil wide TVSOP (TSSOP)

PACKAGE CODE: K48

DOCUMENT CONTROL #: PD-1324

REVISION: D

## Ordering Information

| Ordering Code    | Package Code | Speed Grade | Package Description                                |
|------------------|--------------|-------------|----------------------------------------------------|
| PI74AVC164245VE  | V            | Blank       | Pb-free & Green, 48-pin 300-mil wide plastic SSOP  |
| PI74AVC164245AE  | A            | Blank       | Pb-free & Green, 48-pin 240-mil wide plastic TSSOP |
| PI74AVC164245KE  | K            | Blank       | Pb-free & Green, 48-pin 173-mil wide plastic TVSOP |
| PI74AVC164245AVE | V            | A           | Pb-free & Green, 48-pin 300-mil wide plastic SSOP  |
| PI74AVC164245AAE | A            | A           | Pb-free & Green, 48-pin 240-mil wide plastic TSSOP |

### Notes:

- Thermal characteristics can be found on the company web site at [www.pericom.com/packaging/](http://www.pericom.com/packaging/)
- E = Pb-free and Green
- X Suffix =Tape/Reel