

Advance Information

# Configurable Dual Supply Octal Transceiver with 3-State Outputs for 3V Systems

The 74LVXC3245 is a 24-pin dual-supply, octal configurable voltage interface transceiver especially well suited for PCMCIA and other real time configurable I/O applications. The  $V_{CCA}$  pin accepts a 3V supply level; the A port is a dedicated 3V port. The  $V_{CCB}$  pin accepts a 3V-to-5V supply level. The B port is configured to track the  $V_{CCB}$  supply level. A 5V level on the  $V_{CCB}$  pin will configure the I/O pins at a 5V level and a 3V  $V_{CCB}$  will configure the I/O pins at a 3V level. The A port interfaces with a 3V host system and the B port to the card slots. This device will allow the  $V_{CCB}$  voltage source pin and I/O pins on the B port to float when OE is High. This feature is necessary to buffer data to and from a PCMCIA socket that permits PCMCIA cards to be inserted and removed during normal operation. The Transmit/Receive (T/R) input determines the direction of data flow. Transmit (active-High) enables data from the A port to B port. Receive (active-Low) enables data from the B port to the A port.

- Bidirectional Interface Between 3V and 3V/5V Buses
- Control Inputs Compatible with TTL Level
- Outputs Source/Sink Up to 24mA
- Guaranteed Simultaneous Switching Noise Level and Dynamic Threshold Performance
- Available in SOIC and TSSOP Packages
- Flexible  $V_{CCB}$  Operating Range
- Allows B Port and  $V_{CCB}$  to Float Simultaneously When OE Is High
- Functionally Compatible with the 74 Series 245

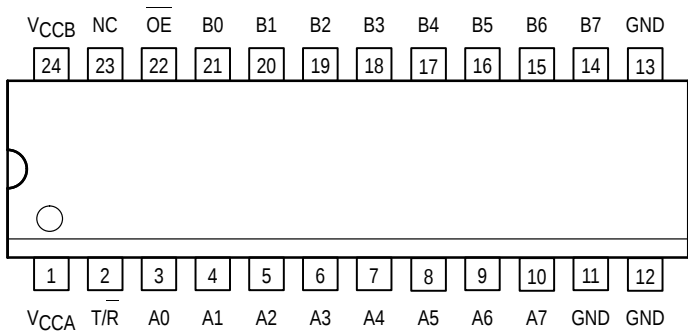
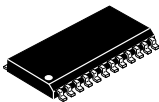


Figure 1. 24-Lead Pinout (Top View)

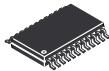
MC74LVXC3245

LVX

LOW-VOLTAGE CMOS



DW SUFFIX  
24-LEAD PLASTIC WIDE SOIC PACKAGE  
CASE 751E-04



DT SUFFIX  
24-LEAD PLASTIC TSSOP PACKAGE  
CASE 948H-01

PIN NAMES

| Pins  | Function                                 |
|-------|------------------------------------------|
| OE    | Output Enable Input                      |
| T/R   | Transmit/Receive Input                   |
| A0-A7 | Side A 3-State Inputs or 3-State Outputs |
| B0-B7 | Side B 3-State Inputs or 3-State Outputs |

This document contains information on a new product. Specifications and information herein are subject to change without notice.



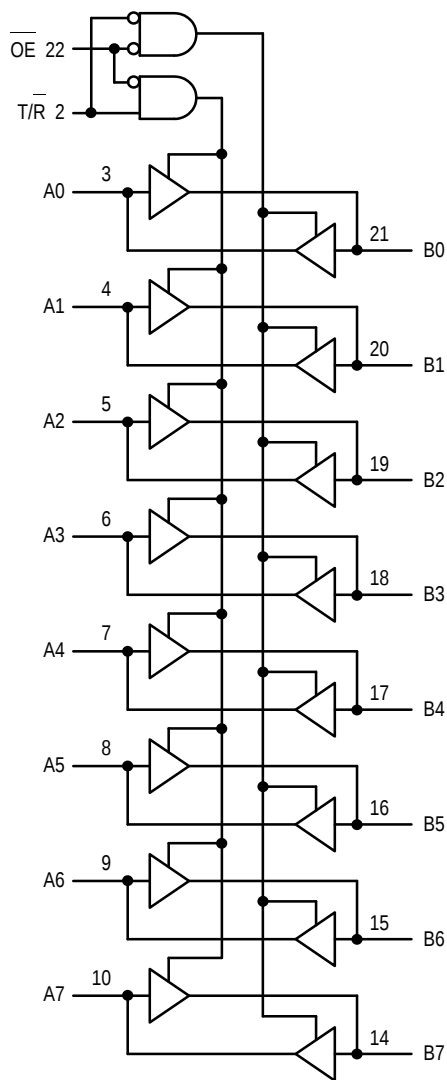


Figure 2. Logic Diagram

| INPUTS |     | OPERATING MODE<br>Non-Inverting |
|--------|-----|---------------------------------|
| OE     | T/R |                                 |
| L      | L   | B Data to A Bus                 |
| L      | H   | A Data to B Bus                 |
| H      | X   | Z                               |

H = High Voltage Level; L = Low Voltage Level; Z = High Impedance State; X = High or Low Voltage Level and Transitions are Acceptable; For I<sub>CC</sub> reasons, Do Not Float Inputs

**ABSOLUTE MAXIMUM RATINGS\***

| Symbol             | Parameter                                        | Value                   | Condition                 | Unit |
|--------------------|--------------------------------------------------|-------------------------|---------------------------|------|
| $V_{CCA}, V_{CCB}$ | DC Supply Voltage                                | -0.5 to +7.0            |                           | V    |
| $V_I$              | DC Input Voltage OE, T/R                         | -0.5 to $V_{CCA} + 0.5$ |                           | V    |
| $V_{I/O}$          | DC Input/Output Voltage                          | An                      | -0.5 to $V_{CCA} + 0.5$   | V    |
|                    |                                                  | Bn                      | -0.5 to $V_{CCB} + 0.5$   | V    |
| $I_{IK}$           | DC Input Diode Current OE, T/R                   | $\pm 20$                | $V_I < GND$               | mA   |
| $I_{OK}$           | DC Output Diode Current                          | $\pm 50$                | $V_O < GND; V_O > V_{CC}$ | mA   |
| $I_O$              | DC Output Source/Sink Current                    | $\pm 50$                |                           | mA   |
| $I_{CC}, I_{GND}$  | DC Supply Current Per Output Pin Maximum Current | $\pm 50$<br>$\pm 200$   |                           | mA   |
| $T_{STG}$          | Storage Temperature Range                        | -65 to +150             |                           | °C   |
|                    | DC Latchup Source/Sink Current                   | $\pm 300$               |                           | mA   |

\* Absolute maximum continuous ratings are those values beyond which damage to the device may occur. Exposure to these conditions or conditions beyond those indicated may adversely affect device reliability. Functional operation under absolute-maximum-rated conditions is not implied.

**RECOMMENDED OPERATING CONDITIONS**

| Symbol              | Parameter                                                                                      | Min                                  | Max        | Unit |
|---------------------|------------------------------------------------------------------------------------------------|--------------------------------------|------------|------|
| $V_{CCA}, V_{CCB}$  | Supply Voltage ( $V_{CCA} \leq V_{CCB}$ )                                                      | $V_{CCA}$<br>2.7<br>$V_{CCB}$<br>3.0 | 3.6<br>5.5 | V    |
| $V_I$               | Input Voltage OE, T/R                                                                          | 0                                    | $V_{CCA}$  | V    |
| $V_{I/O}$           | Input/Output Voltage                                                                           | An                                   | $V_{CCA}$  | V    |
|                     |                                                                                                | Bn                                   | $V_{CCB}$  | V    |
| $T_A$               | Operating Free-Air Temperature                                                                 | -40                                  | +85        | °C   |
| $\Delta t/\Delta V$ | Minimum Input Edge Rate<br>$V_{IN}$ from 30% to 70% of $V_{CC}$ ; $V_{CC}$ at 3.0V, 4.5V, 5.5V | 0                                    | 8          | ns/V |

**DC ELECTRICAL CHARACTERISTICS**

| Symbol           | Parameter                         |                 | Condition                                                                                                                             | V <sub>CCA</sub> | V <sub>CCB</sub>                                                                                           | T <sub>A</sub> = 25°C |                   | T <sub>A</sub> = −40 to +85°C | Unit |      |   |
|------------------|-----------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------|-----------------------|-------------------|-------------------------------|------|------|---|
|                  |                                   |                 |                                                                                                                                       |                  |                                                                                                            | Typ                   | Guaranteed Limits |                               |      |      |   |
| V <sub>IHA</sub> | Minimum HIGH Level Input Voltage  | An<br>OE<br>T/R | V <sub>OUT</sub> ≤ 0.1V<br>or<br>≥ V <sub>CC</sub> − 0.1V                                                                             | 2.7              | 3.0                                                                                                        |                       | 2.0               | 2.0                           | V    |      |   |
| V <sub>IHB</sub> |                                   |                 |                                                                                                                                       | Bn               | 3.0                                                                                                        |                       | 3.6               | 2.0                           |      | 2.0  |   |
|                  |                                   |                 |                                                                                                                                       |                  | 3.6                                                                                                        |                       | 5.5               | 2.0                           |      | 2.0  |   |
|                  |                                   | 2.7             |                                                                                                                                       |                  | 3.0                                                                                                        | 2.00                  | 2.00              |                               |      |      |   |
|                  |                                   | 3.0             |                                                                                                                                       |                  | 3.6                                                                                                        | 2.00                  | 2.00              |                               |      |      |   |
|                  |                                   | 3.6             |                                                                                                                                       |                  | 5.5                                                                                                        | 3.85                  | 3.85              |                               |      |      |   |
| V <sub>ILA</sub> | Maximum LOW Level Input Voltage   | An<br>OE<br>T/R | V <sub>OUT</sub> ≤ 0.1V<br>or<br>≥ V <sub>CC</sub> − 0.1V                                                                             | 2.7              | 3.0                                                                                                        |                       | 0.8               | 0.8                           | V    |      |   |
| V <sub>ILB</sub> |                                   |                 |                                                                                                                                       | Bn               | 3.0                                                                                                        |                       | 3.6               | 0.8                           |      | 0.8  |   |
|                  |                                   |                 |                                                                                                                                       |                  | 3.6                                                                                                        |                       | 5.5               | 0.8                           |      | 0.8  |   |
|                  |                                   | 2.7             |                                                                                                                                       |                  | 3.0                                                                                                        | 0.80                  | 0.80              |                               |      |      |   |
|                  |                                   | 3.0             |                                                                                                                                       |                  | 3.6                                                                                                        | 0.80                  | 0.80              |                               |      |      |   |
|                  |                                   | 3.6             |                                                                                                                                       |                  | 5.5                                                                                                        | 1.65                  | 1.65              |                               |      |      |   |
| V <sub>OHA</sub> | Minimum HIGH Level Output Voltage |                 | I <sub>OUT</sub> = −100μA<br>I <sub>OH</sub> = −12mA<br>I <sub>OH</sub> = −24mA<br>I <sub>OH</sub> = −12mA<br>I <sub>OH</sub> = −24mA | 3.0              | 3.0                                                                                                        | 2.99                  | 2.90              | 2.90                          | V    |      |   |
| 3.0              |                                   |                 |                                                                                                                                       | 3.0              | 2.85                                                                                                       | 2.56                  | 2.46              |                               |      |      |   |
| 3.0              |                                   |                 |                                                                                                                                       | 3.0              | 2.65                                                                                                       | 2.35                  | 2.25              |                               |      |      |   |
| 2.7              |                                   |                 |                                                                                                                                       | 3.0              | 2.50                                                                                                       | 2.30                  | 2.20              |                               |      |      |   |
| 2.7              |                                   |                 |                                                                                                                                       | 4.5              | 2.30                                                                                                       | 2.10                  | 2.00              |                               |      |      |   |
| V <sub>OHB</sub> |                                   |                 |                                                                                                                                       |                  | I <sub>OUT</sub> = −100μA<br>I <sub>OH</sub> = −12mA<br>I <sub>OH</sub> = −24mA<br>I <sub>OH</sub> = −24mA | 3.0                   | 3.0               | 2.99                          | 2.90 | 2.90 | V |
|                  |                                   |                 |                                                                                                                                       |                  |                                                                                                            | 3.0                   | 3.0               | 2.85                          | 2.56 | 2.46 |   |
|                  |                                   |                 |                                                                                                                                       |                  |                                                                                                            | 3.0                   | 3.0               | 2.65                          | 2.35 | 2.25 |   |
|                  |                                   |                 |                                                                                                                                       |                  |                                                                                                            | 3.0                   | 4.5               | 4.25                          | 3.86 | 3.76 |   |
|                  |                                   |                 |                                                                                                                                       |                  |                                                                                                            |                       |                   |                               |      |      |   |

## DC ELECTRICAL CHARACTERISTICS

| Symbol     | Parameter                                      |            | Condition                                                        | VCCA       | VCCB       | TA = 25°C |                   | TA = -40 to +85°C | Unit |
|------------|------------------------------------------------|------------|------------------------------------------------------------------|------------|------------|-----------|-------------------|-------------------|------|
|            |                                                |            |                                                                  |            |            | Typ       | Guaranteed Limits |                   |      |
| VOLA       | Maximum LOW Level Output Voltage               |            | IOUT = 100μA                                                     | 3.0        | 3.0        | 0.002     | 0.10              | 0.10              | V    |
| IOL = 24mA |                                                |            | 3.0                                                              | 3.0        | 0.21       | 0.36      | 0.44              |                   |      |
| IOL = 12mA |                                                |            | 2.7                                                              | 3.0        | 0.11       | 0.36      | 0.44              |                   |      |
| IOL = 24mA |                                                |            | 2.7                                                              | 4.5        | 0.22       | 0.42      | 0.50              |                   |      |
| VOLB       |                                                |            | IOUT = 100μA                                                     | 3.0        | 3.0        | 0.002     | 0.10              | 0.10              | V    |
| IOL = 24mA |                                                |            | 3.0                                                              | 3.0        | 0.21       | 0.36      | 0.44              |                   |      |
| IOL = 24mA |                                                |            | 3.0                                                              | 4.5        | 0.18       | 0.36      | 0.44              |                   |      |
| IIN        | Max Input Leakage Current                      | OE, T/R    | VI = VCCA, GND                                                   | 3.6<br>3.6 | 3.6<br>5.5 |           | ±0.1<br>±0.1      | ±1.0<br>±1.0      | μA   |
| IOZA       | Max 3-State Output Leakage                     | An         | VI = VIH, VIL<br>OE = VCCA<br>VO = VCCA, GND                     | 3.6<br>3.6 | 3.6<br>5.5 |           | ±0.5<br>±0.5      | ±5.0<br>±5.0      | μA   |
| IOZB       | Max 3-State Output Leakage                     | Bn         | VI = VIH, VIL<br>OE = VCCA<br>VO = VCCB, GND                     | 3.6<br>3.6 | 3.6<br>5.5 |           | ±0.5<br>±0.5      | ±5.0<br>±5.0      | μA   |
| ΔICC       | Maximum ICC/Input                              | Bn         | VI=VCCB-2.1V                                                     | 3.6        | 5.5        | 1.0       | 1.35              | 1.5               | mA   |
|            |                                                | All Inputs | VI=VCC-0.6V                                                      | 3.6        | 3.6        |           | 0.35              | 0.5               | mA   |
| ICCA1      | Quiescent VCCA Supply Current as B Port Floats |            | An=VCCA or GND<br>Bn=Open,<br>OE=VCCA,<br>T/R=VCCA,<br>VCCB=Open | 3.6        | Open       |           | 5                 | 50                | μA   |
| ICCA2      | Quiescent VCCA Supply Current                  |            | An=VCCA or GND<br>Bn=VCCB or GND,<br>OE=GND,<br>T/R=GND          | 3.6<br>3.6 | 3.6<br>5.5 |           | 5<br>5            | 50<br>50          | μA   |
| ICCB       | Quiescent VCCB Supply Current                  |            | An=VCCA or GND<br>Bn=VCCB or GND,<br>OE=GND,<br>T/R=VCCA         | 3.6<br>3.6 | 3.6<br>5.5 |           | 5<br>8            | 50<br>80          | μA   |
| VOLPA      | Quiet Output Max Dynamic VOL                   |            | Notes NO TAG,<br>NO TAG                                          | 3.3<br>3.3 | 3.3<br>5.0 |           | 0.8<br>0.8        |                   | V    |
| VOLPB      |                                                |            | Notes NO TAG,<br>NO TAG                                          | 3.3<br>3.3 | 3.3<br>5.0 |           | 0.8<br>1.5        |                   | V    |
| VOLVA      | Quiet Output Min Dynamic VOL                   |            | Notes NO TAG,<br>NO TAG                                          | 3.3<br>3.3 | 3.3<br>5.0 |           | -0.8<br>-0.8      |                   | V    |
| VOLVB      |                                                |            | Notes NO TAG,<br>NO TAG                                          | 3.3<br>3.3 | 3.3<br>5.0 |           | -0.8<br>-1.2      |                   | V    |
| VIHDA      | Min HIGH Level Dynamic Input Voltage           |            | Notes NO TAG,<br>NO TAG                                          | 3.3<br>3.3 | 3.3<br>5.0 |           | 2.0<br>2.0        |                   | V    |
| VIHDB      |                                                |            | Notes NO TAG,<br>NO TAG                                          | 3.3<br>3.3 | 3.3<br>5.0 |           | 2.0<br>3.5        |                   | V    |
| VILDA      | Max LOW Level Dynamic Input Voltage            |            | Notes NO TAG,<br>NO TAG                                          | 3.3<br>3.3 | 3.3<br>5.0 |           | 0.8<br>0.8        |                   | V    |
| VILDB      |                                                |            | Notes NO TAG,<br>NO TAG                                          | 3.3<br>3.3 | 3.3<br>5.0 |           | 0.8<br>1.5        |                   | V    |

1. Worst case package.

2. Max number of outputs defined as (n). Data inputs are driven 0V to V<sub>CC</sub> level; one output at GND.3. Max number of data inputs (n) switching. (n-1) inputs switching 0V to V<sub>CC</sub> level. Input under test switching: V<sub>CC</sub> level to threshold (V<sub>IHD</sub>), 0V to threshold (V<sub>ILD</sub>), f = 1MHz.

## AC ELECTRICAL CHARACTERISTICS

| Symbol                                 | Parameter                                              | T <sub>A</sub> = −40 to +85°C; C <sub>L</sub> = 50pF       |                  |             |                                                            |                  |             | Unit |
|----------------------------------------|--------------------------------------------------------|------------------------------------------------------------|------------------|-------------|------------------------------------------------------------|------------------|-------------|------|
|                                        |                                                        | V <sub>CCA</sub> = 2.7–3.6V<br>V <sub>CCB</sub> = 4.5–5.5V |                  |             | V <sub>CCA</sub> = 2.7–3.6V<br>V <sub>CCB</sub> = 3.0–3.6V |                  |             |      |
|                                        |                                                        | Min                                                        | Typ<br>(Note 4.) | Max         | Min                                                        | Typ<br>(Note 5.) | Max         |      |
| t <sub>PHL</sub><br>t <sub>PLH</sub>   | Propagation Delay A to B                               | 1.0<br>1.0                                                 | 4.8<br>3.9       | 8.5<br>7.0  | 1.0<br>1.0                                                 | 5.5<br>5.2       | 9.0<br>8.5  | ns   |
| t <sub>PHL</sub><br>t <sub>PLH</sub>   | Propagation Delay B to A                               | 1.0<br>1.0                                                 | 3.8<br>4.3       | 7.0<br>8.0  | 1.0<br>1.0                                                 | 4.4<br>5.1       | 7.5<br>8.0  | ns   |
| t <sub>PZL</sub><br>t <sub>PZH</sub>   | Output Enable Time OE to B                             | 1.0<br>1.0                                                 | 4.7<br>4.8       | 8.5<br>9.0  | 1.0<br>1.0                                                 | 6.0<br>6.1       | 9.5<br>10.0 | ns   |
| t <sub>PZL</sub><br>t <sub>PZH</sub>   | Output Enable Time OE to A                             | 1.0<br>1.0                                                 | 5.9<br>5.4       | 10.0<br>9.5 | 1.0<br>1.0                                                 | 6.4<br>5.8       | 10.5<br>9.5 | ns   |
| t <sub>PHZ</sub><br>t <sub>PLZ</sub>   | Output Disable Time OE to B                            | 1.0<br>1.0                                                 | 4.0<br>3.8       | 8.5<br>8.0  | 1.0<br>1.0                                                 | 6.3<br>4.5       | 10.0<br>8.5 | ns   |
| t <sub>PHZ</sub><br>t <sub>PLZ</sub>   | Output Disable Time OE to A                            | 1.0<br>1.0                                                 | 4.6<br>3.1       | 10.0<br>7.0 | 1.0<br>1.0                                                 | 5.2<br>3.4       | 10.0<br>7.0 | ns   |
| t <sub>OSHL</sub><br>t <sub>OSLH</sub> | Output to Output Skew, Data to Output<br>(Note NO TAG) |                                                            | 1.0              | 1.5         |                                                            | 1.0              | 1.5         | ns   |

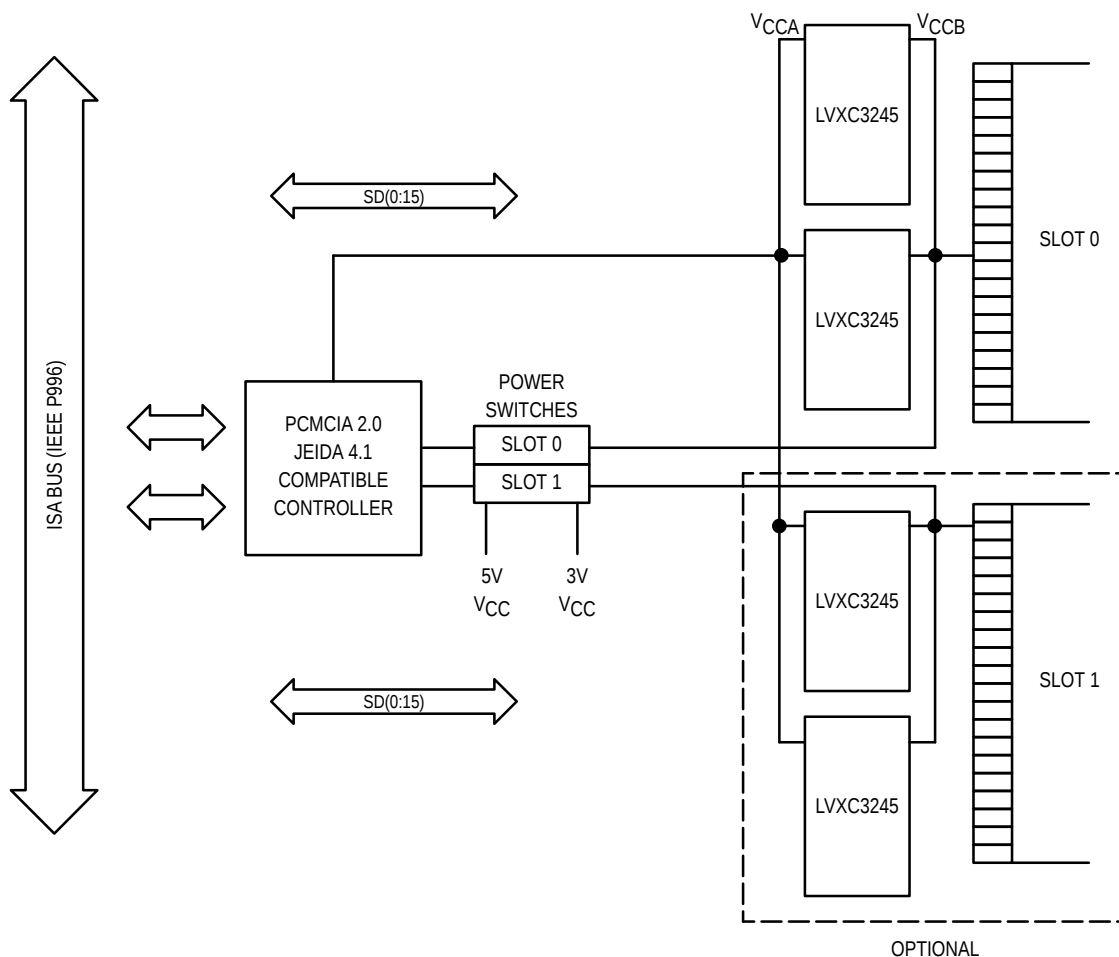
4. Typical values at  $V_{CCA} = 3.3\text{V}$ ,  $V_{CCB} = 5.0\text{V}$  at  $25^\circ\text{C}$ .

5. Typical values at  $V_{CCA} = 3.3\text{V}$ ,  $V_{CCB} = 3.3\text{V}$  at  $25^\circ\text{C}$ .

6. Skew is defined as the absolute value of the difference between the actual propagation delay for any two separate outputs of the same device. The specification applies to any outputs switching in the same direction, either HIGH-to-LOW (t<sub>OSHL</sub>) or LOW-to-HIGH (t<sub>OSLH</sub>); parameter guaranteed by design.

## CAPACITIVE CHARACTERISTICS

| Symbol           | Parameter                                            | Condition                                          | Typical  | Unit |
|------------------|------------------------------------------------------|----------------------------------------------------|----------|------|
| C <sub>IN</sub>  | Input Capacitance                                    | $V_{CCA} = 3.3\text{V}; V_{CCB} = 5.0\text{V}$     | 4.5      | pF   |
| C <sub>I/O</sub> | Input/Output Capacitance                             | $V_{CCA} = 3.3\text{V}; V_{CCB} = 5.0\text{V}$     | 10       | pF   |
| CPD              | Power Dissipation Capacitance<br>(Measured at 10MHz) | $V_{CCB} = 5.0\text{V}$<br>$V_{CCA} = 3.3\text{V}$ | 50<br>40 | pF   |



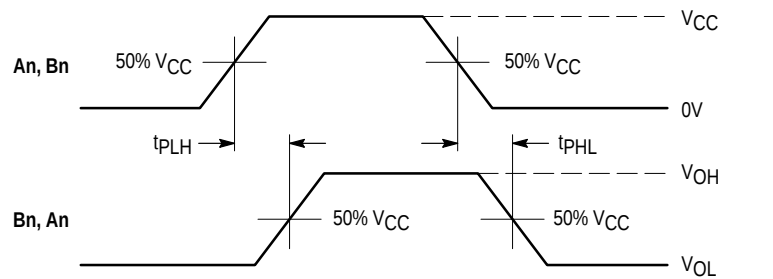
### Figure 3. Block Diagram

## Configurable I/O Application for PCMCIA Cards

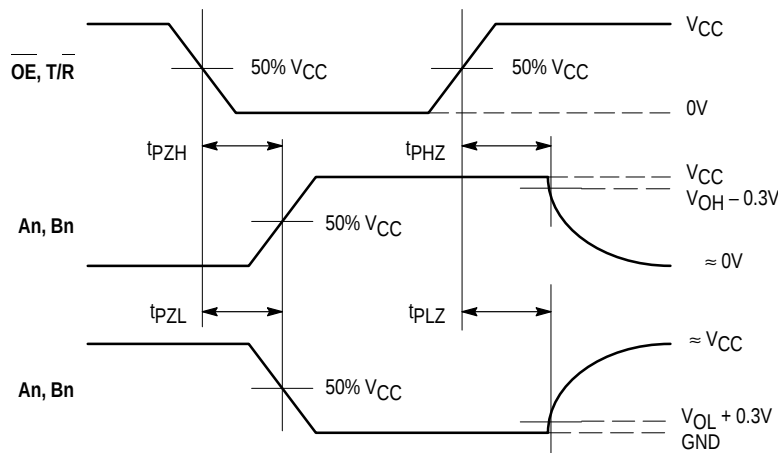
The 74LVXC3245 is a dual-supply device well suited for PCMCIA configurable I/O applications. The LVXC3245 consumes less than 1mW of quiescent power in all modes of operation, making it ideal for low power notebook designs. The LVXC3245 meets all PCMCIA I/O voltage requirements at 5V and 3.3V operation. By tying the V<sub>CCB</sub> pin to the card

voltage supply, the PCMCIA card will always have rail-to-rail output swings, maximizing the reliability of the interface.

The V<sub>CCA</sub> pin must always be tied to a 3.3V power supply. This voltage connection provides internal references needed to account for variations in V<sub>CCB</sub>. When connected as in the figure above, the LVXC3245 meets all the voltage and current requirements of the ISA bus standard (IEEE P996).

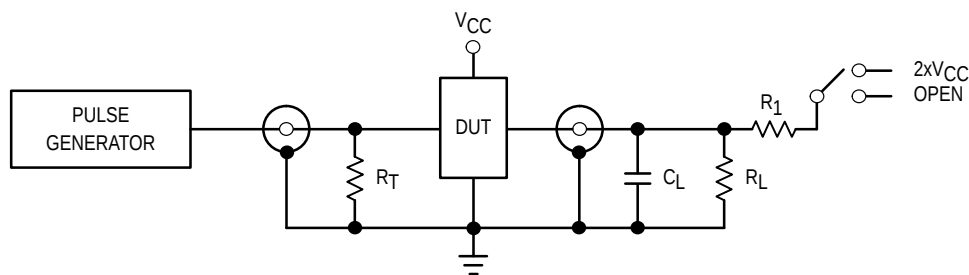


**WAVEFORM 1 – PROPAGATION DELAYS**  
 $t_R = t_F = 2.5\text{ns}$ , 10% to 90%;  $f = 1\text{MHz}$ ;  $t_W = 500\text{ns}$



**WAVEFORM 2 – OUTPUT ENABLE AND DISABLE TIMES**  
 $t_R = t_F = 2.5\text{ns}$ , 10% to 90%;  $f = 1\text{MHz}$ ;  $t_W = 500\text{ns}$

**Figure 4. AC Waveforms**



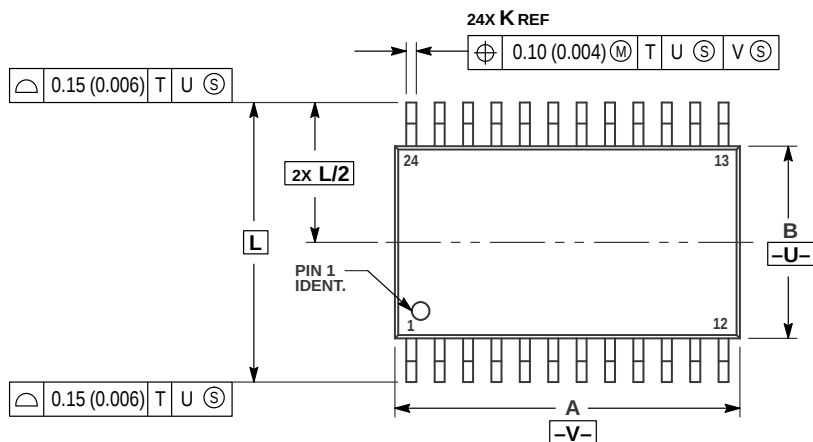
| TEST                                          | SWITCH            |
|-----------------------------------------------|-------------------|
| $t_{PLH}$ , $t_{PHL}$ , $t_{PZH}$ , $t_{PHZ}$ | Open              |
| $t_{PZL}$ , $t_{PLZ}$                         | $2 \times V_{CC}$ |

$C_L = 50\text{pF}$  or equivalent (Includes jig and probe capacitance)  
 $R_L = R_1 = 500\Omega$  or equivalent  
 $R_T = Z_{OUT}$  of pulse generator (typically  $50\Omega$ )

**Figure 5. Test Circuit**

## OUTLINE DIMENSIONS

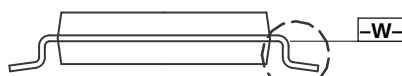
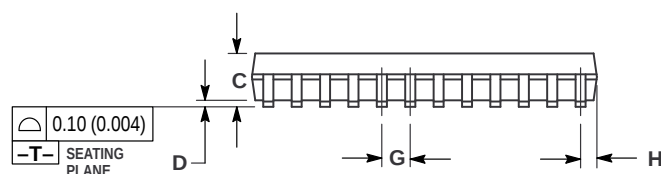
**DT SUFFIX**  
PLASTIC TSSOP PACKAGE  
CASE 948H-01  
ISSUE O



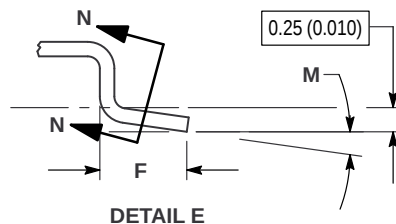
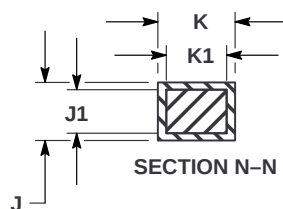
NOTES:

- 1 DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- 2 CONTROLLING DIMENSION: MILLIMETER.
- 3 DIMENSION A DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
- 4 DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 (0.010) PER SIDE.
- 5 DIMENSION K DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE K DIMENSION AT MAXIMUM MATERIAL CONDITION.
- 6 TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
- 7 DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE -W-.

| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX   |
| A   | 7.70        | 7.90 | 0.303     | 0.311 |
| B   | 4.30        | 4.50 | 0.169     | 0.177 |
| C   | —           | 1.20 | —         | 0.047 |
| D   | 0.05        | 0.15 | 0.002     | 0.006 |
| F   | 0.50        | 0.75 | 0.020     | 0.030 |
| G   | 0.65 BSC    |      | 0.026 BSC |       |
| H   | 0.27        | 0.37 | 0.011     | 0.015 |
| J   | 0.09        | 0.20 | 0.004     | 0.008 |
| J1  | 0.09        | 0.16 | 0.004     | 0.006 |
| K   | 0.19        | 0.30 | 0.007     | 0.012 |
| K1  | 0.19        | 0.25 | 0.007     | 0.010 |
| L   | 6.40 BSC    |      | 0.252 BSC |       |
| M   | 0°          | 8°   | 0°        | 8°    |

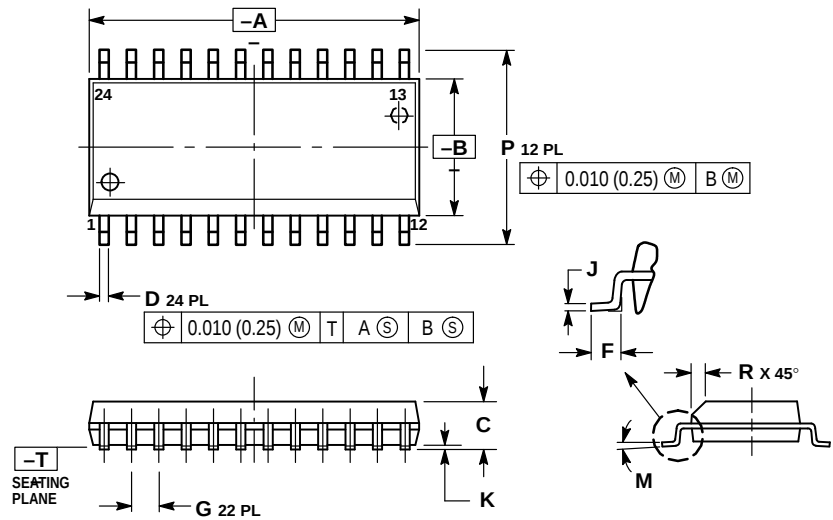


### DETAIL E



OUTLINE DIMENSIONS

DW SUFFIX  
PLASTIC SOIC PACKAGE  
CASE 751E-04  
ISSUE E



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: MILLIMETER.
  3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
  4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
  5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.13 (0.005) TOTAL IN EXCESS OF D DIMENSION AT MAXIMUM MATERIAL CONDITION.

| DIM | MILLIMETERS |       | INCHES    |       |
|-----|-------------|-------|-----------|-------|
|     | MIN         | MAX   | MIN       | MAX   |
| A   | 15.25       | 15.54 | 0.601     | 0.612 |
| B   | 7.40        | 7.60  | 0.292     | 0.299 |
| C   | 2.35        | 2.65  | 0.093     | 0.104 |
| D   | 0.35        | 0.49  | 0.014     | 0.019 |
| F   | 0.41        | 0.90  | 0.016     | 0.035 |
| G   | 1.27 BSC    |       | 0.050 BSC |       |
| J   | 0.23        | 0.32  | 0.009     | 0.013 |
| K   | 0.13        | 0.29  | 0.005     | 0.011 |
| M   | 0°          | 8°    | 0°        | 8°    |
| P   | 10.05       | 10.55 | 0.395     | 0.415 |
| R   | 0.25        | 0.75  | 0.010     | 0.029 |

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