

## 74LVXC4245

# 8-Bit Dual Supply Configurable Voltage Interface Transceiver with 3-STATE Outputs

### General Description

The LVXC4245 is a 24-pin dual-supply, 8-bit configurable voltage interface transceiver suited for PCMCIA and other real time configurable I/O applications. The  $V_{CCA}$  pin accepts a 5V supply level. The "A" Port is a dedicated 5V port. The  $V_{CCB}$  pin accepts a 3V-to-5V supply level. The "B" Port is configured to track the  $V_{CCB}$  supply level respectively. A 5V level on the  $V_{CC}$  pin will configure the I/O pins at a 5V level and a 3V  $V_{CC}$  will configure the I/O pins at a 3V level. This device will allow the  $V_{CCB}$  voltage source pin and I/O pins on the "B" Port to float when  $\overline{OE}$  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.

### Features

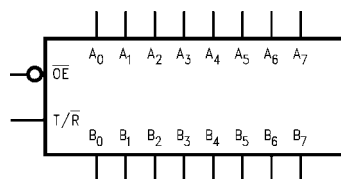
- Bidirectional interface between 5V and 3V-to-5V buses
- Control inputs compatible with TTL level
- Outputs source/sink up to 24 mA
- Guaranteed simultaneous switching noise level and dynamic threshold performance
- Implements patented EMI reduction circuitry
- Flexible  $V_{CCB}$  operating range
- Allows B Port and  $V_{CCB}$  to float simultaneously when  $\overline{OE}$  is HIGH
- Functionally compatible with the 74 series 245

### Ordering Code:

| Order Number  | Package Number | Package Description                                                         |
|---------------|----------------|-----------------------------------------------------------------------------|
| 74LVXC4245WM  | M24B           | 24-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300" Wide  |
| 74LVXC4245QSC | MQA24          | 24-Lead Quarter Size Outline Package (QSOP), JEDEC MO-137, 0.150" Wide      |
| 74LVXC4245MTC | MTC24          | 24-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide |

Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

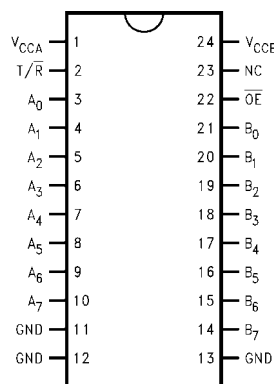
### Logic Symbol



### Pin Descriptions

| Pin Names        | Description                      |
|------------------|----------------------------------|
| $\overline{OE}$  | Output Enable Input              |
| $T/\overline{R}$ | Transmit/Receive Input           |
| $A_0$ - $A_7$    | Side A Inputs or 3-STATE Outputs |
| $B_0$ - $B_7$    | Side B Inputs or 3-STATE Outputs |

### Connection Diagram

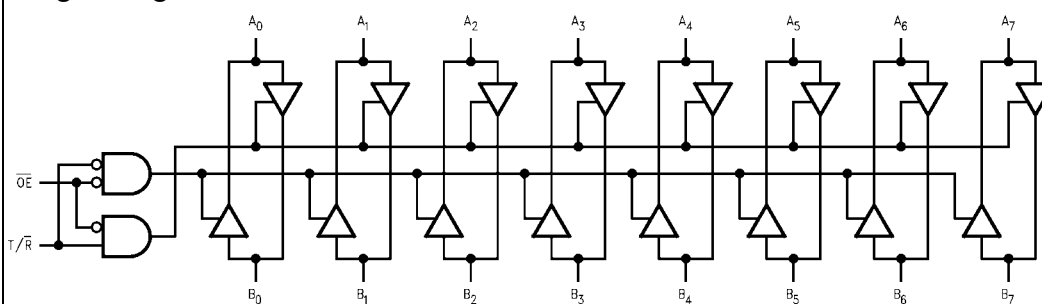


## Truth Table

| Inputs          |                  | Outputs             |
|-----------------|------------------|---------------------|
| $\overline{OE}$ | $\overline{T/R}$ |                     |
| L               | L                | Bus B Data to Bus A |
| L               | H                | Bus A Data to Bus B |
| H               | X                | HIGH-Z State        |

H = HIGH Voltage Level  
 L = LOW Voltage Level  
 X = Immaterial

## Logic Diagram



**Absolute Maximum Ratings**(Note 1)

|                                                                 |                          |
|-----------------------------------------------------------------|--------------------------|
| Supply Voltage ( $V_{CCA}, V_{CCB}$ )                           | -0.5V to +7.0V           |
| DC Input Voltage ( $V_I$ ) @ $\overline{OE}$ , $T/\overline{R}$ | -0.5V to $V_{CCA}$ +0.5V |
| DC Input/Output Voltage ( $V_{I/O}$ )                           |                          |
| @ $A_n$                                                         | -0.5V to $V_{CCA}$ +0.5V |
| @ $B_n$                                                         | -0.5V to $V_{CCB}$ +0.5V |
| DC Input Diode Current ( $I_{IK}$ )                             |                          |
| @ $\overline{OE}$ , $T/\overline{R}$                            | ±20 mA                   |
| DC Output Diode Current ( $I_{OK}$ )                            | ±50 mA                   |
| DC Output Source or Sink Current ( $I_O$ )                      | ±50 mA                   |
| DC $V_{CC}$ or Ground Current                                   |                          |
| Per Output Pin ( $I_{CC}$ or $I_{GND}$ )                        | ±50 mA                   |
| and Max Current                                                 | ±200 mA                  |
| Storage Temperature Range ( $T_{STG}$ )                         | -65°C to +150°C          |
| DC Latch-Up Source or Sink Current                              | ±300 mA                  |

**Recommended Operating Conditions** (Note 2)

|                                                              |                 |
|--------------------------------------------------------------|-----------------|
| Supply Voltage $V_{CCA}$                                     | 4.5V to 5.5V    |
| $V_{CCB}$                                                    | 2.7V to 5.5V    |
| Input Voltage ( $V_I$ ) @ $\overline{OE}$ , $T/\overline{R}$ | 0V to $V_{CCA}$ |
| Input/Output Voltage ( $V_{I/O}$ )                           |                 |
| @ $A_n$                                                      | 0V to $V_{CCA}$ |
| @ $B_n$                                                      | 0V to $V_{CCB}$ |
| Free Air Operating Temperature ( $T_A$ )                     | -40°C to +85°C  |
| Minimum Input Edge Rate ( $\Delta V/\Delta t$ )              | 8 ns/V          |
| $V_{IN}$ from 30% to 70% of $V_{CC}$                         |                 |
| $V_{CC}$ @ 3V, 4.5V, 5.5V                                    |                 |

**Note 1:** The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

**Note 2:** The A Port unused pins (inputs and I/O's) must be held HIGH or LOW. They may not float.

**DC Electrical Characteristics**

| Symbol           | Parameter                                     |                | V <sub>CCA</sub><br>(V) | V <sub>CCB</sub><br>(V) | T <sub>A</sub> = +25°C |                   | T <sub>A</sub> = −40°C to +85°C |    | Units                                                                                                                                                                  | Conditions |
|------------------|-----------------------------------------------|----------------|-------------------------|-------------------------|------------------------|-------------------|---------------------------------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|                  |                                               |                |                         |                         | Typ                    | Guaranteed Limits |                                 |    |                                                                                                                                                                        |            |
| V <sub>IHA</sub> | Minimum HIGH Level<br>Input Voltage           | A <sub>n</sub> | 4.5                     | 2.7                     |                        | 2.0               | 2.0                             | V  | V <sub>OUT</sub> ≤ 0.1V<br>or<br>≥ V <sub>CC</sub> − 0.1V                                                                                                              |            |
| V <sub>IHB</sub> |                                               | B <sub>n</sub> | OE                      | 4.5                     | 3.6                    |                   | 2.0                             |    |                                                                                                                                                                        | 2.0        |
|                  |                                               |                | T/R                     | 5.5                     | 5.5                    |                   | 2.0                             |    |                                                                                                                                                                        | 2.0        |
|                  |                                               |                |                         | 4.5                     | 2.7                    |                   | 2.0                             |    |                                                                                                                                                                        | 2.0        |
|                  |                                               |                |                         | 4.5                     | 3.6                    |                   | 2.0                             |    |                                                                                                                                                                        | 2.0        |
|                  |                                               |                |                         | 4.5                     | 5.5                    |                   | 3.85                            |    |                                                                                                                                                                        | 3.85       |
| V <sub>ILA</sub> | Maximum LOW Level<br>Input Voltage            | A <sub>n</sub> | 4.5                     | 2.7                     |                        | 0.8               | 0.8                             | V  | V <sub>OUT</sub> ≤ 0.1V<br>or<br>≥ V <sub>CC</sub> − 0.1V                                                                                                              |            |
| V <sub>ILB</sub> |                                               | B <sub>n</sub> | OE                      | 4.5                     | 3.6                    |                   | 0.8                             |    |                                                                                                                                                                        | 0.8        |
|                  |                                               |                | T/R                     | 5.5                     | 5.5                    |                   | 0.8                             |    |                                                                                                                                                                        | 0.8        |
|                  |                                               |                |                         | 4.5                     | 2.7                    |                   | 0.8                             |    |                                                                                                                                                                        | 0.8        |
|                  |                                               |                |                         | 4.5                     | 3.6                    |                   | 0.8                             |    |                                                                                                                                                                        | 0.8        |
|                  |                                               |                |                         | 4.5                     | 5.5                    |                   | 1.65                            |    |                                                                                                                                                                        | 1.65       |
| V <sub>OHA</sub> | Minimum HIGH Level<br>Output Voltage          |                | 4.5                     | 3.0                     | 4.49                   | 4.4               | 4.4                             | V  | I <sub>OUT</sub> = −100 μA<br>I <sub>OH</sub> = −24 mA                                                                                                                 |            |
| V <sub>OHB</sub> |                                               |                | 4.5                     | 3.0                     | 4.25                   | 3.86              | 3.76                            |    |                                                                                                                                                                        |            |
|                  |                                               |                | 4.5                     | 3.0                     | 2.99                   | 2.9               | 2.9                             | V  | I <sub>OUT</sub> = −100 μA<br>I <sub>OH</sub> = −12 mA<br>I <sub>OH</sub> = −24 mA<br>I <sub>OH</sub> = −12 mA<br>I <sub>OH</sub> = −24 mA<br>I <sub>OH</sub> = −24 mA |            |
|                  |                                               |                | 4.5                     | 3.0                     | 2.85                   | 2.56              | 2.46                            |    |                                                                                                                                                                        |            |
|                  |                                               |                | 4.5                     | 3.0                     | 2.65                   | 2.35              | 2.25                            |    |                                                                                                                                                                        |            |
|                  |                                               |                | 4.5                     | 2.7                     | 2.5                    | 2.3               | 2.2                             |    |                                                                                                                                                                        |            |
|                  | 4.5                                           | 2.7            | 2.3                     | 2.1                     | 2.0                    |                   |                                 |    |                                                                                                                                                                        |            |
| V <sub>OLA</sub> | Maximum LOW Level<br>Output Voltage           |                | 4.5                     | 3.0                     | 0.002                  | 0.1               | 0.1                             | V  | I <sub>OUT</sub> = 100 μA<br>I <sub>OL</sub> = 24 mA                                                                                                                   |            |
| V <sub>OLB</sub> |                                               |                | 4.5                     | 3.0                     | 0.21                   | 0.36              | 0.44                            |    |                                                                                                                                                                        |            |
|                  |                                               |                | 4.5                     | 3.0                     | 0.002                  | 0.1               | 0.1                             | V  | I <sub>OUT</sub> = 100 μA<br>I <sub>OL</sub> = 24 mA<br>I <sub>OL</sub> = 12 mA<br>I <sub>OL</sub> = 24 mA<br>I <sub>OL</sub> = 24 mA                                  |            |
|                  |                                               |                | 4.5                     | 3.0                     | 0.21                   | 0.36              | 0.44                            |    |                                                                                                                                                                        |            |
|                  |                                               |                | 4.5                     | 2.7                     | 0.11                   | 0.36              | 0.44                            |    |                                                                                                                                                                        |            |
|                  |                                               |                | 4.5                     | 2.7                     | 0.22                   | 0.42              | 0.5                             |    |                                                                                                                                                                        |            |
| I <sub>IN</sub>  | Maximum Input<br>Leakage Current @<br>OE, T/R |                | 5.5                     | 3.6                     |                        | ±0.1              | ±1.0                            | μA | V <sub>I</sub> = V <sub>CCA</sub> , GND                                                                                                                                |            |
|                  |                                               |                | 5.5                     | 5.5                     |                        | ±0.1              | ±1.0                            |    |                                                                                                                                                                        |            |

# DC Electrical Characteristics (Continued)

| Symbol            | Parameter                                                        |                | V <sub>CCA</sub><br>(V) | V <sub>CCB</sub><br>(V) | T <sub>A</sub> = +25°C |                   | T <sub>A</sub> = -40°C to +85°C |  | Units | Conditions                                                                                                                                                                 |
|-------------------|------------------------------------------------------------------|----------------|-------------------------|-------------------------|------------------------|-------------------|---------------------------------|--|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   |                                                                  |                |                         |                         | Typ                    | Guaranteed Limits |                                 |  |       |                                                                                                                                                                            |
| I <sub>OZA</sub>  | Maximum 3-STATE<br>Output Leakage @ A <sub>n</sub>               |                | 5.5                     | 3.6                     |                        | ±0.5              | ±5.0                            |  | μA    | V <sub>I</sub> = V <sub>IL</sub> , V <sub>IH</sub> , $\overline{OE}$ = V <sub>CCA</sub><br>V <sub>O</sub> = V <sub>CCA</sub> , GND                                         |
|                   |                                                                  |                | 5.5                     | 5.5                     |                        | ±0.5              | ±5.0                            |  |       |                                                                                                                                                                            |
| I <sub>OZB</sub>  | Maximum 3-STATE<br>Output Leakage @ B <sub>n</sub>               |                | 5.5                     | 3.6                     |                        | ±0.5              | ±5.0                            |  | μA    | V <sub>I</sub> = V <sub>IL</sub> , V <sub>IH</sub> , $\overline{OE}$ = V <sub>CCA</sub><br>V <sub>O</sub> = V <sub>CCB</sub> , GND                                         |
|                   |                                                                  |                | 5.5                     | 5.5                     |                        | ±0.5              | ±5.0                            |  |       |                                                                                                                                                                            |
| ΔI <sub>CC</sub>  | Maximum<br>I <sub>CC</sub> /Input                                | All Inputs     | 5.5                     | 5.5                     | 1.0                    | 1.35              | 1.5                             |  | mA    | V <sub>I</sub> = V <sub>CC</sub> - 2.1V                                                                                                                                    |
|                   |                                                                  | B <sub>n</sub> | 5.5                     | 3.6                     |                        | 0.35              | 0.5                             |  | mA    | V <sub>I</sub> = V <sub>CCB</sub> - 0.6V                                                                                                                                   |
| I <sub>CCA1</sub> | Quiescent V <sub>CCA</sub><br>Supply Current as B<br>Port Floats |                | 5.5                     | Open                    |                        | 8                 | 80                              |  | μA    | A <sub>n</sub> = V <sub>CCA</sub> or GND<br>B <sub>n</sub> = Open, $\overline{OE}$ = V <sub>CCA</sub><br>T/ $\overline{R}$ = V <sub>CCA</sub> , V <sub>CCB</sub> =<br>Open |
| I <sub>CCA2</sub> | Quiescent V <sub>CCA</sub><br>Supply Current                     |                | 5.5                     | 3.6                     |                        | 8                 | 80                              |  | μA    | A <sub>n</sub> = V <sub>CCA</sub> or GND<br>B <sub>n</sub> = V <sub>CCB</sub> or GND<br>$\overline{OE}$ = GND, T/ $\overline{R}$ = GND                                     |
|                   |                                                                  |                | 5.5                     | 5.5                     |                        | 8                 | 80                              |  |       |                                                                                                                                                                            |
| I <sub>CCB</sub>  | Quiescent V <sub>CCB</sub><br>Supply Current                     |                | 5.5                     | 3.6                     |                        | 5                 | 50                              |  | μA    | A <sub>n</sub> = V <sub>CCA</sub> or GND<br>B <sub>n</sub> = V <sub>CCB</sub> or GND<br>$\overline{OE}$ = GND, T/ $\overline{R}$ = V <sub>CCA</sub>                        |
|                   |                                                                  |                | 5.5                     | 5.5                     |                        | 8                 | 80                              |  |       |                                                                                                                                                                            |
| V <sub>OLPA</sub> | Quiet Output<br>Maximum Dynamic                                  |                | 5.0                     | 3.3                     |                        | 1.5               |                                 |  | V     | (Note 3) (Note 4)                                                                                                                                                          |
| 5.0               |                                                                  |                | 5.0                     |                         | 1.5                    |                   |                                 |  |       |                                                                                                                                                                            |
| V <sub>OLPB</sub> | V <sub>OL</sub>                                                  |                | 5.0                     | 3.3                     |                        | 0.8               |                                 |  | V     | (Note 3) (Note 4)                                                                                                                                                          |
|                   |                                                                  |                | 5.0                     | 5.0                     |                        | 1.5               |                                 |  |       |                                                                                                                                                                            |
| V <sub>OLVA</sub> | Quiet Output Minimum<br>Dynamic V <sub>OL</sub>                  |                | 5.0                     | 3.3                     |                        | -1.2              |                                 |  | V     | (Note 3) (Note 4)                                                                                                                                                          |
|                   |                                                                  |                | 5.0                     | 5.0                     |                        | -1.2              |                                 |  |       |                                                                                                                                                                            |
| V <sub>OLVB</sub> |                                                                  |                | 5.0                     | 3.3                     |                        | -0.8              |                                 |  | V     | (Note 3) (Note 4)                                                                                                                                                          |
|                   |                                                                  |                | 5.0                     | 5.0                     |                        | -1.2              |                                 |  |       |                                                                                                                                                                            |
| V <sub>IHDA</sub> | Minimum HIGH Level<br>Dynamic Input                              |                | 5.0                     | 3.3                     |                        | 2.0               |                                 |  | V     | (Note 3) (Note 5)                                                                                                                                                          |
| 5.0               |                                                                  |                | 5.0                     |                         | 2.0                    |                   |                                 |  |       |                                                                                                                                                                            |
| V <sub>IHDB</sub> | Voltage                                                          |                | 5.0                     | 3.3                     |                        | 2.0               |                                 |  | V     | (Note 3) (Note 5)                                                                                                                                                          |
|                   |                                                                  |                | 5.0                     | 5.0                     |                        | 3.5               |                                 |  |       |                                                                                                                                                                            |
| V <sub>ILDA</sub> | Maximum LOW Level<br>Dynamic Input                               |                | 5.0                     | 3.3                     |                        | 0.8               |                                 |  | V     | (Note 3) (Note 5)                                                                                                                                                          |
|                   |                                                                  |                | 5.0                     | 5.0                     |                        | 0.8               |                                 |  |       |                                                                                                                                                                            |
| V <sub>ILDB</sub> | Voltage                                                          |                | 5.0                     | 3.3                     |                        | 0.8               |                                 |  | V     | (Note 3) (Note 5)                                                                                                                                                          |
|                   |                                                                  |                | 5.0                     | 5.0                     |                        | 1.5               |                                 |  |       |                                                                                                                                                                            |

**Note 3:** Worst case package.

**Note 4:** Max number of outputs defined as (n). Data inputs are driven 0V to V<sub>CC</sub> level; one output at GND.

**Note 5:** 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 = 1 MHz.

## AC Electrical Characteristics

| Symbol                                 | Parameter                                        | C <sub>L</sub> = 50 pF<br>V <sub>CCA</sub> = 4.5V to 5.5V<br>V <sub>CCB</sub> = 4.5V to 5.5V |                 |     |                                 |      | C <sub>L</sub> = 50 pF<br>V <sub>CCA</sub> = 4.5V to 5.5V<br>V <sub>CCB</sub> = 2.7V to 3.6V |                 |      |                                 |      | Units |
|----------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------|-----|---------------------------------|------|----------------------------------------------------------------------------------------------|-----------------|------|---------------------------------|------|-------|
|                                        |                                                  | T <sub>A</sub> = +25°C                                                                       |                 |     | T <sub>A</sub> = -40°C to +85°C |      | T <sub>A</sub> = +25°C                                                                       |                 |      | T <sub>A</sub> = -40°C to +85°C |      |       |
|                                        |                                                  | Min                                                                                          | Typ<br>(Note 6) | Max | Min                             | Max  | Min                                                                                          | Typ<br>(Note 7) | Max  | Min                             | Max  |       |
| t <sub>PHL</sub>                       | Propagation Delay A to B                         | 1.0                                                                                          | 4.9             | 6.5 | 1.0                             | 7.0  | 1.0                                                                                          | 5.5             | 7.5  | 1.0                             | 8.0  | ns    |
| t <sub>PLH</sub>                       | Delay A to B                                     | 1.0                                                                                          | 4.0             | 5.5 | 1.0                             | 6.0  | 1.0                                                                                          | 5.0             | 7.0  | 1.0                             | 7.5  |       |
| t <sub>PHL</sub>                       | Propagation Delay B to A                         | 1.0                                                                                          | 4.7             | 6.5 | 1.0                             | 7.0  | 1.0                                                                                          | 5.6             | 7.5  | 1.0                             | 8.0  | ns    |
| t <sub>PLH</sub>                       | Delay B to A                                     | 1.0                                                                                          | 3.9             | 5.0 | 1.0                             | 5.5  | 1.0                                                                                          | 4.3             | 6.0  | 1.0                             | 6.5  |       |
| t <sub>PZL</sub>                       | Output Enable Time $\overline{OE}$ to B          | 1.0                                                                                          | 5.6             | 7.5 | 1.0                             | 8.0  | 1.0                                                                                          | 6.7             | 9.0  | 1.0                             | 10.0 | ns    |
| t <sub>PZH</sub>                       | Time $\overline{OE}$ to B                        | 1.0                                                                                          | 5.7             | 7.5 | 1.0                             | 8.0  | 1.0                                                                                          | 6.9             | 9.5  | 1.0                             | 10.0 |       |
| t <sub>PZL</sub>                       | Output Enable Time $\overline{OE}$ to A          | 1.0                                                                                          | 7.4             | 9.0 | 1.0                             | 10.0 | 1.0                                                                                          | 8.0             | 10.0 | 1.0                             | 11.0 | ns    |
| t <sub>PZH</sub>                       | Time $\overline{OE}$ to A                        | 1.0                                                                                          | 6.1             | 7.5 | 1.0                             | 8.5  | 1.0                                                                                          | 6.3             | 8.0  | 1.0                             | 8.5  |       |
| t <sub>PHZ</sub>                       | Output Disable Time $\overline{OE}$ to B         | 1.0                                                                                          | 4.8             | 7.0 | 1.0                             | 7.5  | 1.0                                                                                          | 6.0             | 9.0  | 1.0                             | 9.5  | ns    |
| t <sub>PLZ</sub>                       | Time $\overline{OE}$ to B                        | 1.0                                                                                          | 3.8             | 5.5 | 1.0                             | 6.0  | 1.0                                                                                          | 4.2             | 6.5  | 1.0                             | 7.0  |       |
| t <sub>PHZ</sub>                       | Output Disable Time $\overline{OE}$ to A         | 1.0                                                                                          | 3.4             | 5.5 | 1.0                             | 6.0  | 1.0                                                                                          | 3.4             | 5.5  | 1.0                             | 6.0  | ns    |
| t <sub>PLZ</sub>                       | Time $\overline{OE}$ to A                        | 1.0                                                                                          | 2.9             | 4.5 | 1.0                             | 5.0  | 1.0                                                                                          | 2.9             | 5.0  | 1.0                             | 5.5  |       |
| t <sub>OSHL</sub><br>t <sub>OSLH</sub> | Output to Output Skew (Note 8)<br>Data to Output |                                                                                              | 1.0             | 1.5 |                                 | 1.5  |                                                                                              | 1.0             | 1.5  |                                 | 1.5  | ns    |

**Note 6:** Typical values at V<sub>CCA</sub> = 5V, V<sub>CCB</sub> = 5V @25°C.

**Note 7:** Typical values at V<sub>CCA</sub> = 5V, V<sub>CCB</sub> = 3.3V @25°C.

**Note 8:** 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.

## Capacitance

| Symbol           | Parameter                                 |     | Typ | Units | Conditions                                     |
|------------------|-------------------------------------------|-----|-----|-------|------------------------------------------------|
| C <sub>IN</sub>  | Input Capacitance                         |     | 4.5 | pF    | V <sub>CC</sub> = Open                         |
| C <sub>I/O</sub> | Input/Output Capacitance                  |     | 10  | pF    | V <sub>CCA</sub> = 5V, V <sub>CCB</sub> = 3.3V |
| C <sub>PD</sub>  | Power Dissipation Capacitance<br>(Note 9) | A→B | 45  | pF    | V <sub>CCA</sub> = 5V                          |
|                  |                                           | B→A | 50  | pF    | V <sub>CCB</sub> = 3.3V                        |

**Note 9:** C<sub>PD</sub> is measured at 10 MHz.

## Power Up Considerations

To insure the system does not experience unnecessary I<sub>CC</sub> current draw, bus contention, or oscillations during power up, the following guidelines should be adhered to (refer to Table 1):

- Power up the control side of the device first. This is the V<sub>CCA</sub>.
- $\overline{OE}$  should ramp with or ahead of V<sub>CCA</sub>. This will help guard against bus contention.
- The Transmit/Receive control pin (T/R) should ramp with V<sub>CCA</sub>, this will ensure that the A Port data pins are con-

figured as inputs. With V<sub>CCA</sub> receiving power first, the A I/O Port should be configured as inputs to help guard against bus contention and oscillations.

- A side data inputs should be driven to a valid logic level. This will prevent excessive current draw.

The above steps will ensure that no bus contention or oscillations, and therefore no excessive current draw occurs during the power up cycling of these devices. These steps will help prevent possible damage to the translator devices and potential damage to other system components.

TABLE 1. Low Voltage Translator Power Up Sequencing Table

| Device Type | V <sub>CCA</sub>     | V <sub>CCB</sub>             | T/R                           | $\overline{OE}$               | A Side I/O                      | B Side I/O | Floatable Pin Allowed                                     |
|-------------|----------------------|------------------------------|-------------------------------|-------------------------------|---------------------------------|------------|-----------------------------------------------------------|
| 74LVXC4245  | 5V<br>(power up 1st) | 2.7V to 5.5V<br>configurable | ramp<br>with V <sub>CCA</sub> | ramp<br>with V <sub>CCA</sub> | logic<br>0V or V <sub>CCA</sub> | outputs    | yes, V <sub>CCB</sub> and B I/O's w/ $\overline{OE}$ HIGH |

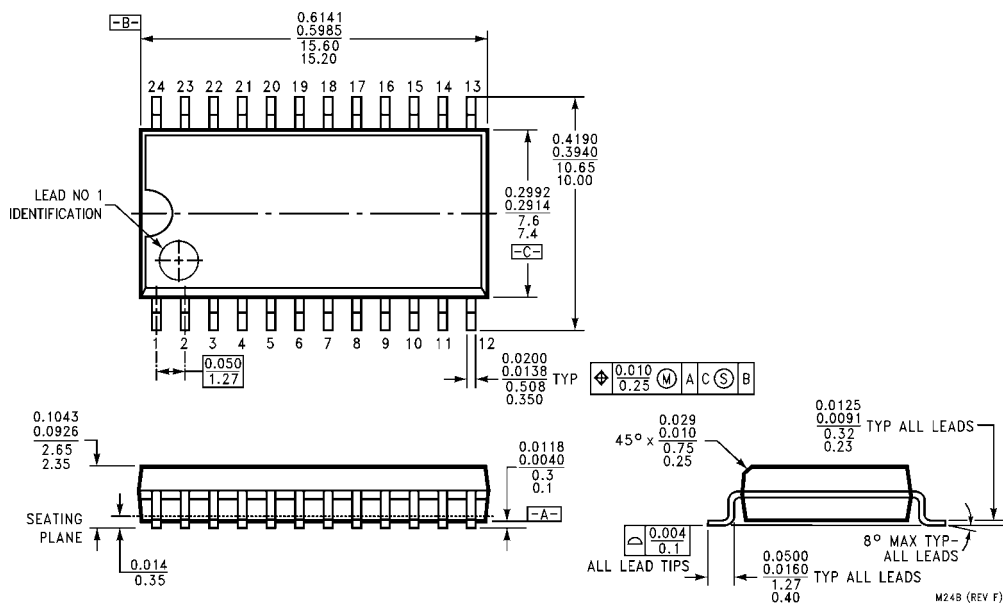
Please reference Application Note AN-5001 for more detailed information on using Fairchild's LVX Low Voltage Dual Supply CMOS Translating Transceivers.

The diagram illustrates the power and data connections for a PCMCIA 2.0 JEIDA 4.1 compatible controller. The controller is connected to the ISA BUS (IEEE P996) via SD(0:15) signals. It provides 5V VCC to Slot 0 and 5V VCC to Slot 1. Slot 1 also receives 3V VCC. The diagram includes labels for VCCA, VCCB, and VCC. Slot 0 and Slot 1 are shown with their respective pin configurations (LVXC4245). A dashed line indicates an optional connection for Slot 1.

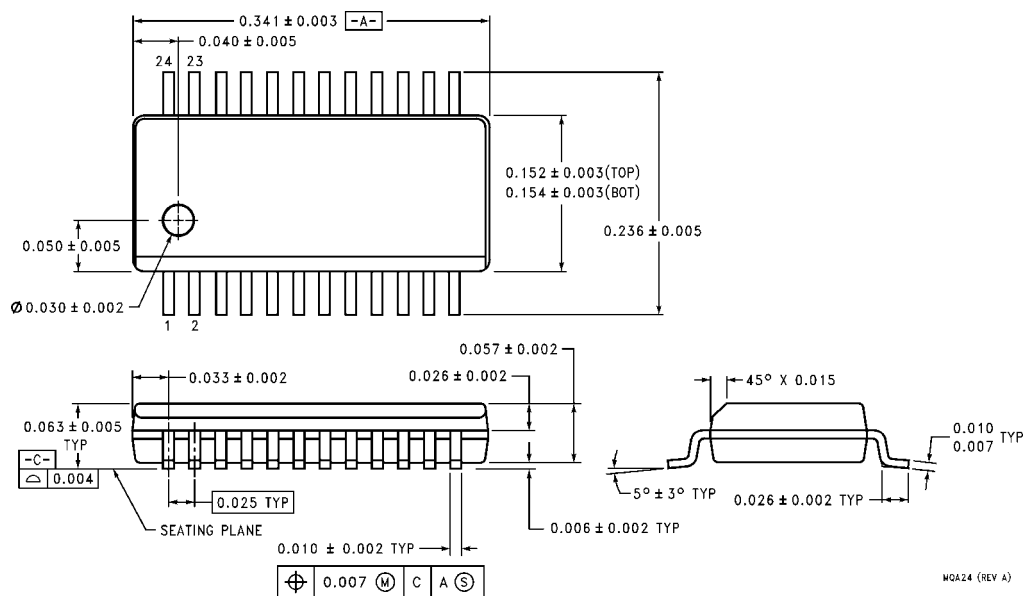
will always experience rail to rail output swings, maximizing the reliability of the interface.

The  $V_{CCA}$  pin on the LVXC4245 must always be tied to a 5V power supply. This voltage connection provides internal references needed to account for variations in  $V_{CCB}$ . When connected as in the block diagram above, the LVXC4245 meets all the voltage and current requirements of the ISA bus standard (IEEE P996).

# Physical Dimensions inches (millimeters) unless otherwise noted

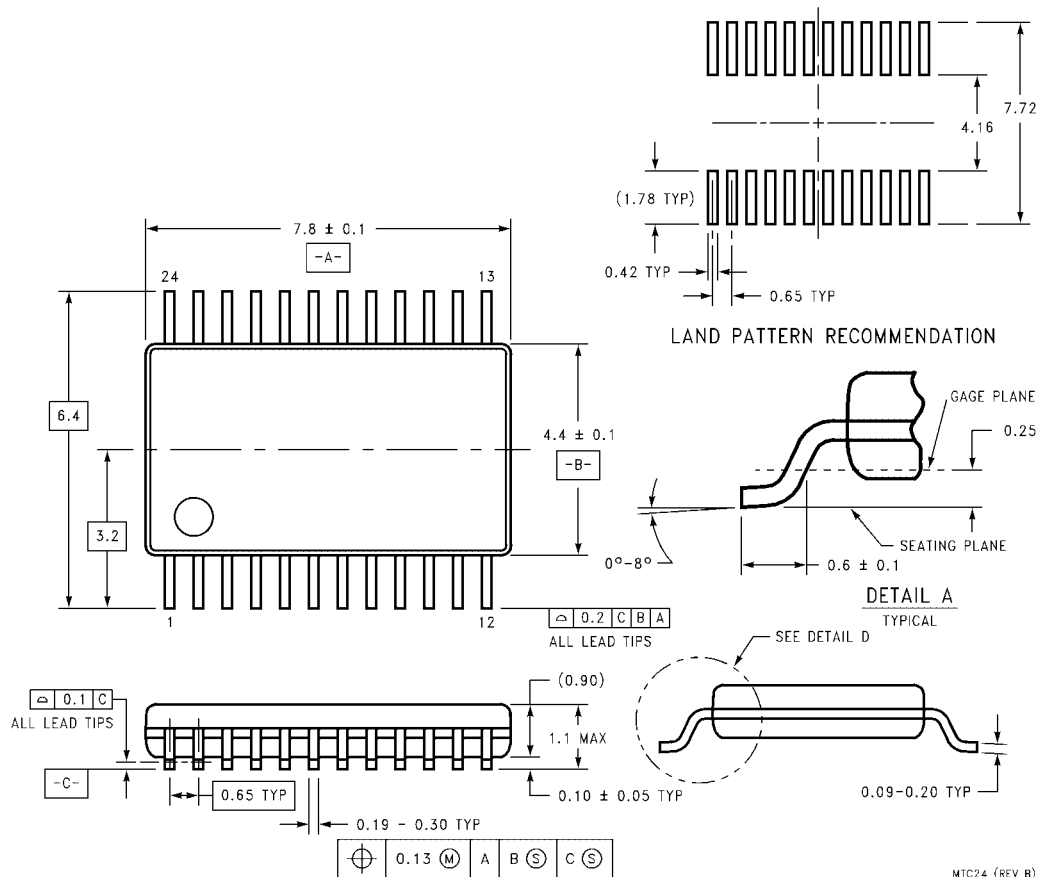


24-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300" Wide  
Package Number M24B



24-Lead Quarter Size Outline Package (QSOP), JEDEC MO-137, 0.150" Wide  
Package Number MQA24

# Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



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