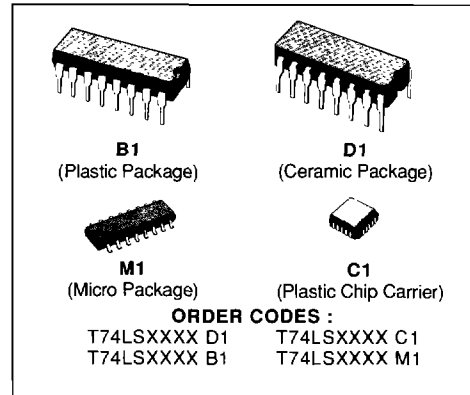


3-STATE HEX BUFFERS

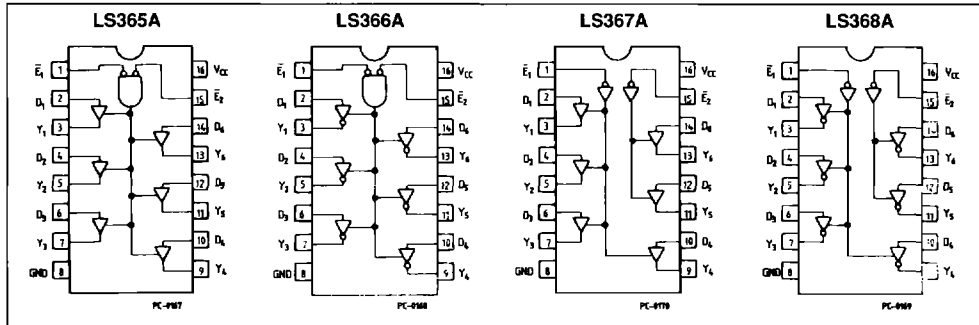
DESCRIPTION

These devices are high-speed Hex Buffers with 3-state outputs. They are organized as single 6-bit or 2-bit/4-bit, with inverting or non-inverting data (D) paths. The outputs are designed to drive 15 TTL Unit Loads or 60 Low Power Schottky loads when the Enable (\bar{E}) is LOW.

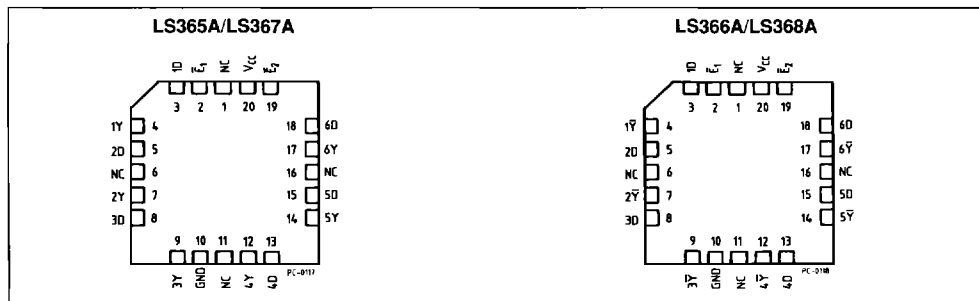
When the output Enable input (\bar{E}) is HIGH, the outputs are forced to a high impedance "off" state. If the outputs of the 3-state devices are tied together, all but one device must be in the high impedance state to avoid high currents that would exceed the maximum ratings. Designers should ensure that Output Enable signals to 3-state devices, whose outputs are tied together, are designed so there is no overlap.



PIN CONNECTION (top view) DUAL IN LINE



CHIP CARRIER



TRUTH TABLES

| | | | | | | | |
|-------------|-------------|--------|-----------|-------------|-------------|---|--------|
| LS365A | | | | LS366A | | | |
| Inputs | | | Output | Inputs | | | Output |
| \bar{E}_1 | \bar{E}_2 | D | | \bar{E}_1 | \bar{E}_2 | D | |
| L | L | L | L | L | L | H | |
| L | L | H | H | L | L | L | |
| H | X | X | (Z) | H | X | X | (Z) |
| X | H | X | (Z) | X | H | X | (Z) |
| LS367A | | | | LS368A | | | |
| Inputs | | Output | Inputs | | Output | | |
| \bar{E} | D | | \bar{E} | D | | | |
| L | L | L | L | L | H | | |
| L | H | H | L | H | L | | |
| H | X | (Z) | H | X | (Z) | | |

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|----------|-----------------------------------|-------------|------|
| V_{CC} | Supply Voltage | - 0.5 to 7 | V |
| V_I | Input Voltage, Applied to Input | - 0.5 to 15 | V |
| V_O | Output Voltage, Applied to Output | 0 to 10 | V |
| I_I | Input Current, into Inputs | - 30 to 5 | mA |
| I_O | Output Current, into Outputs | 50 | mA |

Stresses in excess of those listed "Absolute 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 in excess of those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

GUARANTEED OPERATING RANGE

| Part Numbers | Supply Voltage | | | Temperature |
|----------------------------|----------------|-------|--------|-----------------|
| | Min. | Typ. | Max. | |
| T74LS365A/366A/367A/368AXX | 4.75 V | 5.0 V | 5.25 V | 0 °C to + 70 °C |

XX = Package type.

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE

| Symbol | Parameter | | Limits | | | Test Condition (note 1) | Unit | |
|------------------|--|-------------|--------|----------|-----------|---|---|---|
| | | | Min. | Typ. (*) | Max. | | | |
| V _{IH} | Input HIGH Voltage | | 2.0 | | | Guaranteed Input HIGH Voltage for All Inputs | V | |
| V _{IL} | Input LOW Voltage | | | | 0.8 | Guaranteed Input LOW Voltage for All Inputs | V | |
| V _{CD} | Input Clamp Diode Voltage | | | - 0.65 | - 1.5 | V _{CC} = MIN, I _{IN} = -18 mA | V | |
| V _{OH} | Output HIGH Voltage | | 2.4 | 3.1 | | V _{CC} = MIN, I _{OH} = - 2.6 mA V _{IN} = V _{IH} or V _{IL} per Truth Table | V | |
| V _{OL} | Output LOW Voltage | | | 0.25 | 0.4 | I _{OL} = 12 mA | V _{CC} = MIN, V _{IN} = V _{IH} or V _{IL} per Truth Table | V |
| | | | | 0.35 | 0.5 | I _{OL} = 24 mA | | V |
| I _{OZH} | Output Off Current HIGH | | | | 20 | V _{CC} = MAX, V _{OUT} = 2.7 V V _E = 2.0 V | μA | |
| I _{OZL} | Output Off Current LOW | | | | - 20 | V _{CC} = MAX, V _{IN} = 0.4 V V _E = 2.0 V | μA | |
| I _{IH} | Input HIGH Current | | | | 20 0.1 | V _{CC} = MAX, V _{IN} = 2.7 V V _{CC} = MAX, V _{IN} = 7.0 V | μA | |
| I _{IL} | Input LOW Current | D Inputs | | | - 20 | V _{CC} = MAX, V _{IN} = 0.5 V Either E Input at 2 V | mA | |
| | | | | | - 0.4 | V _{CC} = MAX, V _{IN} = 0.4 V Both E Inputs at 0.4 V | mA | |
| | | E Inputs | | | - 0.4 | | mA | |
| I _{OS} | Output Short Circuit Current (note 2) | | - 40 | | - 225 | V _{CC} = MAX, V _{OUT} = 0 V | mA | |
| I _{CC} | Power Supply Current | LS365A/367A | | 13.5 | 24 | V _{CC} = MAX, V _{IN} = 0.4 V V _E = 4.5 V | mA | |
| | | LS366A/368A | | 11.8 | 21 | | mA | |

Notes : 1. For Conditions shown as MIN or MAX, use the appropriate value specified under guaranteed operating conditions for the device type.

2. Not more than one output should be shorted at a time.

(*) Typical values are at V_{CC} = 5.0 V, T_A = 25 °C.

AC CHARACTERISTICS : T_A = 25 °C

| Symbol | Parameter | Limits | | | | | | Test Conditions | Unit |
|--------------------------------------|---------------------|-------------|-----------|----------|-------------|-----------|----------|---|------|
| | | LS365A/367A | | | LS366A/368A | | | | |
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | | |
| t _{PLH} t _{PHL} | Propagation Delay, | | 10 9.0 | 16 22 | | 7.0 12 | 15 18 | V _{CC} = 5.0 V C _L = 45 pF R _L 667 Ω | ns |
| t _{PLH} t _{PHL} | Output Enable Time | | 19 24 | 35 40 | | 18 28 | 35 45 | | ns |
| t _{PLH} t _{PHL} | Output Disable Time | | | 30 35 | | | 32 35 | V _{CC} = 5.0 V C _L = 5.0 pF | ns |

AC WAVEFORMS

Figure 1.

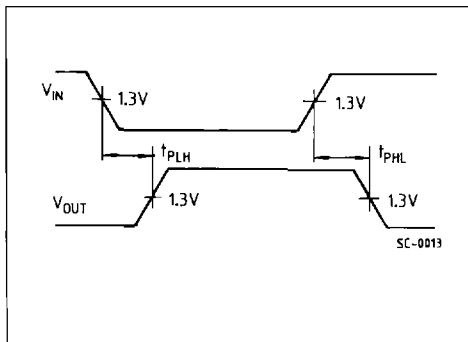


Figure 2.

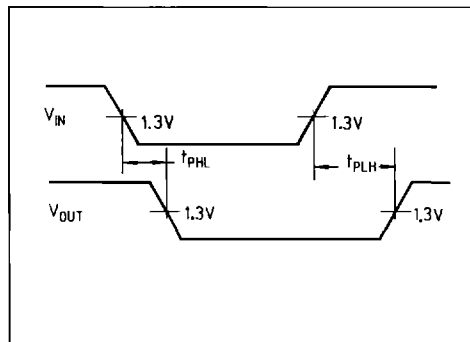


Figure 3.

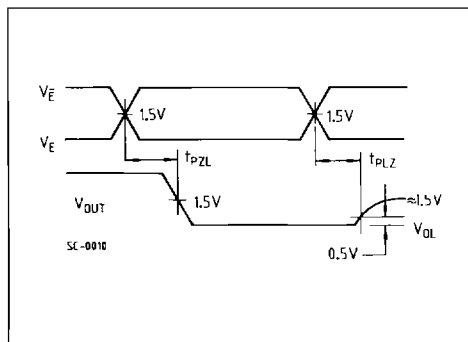


Figure 4.

