

April 1988 Revised August 1999

# 74F365

# **Hex Buffer/Driver with 3-STATE Outputs**

### **General Description**

The 74F365 is a hex buffer and line driver designed to be employed as a memory and address driver, clock driver and bus-oriented transmitter/receiver.

### **Features**

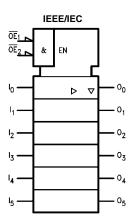
- 3-STATE buffer outputs
- Outputs sink 64 mA
- Bus-oriented

# **Ordering Code:**

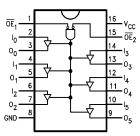
|  | Order Number | Package Number | Package Description   |
|--|--------------|----------------|---|
|  |              | M16A           | 16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow |
|  |              | N16E           | 16-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide       |

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

### **Logic Symbol**



### **Connection Diagram**



### **Function Table**

|                 | Output          |   |   |
|-----------------|-----------------|---|---|
| OE <sub>1</sub> | OE <sub>2</sub> | I | 0 |
| L               | L               | L | L |
| L               | L               | Н | Н |
| Х               | Н               | Χ | Z |
| Н               | X               | Χ | Z |

L = LOW Voltage Level X = Immaterial
H = HIGH Voltage Level Z = High Imped

# **Unit Loading/Fan Out**

| Din Names                          | Donordination.                   | U.L.           | Input I <sub>IH</sub> /I <sub>IL</sub>  |  |
|------------------------------------|----------------------------------|----------------|---|--|
| Pin Names                          | Description                      | HIGH/LOW       | Output I <sub>OH</sub> /I <sub>OL</sub> |  |
| $\overline{OE}_1, \overline{OE}_2$ | Output Enable Input (Active LOW) | 1.0/0.033      | 20 μΑ/20 μΑ                             |  |
| I <sub>n</sub>                     | Inputs                           | 1.0/0.033      | 20 μΑ/20 μΑ                             |  |
| O <sub>n</sub>                     | Outputs                          | 600/106.6 (80) | -12 mA/64 mA (48 mA)                    |  |

## **Absolute Maximum Ratings**(Note 1)

-65°C to +150°C Storage Temperature -55°C to +125°C

Ambient Temperature under Bias Junction Temperature under Bias  $-55^{\circ}C$  to  $+150^{\circ}C$ V<sub>CC</sub> Pin Potential to Ground Pin -0.5V to +7.0V Input Voltage (Note 2) -0.5V to +7.0V -30 mA to +5.0 mA

Input Current (Note 2) Voltage Applied to Output

in HIGH State (with  $V_{CC} = 0V$ )

Standard Output -0.5V to  $V_{CC}$ 3-STATE Output -0.5V to +5.5V

Current Applied to Output

in LOW State (Max) twice the rated  $I_{OL}$  (mA)

### **Recommended Operating Conditions**

Free Air Ambient Temperature  $0^{\circ}$ C to +70°C Supply Voltage +4.5V to +5.5V

Note 1: Absolute maximum ratings are values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

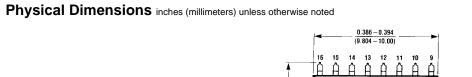
Note 2: Either voltage limit or current limit is sufficient to protect inputs.

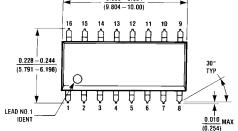
### **DC Electrical Characteristics**

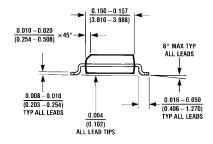
| Symbol           | Parameter                    | Min    | Тур | Max  | Units | v <sub>cc</sub> | Conditions                  |
|------------------|------------------------------|--------|-----|------|-------|-----------------|-----------------------------|
| V <sub>IH</sub>  | Input HIGH Voltage           | 2.0    |     |      | V     |                 | Recognized as a HIGH Signal |
| V <sub>IL</sub>  | Input LOW Voltage            |        |     | 0.8  | V     |                 | Recognized as a LOW Signal  |
| V <sub>CD</sub>  | Input Clamp Diode Voltage    |        |     | -1.2 | V     | Min             | I <sub>IN</sub> = -18 mA    |
| V <sub>OH</sub>  | Output HIGH 10% V            | CC 2.4 |     |      |       |                 | $I_{OH} = -3 \text{ mA}$    |
|                  | Voltage 10% V                | CC 2.0 |     |      | V     | Min             | $I_{OH} = -15 \text{ mA}$   |
|                  | 5% V                         | CC 2.7 |     |      |       |                 | $I_{OH} = -3 \text{ mA}$    |
| V <sub>OL</sub>  | Output LOW 10% V             | СС     |     | 0.55 | V     | Min             | I <sub>OL</sub> = 64 mA     |
|                  | Voltage                      |        |     |      |       |                 |                             |
| I <sub>IH</sub>  | Input HIGH Current           |        |     | 20   | μΑ    | Max             | $V_{IN} = 2.7V$             |
| I <sub>BVI</sub> | Input HIGH Current           |        |     | 100  | ^     | 0.0             | V 7.0V                      |
|                  | Breakdown Test               |        |     | 100  | μΑ    | 0.0             | V <sub>IN</sub> = 7.0V      |
| I <sub>IL</sub>  | Input LOW Current            |        |     | -20  | μΑ    | Max             | $V_{IN} = 0.5V$             |
| I <sub>OZH</sub> | Output Leakage Current       |        |     | 50   | μΑ    | Max             | V <sub>OUT</sub> = 2.7V     |
| I <sub>OZL</sub> | Output Leakage Current       |        |     | -50  | μΑ    | Max             | V <sub>OUT</sub> = 0.5V     |
| Ios              | Output Short-Circuit Current | -100   |     | -225 | mA    | Max             | V <sub>OUT</sub> = 0V       |
| I <sub>CEX</sub> | Output HIGH Leakage Current  |        |     | 250  | μΑ    | Max             | $V_{OUT} = V_{CC}$          |
| I <sub>ZZ</sub>  | Bus Drainage Test            | İ      |     | 500  | μΑ    | 0.0V            | V <sub>OUT</sub> = 5.25V    |
| I <sub>CCH</sub> | Power Supply Current         |        | 25  | 35   | mA    | Max             | V <sub>O</sub> = HIGH       |
| I <sub>CCL</sub> | Power Supply Current         |        | 44  | 62   | mA    | Max             | $V_O = LOW$                 |
| I <sub>CCZ</sub> | Power Supply Current         |        | 35  | 48   | mA    | Max             | V <sub>O</sub> = HIGH Z     |

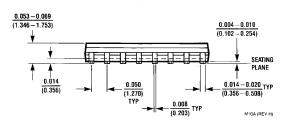
### **AC Electrical Characteristics**

| Symbol           | Parameter                        | $T_A = +25^{\circ}C$ $V_{CC} = +5.0V$ $C_L = 50 \text{ pF}$ |     |     | $T_{A} = -55^{\circ}\text{C to } +125^{\circ}\text{C}$ $V_{CC} = +5.0\text{V}$ $C_{L} = 50 \text{ pF}$ |     | $T_A = 0$ °C to +70°C<br>$V_{CC} = +5.0V$<br>$C_L = 50 \text{ pF}$ |      | Units |
|------------------|----------------------------------|---|-----|-----|--|-----|--|------|-------|
|                  |                                  | Min   | Тур | Max | Min  | Max | Min  | Max  |       |
| t <sub>PLH</sub> | Propagation Delay                | 2.5   | 4.6 | 6.5 | 2.0  | 7.0 | 2.0  | 7.0  | 20    |
| t <sub>PHL</sub> | I <sub>n</sub> to O <sub>n</sub> | 2.5   | 4.9 | 7.0 | 2.0  | 7.0 | 2.0  | 7.5  | ns    |
| t <sub>PZH</sub> | Enable Time                      | 2.5   | 5.1 | 9.5 | 2.0  | 8.5 | 2.5  | 10.0 | ns    |
| t <sub>PZL</sub> |                                  | 2.5   | 5.7 | 9.0 | 2.0  | 8.5 | 2.5  | 9.5  | 115   |
| t <sub>PHZ</sub> | Disable Time                     | 2.0   | 3.6 | 6.5 | 1.5  | 6.5 | 2.0  | 7.0  | no    |
| t <sub>PLZ</sub> |                                  | 2.0   | 4.4 | 6.5 | 1.5  | 9.0 | 2.0  | 7.0  | ns    |



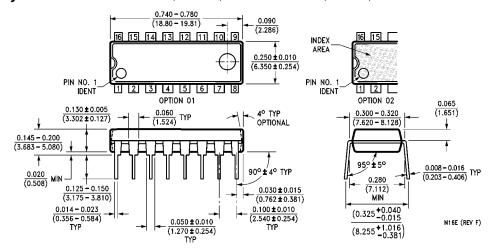






16-Lead (0.150' Wide) Molded Small Outline Package, JEDEC (S) Package Number M16A

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



16-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide Package Number N16E

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