

## 74F366 • 74F368 Hex Inverter/Buffer with 3-STATE Outputs

### Features

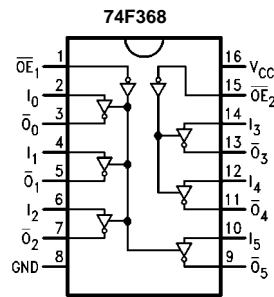
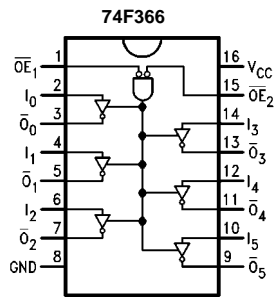
- 3-STATE buffer outputs sink 64 mA
- High-speed
- Bus-oriented
- High impedance npn base inputs for reduced loading

### Ordering Code:

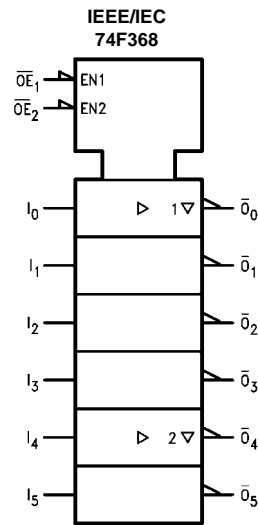
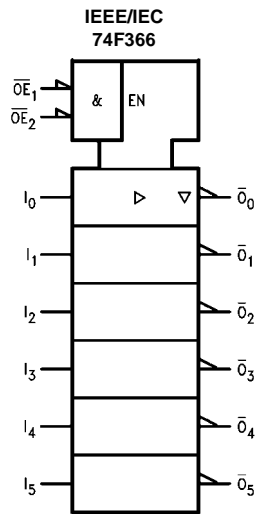
| Order Number | Package Number | Package Description   |
|--------------|----------------|---|
| 74F366SC     | M16A           | 16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow |
| 74F366PC     | N16E           | 16-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide       |
| 74F368SC     | M16A           | 16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow |
| 74F368SJ     | M16D           | 16-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide               |
| 74F368PC     | 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.

### Connection Diagrams



### Logic Symbols



### Unit Loading/Fan Out

| Pin Names                          | Description                      | U.L.<br>HIGH/LOW | Input $I_{IH}/I_{IL}$<br>Output $I_{OH}/I_{OL}$ |
|------------------------------------|----------------------------------|------------------|---|
| $\overline{OE}_1, \overline{OE}_2$ | Output Enable Input (Active LOW) | 1.0/0.033        | 20 $\mu$ A/-20 $\mu$ A                          |
| $I_n$                              | Input                            | 1.0/0.033        | 20 $\mu$ A/-20 $\mu$ A                          |
| $O_n, \overline{O}_n$              | Outputs                          | 600/106.6 (80)   | -12 mA/64 mA (48 mA)                            |

### Function Tables

**74F366**

| Inputs            |                   |   | Output         |
|-------------------|-------------------|---|----------------|
| $\overline{OE}_1$ | $\overline{OE}_2$ | I | $\overline{O}$ |
| L                 | L                 | L | H              |
| L                 | L                 | H | L              |
| X                 | H                 | X | Z              |
| H                 | X                 | X | Z              |

**74F368**

| Inputs          |   | Output         |
|-----------------|---|----------------|
| $\overline{OE}$ | I | $\overline{O}$ |
| L               | L | H              |
| L               | H | L              |
| H               | X | Z              |

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

**Absolute Maximum Ratings**(Note 1)

|  |                                      |
|--|--------------------------------------|
| Storage Temperature  | -65°C to +150°C                      |
| Ambient Temperature under Bias   | -55°C to +125°C                      |
| Junction Temperature under Bias  | -55°C to +150°C                      |
| V <sub>CC</sub> Pin Potential to Ground Pin                            | -0.5V to +7.0V                       |
| Input Voltage (Note 2)   | -0.5V to +7.0V                       |
| Input Current (Note 2)   | -30 mA to +5.0 mA                    |
| Voltage Applied to Output<br>in HIGH State (with V <sub>CC</sub> = 0V) |                                      |
| Standard Output  | -0.5V to V <sub>CC</sub>             |
| 3-STATE Output   | -0.5V to +5.5V                       |
| Current Applied to Output<br>in LOW State (Max)                        | twice the rated I <sub>OL</sub> (mA) |

**Recommended Operating Conditions**

|                              |                |
|------------------------------|----------------|
| Free Air Ambient Temperature | 0°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.

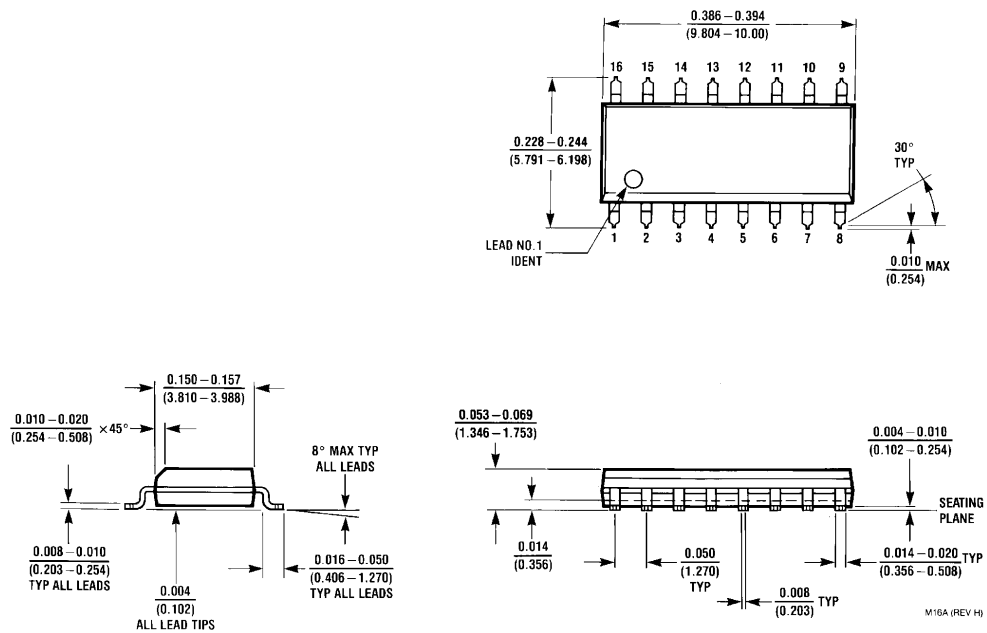
**DC Electrical Characteristics**

| Symbol           | Parameter                            | Min                 | Typ | 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 Voltage                  | 10% V <sub>CC</sub> | 2.0 |      | V     | Min             | I <sub>OH</sub> = -15 mA           |
| V <sub>OL</sub>  | Output LOW Voltage                   | 10% V <sub>CC</sub> |     | 0.55 | V     | Min             | I <sub>OL</sub> = 64 mA            |
| I <sub>IH</sub>  | Input HIGH Current                   |                     |     | 20   | μA    | Max             | V <sub>IN</sub> = 2.7V             |
| I <sub>BVI</sub> | Input HIGH Current<br>Breakdown Test |                     |     | 100  | μA    | Max             | V <sub>IN</sub> = 7.0V             |
| I <sub>IL</sub>  | Input LOW Current                    |                     |     | -20  | μA    | Max             | V <sub>IN</sub> = 0.5V             |
| I <sub>OZH</sub> | Output Leakage Current               |                     |     | 50   | μA    | Max             | V <sub>OUT</sub> = 2.7V            |
| I <sub>OZL</sub> | Output Leakage Current               |                     |     | -50  | μA    | Max             | V <sub>OUT</sub> = 0.5V            |
| I <sub>OS</sub>  | Output Short-Circuit Current         | -100                |     | -225 | mA    | Max             | V <sub>OUT</sub> = 0V              |
| I <sub>CEX</sub> | Output HIGH Leakage Current          |                     |     | 250  | μA    | Max             | V <sub>OUT</sub> = V <sub>CC</sub> |
| I <sub>ZZ</sub>  | Bus Drainage Test                    |                     |     | 500  | μA    | 0.0V            | V <sub>OUT</sub> = 5.25V           |
| I <sub>CCH</sub> | Power Supply Current                 |                     | 20  | 25   | mA    | Max             | V <sub>O</sub> = HIGH              |
| I <sub>CCL</sub> | Power Supply Current                 |                     | 49  | 62   | mA    | Max             | V <sub>O</sub> = LOW               |
| I <sub>CCZ</sub> | Power Supply Current                 |                     | 35  | 48   | mA    | Max             | V <sub>O</sub> = HIGH Z            |

**AC Electrical Characteristics**

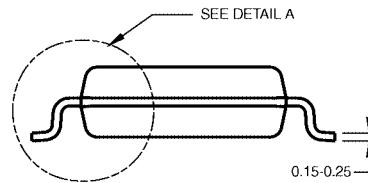
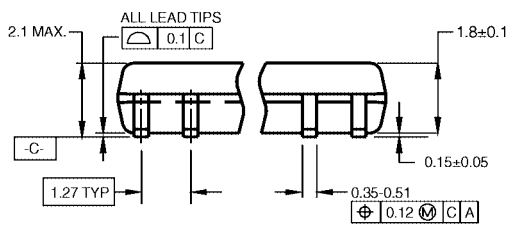
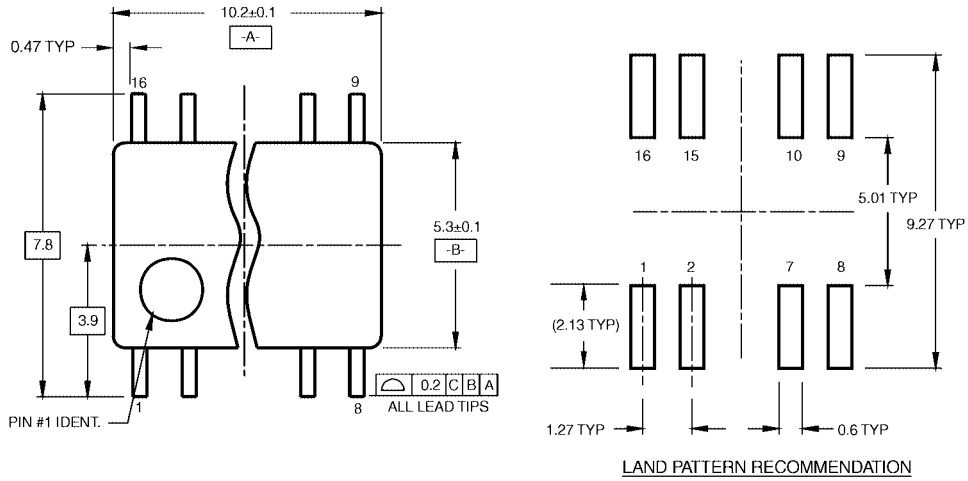
| Symbol           | Parameter            | T <sub>A</sub> = +25°C<br>V <sub>CC</sub> = +5.0V<br>C <sub>L</sub> = 50 pF |     |     | T <sub>A</sub> = 0°C to +70°C<br>C <sub>L</sub> = 50 pF<br>C <sub>L</sub> = 50 pF |      | Units |
|------------------|----------------------|---|-----|-----|---|------|-------|
|                  |                      | Min   | Typ | Max | Min   | Max  |       |
| t <sub>PLH</sub> | Propagation Delay    | 2.5   | 4.0 | 6.5 | 2.0   | 7.5  | ns    |
| t <sub>PHL</sub> |                      | 1.0   | 1.8 | 5.0 | 1.0   | 5.5  |       |
| t <sub>PZH</sub> | Enable Time (74F366) | 2.5   | 4.2 | 9.5 | 2.5   | 10.0 | ns    |
| t <sub>PZL</sub> |                      | 2.5   | 4.2 | 9.0 | 2.5   | 9.5  |       |
| t <sub>PZH</sub> | Enable Time (74F368) | 2.5   | 4.2 | 7.5 | 2.0   | 8.5  | ns    |
| t <sub>PZL</sub> |                      | 3.0   | 5.6 | 8.5 | 3.0   | 9.0  |       |
| t <sub>PHZ</sub> | Disable Time         | 2.0   | 3.3 | 6.5 | 2.0   | 7.0  | ns    |
| t <sub>PLZ</sub> |                      | 2.0   | 4.1 | 6.5 | 2.0   | 7.0  |       |

**Physical Dimensions** inches (millimeters) unless otherwise noted



**16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow  
Package Number M16A**

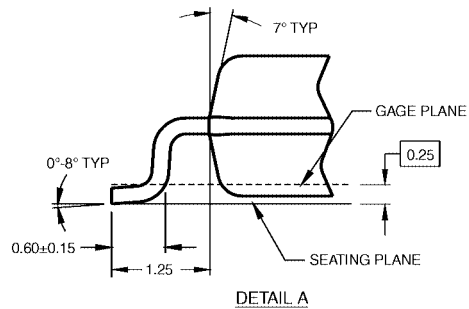
**Physical Dimensions** inches (millimeters) unless otherwise noted (Continued)



DIMENSIONS ARE IN MILLIMETERS

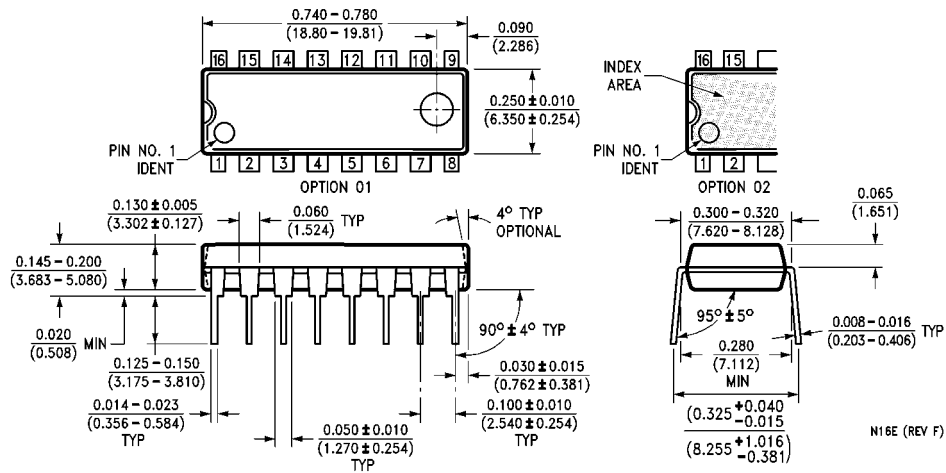
- NOTES:  
 A. CONFORMS TO EIAJ EDR-7320 REGISTRATION, ESTABLISHED IN DECEMBER, 1998.  
 B. DIMENSIONS ARE IN MILLIMETERS.  
 C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.

M16DRevB1



**16-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide  
 Package Number M16D**

**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

Fairchild does not assume any responsibility for use of any circuitry described, no circuit patent licenses are implied and Fairchild reserves the right at any time without notice to change said circuitry and specifications.

**LIFE SUPPORT POLICY**

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

[www.fairchildsemi.com](http://www.fairchildsemi.com)