FAIRCHILD SEMICONDUCTOR™

April 1988
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# 74F30
# 8-Input NAND Gate

## General Description

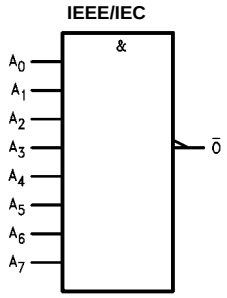
This device contains a single gate, which performs the logic NAND function.

## Ordering Code:

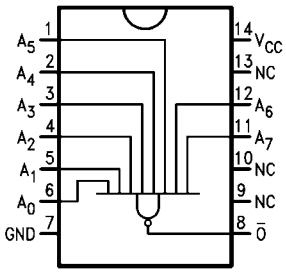
| Order Number | Package Number | Package Description |
|---|---|---|
| 74F30SC (Note 1) | M14A | 14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow |
| 74F30SJ | M14D | 14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide |
| 74F30PC | N14A | 14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide |

**Note 1:** Devices also available in Tape and Reel. Specify by appending the letter "X" to the ordering code.

## Logic Symbol




## Connection Diagram




## Unit Loading/Fan Out

| Pin Names | Description | U.L. HIGH/LOW | Input $I_{IH}/I_{IL}$ Output $I_{OH}/I_{OL}$ |
|---|---|---|---|
| $A_0$–$A_7$ | Inputs | 1.0/1.0 | 20 μA/–0.6 mA |
| $\overline{O}$ | Output | 50/33.3 | –1 mA/20 mA |

## Function Table

| Inputs | | | | | | | | Output |
|---|---|---|---|---|---|---|---|---|
| $A_0$ | $A_1$ | $A_2$ | $A_3$ | $A_4$ | $A_5$ | $A_6$ | $A_7$ | $\overline{O}$ |
| L | X | X | X | X | X | X | X | H |
| X | L | X | X | X | X | X | X | H |
| X | X | L | X | X | X | X | X | H |
| X | X | X | L | X | X | X | X | H |
| X | X | X | X | L | X | X | X | H |
| X | X | X | X | X | L | X | X | H |
| X | X | X | X | X | X | L | X | H |
| X | X | X | X | X | X | X | L | H |
| H | H | H | H | H | H | H | H | L |

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

## Absolute Maximum Ratings(Note 2)

| | |
|---|---|
| Storage Temperature | −65°C to +150°C |
| Ambient Temperature under Bias | −55°C to +125°C |
| Junction Temperature under Bias | −55°C to +150C |
| $V_{CC}$ Pin Potential to Ground Pin | −0.5V to +7.0V |
| Input Voltage (Note 3) | −0.5V to +7.0V |
| Input Current (Note 3) | −30 mA to +5.0 mA |
| 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°C to +70°C |
| Supply Voltage | +4.5V to +5.5V |

**Note 2:** 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 3:** Either voltage limit or current limit is sufficient to protect inputs.

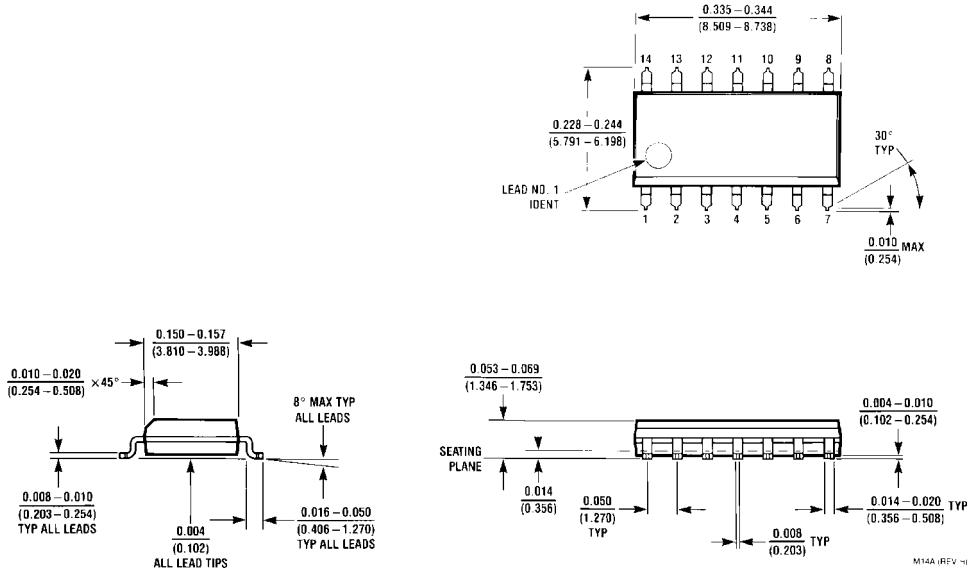
## DC Electrical Characteristics

| Symbol | Parameter | | Min | Typ | Max | Units | $V_{CC}$ | Conditions |
|---|---|---|---|---|---|---|---|---|
| $V_{IH}$ | Input HIGH Voltage | | 2.0 | | | V | | Recognized as a HIGH Signal |
| $V_{IL}$ | Input LOW Voltage | | | | 0.8 | V | | Recognized as a LOW Signal |
| $V_{CD}$ | Input Clamp Diode Voltage | | | | −1.2 | V | Min | $I_{IN}$ = −18 mA |
| $V_{OH}$ | Output HIGH Voltage | 10% $V_{CC}$ | 2.5 | | | V | Min | $I_{OH}$ = −1 mA |
| | | 5% $V_{CC}$ | 2.7 | | | | | $I_{OH}$ = −1 mA |
| $V_{OL}$ | Output LOW Voltage | 10% $V_{CC}$ | | | 0.5 | V | Min | $I_{OL}$ = 20 mA |
| $I_{IH}$ | Input HIGH Current | | | | 5.0 | µA | Max | $V_{IN}$ = 2.7V |
| $I_{BVI}$ | Input HIGH Current Breakdown Test | | | | 7.0 | µA | Max | $V_{IN}$ = 7.0V |
| $I_{CEX}$ | Output HIGH Leakage Current | | | | 50 | µA | Max | $V_{OUT}$ = $V_{CC}$ |
| $V_{ID}$ | Input Leakage Test | | 4.75 | | | V | 0.0 | $I_{ID}$ = 1.9 µA All Other Pins Grounded |
| $I_{OD}$ | Output Leakage Circuit Current | | | | 3.75 | µA | 0.0 | $V_{IOD}$ = 150 mV All Other Pins Grounded |
| $I_{IL}$ | Input LOW Current | | | | −0.6 | mA | Max | $V_{IN}$ = 0.5V |
| $I_{OS}$ | Output Short-Circuit Current | | −60 | | −150 | mA | Max | $V_{OUT}$ = 0V |
| $I_{CCH}$ | Power Supply Current | | | 0.5 | 1.5 | mA | Max | $V_O$ = HIGH |
| $I_{CCL}$ | Power Supply Current | | | | 4.5 | mA | Max | $V_O$ = LOW |

## AC Electrical Characteristics

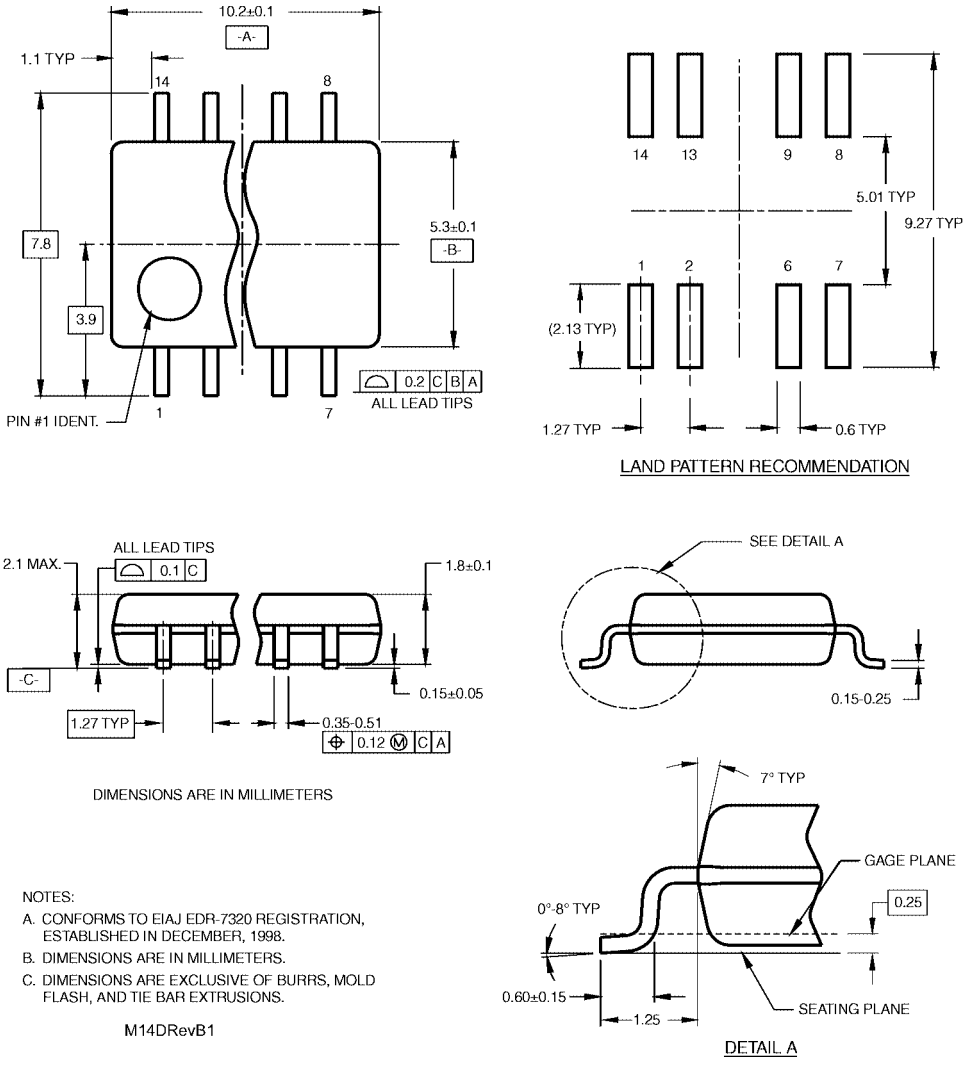
| Symbol | Parameter | $T_A$ = +25°C, $V_{CC}$ = +5.0V, $C_L$ = 50 pF | | | $T_A$ = 0°C to +70°C, $V_{CC}$ = +5.0V, $C_L$ = 50 pF | | Units |
|---|---|---|---|---|---|---|---|
| | | Min | Typ | Max | Min | Max | |
| $t_{PLH}$ | Propagation Delay | 1.0 | 3.7 | 5.0 | 1.0 | 5.5 | ns |
| $t_{PHL}$ | $A_n$ to $\overline{O}$ | 1.5 | 2.8 | 5.0 | 1.5 | 5.5 | |

## Physical Dimensions inches (millimeters) unless otherwise noted




**14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow**
**Package Number M14A**

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




NOTES:

A. CONFORMS TO EIAJ EDR-7320 REGISTRATION, ESTABLISHED IN DECEMBER, 1998.

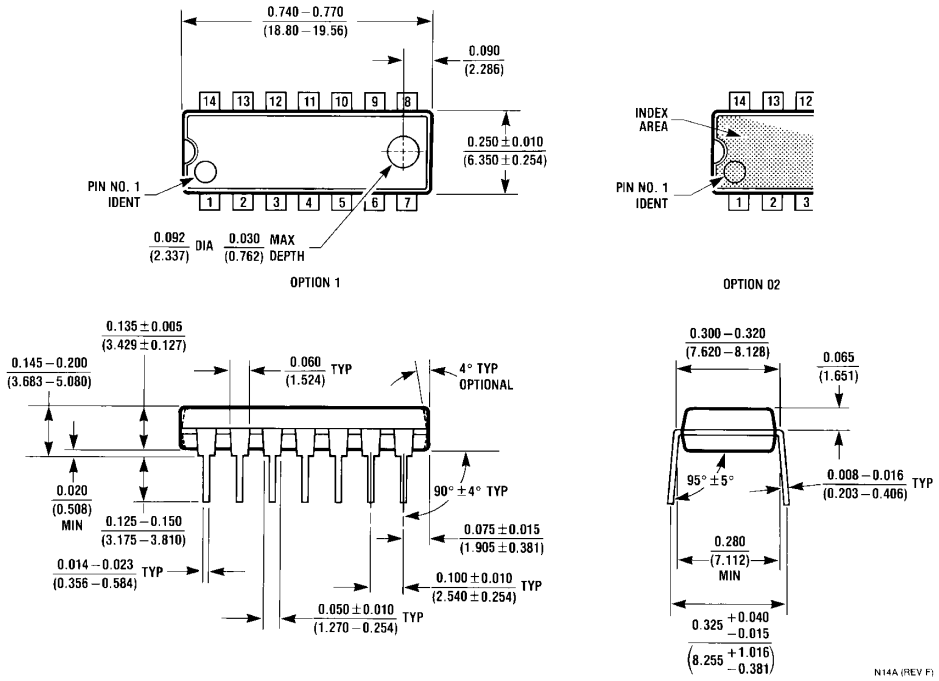
B. DIMENSIONS ARE IN MILLIMETERS.

C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.

M14DRevB1

**14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide**
**Package Number M14D**

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




**14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide**
**Package Number N14A**

# 74F30

8-Input NAND Gate

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## General description

This device contains a single gate, which performs the logic NAND function.

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## Product status/pricing/packaging

BUY

| Product | Product status | Pb-free Status | Package type | Leads | Packing method | Package Marking Convention** |
|---|---|---|---|---|---|---|
| 74F30SCX_NL | Not recommended for new designs | | SOIC | 14 | TAPE REEL | Line 1: **$Y** (Fairchild logo)<br>&**Z** (Asm. Plant Code)<br>&**2** (2-Digit Date Code)<br>&**T** (Die Trace Code)<br>Line 2: 74F30 |

Indicates product with Pb-free second-level interconnect. For more information click here.

Package marking information for product 74F30 is available. Click here for more information .

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## Qualification Support

Click on a product for detailed qualification data

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