

74F11

Triple 3-Input AND Gate

General Description

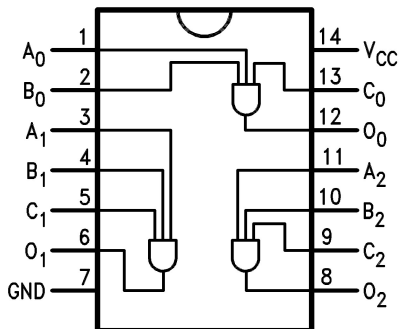
This device contains three independent gates, each of which performs the logic AND function.

Ordering Information

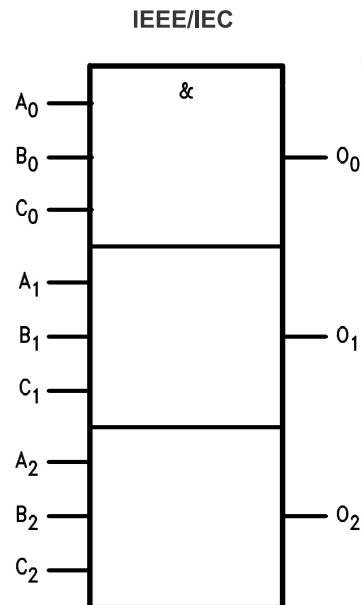
| Order Number | Package Number | Package Description |
|--------------|----------------|--|
| 74F11SC | M14A | 14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow |
| 74F11SJ | M14D | 14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide |

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

Connection Diagram



Logic Symbol



Unit Loading/Fan Out

| Pin Names | Description | U.L. HIGH/LOW | Input I_{IH}/I_{IL} , Output I_{OH}/I_{OL} |
|-----------------|-------------|------------------|---|
| A_n, B_n, C_n | Inputs | 1.0 / 1.0 | 20 μ A / -0.6mA |
| O_n | Outputs | 50 / 33.3 | -1 mA / 20 mA |

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

| Symbol | Parameter | Rating |
|-----------|---|-------------------------------|
| T_{STG} | Storage Temperature | -65°C to +150°C |
| T_A | Ambient Temperature Under Bias | -55°C to +125°C |
| T_J | Junction Temperature Under Bias | -55°C to +150°C |
| V_{CC} | V_{CC} Pin Potential to Ground Pin | -0.5V to +7.0V |
| V_{IN} | Input Voltage ⁽¹⁾ | -0.5V to +7.0V |
| I_{IN} | Input Current ⁽¹⁾ | -30mA to +5.0mA |
| V_O | 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) |

Note:

1. Either voltage limit or current limit is sufficient to protect inputs.

Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance to the datasheet specifications. Fairchild does not recommend exceeding them or designing to absolute maximum ratings.

| Symbol | Parameter | Rating |
|----------|------------------------------|----------------|
| T_A | Free Air Ambient Temperature | 0°C to +70°C |
| V_{CC} | Supply Voltage | +4.5V to +5.5V |

DC Electrical Characteristics

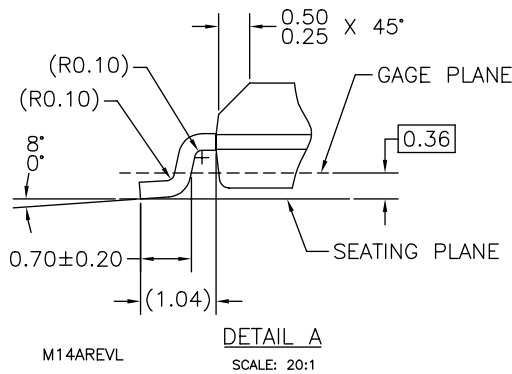
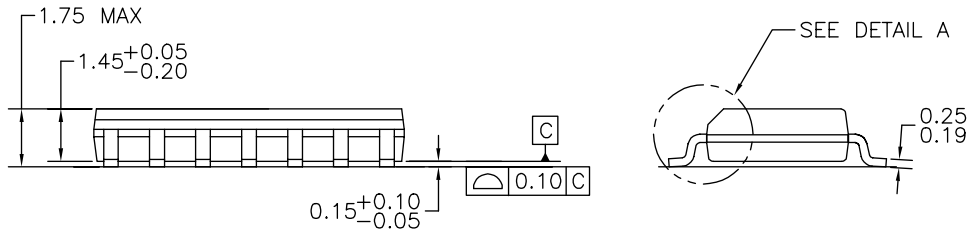
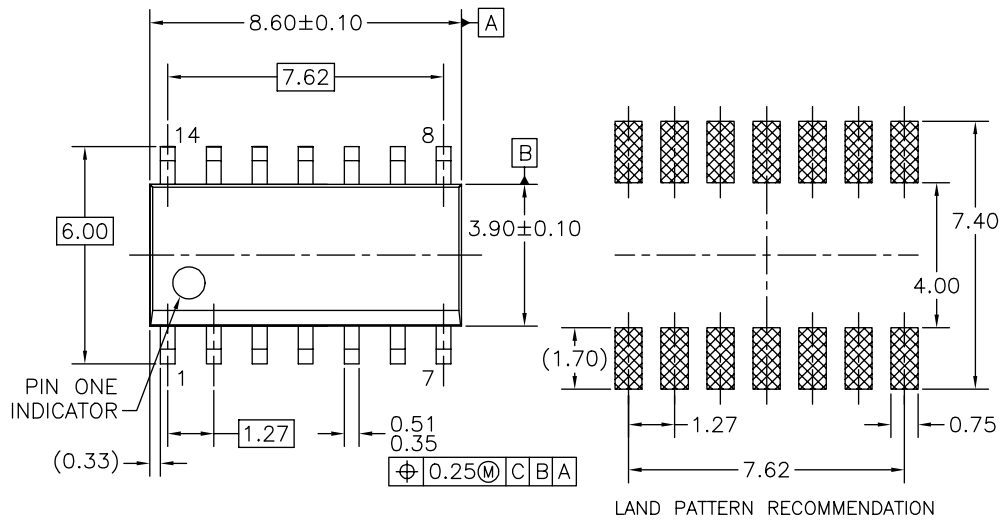
| Symbol | Parameter | | V _{CC} | Conditions | Min. | Typ. | Max. | Units |
|------------------|-----------------------------------|---------------------|-----------------|---|------|------|------|-------|
| V _{IH} | Input HIGH Voltage | | | Recognized as a HIGH Signal | 2.0 | | | V |
| V _{IL} | Input LOW Voltage | | | Recognized as a LOW Signal | | | 0.8 | V |
| V _{CD} | Input Clamp Diode Voltage | | Min. | I _{IN} = -18mA | | | -1.2 | V |
| V _{OH} | Output HIGH Voltage | 10% V _{CC} | Min. | I _{OH} = -1mA | 2.5 | | | V |
| | | 5% V _{CC} | | I _{OH} = -1mA | 2.7 | | | |
| V _{OL} | Output LOW Voltage | 10% V _{CC} | Min. | I _{OL} = 20mA | | | 0.5 | V |
| I _{IH} | Input HIGH Current | | Max. | V _{IN} = 2.7V | | | 5.0 | μA |
| I _{BVI} | Input HIGH Current Breakdown Test | | Max. | V _{IN} = 7.0V | | | 7.0 | μA |
| I _{CEX} | Output HIGH Leakage Current | | Max. | V _{OUT} = V _{CC} | | | 50 | μA |
| V _{ID} | Input Leakage Test | | 0.0 | I _{ID} = 1.9μA, All other pins grounded | 4.75 | | | V |
| I _{OD} | Output Leakage Circuit Current | | 0.0 | V _{IOD} = 150mV, All other pins grounded | | | 3.75 | μA |
| I _{IL} | Input LOW Current | | Max. | V _{IN} = 0.5V | | | -0.6 | mA |
| I _{OS} | Output Short-Circuit Current | | Max. | V _{OUT} = 0V | -60 | | -150 | mA |
| I _{CCH} | Power Supply Current | | Max. | V _O = HIGH | | 4.1 | 6.2 | mA |
| I _{CCL} | Power Supply Current | | Max. | V _O = LOW | | 6.5 | 9.7 | mA |

AC Electrical Characteristics

| Symbol | Parameter | T _A = +25°C, V _{CC} = +5.0V, C _L = 50pF | | | T _A -55°C to +125°C, V _{CC} = +5.0V, C _L = 50pF | | T _A = 0°C to +70°C, V _{CC} = +5.0V, C _L = 50pF | | Units |
|------------------|--|--|------|------|--|------|---|------|-------|
| | | Min. | Typ. | Max. | Min. | Max. | Min. | Max. | |
| t _{PLH} | Propagation Delay, A _n , B _n , C _n to O _n | 3.0 | 4.2 | 5.6 | 2.5 | 7.5 | 3.0 | 6.6 | ns |
| t _{PHL} | | 2.5 | 4.1 | 5.5 | 2.0 | 7.5 | 2.5 | 6.5 | |

Physical Dimensions

Dimensions are in millimeters unless otherwise noted.



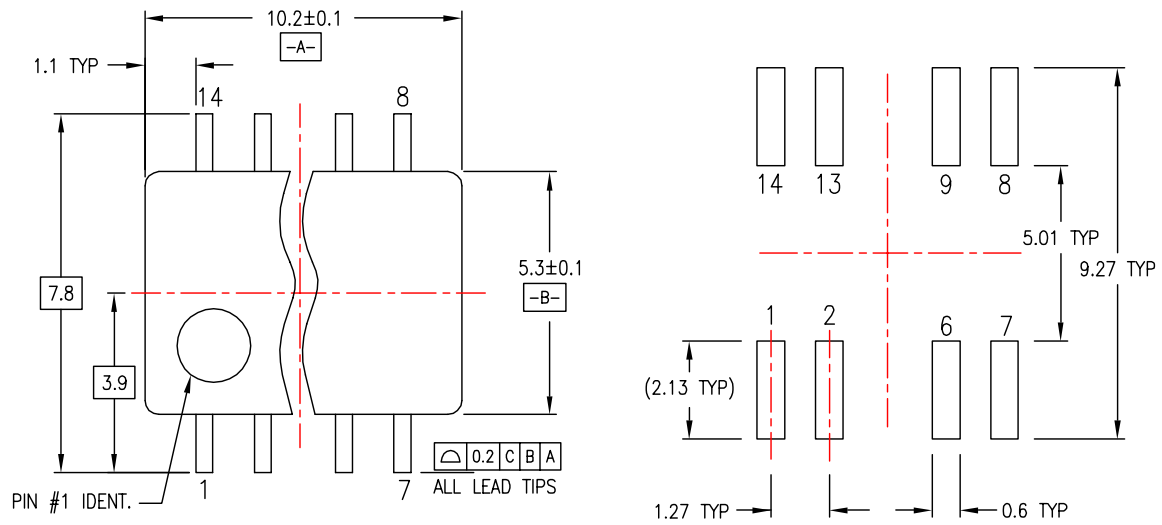
NOTES: UNLESS OTHERWISE SPECIFIED

- A) THIS PACKAGE CONFORMS TO JEDEC MS-012, VARIATION AB, ISSUE C, DATED MAY 1990.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS DO NOT INCLUDE MOLD FLASH OR BURRS.

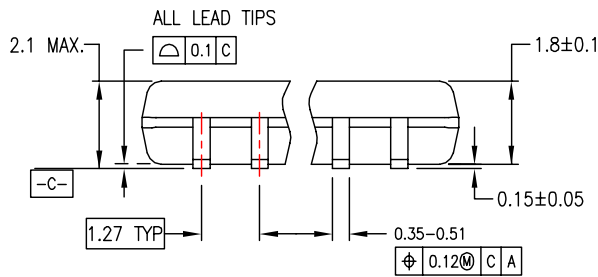
Figure 1. 14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow Package Number M14A

Physical Dimensions (Continued)

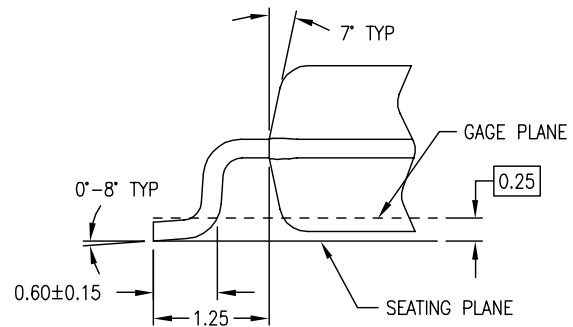
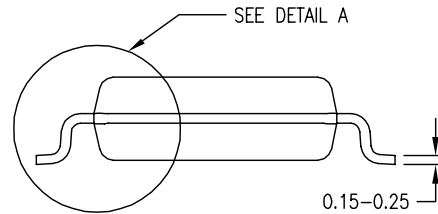
Dimensions are in millimeters unless otherwise noted.



LAND PATTERN RECOMMENDATION



DIMENSIONS ARE IN MILLIMETERS



DETAIL A

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.


M14DREVC

Figure 2. 14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide Package Number M14D



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