

## 74F32

### Quad 2-Input OR Gate

#### General Description

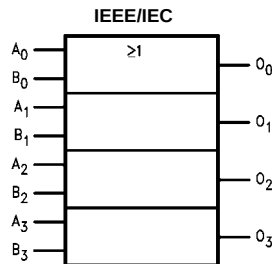
This device contains four independent gates, each of which performs the logic OR function.

#### Ordering Code:

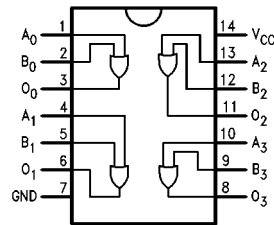
| Order Number | Package Number | Package Description                                                         |
|--------------|----------------|-----------------------------------------------------------------------------|
| 74F32SC      | M14A           | 14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow |
| 74F32SJ      | M14D           | 14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide               |
| 74F32MTC     | MTC14          | 14-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide |
| 74F32PC      | N14A           | 14-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



#### Unit Loading/Fan Out

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

**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) |
| ESD Last Passing Voltage (Min)                                         | 4000V                                |

**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><br>5% V <sub>CC</sub> | 2.5<br>2.7 |      | V     | Min             | I <sub>OH</sub> = −1 mA<br>I <sub>OH</sub> = −1 mA   |
| V <sub>OL</sub>  | Output LOW Voltage                | 10% V <sub>CC</sub>                       |            | 0.5  | V     | Min             | I <sub>OL</sub> = 20 mA                              |
| I <sub>IH</sub>  | Input HIGH Current                |                                           |            | 5.0  | μA    | Max             | V <sub>IN</sub> = 2.7V                               |
| I <sub>BVI</sub> | Input HIGH Current Breakdown Test |                                           |            | 7.0  | μA    | Max             | V <sub>IN</sub> = 7.0V                               |
| I <sub>CEX</sub> | Output HIGH Leakage Current       |                                           |            | 50   | μA    | Max             | V <sub>OUT</sub> = V <sub>CC</sub>                   |
| V <sub>ID</sub>  | Input Leakage Test                | 4.75                                      |            |      | V     | 0.0             | I <sub>ID</sub> = 1.9 μA<br>All Other Pins Grounded  |
| I <sub>OD</sub>  | Output Leakage Circuit Current    |                                           |            | 3.75 | μA    | 0.0             | V <sub>IOD</sub> = 150 mV<br>All Other Pins Grounded |
| I <sub>IL</sub>  | Input LOW Current                 |                                           |            | −0.6 | mA    | Max             | V <sub>IN</sub> = 0.5V                               |
| I <sub>OS</sub>  | Output Short-Circuit Current      | −60                                       |            | −150 | mA    | Max             | V <sub>OUT</sub> = 0V                                |
| I <sub>CCH</sub> | Power Supply Current              |                                           | 6.1        | 9.2  | mA    | Max             | V <sub>O</sub> = HIGH                                |
| I <sub>CCL</sub> | Power Supply Current              |                                           | 10.3       | 15.5 | mA    | Max             | V <sub>O</sub> = LOW                                 |

**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> = −55°C to +125°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>V <sub>CC</sub> = +5.0V<br>C <sub>L</sub> = 50 pF |     | Units |
|------------------|---------------------------------------------------|-----------------------------------------------------------------------------|-----|-----|---------------------------------------------------------------------------------------|-----|------------------------------------------------------------------------------------|-----|-------|
|                  |                                                   | Min                                                                         | Typ | Max | Min                                                                                   | Max | Min                                                                                | Max |       |
| t <sub>PLH</sub> | Propagation Delay                                 | 3.0                                                                         | 4.2 | 5.6 | 3.0                                                                                   | 7.5 | 3.0                                                                                | 6.6 | ns    |
| t <sub>PHL</sub> | A <sub>n</sub> , B <sub>n</sub> to O <sub>n</sub> | 3.0                                                                         | 4.0 | 5.3 | 2.5                                                                                   | 7.5 | 3.0                                                                                | 6.3 |       |

# Physical Dimensions inches (millimeters) unless otherwise noted



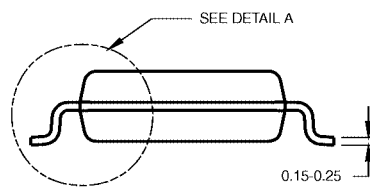
**14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow  
Package Number M14A**



### LAND PATTERN RECOMMENDATION



DIMENSIONS ARE IN MILLIMETERS



NOTES:

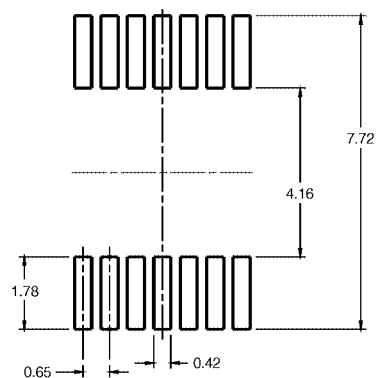
- A. CONFORMS TO EIAJ EDR-7320 REGISTRATION,  
ESTABLISHED IN DECEMBER, 1998.
- B. DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD  
FLASH, AND TIE BAR EXTRUSIONS.

M14DRevB1

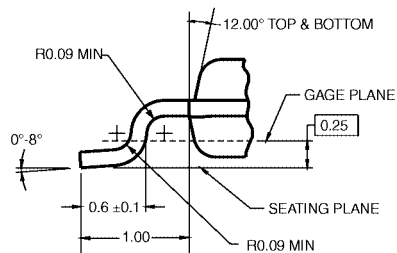
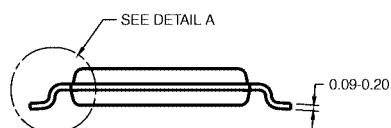
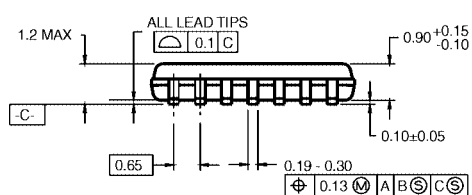


DETAIL A

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



LAND PATTERN RECOMMENDATION



### DETAIL A

NOTES:

A. CONFORMS TO JEDEC REGISTRATION MO-153, VARIATION AB,  
REF NOTE 6, DATE 7/93.

B. DIMENSIONS ARE IN MILLIMETERS.

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

D. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M, 1982.

MTC14RevC3

**14-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide  
Package Number MTC14**

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



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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.

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