

## 74F64

### 4-2-3-2-Input AND-OR-Invert Gate

#### General Description

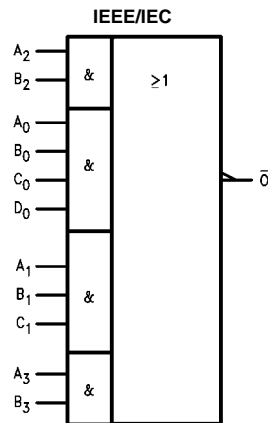
This device contains gates configured to perform a 4-2-3-2 input AND-OR-INVERT function.

#### Ordering Code:

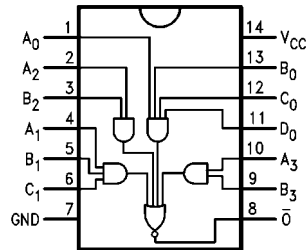
Order Number	Package Number	Package Description
74F64SC	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow
74F64SJ	M14D	14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
74F64PC	N14A	14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide

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.	Input $I_{IH}/I_{IL}$
		HIGH/LOW	Output $I_{OH}/I_{OL}$
$A_n, B_n, C_n, D_n$	Inputs	1.0/1.0	20 $\mu$ A/-0.6 mA
$\bar{O}$	Output	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 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 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.

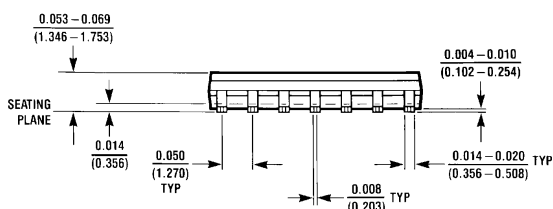
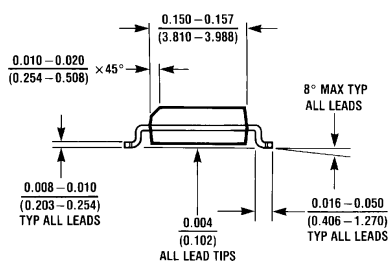
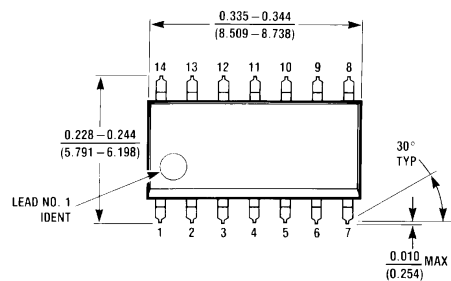
**DC Electrical Characteristics**

Symbol	Parameter	Units	V <sub>CC</sub>	Conditions
V <sub>IH</sub>	Input HIGH Voltage	V		Recognized as a HIGH Signal
V <sub>IL</sub>	Input LOW Voltage	V		Recognized as a LOW Signal
V <sub>CD</sub>	Input Clamp Diode Voltage	V	Min	I <sub>IN</sub> = -18 mA
V <sub>OH</sub>	Output HIGH Voltage	V	Min	I <sub>OH</sub> = -1 mA I <sub>OH</sub> = -1 mA
V <sub>OL</sub>	Output LOW Voltage	V	Min	I <sub>OL</sub> = 20 mA
I <sub>IH</sub>	Input HIGH Current	μA	Max	V <sub>IN</sub> = 2.7V
I <sub>BVI</sub>	Input HIGH Current Breakdown Test	μA	Max	V <sub>IN</sub> = 7.0V
I <sub>CEX</sub>	Output High Leakage Current	μA	Max	V <sub>OUT</sub> = V <sub>CC</sub>
V <sub>ID</sub>	Input Leakage Test	V	0.0	I <sub>ID</sub> = 1.9 μA All Other Pins Grounded
I <sub>OD</sub>	Output Leakage Circuit Current	μA	0.0	V <sub>IOD</sub> = 150 mV All Other Pins Grounded
I <sub>IL</sub>	Input LOW Current	mA	Max	V <sub>IN</sub> = 0.5V
I <sub>OS</sub>	Output Short-Circuit Current	mA	Max	V <sub>OUT</sub> = 0V
I <sub>CCH</sub>	Power Supply Current	mA	Max	V <sub>O</sub> = HIGH
I <sub>CCL</sub>	Power Supply Current	mA	Max	V <sub>O</sub> = LOW

**AC Electrical Characteristics**

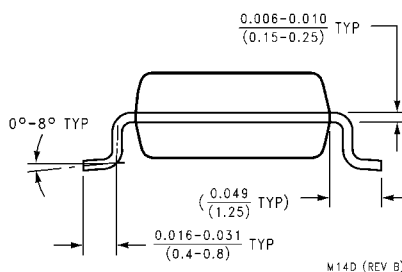
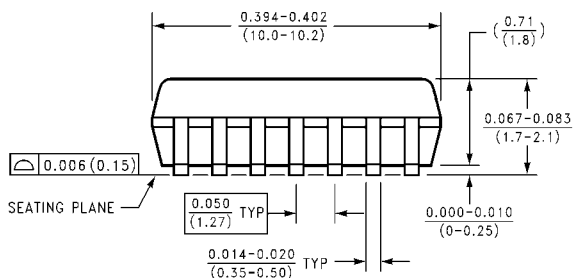
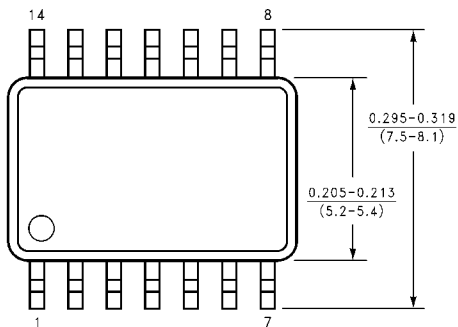
Symbol	Parameter	T <sub>A</sub> = +25°C V <sub>CC</sub> = +5.0V C <sub>L</sub> = 50 pF			T <sub>A</sub> = 0° to +70°C C <sub>L</sub> = 50 pF		Units
		Min	Typ	Max	Min	Max	
t <sub>PLH</sub>	Propagation Delay	2.5	4.6	6.5	2.5	7.5	ns
t <sub>PHL</sub>	A <sub>n</sub> , B <sub>n</sub> , C <sub>n</sub> , D <sub>n</sub> to $\bar{O}$	1.5	3.2	4.5	1.5	5.5	

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



M14A (REV H)

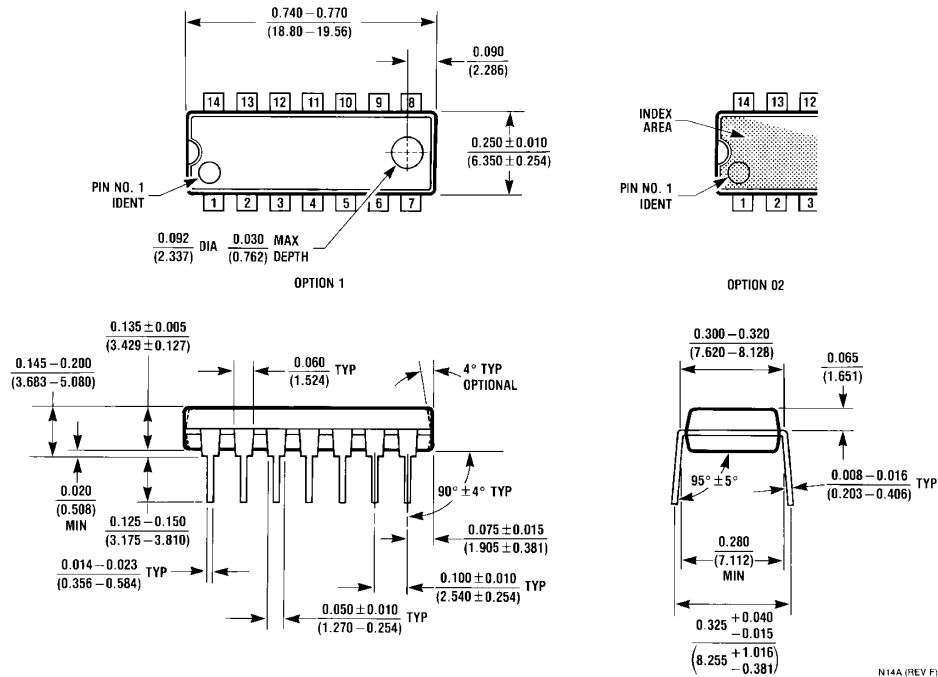
**14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow  
Package Number M14A**



M14D (REV B)

**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**

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