

**FAIRCHILD**  
SEMICONDUCTOR™

April 1988  
Revised July 1999

## 74F125 Quad Buffer (3-STATE)

### Features

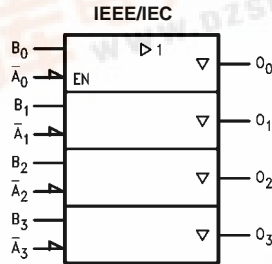
- High impedance base inputs for reduced loading

### Ordering Code:

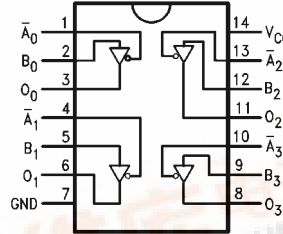
Order Number	Package Number	Package Description
74F125SC	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow
74F125SJ	M14D	14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
74F125PC	N14A	14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide

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. HIGH/LOW	Input $I_H/I_L$ Output $I_{OH}/I_{OL}$
$\bar{A}_n, B_n$	Inputs	1.0/0.033	20 $\mu$ A/-20 $\mu$ A
$O_n$	Outputs	600/106.6 (80)	-12 mA/64 mA (48 mA)

### Function Table

Inputs		Output
$\bar{A}_n$	$B_n$	O
L	L	L
L	H	H
H	X	Z

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

74F125 Quad Buffer (3-STATE)



**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.

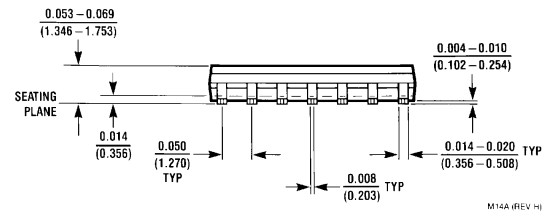
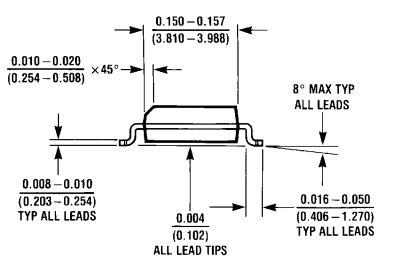
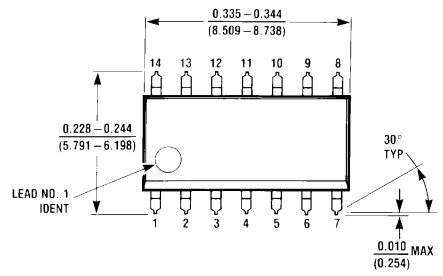
**DC Electrical Characteristics**

Symbol	Parameter	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> 10% V <sub>CC</sub> 5% V <sub>CC</sub> 5% V <sub>CC</sub>	2.4 2.0 2.7 2.0		V	Min	I <sub>OH</sub> = -3 mA I <sub>OH</sub> = -12 mA I <sub>OH</sub> = -3 mA 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 Breakdown Test			100	μA	0.0V	V <sub>IN</sub> = 7.0V
I <sub>IL</sub>	Input LOW Current			-20.0	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>	Buss Drainage Test			500	μA	0.0V	V <sub>OUT</sub> = 5.25V
I <sub>CCH</sub>	Power Supply Current		18.5	24.0	mA	Max	V <sub>O</sub> = HIGH
I <sub>CCL</sub>	Power Supply Current		31.7	40.0	mA	Max	V <sub>O</sub> = LOW
I <sub>CCZ</sub>	Power Supply Current		27.6	35.0	mA	Max	V <sub>O</sub> = HIGH Z

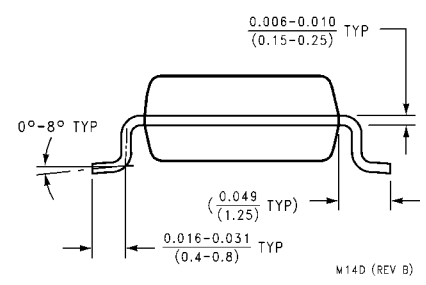
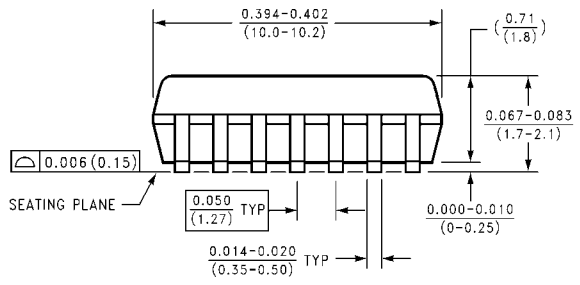
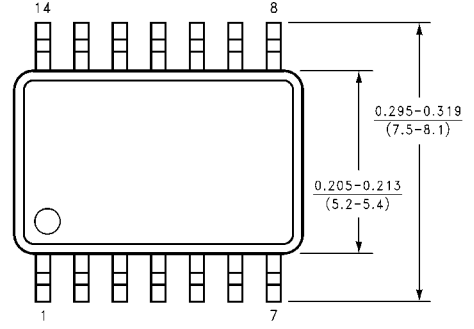
**AC Electrical Characteristics**

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°C to +70°C V <sub>CC</sub> = +5.0V C <sub>L</sub> = 50 pF		Units
		Min	Typ	Max	Min	Max	
t <sub>PLH</sub>	Propagation Delay	2.0	4.0	6.0	2.0	6.5	ns
t <sub>PHL</sub>		3.0	4.6	7.5	3.0	8.0	
t <sub>PZH</sub>	Output Enable Time	3.5	4.7	7.5	3.0	8.5	ns
t <sub>PZL</sub>		3.5	5.3	8.0	3.5	9.0	
t <sub>PHZ</sub>	Output Disable Time	1.5	3.9	5.5	1.5	6.0	ns
t <sub>PLZ</sub>		1.5	4.0	6.0	1.5	6.5	

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

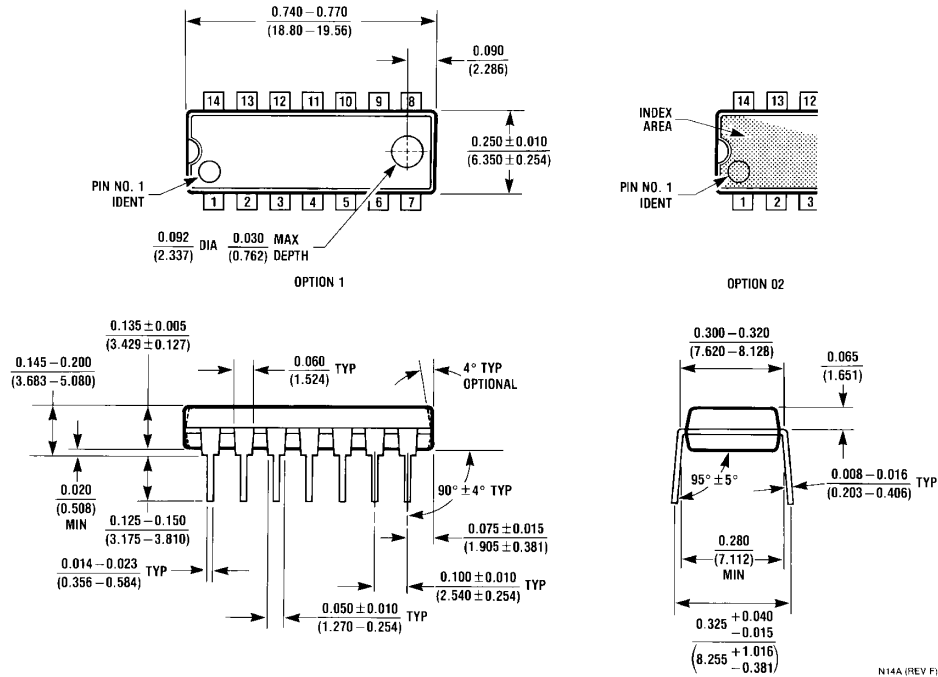


**14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow  
Package Number M14A**



**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

N14A (REV F)

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