FAIRCHILD SEMICONDUCTOR™

April 1988
Revised September 2000

74F366 • 74F368
Hex Inverter/Buffer with 3-STATE Outputs

Features

- 3-STATE buffer outputs sink 64 mA
- High-speed
- Bus-oriented
- High impedance npn base inputs for reduced loading

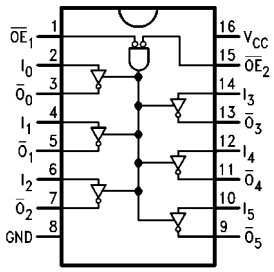
Ordering Code:

Order Number	Package Number	Package Description
74F366SC	M16A	16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow
74F366PC	N16E	16-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide
74F368SC	M16A	16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow
74F368SJ	M16D	16-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
74F368PC	N16E	16-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.

Connection Diagrams

74F366



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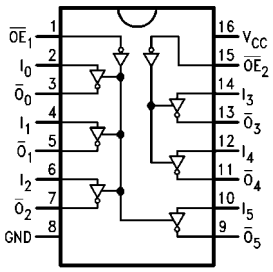
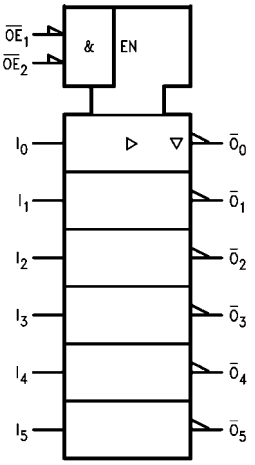
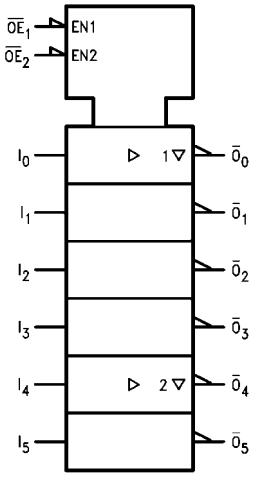


Logic Symbols

IEEE/IEC
74F366



IEEE/IEC
74F368



Unit Loading/Fan Out

Pin Names	Description	U.L. HIGH/LOW	Input I_{IH}/I_{IL} Output I_{OH}/I_{OL}
$\overline{OE}_1$, $\overline{OE}_2$	Output Enable Input (Active LOW)	1.0/0.033	20 µA/–20 µA
I_n	Input	1.0/0.033	20 µA/–20 µA
O_n, $\overline{O}_n$	Outputs	600/106.6 (80)	–12 mA/64 mA (48 mA)

Function Tables

74F366

Inputs			Output
$\overline{OE}_1$	$\overline{OE}_2$	I	$\overline{O}$
L	L	L	H
L	L	H	L
X	H	X	Z
H	X	X	Z

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Inputs		Output
$\overline{OE}$	I	$\overline{O}$
L	L	H
L	H	L
H	X	Z

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

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_{CC} 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_{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 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.

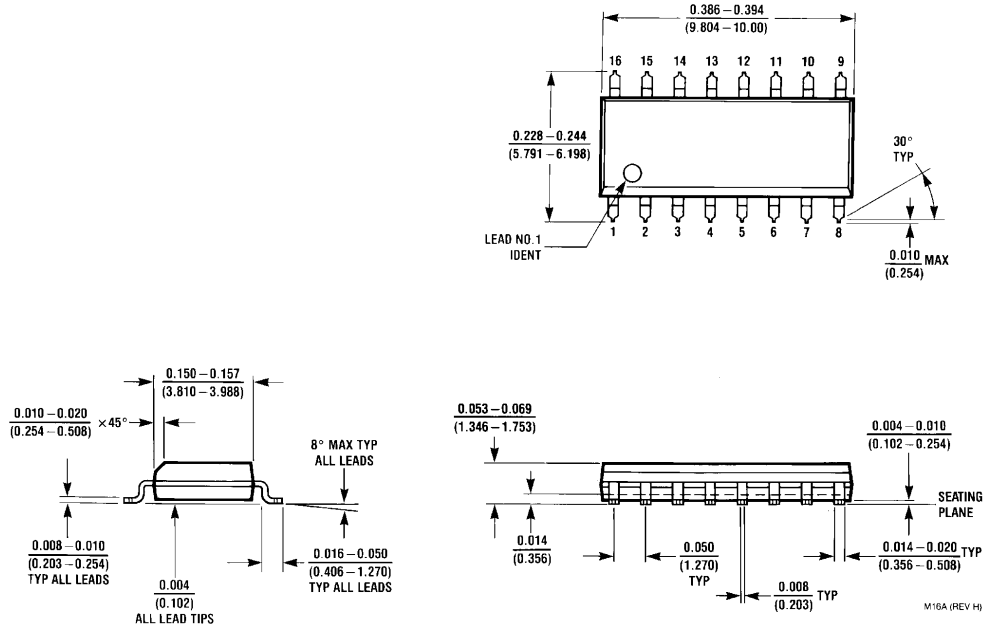
DC Electrical Characteristics

Symbol	Parameter		Min	Typ	Max	Units	V_{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}	2.0			V	Min	I_{OH} = −15 mA
V_{OL}	Output LOW Voltage	10% V_{CC}			0.55	V	Min	I_{OL} = 64 mA
I_{IH}	Input HIGH Current				20	µA	Max	V_{IN} = 2.7V
I_{BVI}	Input HIGH Current Breakdown Test				100	µA	Max	V_{IN} = 7.0V
I_{IL}	Input LOW Current				−20	µA	Max	V_{IN} = 0.5V
I_{OZH}	Output Leakage Current				50	µA	Max	V_{OUT} = 2.7V
I_{OZL}	Output Leakage Current				−50	µA	Max	V_{OUT} = 0.5V
I_{OS}	Output Short-Circuit Current		−100		−225	mA	Max	V_{OUT} = 0V
I_{CEX}	Output HIGH Leakage Current				250	µA	Max	V_{OUT} = V_{CC}
I_{ZZ}	Bus Drainage Test				500	µA	0.0V	V_{OUT} = 5.25V
I_{CCH}	Power Supply Current			20	25	mA	Max	V_O = HIGH
I_{CCL}	Power Supply Current			49	62	mA	Max	V_O = LOW
I_{CCZ}	Power Supply Current			35	48	mA	Max	V_O = HIGH Z

AC Electrical Characteristics

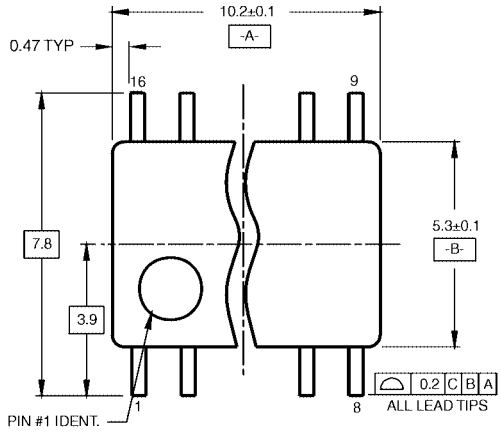
Symbol	Parameter	T_A = +25°C, V_{CC} = +5.0V, C_L = 50 pF			T_A = 0°C to +70°C, C_L = 50 pF		Units
		Min	Typ	Max	Min	Max	
t_{PLH}	Propagation Delay	2.5	4.0	6.5	2.0	7.5	ns
t_{PHL}		1.0	1.8	5.0	1.0	5.5	
t_{PZH}	Enable Time (74F366)	2.5	4.2	9.5	2.5	10.0	ns
t_{PZL}		2.5	4.2	9.0	2.5	9.5	
t_{PZH}	Enable Time (74F368)	2.5	4.2	7.5	2.0	8.5	ns
t_{PZL}		3.0	5.6	8.5	3.0	9.0	
t_{PHZ}	Disable Time	2.0	3.3	6.5	2.0	7.0	ns
t_{PLZ}		2.0	4.1	6.5	2.0	7.0	

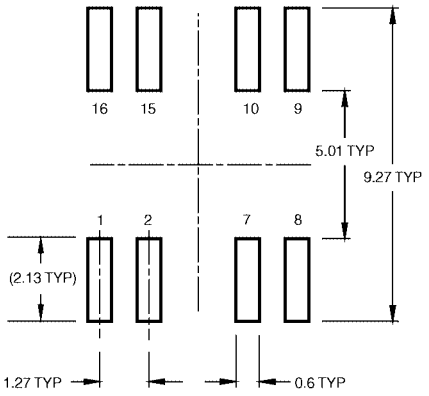
Physical Dimensions inches (millimeters) unless otherwise noted



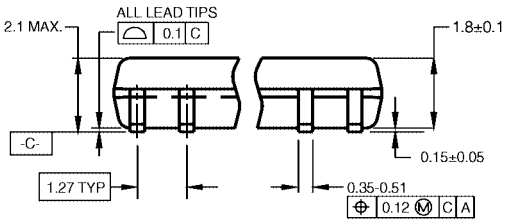
16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow
Package Number M16A

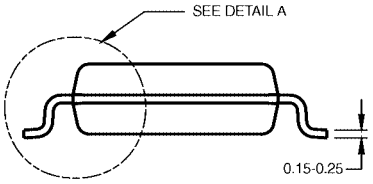
Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



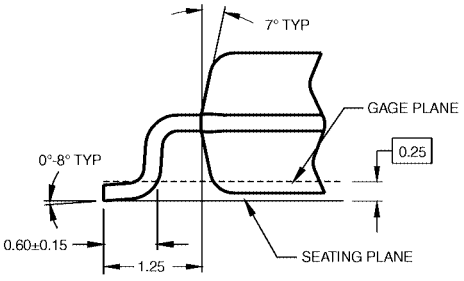


LAND PATTERN RECOMMENDATION





DIMENSIONS ARE IN MILLIMETERS



DETAIL A

NOTES:

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

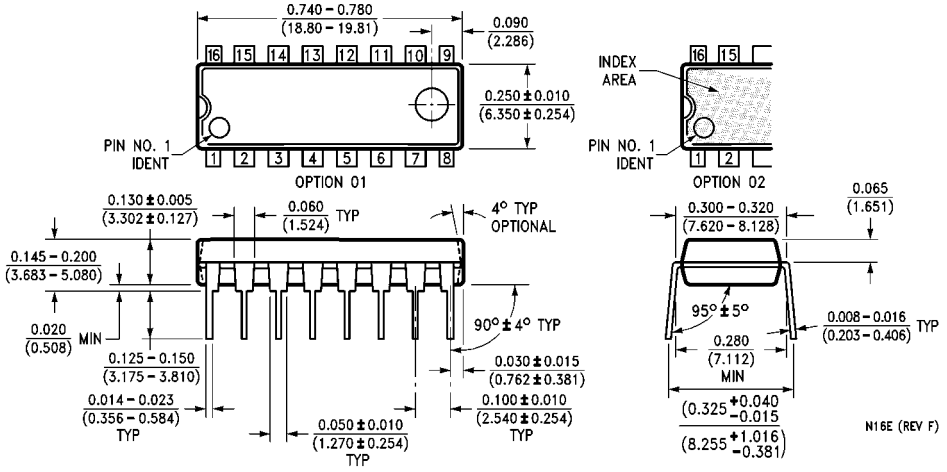
B. DIMENSIONS ARE IN MILLIMETERS.

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

M16DRevB1

16-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
Package Number M16D

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



16-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide
Package Number N16E