

74F38

Quad Two-Input NAND Buffer (Open Collector)

General Description

This device contains four independent gates, each of which performs the logic NAND function. The open-collector out-

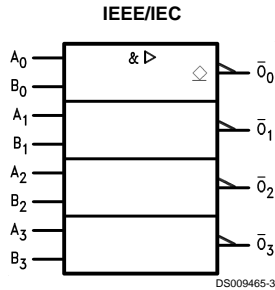
puts require external pull-up resistors for proper logical operation.

Ordering Code:

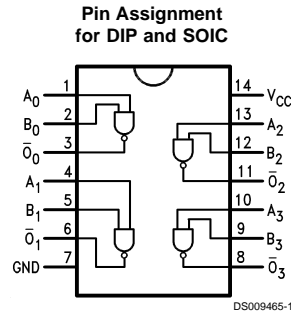
Commercial	Package Number	Package Description
74F38PC	N14E	14-Lead (0.300" Wide) Molded Dual-In-Line
74F38SC (Note 1)	M14A	14-Lead (0.150" Wide) Molded Small Outline, JEDEC
74F38SJ (Note 1)	M14D	14-Lead (0.300" Wide) Molded Small Outline, EIAJ

Note 1: Devices also available in 13" reel. Use suffix = SCX and SJX.

Logic Symbol



Connection Diagram



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	Inputs	1.0/2.0	20 μ A/-1.2 mA
\bar{O}_n	Outputs	OC (Note 2) /106.6 (80)	OC (Note 2) /64 mA (48 mA)

Note 2: OC = Open Collector

Function Table

Inputs		Output
A	B	\bar{O}
L	L	H
L	H	H
H	L	H
H	H	L

H = HIGH Voltage Level
L = LOW Voltage Level

74F38 Quad Two-Input NAND Buffer (Open Collector)

Absolute Maximum Ratings (Note 3)

Storage Temperature	-65°C to +150°C
Ambient Temperature under Bias	-55°C to +125°C
Junction Temperature under Bias	-55°C to +175°C
Plastic	-55°C to +150°C
V _{CC} Pin Potential to Ground Pin	-0.5V to +7.0V
Input Voltage (Note 4)	-0.5V to +7.0V
Input Current (Note 4)	-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	
Commercial	0°C to +70°C
Supply Voltage	
Commercial	+4.5V to +5.5V

Note 3: 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 4: Either voltage limit or current limit is sufficient to protect inputs.

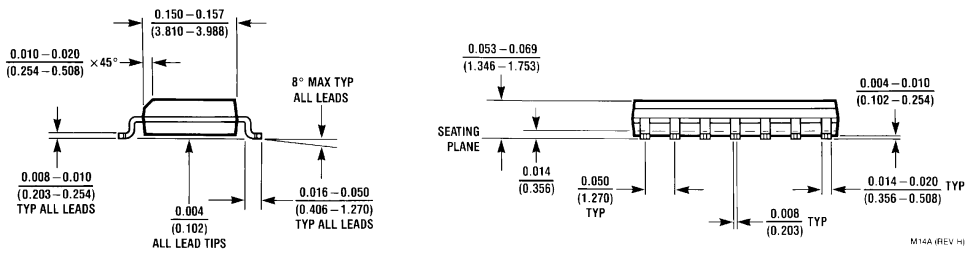
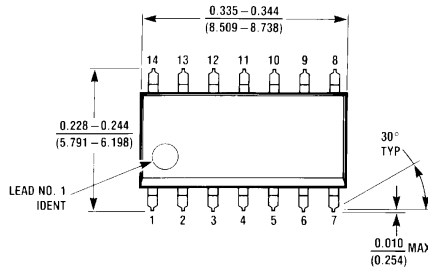
DC Electrical Characteristics

Symbol	Parameter	74F			Units	V _{CC}	Conditions
		Min	Typ	Max			
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 _{OL}	Output LOW Voltage			0.55	V	Min	I _{OL} = 64 mA
I _{IH}	Input HIGH Current			5.0	μA	Max	V _{IN} = 2.7V
I _{BVI}	Input HIGH Current Breakdown Test			7.0	μA	Max	V _{IN} = 7.0V
V _{ID}	Input Leakage Test	4.75			V	0.0	I _{ID} = 1.9 μA All Other Pins Grounded
I _{OD}	Output Leakage Circuit Current			3.75	μA	0.0	V _{IOD} = 150 mV All Other Pins Grounded
I _{IL}	Input LOW Current			-1.2	mA	Max	V _{IN} = 0.5V
I _{OHC}	Open Collector, Output OFF Leakage Test			250	μA	Min	V _{OUT} = V _{CC}
I _{CCH}	Power Supply Current		2.1	7.0	mA	Max	V _O = HIGH
I _{CCL}	Power Supply Current		26.0	30.0	mA	Max	V _O = LOW

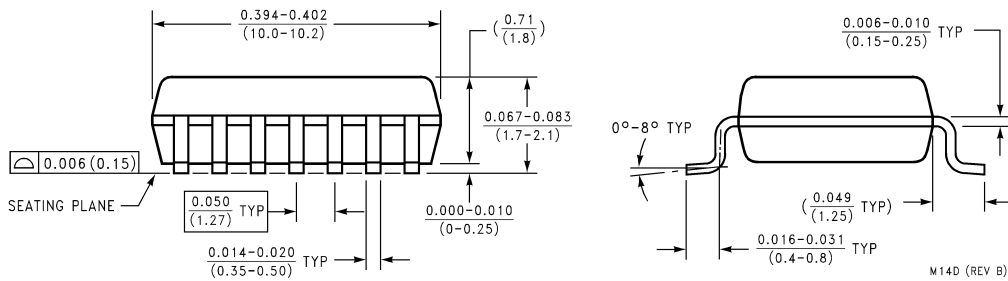
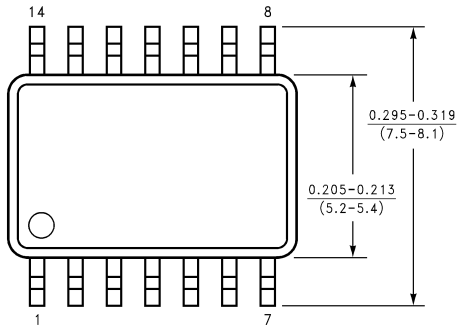
AC Electrical Characteristics

Symbol	Parameter	74F			74F		Units	Fig. No.
		T _A = +25°C V _{CC} = +5.0V C _L = 50 pF			T _A , V _{CC} = Com C _L = 50 pF			
		Min	Typ	Max	Min	Max		
t _{PLH}	Propagation Delay	6.5	9.7	12.5	6.5	13.0	ns	
t _{PHL}	A _n , B _n to \bar{O}_n	1.5	2.1	5.0	1.5	5.5		

Physical Dimensions inches (millimeters) unless otherwise noted

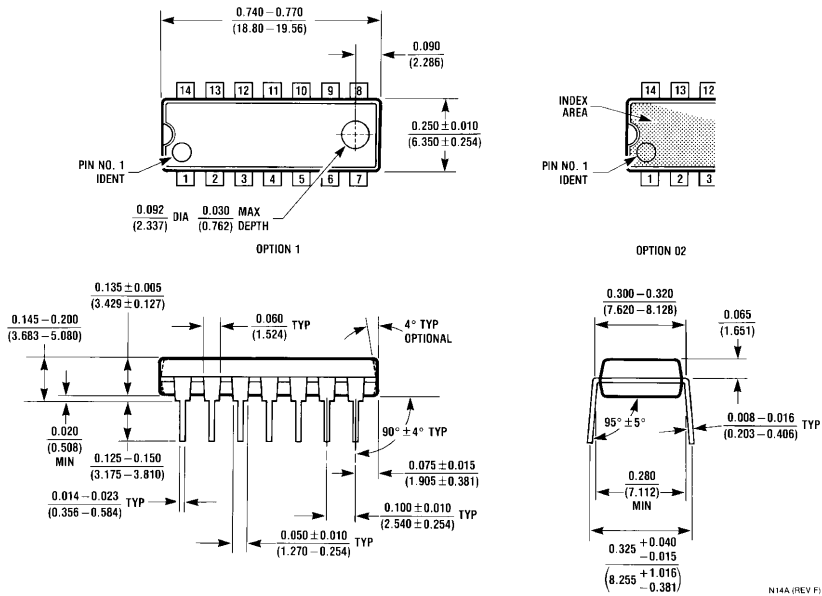


**14-Lead (0.150" Wide) Molded Small Outline Package, JEDEC (S)
Package Number M14A**



**14-Lead (0.300" Wide) Molded Small Outline Package, EIAJ (SJ)
Package Number M14D**

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



14-Lead (0.300" Wide) Molded Dual-In-Line Package (P)
Package Number N14A

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