FAIRCHILD

SEMICONDUCTOR

DM74AS30 8 Input NAND Gate

General Description

This device contains a single gate which performs the logic NAND function.

Features

- Switching specifications at 50 pF
- \blacksquare Switching specifications guaranteed over full temperature and V_{CC} range

April 1984

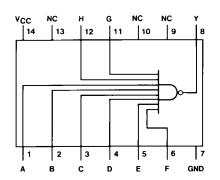
Revised March 2000

- Advanced oxide-isolated, ion-implanted Schottky TTL process
- Functionally and pin for pin compatible with Schottky, low power Schottky, and advanced low power Schottky TTL counterpart
- Improved AC performance over Schottky, low power Schottky, and advanced low power Schottky counterparts

Ordering Code:

Order Number	Package Number	Package Description			
DM74AS30M	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow			
DM74AS30N	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.					

Connection Diagram



Function Table

$\mathbf{Y} = \overline{\mathbf{ABCDEFGH}}$

Inputs	Output
A thru H	Y
All inputs H	L
One or More	н
Inputs L	

H = HIGH Logic Level L = LOW Logic Level

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Absolute Maximum Ratings(Note 1)

7V
7V
$0^{\circ}C$ to $+70^{\circ}C$
$-65^{\circ}C$ to $+150^{\circ}C$
84.0°C/W
114.0°C/W

Note 1: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Recommended Operating Conditions

Symbol	Parameter	Min	Nom	Max	Units
V _{CC}	Supply Voltage	4.5	5	5.5	V
VIH	HIGH Level Input Voltage	2			V
V _{IL}	LOW Level Input Voltage			0.8	V
он	HIGH Level Output Current			-2	mA
I _{OL}	LOW Level Output Current			20	mA
T _A	Free Air Operating Temperature	0		70	°C

Electrical Characteristics

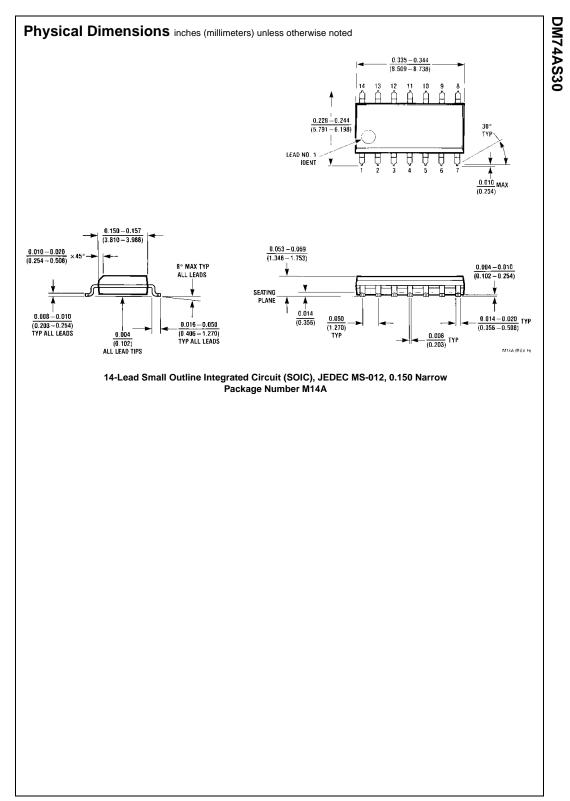
over recommended operating free air temperature range. All typical values are measured at V_{CC} = 5V, $T_A = 25^{\circ}C$.

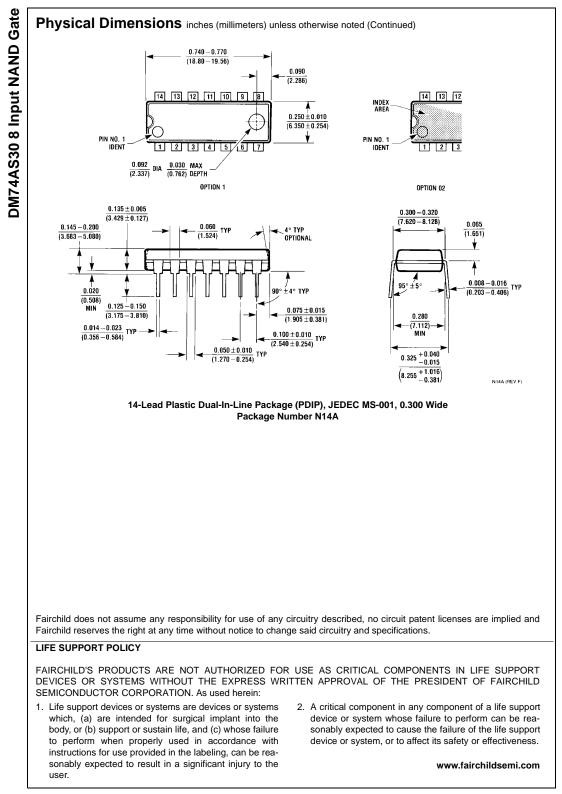
Symbol	Parameter	Conditions	S	Min	Тур	Max	Units
V _{IK}	Input Clamp Voltage	$V_{CC} = 4.5V, I_I = -18 \text{ mA}$				-1.2	V
V _{OH}	HIGH Level	$I_{OH} = -2 \text{ mA}$		V _{CC} – 2			V
	Output Voltage	$V_{CC} = 4.5V$ to 5.5V					
V _{OL}	LOW Level	$V_{CC} = 4.5V$			0.35	0.5	V
	Output Voltage	I _{OL} = 20 mA			0.55	0.5	v
I _I	Input Current at Max Input Voltage	$V_{CC} = 5.5V, V_{IH} = 7V$				0.1	mA
I _{IH}	HIGH Level Input Current	$V_{CC} = 5.5V, V_{IH} = 2.7V$				20	μA
I _{IL}	LOW Level Input Current	$V_{CC} = 5.5V, V_{IL} = 0.4V$				-0.5	mA
I _O	Output Drive Current	$V_{CC} = 5.5V, V_{O} = 2.25V$		-30		-112	mA
I _{CC}	Supply Current	$V_{CC} = 5.5V$	Outputs HIGH		1	1.5	mA
			Outputs LOW		3.4	4.9	mA

Switching Characteristics

Symbol	Parameter	Conditions	Min	Max	Units
t _{PLH}	Propagation Delay Time	$V_{CC} = 4.5V$ to 5.5V	1	5	ns
	LOW-to-HIGH Level Output	$R_L = 500\Omega$	1	J	113
t _{PHL}	Propagation Delay Time	C _L = 50 pF	1	4.5	ns
	HIGH-to-LOW Level Output		1	4.5	115

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