

## DM74ALS1000A Quadruple 2-Input NAND Buffer

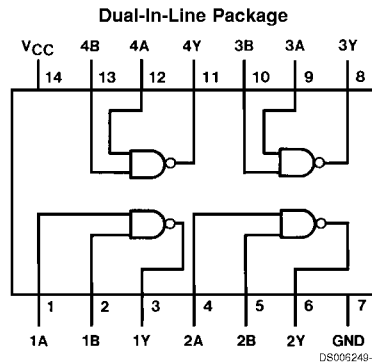
### General Description

These devices contain four independent 2-input buffer/drivers, each of which performs the logic NAND function. The 'ALS1000A is a buffer/driver version of the 'ALS00A.

### Features

- Switching specifications at 50 pF
- Switching specifications guaranteed over full temperature and V<sub>CC</sub> range
- Advanced oxide-isolated, ion-implanted Schottky TTL process
- Improved line receiving characteristics

### Connection Diagram



Order Number DM74ALS1000AM or DM74ALS1000AN  
See Package Number M14A or N14A

### Function Table

$$Y = \overline{AB}$$

Inputs		Output
A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

H = High Logic Level  
L = Low Logic Level

<b>Absolute Maximum Ratings</b> (Note 1)		Storage Temperature Range	-65°C to +150°C
Supply Voltage	7V	Typical $\theta_{JA}$	
Input Voltage	7V	N Package	83.0°C/W
Operating Free Air Temperature Range		M Package	114.0°C/W
DM74ALS	0°C to +70°C		

## Recommended Operating Conditions

Symbol	Parameter	DM74ALS1000A			Units
		Min	Nom	Max	
$V_{CC}$	Supply Voltage	4.5	5	5.5	V
$V_{IH}$	High Level Input Voltage	2			V
$V_{IL}$	Low Level Input Voltage			0.8	V
$I_{OH}$	High Level Output Current			-2.6	mA
$I_{OL}$	Low Level Output Current			24	mA
$T_A$	Free Air Operating Temperature	0		70	°C

**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" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

## 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	Min	Typ	Max	Units
$V_{IK}$	Input Clamp Voltage	$V_{CC} = 4.5V$ , $I_I = -18 mA$			-1.5	V
$V_{OH}$	High Level Output Voltage	$V_{CC} = 4.5V$ $V_{IL} = V_{IL Max}$	$I_{OH} = Max$	2.4	3.2	V
		$V_{CC} = 4.5V$ to $5.5V$	$I_{OH} = -400 \mu A$	$V_{CC} - 2$		V
$V_{OL}$	Low Level Output Voltage	$V_{CC} = 4.5V$	$I_{OL} = 12 mA$	0.25	0.4	V
		$V_{IH} = 2V$	$I_{OL} = 24 mA$	0.35	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	$\mu A$
$I_{IL}$	Low Level Input Current	$V_{CC} = 5.5V$ , $V_{IL} = 0.4V$			-0.1	mA
$I_O$	Output Drive Current	$V_{CC} = 5.5V$ , $V_O = 2.25V$	-30		-112	mA
$I_{CCH}$	Supply Current with Outputs High	$V_{CC} = 5.5V$ , $V_I = 0V$		0.86	1.6	mA
$I_{CCL}$	Supply Current with Outputs Low	$V_{CC} = 5.5V$ , $V_I = 4.5V$		4.8	7.8	mA

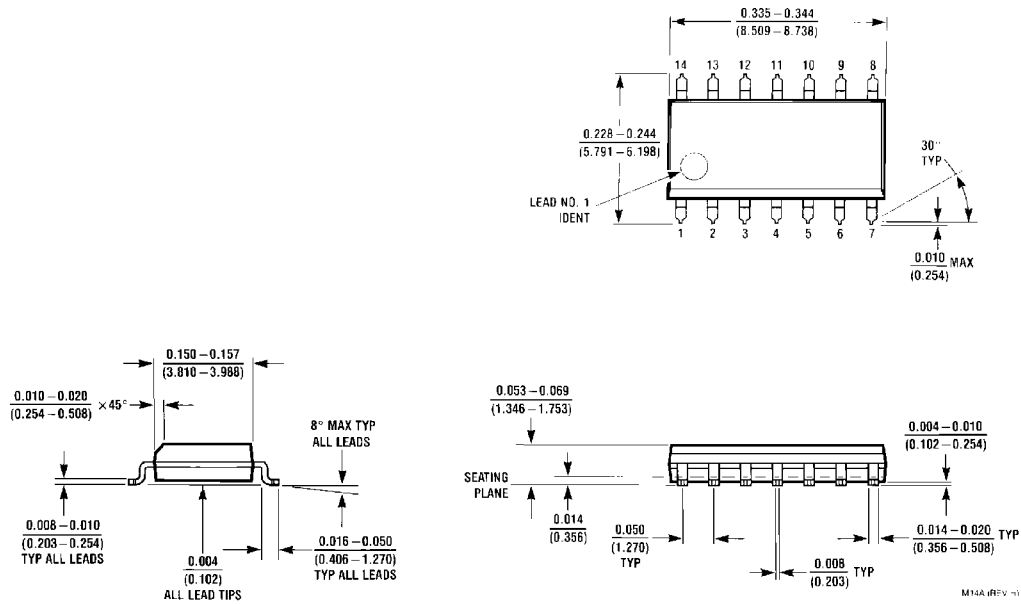
## Switching Characteristics

over recommended operating free air temperature range (Note 2)

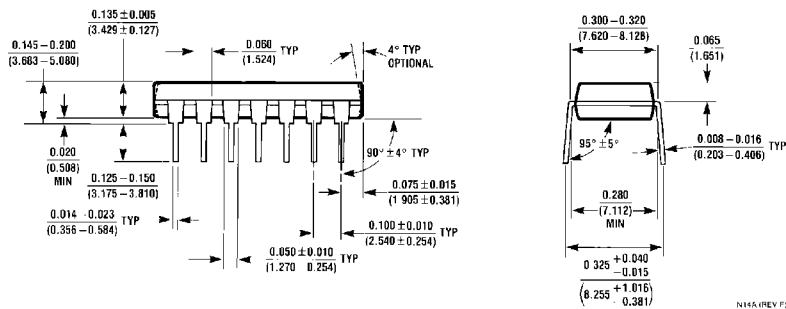
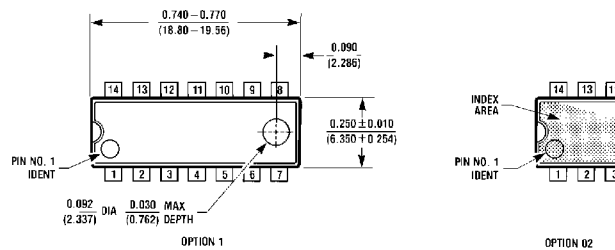
Symbol	Parameter	Conditions	DM74ALS1000A		Units
			Min	Max	
$t_{PLH}$	Propagation Delay Time Low to High Level Output	$V_{CC} = 4.5V$ to $5.5V$ $R_L = 500\Omega$	2	8	ns
$t_{PHL}$	Propagation Delay Time High to Low Level Output	$C_L = 50 pF$	2	7	ns

**Note 2:** See Section 1 for test waveforms and output load.

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



**S.O. Package (M)**  
**Order Number DM74ALS1000AM**  
**Package Number M14A**



**Molded Dual-In-Line Package (N)**  
**Order Number DM74ALS1000AN**  
**Package Number N14A**

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