

## DM74ALS08 Quad 2-Input AND Gate

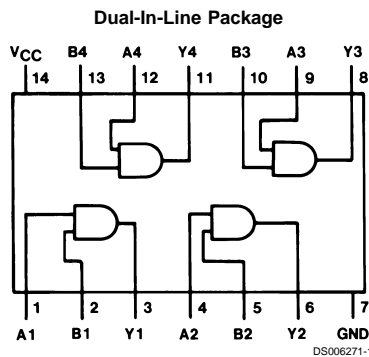
### General Description

This device contains four independent gates, each of which performs the logic AND function.

### Features

- Switching specifications at 50 pF
- Switching specifications guaranteed over full temperature and  $V_{CC}$  range
- Advanced oxide-isolated, ion-implanted Schottky TTL process
- Functionally and pin for pin compatible with Schottky and low power Schottky TTL counterpart
- Improved AC performance over Schottky and low power Schottky counterparts

### Connection Diagram



Order Number DM74ALS08M, DM74ALS08N or DM74ALS08SJ  
See Package Number M14A, M14D or N14A

### Function Table

$$Y = AB$$

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

H = High Logic Level  
L = Low Logic Level

**Absolute Maximum Ratings** (Note 1)

Supply Voltage	7V
Input Voltage	7V
Operating Free Air Temperature Range	0°C to +70°C
DM74ALS	

Storage Temperature Range -65°C to +150°C

Typical $\theta_{JA}$	
N Package	89°C/W
M Package	120°C/W

**Recommended Operating Conditions**

Symbol	Parameter	DM74ALS08			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			-0.4	mA
$I_{OL}$	Low Level Output Current			8	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	$I_{OH} = -0.4 mA$ $V_{CC} = 4.5V$ to $5.5V$	$V_{CC} - 2$			V
$V_{OL}$	Low Level Output Voltage	$V_{CC} = 4.5V$	$I_{OL} = 4 mA$	0.25	0.4	V
			$I_{OL} = 8 mA$	0.35	0.5	V
$I_I$	Input Current @ 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
$I_{CC}$	Supply Current	$V_{CC} = 5.5V$	Outputs High	1.3	2.4	mA
			Outputs Low	2.2	4	mA

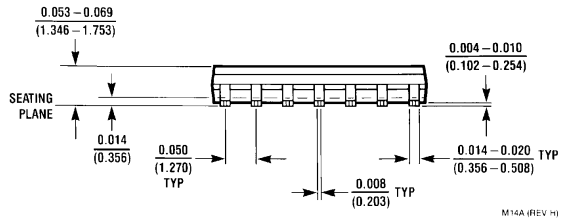
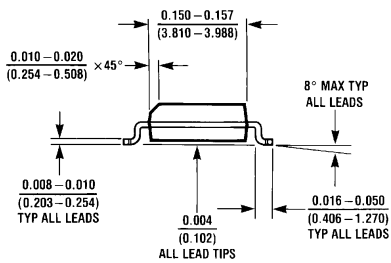
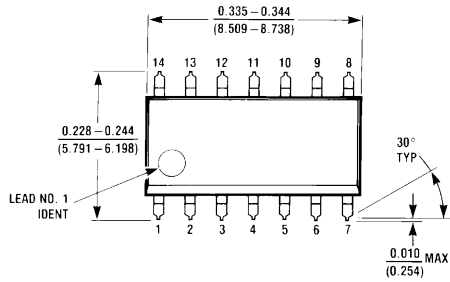
**Switching Characteristics**

over recommended operating free air temperature range. (Note 2)

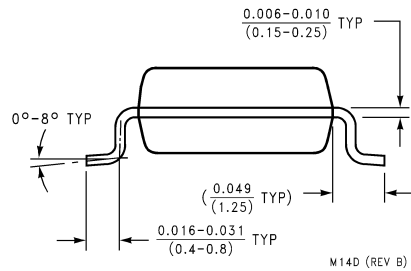
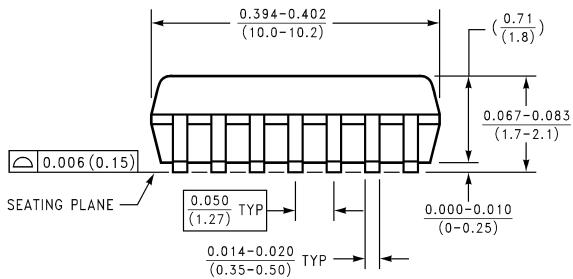
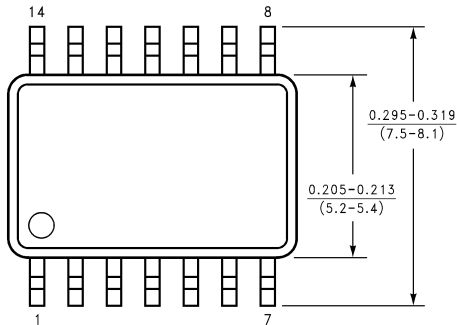
Symbol	Parameter	Conditions	DM74ALS08		Units
			Min	Max	
$t_{PLH}$	Propagation Delay Time Low to High Level Output	$V_{CC} = 4.5V$ to $5.5V$ $R_L = 500\Omega$ $C_L = 50 pF$	4	14	ns
$t_{PHL}$	Propagation Delay Time High to Low Level Output		3	10	ns

**Note 2:** See Section 5 for test waveforms and output load.

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

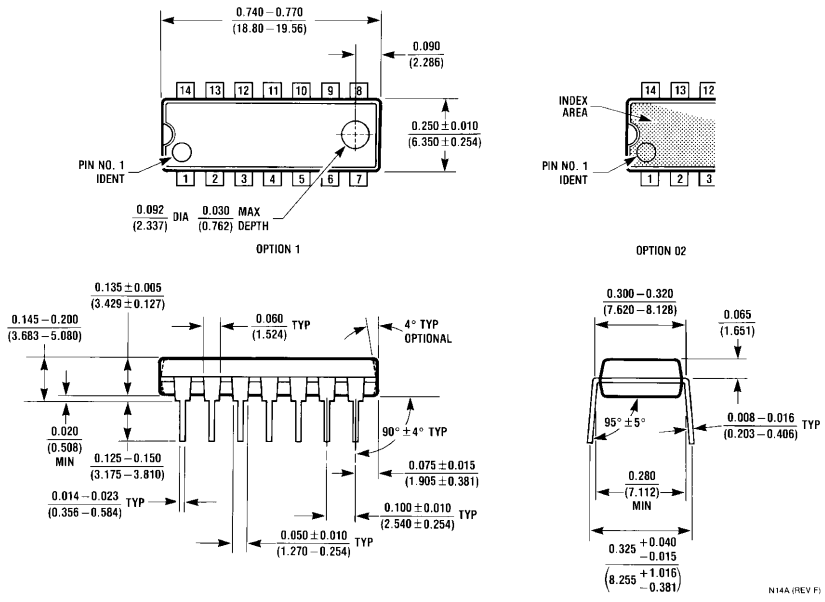


**S.O. Package (M)**  
**Order Number DM74ALS08M**  
**Package Number M14A**



**Small Outline Package (SJ)**  
**Order Number DM74ALS08SJ**  
**Package Number M14D**

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



**Molded Dual-In-Line Package (N)**  
**Order Number DM74ALS08N**  
**Package Number N14A**

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