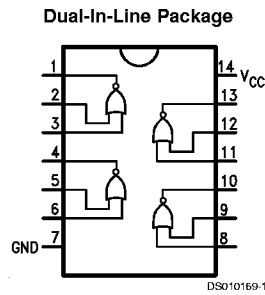


## DM74LS28 Quad 2-Input NOR Buffer

### General Description

The 'LS28 contains four independent gates each of which perform the logic NOR function.

### Connection Diagram



Order Number DM74LS28M or DM74LS28N  
See Package Number M14A or N14A

### Truth Table

$$Y = \overline{A+B}$$

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

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

### Recommended Operating Conditions

Symbol	Parameter	Min	Nom	Max	Units
V <sub>CC</sub>	Supply Voltage	4.75	5	5.25	V
V <sub>IH</sub>	High Level Input Voltage	2			V
V <sub>IL</sub>	Low Level Input Voltage			0.7	V
I <sub>OH</sub>	High Level Output Current			-1.2	mA
I <sub>OL</sub>	Low Level Output Current			24	mA
T <sub>A</sub>	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 (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 2)	Max	Units
V <sub>I</sub>	Input Clamp Voltage	V <sub>CC</sub> = Min, I <sub>I</sub> = -18 mA			-1.5	V
V <sub>OH</sub>	High Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OH</sub> = Max, V <sub>IL</sub> = Max	2.7			V
V <sub>OL</sub>	Low Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OL</sub> = Max, V <sub>IH</sub> = Min			0.5	V
		I <sub>OL</sub> = 12 mA, V <sub>CC</sub> = Min			0.4	
I <sub>I</sub>	Input Current @ Max Input Voltage	V <sub>CC</sub> = Max, V <sub>I</sub> = 7V			0.1	mA
I <sub>IH</sub>	High Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> = 2.7V			20	μA
I <sub>IL</sub>	Low Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> = 0.4V			-0.4	mA
I <sub>OS</sub>	Short Circuit Output Current	V <sub>CC</sub> = Max (Note 3)	-30		-130	mA
I <sub>CCH</sub>	Supply Current with Outputs High	V <sub>CC</sub> = Max			3.6	mA
I <sub>CCL</sub>	Supply Current with Outputs Low	V <sub>CC</sub> = Max			13.8	mA

**Note 2:** All typicals are at V<sub>CC</sub> = 5V, T<sub>A</sub> = 25°C.

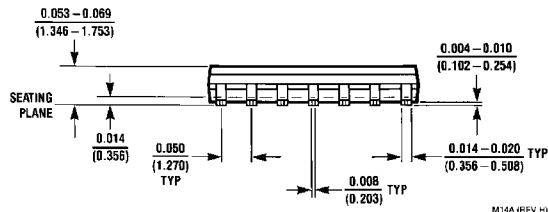
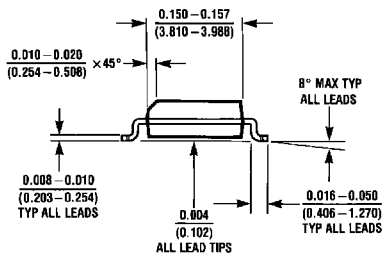
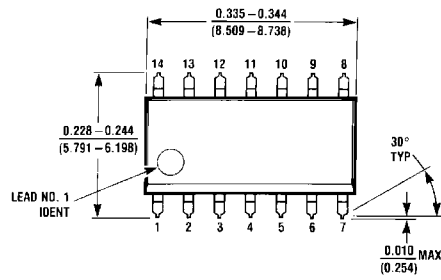
**Note 3:** Not more than one output should be shorted at a time, and the duration should not exceed one second.

### Switching Characteristics

V<sub>CC</sub> = +5.0V, T<sub>A</sub> = +25°C

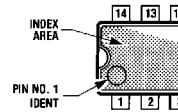
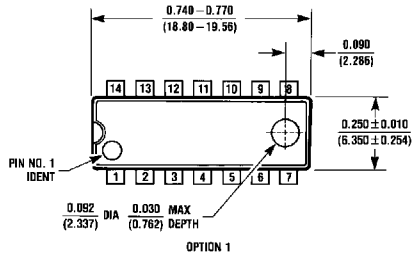
Symbol	Parameter	R <sub>L</sub> = 2 kΩ C <sub>L</sub> = 15 pF		Units
		Min	Max	
t <sub>PLH</sub>	Propagation Delay Time Low to High Level Output		20	ns
t <sub>PHL</sub>	Propagation Delay Time High to Low Level Output		20	ns

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



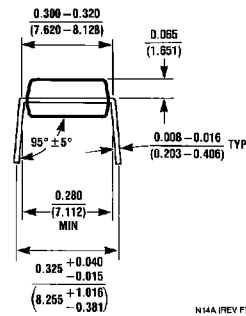
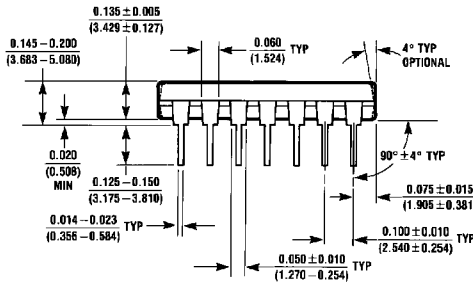
M14A (REV H)

**14-Lead Small Outline Molded Package (M)**  
**Order Number DM74LS28M**  
**Package Number M14A**



OPTION 1

OPTION 2



N14A (REV F)

**14-Lead Molded Dual-In-Line Package (N)**  
**Order Number DM74LS28N**  
**Package Number N14A**