

# DM74LS132

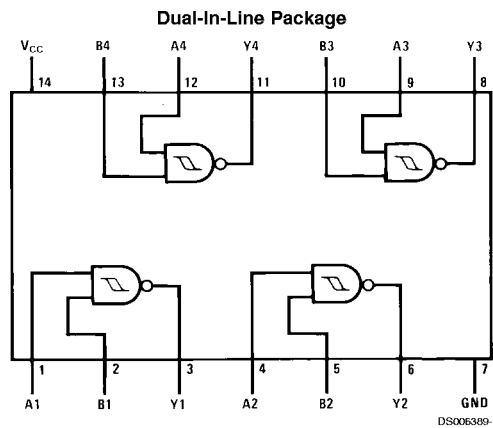
## Quad 2-Input NAND Gates with Schmitt Trigger Inputs

### General Description

This device contains four independent gates each of which performs the logic NAND function. Each input has hysteresis

which increases the noise immunity and transforms a slowly changing input signal to a fast changing, jitter free output.

### Connection Diagram



Order Number DM54LS132J, DM54LS132W, DM74LS132M or DM74LS132N  
See Package Number J14A, M14A, N14A or W14B

### 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

DM74LS132 Quad 2-Input NAND Gates with Schmitt Trigger Inputs

## Absolute Maximum Ratings (Note 1)

Supply Voltage	7V	DM54LS	-55°C to +125°C
Input Voltage	7V	DM74LS	0°C to +70°C
Operating Free Air Temperature Range		Storage Temperature Range	-65°C to +150°C

## Recommended Operating Conditions

Symbol	Parameter	DM54LS132			DM74LS132			Units
		Min	Nom	Max	Min	Nom	Max	
V <sub>CC</sub>	Supply Voltage	4.5	5	5.5	4.75	5	5.25	V
V <sub>T+</sub>	Positive-Going Input Threshold Voltage (Note 2)	1.4	1.6	1.9	1.4	1.6	1.9	V
V <sub>T-</sub>	Negative-Going Input Threshold Voltage (Note 2)	0.5	0.8	1	0.5	0.8	1	V
HYS	Input Hysteresis (Note 2)	0.4	0.8		0.4	0.8		V
I <sub>OH</sub>	High Level Output Current			-0.4			-0.4	mA
I <sub>OL</sub>	Low Level Output Current			4			8	mA
T <sub>A</sub>	Free Air Operating Temperature	-55		125	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 3)	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>I</sub> = V <sub>T-</sub> Min	DM54 2.5	3.4		V
V <sub>OL</sub>	Low Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OL</sub> = Max, V <sub>I</sub> = V <sub>T+</sub> Max	DM54	0.25	0.4	V
			DM74	0.35	0.5	
		I <sub>OL</sub> = 4 mA, V <sub>CC</sub> = Min	DM74	0.25	0.4	
I <sub>T+</sub>	Input Current at Positive-Going Threshold	V <sub>CC</sub> = 5V, V <sub>I</sub> = V <sub>T+</sub>		-0.14		mA
I <sub>T-</sub>	Input Current at Negative-Going Threshold	V <sub>CC</sub> = 5V, V <sub>I</sub> = V <sub>T-</sub>		-0.18		mA
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 4)	DM54 -20		-100	mA
			DM74 -20		-100	
I <sub>COH</sub>	Supply Current with Outputs High	V <sub>CC</sub> = Max		5.9	11	mA
I <sub>COL</sub>	Supply Current with Outputs Low	V <sub>CC</sub> = Max		8.2	14	mA

**Note 2:** V<sub>CC</sub> = 5V

**Note 3:** All typicals are at V<sub>CC</sub> = 5V, T<sub>A</sub> = 25°C.

**Note 4:** Not more than one output should be shorted at a time, and the duration should not exceed one second.

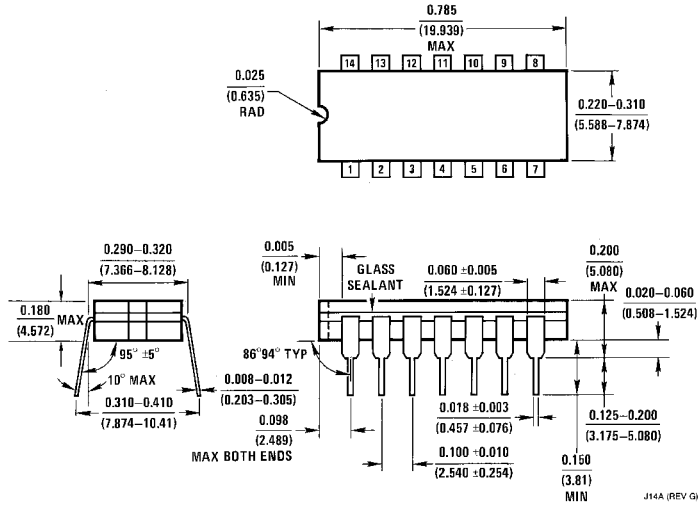
## Switching Characteristics

at  $V_{CC} = 5V$  and  $T_A = 25^\circ C$

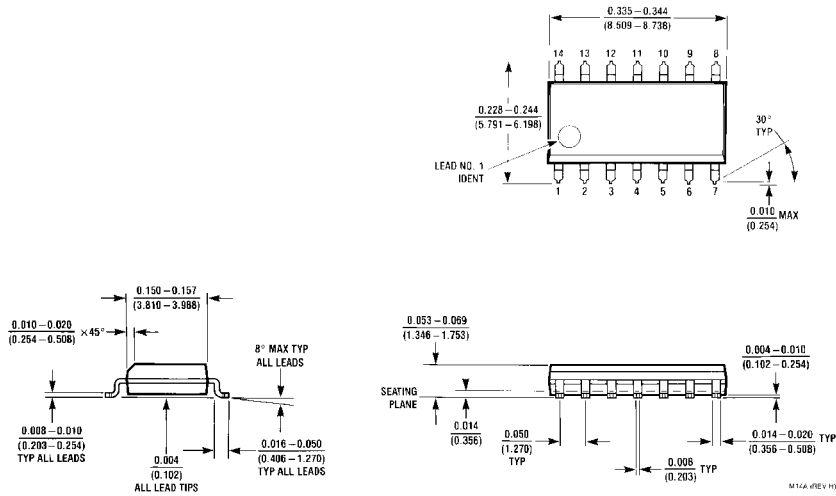
Symbol	Parameter	$R_L = 2\text{ k}\Omega$				Units
		$C_L = 15\text{ pF}$		$C_L = 50\text{ pF}$		
		Min	Max	Min	Max	
$t_{PLH}$	Propagation Delay Time Low to High Level Output	5	22	8	25	ns
$t_{PHL}$	Propagation Delay Time High to Low Level Output	5	22	10	33	ns



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

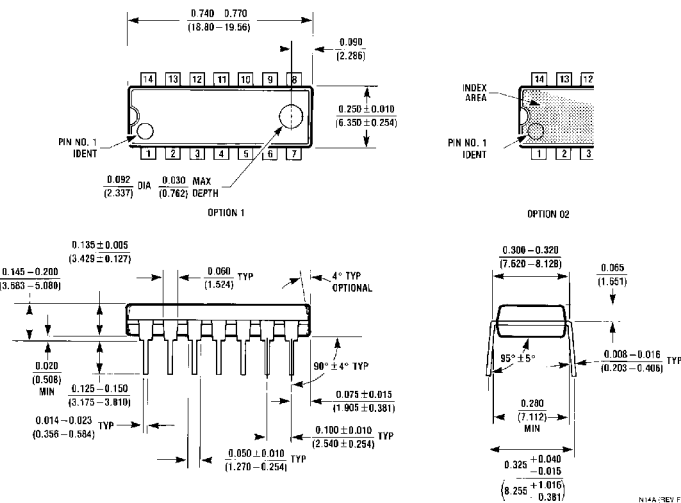


**14-Lead Ceramic Dual-In-Line Package (J)**  
**Order Number DM54LS132J**  
**Package Number J14A**

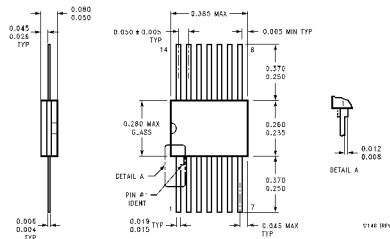


**14-Lead Small Outline Molded Package (M)**  
**Order Number DM74LS132M**  
**Package Number M14A**

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



**14-Lead Molded Dual-In-Line Package (N)**  
**Order Number DM74LS132N**  
**Package Number N14A**



**14-Lead Ceramic Flat Package (W)**  
**Order Number DM54LS132W**  
**Package Number W14B**

**LIFE SUPPORT POLICY**

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

Fairchild Semiconductor Corporation  
 Americas  
 Customer Response Center  
 Tel: 1-888-522-5372

Fairchild Semiconductor Europe  
 Fax: +49 (0) 1 80-530 85 86  
 Email: europe.support@nsc.com  
 Deutsch Tel: +49 (0) 8 141-35-0  
 English Tel: +44 (0) 1 793-85-68-56  
 Italy Tel: +39 (0) 2 57 5631

Fairchild Semiconductor Hong Kong Ltd.  
 13th Floor, Straight Block,  
 Ocean Centre, 5 Canton Rd.  
 Tsimshatsui, Kowloon  
 Hong Kong  
 Tel: +852 2737-7200  
 Fax: +852 2314-0061

National Semiconductor Japan Ltd.  
 Tel: 81-3-5620-6175  
 Fax: 81-3-5620-6179

www.fairchildsemi.com