



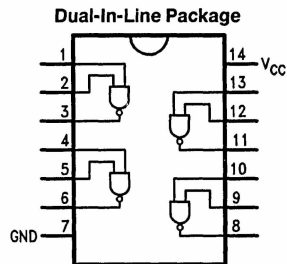
## DM74S132

### Quad 2-Input Schmitt Trigger NAND Gate

#### General Description

This device contains four independent gates that perform the logic NAND function. Each gate has two inputs that are Schmitt Triggers.

#### Connection Diagram



TL/F/9803-1

Order Number DM74S132N  
See NS Package Number N14A

## Absolute Maximum Ratings (Note)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	7V
Input Voltage	5.5V
Operating Free Air Temperature Range	
DM74S	0°C to +70°C
Storage Temperature Range	−65°C to +150°C

Note: 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.

## Recommended Operating Conditions

Symbol	Parameter	DM74S132			Units
		Min	Nom	Max	
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			0.8	V
I <sub>OH</sub>	High Level Output Current			−1	mA
I <sub>OL</sub>	Low Level Output Current			20	mA
T <sub>A</sub>	Free Air Operating Temperature	0		70	°C
V <sub>T+</sub>	Positive-Going Threshold Voltage	1.6		1.9	V
V <sub>T−</sub>	Negative-Going Threshold Voltage	1.1		1.4	V
V <sub>T+</sub> − V <sub>T−</sub>	Hysteresis Voltage	0.2			V
I <sub>T+</sub>	Input Current at Positive-Going Threshold	−0.9**			mA
I <sub>T−</sub>	Input Current at Negative-Going Threshold	−1.1**			mA

\*DC limits apply over operating temperature range; AC limits apply at T<sub>A</sub> = +25°C and V<sub>CC</sub> = +5.0V.

\*\*Typical Value.

## Electrical Characteristics Over recommended operating free air temperature range (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 1)	Max	Units
V <sub>I</sub>	Input Clamp Voltage	V <sub>CC</sub> = Min, I <sub>I</sub> = −18 mA			−1.2	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	3.4		V
V <sub>OL</sub>	Low Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OL</sub> = Max V <sub>IH</sub> = Min		0.35	0.5	V
I <sub>I</sub>	Input Current @ Max Input Voltage	V <sub>CC</sub> = Max, V <sub>I</sub> = 5.5V			1	mA
I <sub>IH</sub>	High Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> = 2.7V			50	μA
I <sub>IL</sub>	Low Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> = 0.5V			−2.0	mA
I <sub>OS</sub>	Short Circuit Output Current	V <sub>CC</sub> = Max (Note 2)	−40		−100	mA
I <sub>COH</sub>	Supply Current with Outputs High	V <sub>CC</sub> = Max			44	mA
I <sub>CCL</sub>	Supply Current with Outputs Low	V <sub>CC</sub> = Max			68	mA

Note 1: All typicals are at V<sub>CC</sub> = 5V, T<sub>A</sub> = 25°C.

Note 2: Not more than one output should be shorted at a time, and the duration should not exceed one second.

**Switching Characteristics**  $V_{CC} = 5V$  and  $T_A = 25^{\circ}C$  (See Section 1 for Test Waveforms and Output Load)

Symbol	Parameter	R <sub>L</sub> = 280Ω		Units
		C <sub>L</sub> = 15 pF		
		Min	Max	
t <sub>PLH</sub>	Propagation Delay Time Low to High Level Output		10.5	ns
t <sub>PHL</sub>	Propagation Delay Time High to Low Level Output		13	ns