

**PRELIMINARY  
DATA SHEET**

**GD74F32  
QUAD 2-INPUT AND GATE**

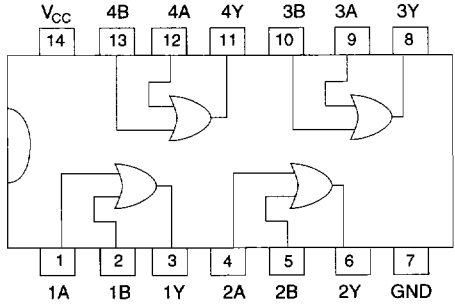
**Description**

This device contains four independent 2-input OR gates, each of which performs the Boolean functions  $Y = A \cdot B$  or  $Y = A + B$ .

**Function Table (each gate)**

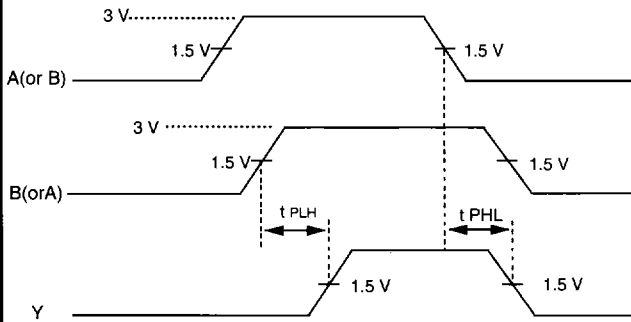
Inputs		Outputs
A	B	Y
H	L	H
L	H	H
H	H	H

**Pin Configuration**

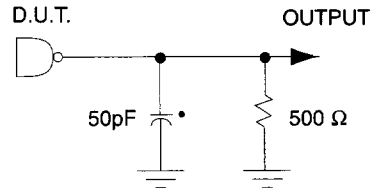


Package Type: 14 DIP, 14 SOP Available

**Waveform Of Functions**



**AC Test Circuit**



\* Includes jig and probe capacitance

**Input Condition**

- Frequency : 1.0 MHz
- Duty Cycle : 50%
- Rising Time : 2.5 ns
- Falling Time : 2.5 ns
- Amplitude : 0 to 3V

**Absolute Maximum Ratings**

- Storage Temperature ..... -65°C to 150°C
- Ambient Temperature Under Bias ..... -55°C to 125°C
- Junction Temperature Under Bias ..... -0.5°C to 175°C
- V<sub>CC</sub> Voltage ..... -0.5 V to 7.0 V
- Input Voltage ..... -5.0 V to 7.0 V
- Input Current ..... -30 mA to 5.0 mA
- Output Voltage ..... -0.5 V to 5.5 V

Note: Absolute Maximum ratings are values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

## Recommended Operating Conditions

SYMBOL	PARAMETER	MIN	MAX	UNIT
$T_A$	Free Air Ambient Temperature	0	70	°C
$V_{CC}$	Supply Voltage	4.5	5.5	V

## AC Characteristics

SYMBOL	PARAMETER	TEST CONDITION						UNIT
		$T_A = 25^\circ\text{C}$			$T_A = 0 \sim 70^\circ\text{C}$			
		$V_{CC} = 5.0\text{ V}$			$V_{CC} = 5\text{ V} \pm 10\%$			
$CL = 50\text{ PF}$			$CL = 50\text{ PF}$					
		Min	Typ	Max	Min	Typ	Max	
tPLH	Propagation	3.0	4.2	5.6	3.0	–	6.6	ns
tPHL	Delay	3.0	4.0	5.3	3.0	–	6.3	ns

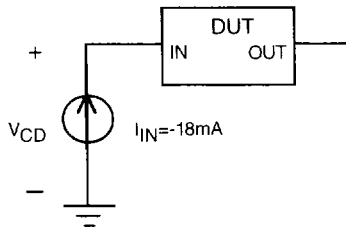
## DC Electrical Characteristics over recommended operating free-air temperature range

SYMBOL	PARAMETER	TEST CONDITIONS	Min	Typ	Max	UNIT	$V_{CC}$	CIRCUIT
$V_{IH}$	Input High Voltage	-----	2.0			V		
$V_{IL}$	Input Low Voltage	-----			0.8	V		
$V_{CD}$	Input Clamp Diode Voltage	$I_{IN} = -18\text{mA}$			-1.2	V	Min	See FIG. 1
$V_{OH}$	Output High Voltage	$I_{OH} = -1\text{mA}$ $I_{OH} = -1\text{mA}$	2.5 2.7			V	4.5 4.75	See FIG. 2
$V_{OL}$	Output Low Voltage	$I_{OL} = 20\text{mA}$			0.5	V	Min	
$I_I$	Input High Current Breakdown Test	$V_{IN} = 7.0\text{ V}$			7.0	$\mu\text{A}$	Max	See FIG. 3
$I_{IH}$	Input High Current	$V_{IN} = 2.7\text{ V}$			5.0	$\mu\text{A}$	Max	
$I_{IL}$	Input Low Current	$V_{IN} = 0.5\text{ V}$			-0.6	$\text{mA}$	Max	
$I_{ILK}$	Input Leakage Circuit Current	$V_{IN} = 4.75\text{ V}$ All other pins grounded			1.9	$\mu\text{A}$	0.0	See FIG. 4
$I_{OLK}$	Output Leakage Circuit Current	$V_{OUT} = 150\text{mV}$ All other pins grounded			3.75	$\mu\text{A}$	0.0	
$I_{OS}$	Output Short Circuit Current	$V_{OUT} = 0\text{ V}$	-60		-150	$\text{mA}$	Max	See FIG. 5
$I_{CCH}$ $I_{CCL}$	Supply Current	$V_{OUT} = \text{High}$ $V_{OUT} = \text{Low}$		6.1 10.3	9.2 15.5	$\text{mA}$ $\text{mA}$	Max Max	See FIG. 6

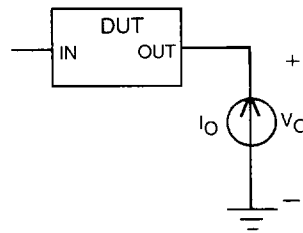
\* For  $I_{OS}$ , Not more than one output should be shorted at a time, and duration should not exceed one second.

**DC Test Circuit**

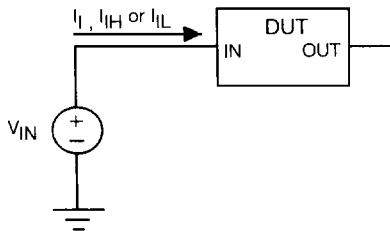
**FIG. 1  $V_{CD}$  Test**  
(force  $I_{IN}$  and measure  $V_{CD}$ )



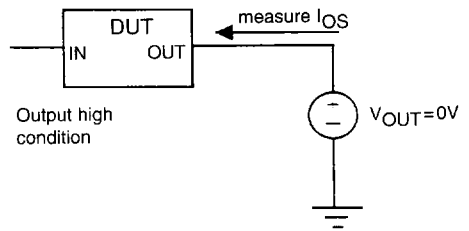
**FIG. 2  $V_{OH}$  &  $V_{OL}$  Test**  
(force  $I_O$  and measure  $V_{OH}$  or  $V_{OL}$ )



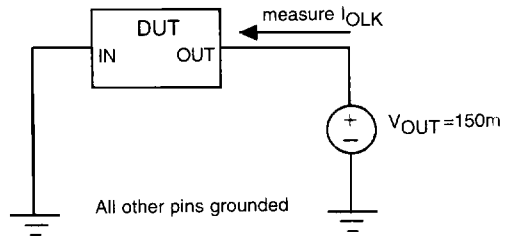
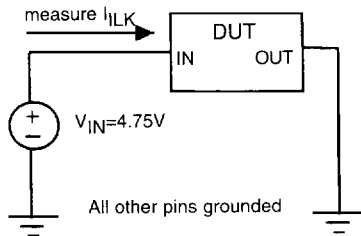
**FIG. 3  $I_I$ ,  $I_{IH}$  &  $I_{IL}$  Test**  
(force  $V_{IN}$  and measure  $I_I$ ,  $I_{IH}$  or  $I_{IL}$ )



**FIG. 5  $I_{OS}$  Test**



**FIG. 4  $I_{ILK}$  Test &  $I_{OLK}$  Test**



**FIG. 6  $I_{CCH}$  Test &  $I_{CCL}$  Test**

