

**DN74LS32**

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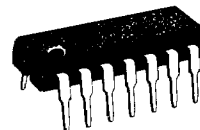
**Quad 2-input Positive OR Gates****Description**

DN74LS32 contains four 2-input positive isolation OR gate circuits.

**Features**

- Low power consumption ( $P_d = 20\text{mW}$  typical)
- High speed ( $t_{pd} = 14\text{ns}$  typical)
- Low output impedance
- Wide operating temperature range ( $T_a = -20$  to  $+75^\circ\text{C}$ )

P-1

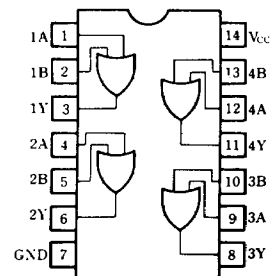


14-pin plastic DIL package

P-4



14-pin Panaflat package (SO-14D)

**Pin configuration (top view)****Recommended operating conditions**

| Parameter                   | Sym       | Min  | Typ  | Max  | Unit             |
|-----------------------------|-----------|------|------|------|------------------|
| Supply voltage              | $V_{CC}$  | 4.75 | 5.00 | 5.25 | V                |
| Output current              | $I_{OH}$  |      |      | -400 | $\mu\text{A}$    |
|                             | $I_{OL}$  |      |      | 8    | mA               |
| Operating temperature range | $T_{opr}$ | -20  | 25   | 75   | $^\circ\text{C}$ |

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■ DC characteristics ( $T_a = -20 \sim +75^\circ\text{C}$ )

| Parameter                      | Sym       | Test conditions                                                              | Min | Typ* | Max  | Unit          |
|--------------------------------|-----------|------------------------------------------------------------------------------|-----|------|------|---------------|
| Input voltage                  | $V_{IH}$  |                                                                              | 2.0 |      |      | V             |
|                                | $V_{IL}$  |                                                                              |     |      | 0.8  | V             |
| Output voltage                 | $V_{OH}$  | $V_{CC} = 4.75\text{V}$ , $V_{IH} = 2\text{V}$<br>$I_{OH} = -400\mu\text{A}$ | 2.7 | 3.4  |      | V             |
|                                | $V_{OL1}$ | $V_{CC} = 4.75\text{V}$<br>$I_{OL} = 4\text{mA}$                             |     | 0.25 | 0.4  | V             |
|                                | $V_{OL2}$ | $V_{CC} = 4.75\text{V}$<br>$I_{OL} = 8\text{mA}$                             |     | 0.35 | 0.5  | V             |
|                                |           |                                                                              |     |      |      |               |
| Input current                  | $I_{IH}$  | $V_{CC} = 5.25\text{V}$<br>$V_I = 2.7\text{V}$                               |     |      | 20   | $\mu\text{A}$ |
|                                | $I_{IL}$  | $V_{CC} = 5.25\text{V}$<br>$V_I = 0.4\text{V}$                               |     |      | -0.4 | mA            |
|                                | $I_i$     | $V_{CC} = 5.25\text{V}$<br>$V_I = 7\text{V}$                                 |     |      | -0.1 | mA            |
| Output short circuit current** | $I_{OS}$  | $V_{CC} = 5.25\text{V}$ , $V_O = 0\text{V}$                                  | -15 |      | -100 | mA            |
| Input clamp voltage            | $V_{IK}$  | $V_{CC} = 4.75\text{V}$<br>$I_I = -18\text{mA}$                              |     |      | -1.5 | V             |
| Supply current                 | $I_{CCH}$ | $V_{CC} = 5.25\text{V}$                                                      |     | 3.1  | 6.2  | mA            |
|                                | $I_{CCL}$ | $V_{CC} = 5.25\text{V}$                                                      |     | 4.9  | 9.8  | mA            |

\* When constant at  $V_{CC} = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$ .

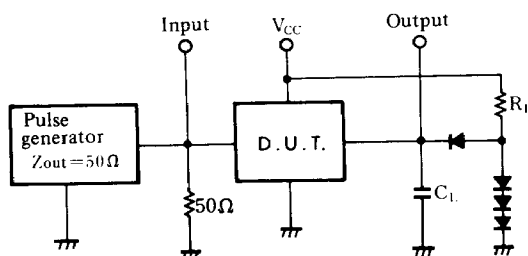
\*\* Only one output at a time short circuited to GND. Also, short circuit time to GND within 1 second.

■ Switching characteristics ( $V_{CC} = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$ )

| Parameter              | Sym       | Test conditions                               | Min | Typ | Max | Unit |
|------------------------|-----------|-----------------------------------------------|-----|-----|-----|------|
| Propagation delay time | $t_{PLH}$ | $C_L = 15\text{pF}$ , $R_L = 2\text{k}\Omega$ |     | 14  | 22  | ns   |
|                        | $t_{PHL}$ |                                               |     | 14  | 22  | ns   |

※ Switching parameter measurement information

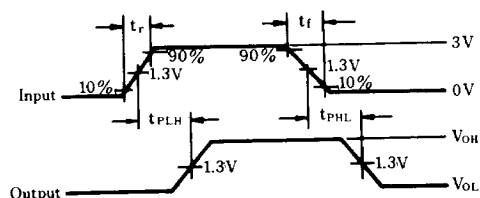
## 1. Measurement circuit



Notes

- $C_L$  includes probe and tool floating capacitance.
- Diodes are all MA161.

## 2. Waveforms



Notes

- Input waveform:  $t_r \leq 15\text{ns}$ ,  $t_f \leq 6\text{ns}$ ,  $\text{PRR} = 1\text{MHz}$ , duty cycle = 50%.