

9XXX Series

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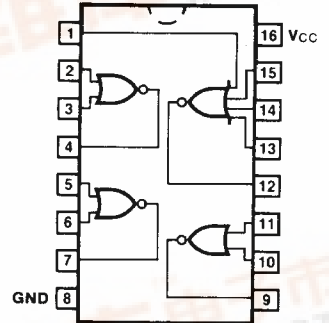
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ADD
9015
QUAD NOR GATE

CONNECTION DIAGRAM
INOUT A

DESCRIPTION — The 9015 consists of three 2-input and one 4-input NOR gates. The NOR gate produces a LOW output if any of the inputs are HIGH.

ORDERING CODE: See Section 9

| PKGS | PIN OUT | COMMERCIAL GRADE | MILITARY GRADE | PKG TYPE |
|-----------------|---------|---|---|----------|
| | | $V_{CC} = +5.0\text{ V} \pm 5\%$, $T_A = 0^\circ\text{C to } +75^\circ\text{C}$ | $V_{CC} = +5.0\text{ V} \pm 10\%$, $T_A = -55^\circ\text{C to } +125^\circ\text{C}$ | |
| Ceramic DIP (D) | A | 9015DC | 9015DM | 6B |
| Flatpak (F) | A | 9015FC | 9015FM | 4L |



INPUT LOADING/FAN-OUT: See Section 3 for U.L. definitions

| PINS | 9XXX (U.L.) HIGH/LOW |
|---------|----------------------|
| Inputs | 1.5/1.0 |
| Outputs | 30/8.8 (33)/(8.5) |

DC AND AC CHARACTERISTICS OVER COMMERCIAL TEMPERATURE RANGE: $V_{CC} = +5.0\text{ V} \pm 5\%$

| SYMBOL | PARAMETER | 0°C | | 25°C | | 75°C | | UNITS | CONDITIONS |
|----------|---------------------|-----|------|------|------|------|------|-------|---|
| | | Min | Max | Min | Max | Min | Max | | |
| V_{IH} | Input HIGH Voltage | 1.9 | | 1.8 | | 1.6 | | V | Guaranteed Input HIGH Threshold |
| V_{IL} | Input LOW Voltage | | 0.85 | | 0.85 | | 0.85 | V | Guaranteed Input LOW Threshold |
| V_{OH} | Output HIGH Voltage | 2.4 | | 2.4 | | 2.4 | | V | $V_{CC} = 4.75\text{ V}$, $I_{OH} = -1.2\text{ mA}$, Inputs = V_{IL} |
| V_{OL} | Output LOW Voltage | | 0.45 | | 0.45 | | 0.45 | V | $V_{CC} = 5.25\text{ V}$, $I_{OL} = 16\text{ mA}$, Inputs = 5.25 V |
| | | | 0.45 | | 0.45 | | 0.45 | | $V_{CC} = 4.75\text{ V}$, $I_{OL} = 14.1\text{ mA}$, Inputs = V_{IH} |



DC AND AC CHARACTERISTICS OVER COMMERCIAL TEMPERATURE RANGE (Cont'd)

| SYMBOL | PARAMETER | | 0°C | | 25°C | | 75°C | | UNITS | CONDITIONS |
|--------------------------------------|---------------------------------|-----|-------|-----|-------|-----|-------|-----|-------|---|
| | | | Min | Max | Min | Max | Min | Max | | |
| I _{IL} | Input LOW Current | | -1.6 | | -1.6 | | -1.6 | | mA | V _{CC} = 5.25 V, V _{IN} = .45 V 5.25 V on Other Inputs |
| | | | -1.41 | | -1.41 | | -1.41 | | mA | V _{CC} = 4.75 V, V _{IN} = .45 V 5.25 V on Other Inputs |
| I _{CC} | Power Supply Current, each gate | ON | 6.55 | | 6.55 | | 6.55 | | mA | Inputs HIGH |
| | | | 8.75 | | 8.75 | | 8.75 | | mA | Inputs HIGH (4-Input Gate Only) |
| | | OFF | 3.38 | | 3.38 | | 3.38 | | mA | Inputs LOW |
| | | | 6.77 | | 6.77 | | 6.77 | | mA | Inputs LOW (4-Input Gate Only) |
| t _{PLH} t _{PHL} | Propagation Delay | | | 3.0 | 13 | | | | ns | C _L = 15 pF Fig. 3-4 |

DC AND AC CHARACTERISTICS OVER MILITARY TEMPERATURE RANGE: V_{CC} = +5.0 V ±10%

| SYMBOL | PARAMETER | | -55°C | | 25°C | | 125°C | | UNITS | CONDITIONS |
|--------------------------------------|---------------------------------|-----|-------|-----|-------|-----|-------|-----|-------|--|
| | | | Min | Max | Min | Max | Min | Max | | |
| V _{IH} | Input HIGH Voltage | | 2.0 | | 1.7 | | 1.4 | | V | Guaranteed Input HIGH Threshold |
| V _{IL} | Input LOW Voltage | | 0.8 | | 0.9 | | 0.8 | | V | Guaranteed Input LOW Threshold |
| V _{OH} | Output HIGH Voltage | | 2.4 | | 2.4 | | 2.4 | | V | V _{CC} = 4.5 V, I _{OH} = -1.32 mA, Inputs = V _{IL} |
| V _{OL} | Output LOW Voltage | | 0.4 | | 0.4 | | 0.4 | | V | V _{CC} = 5.5 V, Inputs = 5.5 V, I _{OL} = 17.6 mA |
| | | | 0.4 | | 0.4 | | 0.4 | | | V _{CC} = 4.5 V, V _{IN} = V _{IH} , I _{OL} = 13.6 mA |
| I _{IL} | Input LOW Current | | -1.6 | | -1.6 | | -1.6 | | mA | V _{CC} = 5.5 V, V _{IN} = 0.4 V 5.5 V on Other Inputs |
| | | | -1.24 | | -1.24 | | -1.24 | | mA | V _{CC} = 4.5 V V _{IN} = 0.4 V 5.5 V on Other Inputs |
| I _{CC} | Power Supply Current, each gate | ON | 6.07 | | 6.07 | | 6.07 | | mA | Inputs HIGH |
| | | | 8.14 | | 8.14 | | 8.14 | | mA | Inputs HIGH (4-Input Gate Only) |
| | | OFF | 3.2 | | 3.2 | | 3.2 | | mA | Inputs LOW |
| | | | 6.4 | | 6.4 | | 6.4 | | mA | Inputs LOW (4-Input Gate Only) |
| t _{PLH} t _{PHL} | Propagation Delay | | | 3.0 | 10 | | | | ns | C _L = 15 pF Fig. 3-4 |