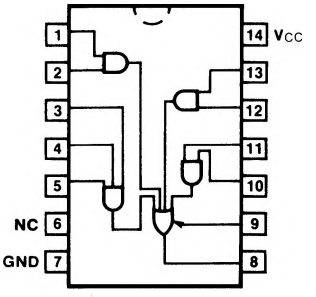
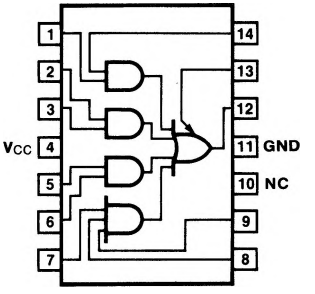
# 54H/74H52

## EXPANDABLE 2-2-2-3-INPUT AND-OR GATE

**CONNECTION DIAGRAMS**
PINOUT A




PINOUT B




**ORDERING CODE:** See Section 9

| PKGS | PIN OUT | COMMERCIAL GRADE<br>$V_{CC}$ = +5.0 V ±5%,<br>$T_A$ = 0°C to +70°C | MILITARY GRADE<br>$V_{CC}$ = +5.0 V ±10%,<br>$T_A$ = -55°C to +125°C | PKG TYPE |
|---|---|---|---|---|
| Plastic DIP (P) | A | 74H52PC | | 9A |
| Ceramic DIP (D) | A | 74H52DC | 54H52DM | 6A |
| Flatpak (F) | B | 74H52FC | 54H52FM | 3I |

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

| PINS | 54/74H (U.L.)<br>HIGH/LOW |
|---|---|
| Inputs | 1.25/1.25 |
| Outputs | 12.5/12.5 |

**DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE:** Expander Pins Open

| SYMBOL | PARAMETER | 54/74H Min | 54/74H Max | UNITS | CONDITIONS | |
|---|---|---|---|---|---|---|
| $I_{CCH}$ | Power Supply Current | | 31 | mA | $V_{IN}$ = Open | $V_{CC}$ = Max |
| $I_{CCL}$ | | | 24 | | $V_{IN}$ = Gnd | |

**DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE:** Using Expander Pins

| SYMBOL | PARAMETER | | 54/74H Min | 54/74H Max | UNITS | CONDITIONS | |
|---|---|---|---|---|---|---|---|
| $V_{OH}$ | Output HIGH Voltage | XM | 2.4 | | V | $T_A$ = -55°C | $V_{CC}$ = Min, $V_X$ = 1.0 V $I_{OH}$ = -500 μA |
| | | XC | 2.4 | | | $T_A$ = 0 °C | |
| $V_{OL}$ | Output LOW Voltage | XM | | 0.4 | V | $T_A$ = +125°C | $V_{CC}$ = Min, $I_{INX}$ = -300 μA $I_{OL}$ = 20 mA |
| | | XC | | 0.4 | | $T_A$ = +70°C | |
| $I_{INX}$ | Expander-Node Input Current | XM | -2.7 | -4.5 | mA | $T_A$ = -55°C | $V_{CC}$ = Min, $V_X$ = 1.0 V, $I_{OH}$ = -500 μA |
| | | XC | -2.9 | -5.35 | | $T_A$ = 0°C | |

**AC CHARACTERISITCS:** $V_{CC}$ = +5.0 V, $T_A$ = +25° C ( See Section 3 for waveforms and load configurations)

| SYMBOL | PARAMETER | 54/74H Min | 54/74H Max | UNITS | CONDITIONS |
|---|---|---|---|---|---|
| $t_{PLH}$ $t_{PHL}$ | Propagation Delay | | 15 15 | ns | Expander Pins Open Figs. 3-1, 3-5 |
| $t_{PLH}$ $t_{PHL}$ | Propagation Delay | | 14.8* 9.8* | ns | $C_X$ = 15 pF |

*Typical Value

**ADDED PROPAGATION DELAY TIME vs EXPANDER-NODE CAPACITANCE**