# Military 54F64

# 4-2-3-2-Input AND/OR/INVERT Gate

**ELECTRICALLY TESTED PER:**
**MIL-M-38510/33401**

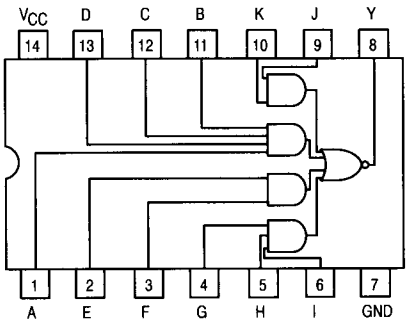
**AVAILABLE AS:**

**1) JAN: JM38510/33401BXA**
**2) SMD: N/A**
**3) 883: 54F64/BXAJC**

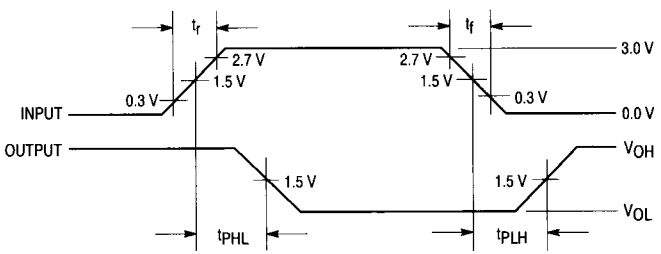
**X = CASE OUTLINE AS FOLLOWS:**
**PACKAGE: CERDIP: C**
**CERFLAT: D**
**LCC: 2**

**THE LETTER "M" APPEARS BEFORE THE / ON LCC.**

**LOGIC DIAGRAM**




**WAVEFORMS**



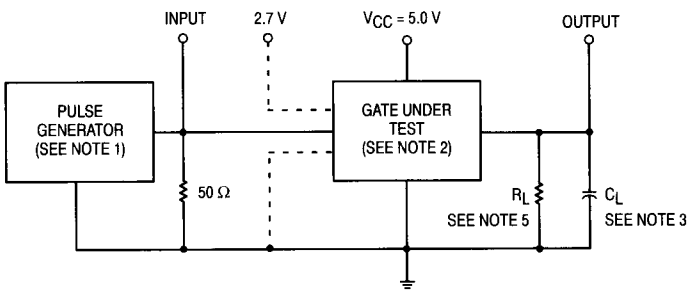

**NOTES:**
1. Input pulse has the following characteristics: $t_r = t_f \leq 2.5$ ns, PRR ≤ 1.0 MHz, and $Z_{OUT} \approx 50\ \Omega$.
2. Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).
3. $C_L = 50$ pF ± 10%, including scope probe, wiring and stray capacitance, without package in test fixture.
4. Voltage measurements are to be made with respect to network ground terminal.
5. $R_L = 500\ \Omega \pm 5.0\%$.

**PIN ASSIGNMENTS**

| FUNCT. | DIL 632-08 | FLATS 717-04 | LCC 756A-02 | BURN-IN (COND. A) |
|---|---|---|---|---|
| A | 1 | 1 | 2 | $V_{CC}$ |
| E | 2 | 2 | 3 | $V_{CC}$ |
| F | 3 | 3 | 4 | $V_{CC}$ |
| G | 4 | 4 | 6 | $V_{CC}$ |
| H | 5 | 5 | 8 | $V_{CC}$ |
| I | 6 | 6 | 9 | $V_{CC}$ |
| GND | 7 | 7 | 10 | GND |
| Y | 8 | 8 | 12 | OPEN |
| J | 9 | 9 | 13 | $V_{CC}$ |
| K | 10 | 10 | 14 | $V_{CC}$ |
| B | 11 | 11 | 16 | $V_{CC}$ |
| C | 12 | 12 | 18 | $V_{CC}$ |
| D | 13 | 13 | 19 | $V_{CC}$ |
| $V_{CC}$ | 14 | 14 | 20 | $V_{CC}$ |

**BURN-IN CONDITIONS:**
**$V_{CC}$ = 5.0 V MIN/6.0 V MAX**

**AC TEST CIRCUIT**



| Symbol | Parameter | Limits | | | | | | Unit | Test Condition (Unless Otherwise Specified) |
|---|---|---|---|---|---|---|---|---|---|
| | Static Parameters: | +25°C | | +125°C | | −55°C | | | |
| | | Subgroup 1 | | Subgroup 2 | | Subgroup 3 | | | |
| | | Min | Max | Min | Max | Min | Max | | |
| $V_{OH}$ | Logical "1" Output Voltage | 2.5 | | 2.5 | | 2.5 | | V | $V_{CC}$ = 4.5 V, $I_{OH}$ = −1.0 mA, $V_{OL}$ = 0.8 V, $V_{IH}$ = 2.0 V, other inputs = 0 V. |
| $V_{OL}$ | Logical "0" Output Voltage | | 0.5 | | 0.5 | | 0.5 | V | $V_{CC}$ = 4.5 V, $I_{OL}$ = 20 mA, $V_{IH}$ = 2.0 V, $V_{IN}$ = 0 V, other inputs = 0 V. |
| $V_{IC}$ | Input Clamping Voltage | | −1.2 | | | | | V | $V_{CC}$ = 4.5 V, $I_{IN}$ = −18 mA, other inputs are open. |
| $I_{IH1}$ | Logical "1" Input Current | | 20 | | 20 | | 20 | µA | $V_{CC}$ = 5.5 V, $V_{IH}$ = 2.7 V, other inputs = 0 V. |
| $I_{IH2}$ | Logical "1" Input Current | | 100 | | 100 | | 100 | µA | $V_{CC}$ = 5.5 V, $V_{IHH}$ = 7.0 V, other inputs = 0 V. |
| $I_{IL}$ | Logical "0" Input Current | −0.03 | −0.6 | −0.03 | −0.6 | −0.03 | −0.6 | mA | $V_{CC}$ = 5.5 V, $V_{INL}$ = 0.5 V, $V_{IN}$ = 5.5 V. |
| $I_{OD}$ | Diode Current | 60 | | 60 | | 60 | | mA | $V_{CC}$ = 4.5 V, $V_{IN}$ (pins 9, 10) = 5.5 V, other inputs are open, $V_{OUT}$ = 2.5 V. |
| $I_{OS}$ | Output Short Circuit Current | −60 | −150 | −60 | −150 | −60 | −150 | mA | $V_{CC}$ = 5.5 V, $V_{IN}$ = 0 V (all inputs), $V_{OUT}$ = 0 V. |
| $I_{CCH}$ | Power Supply Current | | 2.8 | | 2.8 | | 2.8 | mA | $V_{CC}$ = 5.5 V, $V_{IN}$ = 0 V (all inputs). |
| $I_{CCL}$ | Power Supply Current | | 4.7 | | 4.7 | | 4.7 | mA | $V_{CC}$ = 5.5 V, $V_{IN}$ = 5.5 V (all inputs). |
| $V_{IH}$ | Logical "1" Input Voltage | 2.0 | | 2.0 | | 2.0 | | V | $V_{CC}$ = 4.5 V. |
| $V_{IL}$ | Logical "0" Input Voltage | | 0.8 | | 0.8 | | 0.8 | V | $V_{CC}$ = 4.5 V. |
| | Functional Tests | Subgroup 7 | | Subgroup 8A | | Subgroup 8B | | | per Truth Table with $V_{CC}$ = 5.0 V, $V_{INL}$ = 0.5 V, and $V_{INH}$ = 2.5 V. |

| Symbol | Parameter | Limits | | | | | | Unit | Test Condition (Unless Otherwise Specified) |
|---|---|---|---|---|---|---|---|---|---|
| | Switching Parameters: | +25°C | | +125°C | | −55°C | | | |
| | | Subgroup 9 | | Subgroup 10 | | Subgroup 11 | | | |
| | | Min | Max | Min | Max | Min | Max | | |
| $t_{PHL}$ | Propagation Delay /Data-Output Output High-Low | 1.5 | 4.5 | 1.0 | 6.5 | 1.0 | 6.5 | ns | $V_{CC}$ = 5.0 V, $C_L$ = 50 pF, $R_L$ = 500 Ω. |
| $t_{PLH}$ | Propagation Delay /Data-Output Output Low-High | 1.5 | 6.0 | 1.0 | 8.0 | 1.0 | 8.0 | ns | $V_{CC}$ = 5.0 V, $C_L$ = 50 pF, $R_L$ = 500 Ω. |