



## Quad 2-Input NOR Gate

ELECTRICALLY TESTED PER:  
MPG 1662 (-30°C to +85°C)

- $P_D = 240$  mW typ/pkg
- $t_{pd} = 0.9$  ns typ (510 ohm load)  
= 1.1 ns typ (50 ohm load)
- Full Load Current,  $I_L = -25$  mAdc max

| ABSOLUTE MAXIMUM RATINGS:             | Symbol    | Min  | Max      | Unit |
|---------------------------------------|-----------|------|----------|------|
| Power Supply Voltage ( $V_{CC} = 0$ ) | $V_{CC}$  | -8.0 | 0        | Vdc  |
| Base Input Voltage ( $V_{CC} = 0$ )   | $V_{IN}$  | 0    | $V_{EE}$ | Vdc  |
| Output Source Current Continuous      | $I_O$     |      | < 40     | mAdc |
| Storage Temperature Range             | $T_{stg}$ | -55  | +125     | °C   |
| Operating Temperature Range           | $T_A$     | -30  | +85      | °C   |

### PIN ASSIGNMENTS

| FUNCTION         | DIL | FLATS | BURN-IN<br>(CONDITION C) |
|------------------|-----|-------|--------------------------|
| $V_{CC1}$        | 1   | 5     | GND                      |
| AOUT             | 2   | 6     | 51 $\Omega$ to $V_{TT}$  |
| BOUT             | 3   | 7     | 51 $\Omega$ to $V_{TT}$  |
| A <sub>IN1</sub> | 4   | 8     | OPEN                     |
| A <sub>IN2</sub> | 5   | 9     | OPEN                     |
| B <sub>IN1</sub> | 6   | 10    | OPEN                     |
| B <sub>IN2</sub> | 7   | 11    | OPEN                     |
| $V_{EE}$         | 8   | 12    | $V_{EE}$                 |
| N.C.             | 9   | 13    | OPEN                     |
| C <sub>IN1</sub> | 10  | 14    | OPEN                     |
| C <sub>IN2</sub> | 11  | 15    | GND                      |
| D <sub>IN1</sub> | 12  | 16    | OPEN                     |
| D <sub>IN2</sub> | 13  | 1     | GND                      |
| COUT             | 14  | 2     | 51 $\Omega$ to $V_{TT}$  |
| DOUT             | 15  | 3     | 51 $\Omega$ to $V_{TT}$  |
| $V_{CC2}$        | 16  | 4     | GND                      |

BURN - IN CONDITIONS:  
 $V_{TT} = -2.0$  V MAX/ -2.2 V MIN  
 $V_{EE} = -5.7$  V MAX/ -5.2 V MIN

## Military 1662

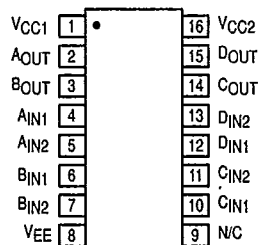


### AVAILABLE AS

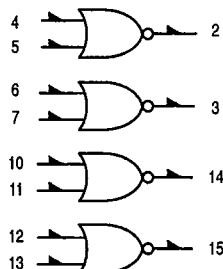
- 1) JAN: N/A
  - 2) SMD: N/A
  - 3) 883: N/A
  - 4) 1662/BXA \*
- X = CASE OUTLINE AS FOLLOWS:

PACKAGE: CERDIP: E  
CERFLAT: F

\* 883 Processing (Non-Compliant)



### LOGIC DIAGRAM



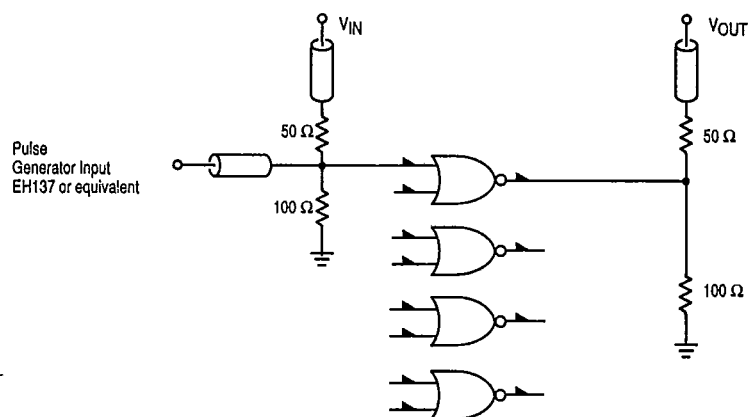


Figure 1. Test Circuit

## NOTES

1. Coaxial cables (Equal lengths, typ 2 places) to scope.
2.  $t_r = t_f = 1.5 \text{ ns} \pm 0.2 \text{ ns}$ .
3. PRR = 20 MHz, 50% duty cycle.
4. Unused outputs connected to a 50  $\Omega$  resistor to ground.

| Temp.            | 25°C   | 85°C   | -30°C  |
|------------------|--------|--------|--------|
| V <sub>ILL</sub> | 0.31 V | 0.34 V | 0.28 V |
| V <sub>IHH</sub> | 1.11 V | 1.19 V | 1.04 V |

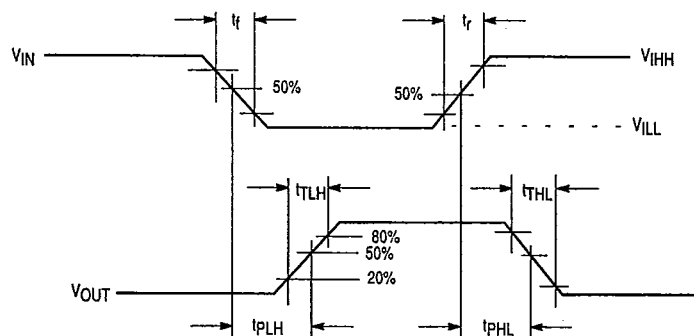


Figure 2. Test Circuit Waveforms

T-43-22

1662

QUIESCENT LIMIT TABLE

| Test Temperature        | Test Voltage Values (Volts) |                 |                  |                  |                 |                  |
|-------------------------|-----------------------------|-----------------|------------------|------------------|-----------------|------------------|
|                         | V <sub>IH</sub>             | V <sub>IL</sub> | V <sub>IHA</sub> | V <sub>ILA</sub> | V <sub>EE</sub> | V <sub>EEL</sub> |
| T <sub>A</sub> = 25 °C  | -0.81                       | -1.85           | -1.095           | -1.485           | -5.2            | -3.2             |
| T <sub>A</sub> = 85 °C  | -0.70                       | -1.83           | -1.025           | -1.440           | -5.2            | -3.2             |
| T <sub>A</sub> = -30 °C | -0.875                      | -1.89           | -1.180           | -1.515           | -5.2            | -3.2             |

| Symbol                 | Parameter                  | Limits     |       |            |        |            |        | Units | TEST VOLTAGE APPLIED TO PINS BELOW                                                                         |  |  |  |  |  |  |  |
|------------------------|----------------------------|------------|-------|------------|--------|------------|--------|-------|------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| Functional Parameters: |                            | + 25 °C    |       | + 85 °C    |        | - 30 °C    |        | V     | Pinouts referenced are for DIL package, check Pin Assignments<br>VCC = 0.0 V, Output Load = 50 Ω to -2.0 V |  |  |  |  |  |  |  |
|                        |                            | Subgroup 1 |       | Subgroup 2 |        | Subgroup 3 |        |       |                                                                                                            |  |  |  |  |  |  |  |
|                        |                            | Min        | Max   | Min        | Max    | Min        | Max    |       |                                                                                                            |  |  |  |  |  |  |  |
| VOH                    | High Output Voltage        | -0.96      | -0.81 | -0.89      | -0.7   | -1.045     | -0.875 | V     |                                                                                                            |  |  |  |  |  |  |  |
| VOL                    | Low Output Voltage         | -1.85      | -1.62 | -1.83      | -1.575 | -1.89      | -1.65  | V     |                                                                                                            |  |  |  |  |  |  |  |
| VOHA                   | High Output Voltage        | -0.98      | -0.81 | -0.91      | -0.7   | -1.065     | -0.875 | V     |                                                                                                            |  |  |  |  |  |  |  |
| VOLA                   | Low Output Voltage         | -1.85      | -1.60 | -1.83      | -1.555 | -1.89      | -1.63  | V     |                                                                                                            |  |  |  |  |  |  |  |
| IEE                    | Power Supply Drain Current | -56        |       | -56        |        | -56        |        | mA    |                                                                                                            |  |  |  |  |  |  |  |
| IINH                   | Input Current High         |            | 350   |            | 350    |            | 350    | μA    |                                                                                                            |  |  |  |  |  |  |  |
| IINL                   | Input Current Low          | 0.5        |       | 0.3        |        | 0.5        |        | μA    |                                                                                                            |  |  |  |  |  |  |  |



T-43-22

1662  
QUIESCENT LIMIT TABLE

| Test Temperature        | Test Voltage Values (Volts) |                 |                  |                  |                 |                  |                 |
|-------------------------|-----------------------------|-----------------|------------------|------------------|-----------------|------------------|-----------------|
|                         | V <sub>IH</sub>             | V <sub>IL</sub> | V <sub>IHA</sub> | V <sub>ILA</sub> | V <sub>EE</sub> | V <sub>EEL</sub> | V <sub>CC</sub> |
| T <sub>A</sub> = 25 °C  | -0.81                       | -1.85           | -1.095           | -1.485           | -5.2            | -3.2             | +2.0            |
| T <sub>A</sub> = 85 °C  | -0.70                       | -1.83           | -1.025           | -1.440           | -5.2            | -3.2             | +2.0            |
| T <sub>A</sub> = -30 °C | -0.875                      | -1.89           | -1.180           | -1.515           | -5.2            | -3.2             | +2.0            |

| Symbol           | Parameter                                      | Limits     |     |             |     |             |     | Units   | TEST VOLTAGE APPLIED TO PINS BELOW                                                         |              |       |   |              |
|------------------|------------------------------------------------|------------|-----|-------------|-----|-------------|-----|---------|--------------------------------------------------------------------------------------------|--------------|-------|---|--------------|
|                  | Functional Parameters:                         | + 25 °C    |     | + 85 °C     |     |             |     | - 30 °C | Pinouts referenced are for DIL package, check Pin Assignments<br>Output Load = 50 Ω to GND |              |       |   |              |
|                  |                                                | Subgroup 9 |     | Subgroup 10 |     | Subgroup 11 |     |         |                                                                                            |              |       |   |              |
|                  |                                                | Min        | Max | Min         | Max | Min         | Max |         |                                                                                            |              |       |   |              |
| t <sub>TLH</sub> | Rise Time                                      |            | 2.1 |             | 2.3 |             | 2.2 | ns      | 5, 6 11, 12                                                                                | 2, 3, 14, 16 | 1, 16 | 8 | 2, 3, 14, 15 |
| t <sub>THL</sub> | Fall Time                                      |            | 2.1 |             | 2.3 |             | 2.2 | ns      | 5, 6 11, 12                                                                                | 2, 3, 14, 16 | 1, 16 | 8 | 2, 3, 14, 15 |
| t <sub>PHL</sub> | Propagation Delay<br>High to Low<br>A, B and D |            | 1.9 |             | 2.1 |             | 2.0 | ns      | 5, 6 11, 12                                                                                | 2, 3, 14, 16 | 1, 16 | 8 | 2, 3, 14, 15 |
| t <sub>PLH</sub> | Propagation Delay<br>Low to High<br>A, B and D |            | 2.1 |             | 2.1 |             | 2.1 | ns      | 5, 6 11, 12                                                                                | 2, 3, 14, 16 | 1, 16 | 8 | 2, 3, 14, 15 |
| t <sub>PHL</sub> | Propagation Delay<br>High to Low C             |            | 2.0 |             | 2.2 |             | 2.1 | ns      | 5, 6 11, 12                                                                                | 2, 3, 14, 16 | 1, 16 | 8 | 2, 3, 14, 15 |
| t <sub>PLH</sub> | Propagation Delay<br>Low to High C             |            | 2.1 |             | 2.1 |             | 2.1 | ns      | 5, 6 11, 12                                                                                | 2, 3, 14, 16 | 1, 16 | 8 | 2, 3, 14, 15 |