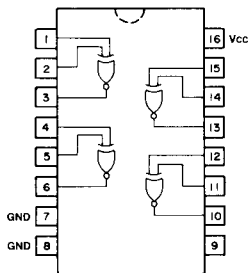


# 41BN(M), 41CT(L)

## Quad 2-Input Exclusive NOR Gate (Open Collector)

The 41BN(M) and 41CT(L) devices are bipolar, NPN, sealed junction, silicon integrated circuits. They are available in 16-pin plastic DIPs.



### Electrical Characteristics

$V_{CC} = 5.0 \pm 0.5 \text{ V}$ ,  $T_J = 0 \text{ to } 85^\circ \text{ C}$

| Parameter                                     | Symbol   | Test Conditions   | MTTL Family |      |       | LTTL Family |      |       | Unit          |
|---|----------|---|-------------|------|-------|-------------|------|-------|---------------|
|   |          |   | 41BN Device |      |       | 41CT Device |      |       |               |
| Output Voltage<br>Low                         | $V_{OL}$ | $V_{CC}=4.5 \text{ V}$ , $I_{OL}=9.8 \text{ mA}$                            | —           | 0.25 | 0.4   | —           | —    | —     | V             |
| Low   | $V_{OL}$ | $V_{CC}=4.5 \text{ V}$ , $I_{OL}=2.4 \text{ mA}$                            | —           | —    | —     | —           | 0.25 | 0.4   | V             |
| Input Voltage<br>High                         | $V_{IH}$ | —   | 1.8         | —    | —     | 1.8         | —    | —     | V             |
| Low   | $V_{IL}$ | —   | —           | —    | 0.8   | —           | —    | 0.8   | V             |
| Clamp   | $V_{IK}$ | $I_{IK} = -5 \text{ mA}$  | —           | —    | -1.5  | —           | —    | -1.5  | V             |
| Input Current<br>High, $V_{IH}=2.4 \text{ V}$ | $I_{IH}$ | $V_{CC}=5.5 \text{ V}$  | —           | —    | 80    | —           | —    | 20    | $\mu\text{A}$ |
| High, $V_{IH}=5.5 \text{ V}$                  | $I_{IH}$ | $V_{CC}=5.5 \text{ V}$  | —           | —    | 400   | —           | —    | 200   | $\mu\text{A}$ |
| Low   | $I_{IL}$ | $V_{CC}=5.5 \text{ V}$ , $V_{IL}=0.4 \text{ V}$                             | —           | —    | -1.96 | —           | —    | -0.48 | $\text{mA}$   |
| Output Current<br>Leakage                     | $I_{OH}$ | $V_{CC}=5.5 \text{ V}$ , $V_{OH}=6.5 \text{ V}$ ,<br>$V_{IL}=0.8 \text{ V}$ | —           | —    | 250   | —           | —    | 250   | $\mu\text{A}$ |
| Power Supply Current                          | $I_{CC}$ | $V_{CC}=5.5 \text{ V}$  | —           | —    | 35    | —           | —    | 10    | $\text{mA}$   |

### Timing Characteristics

$V_{CC}=5.0 \text{ V}$ ,  $T_J=25^\circ \text{ C}$

| Parameter                    | MTTL Family |     |     | LTTL Family |     |     | Unit |
|------------------------------|-------------|-----|-----|-------------|-----|-----|------|
|                              | 41AA Device |     |     | 41AF Device |     |     |      |
| Propagation Delays           | Min         | Typ | Max | Min         | Typ | Max |      |
| $t_{PLH}$ (other input low)  | —           | —   | 30  | —           | —   | 90  | ns   |
| $t_{PHL}$ (other input low)  | —           | —   | 17  | —           | —   | 45  | ns   |
| $t_{PLH}$ (other input high) | —           | —   | 30  | —           | —   | 110 | ns   |
| $t_{PHL}$ (other input high) | —           | —   | 30  | —           | —   | 70  | ns   |
| Transition Times             |             |     |     |             |     |     |      |
| $t_{rHL}$                    | —           | —   | 8   | —           | —   | 30  | ns   |

### Maximum Ratings

Power supply voltage ( $V_{CC}$ ) .....7.0 V  
 Input voltage ( $V_i$ ) .....5.5 V  
 Operating temperature range ( $T_J$ ) .....-25 to +125 °C  
 Storage temperature range ( $T_{stg}$ ) .....-40 to +125 °C

Maximum ratings are defined as the limiting conditions that the user can apply to the device under all variations of circuit and environmental conditions. If any rating is exceeded, permanent damage to the device may result.

Bonding or soldering of the external leads of this device can be performed safely at temperatures up to 300 °C.