

CMOS QUAD EXCLUSIVE-NOR GATE

FEATURES

- ◆ Buffered Outputs
- ◆ Diode Protection on all Inputs
- ◆ Fully "B"-Series Compatible

DESCRIPTION

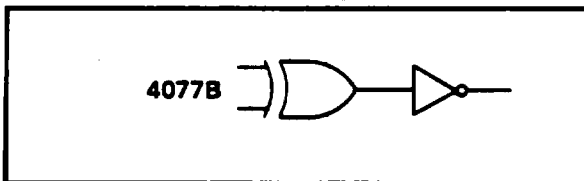
The 4077B contains four independent exclusive-NOR gates integrated on a single monolithic silicon chip. Each exclusive-NOR gate consists of five N-channel and five P-channel enhancement-mode transistors, plus output buffering devices.

TRUTH TABLE
(one of four gates)

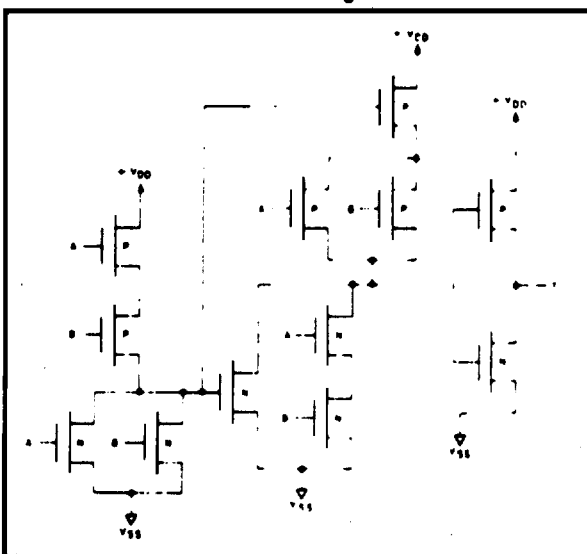
| A | B | Y |
|---|---|---|
| 0 | 0 | 1 |
| 1 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 1 | 1 |

Where 1 = High Level
0 = Low Level

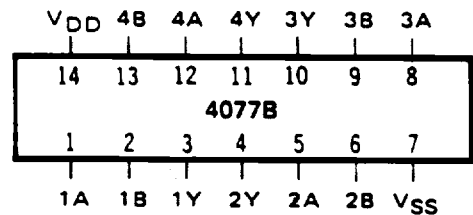
LOGIC DIAGRAM
(one of four gates)



SCHEMATIC DIAGRAM
(one of four gates)



CONNECTION DIAGRAM
(all packages)



Add suffix for package:

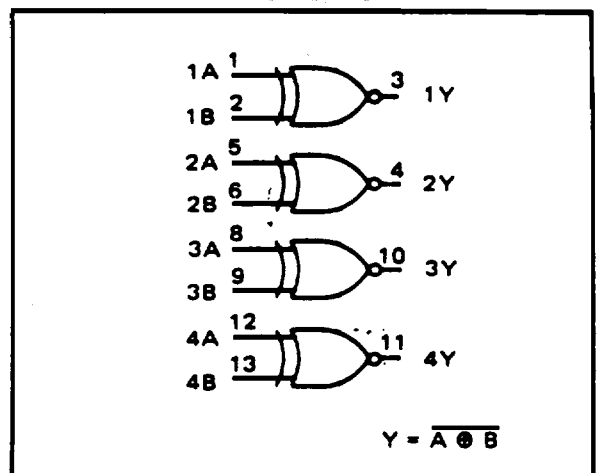
- C 14-pin Cerdip
- E 14-pin Epoxy

RECOMMENDED OPERATING CONDITIONS

For maximum reliability:

| | | | |
|-----------------------|-------------------|-------------|-----|
| DC Supply Voltage | $V_{DD} - V_{SS}$ | 3 to 15 | Vdc |
| Operating Temperature | T_A | -55 to +125 | °C |
| | | -40 to +85 | °C |

FUNCTION DIAGRAM



ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS¹

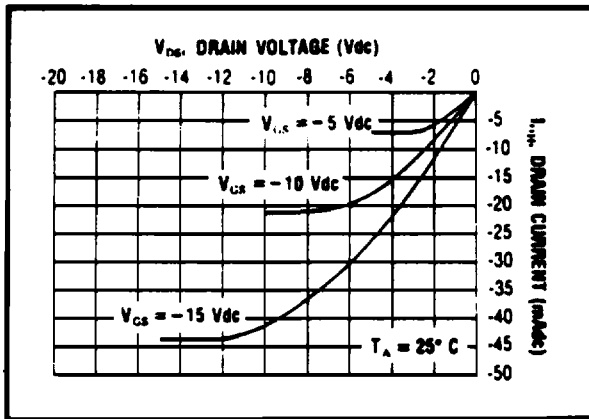
| PARAMETER | V _{DD} (Vdc) | CONDITIONS | T _{LOW} ² | | +25°C | | | T _{HIGH} ² | | Units |
|---|--------------------------|--|-------------------------------|------|-------|--------|------|--------------------------------|------|------------------|
| | | | Min. | Max. | Min. | Typ. | Max. | Min. | Max. | |
| QUIESCENT DEVICE CURRENT I _{DD} | 5 | V _{IN} = V _{SS} or V _{DD} | - | 0.05 | - | 0.0005 | 0.05 | - | 1.5 | μA _{dc} |
| | 10 | All valid input combinations | - | 0.10 | - | 0.001 | 0.10 | - | 3.0 | |
| | 15 | | - | 0.20 | - | 0.002 | 0.20 | - | 6.0 | |

NOTES: ¹ Remaining Static Electrical Characteristics are listed under "4000B Series Family Specifications".

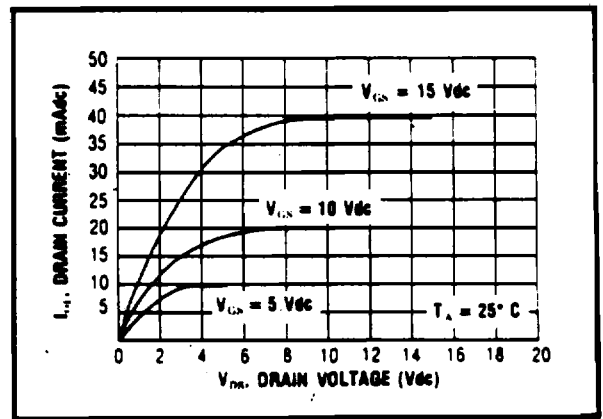
² T_{LOW} = -55°C for C
 = -40°C for E
 T_{HIGH} = +125°C for C
 = + 85°C for E

DYNAMIC CHARACTERISTICS (C_L = 50pF, T_A = 25°C)

| PARAMETER | V _{DD} (Vdc) | Min. | Typ. | Max. | Units |
|---|--------------------------|------|------|------|-------|
| PROPAGATION DELAY TIME t _{PLH} , t _{PHL} | 5 | - | 150 | 300 | ns |
| | 10 | - | 65 | 130 | |
| | 15 | - | 50 | 100 | |
| OUTPUT TRANSITION TIME t _{TLH} , t _{THL} | 5 | - | 100 | 200 | ns |
| | 10 | - | 50 | 100 | |
| | 15 | - | 40 | 80 | |



Typical P-Channel
Source Current Characteristics



Typical N-Channel
Sink Current Characteristics