

## CMOS NOR GATES

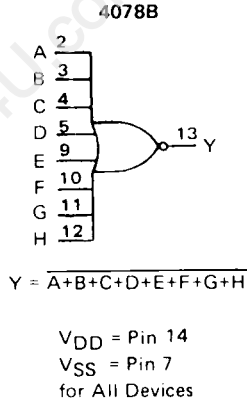
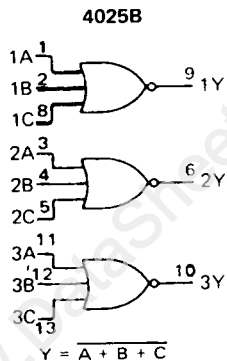
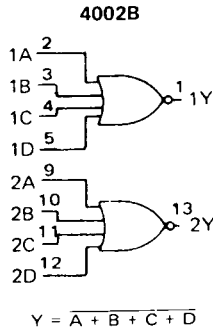
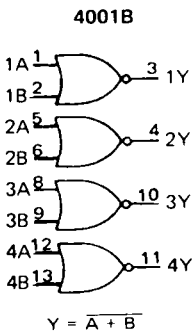
- 4001B – Quad 2-Input NOR
- 4002B – Dual 4-Input NOR
- 4025B – Triple 3-Input NOR
- 4078B – 8-Input NOR

**FEATURES**

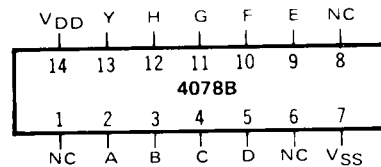
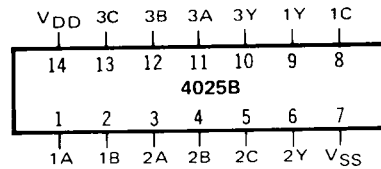
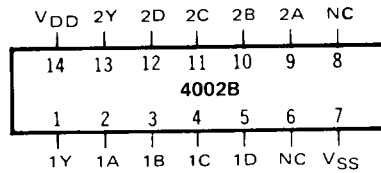
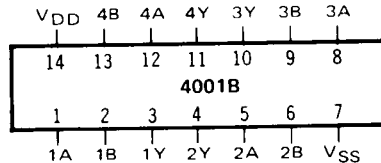
- ◆ Buffered Outputs
- ◆ Diode Protection on all Inputs
- ◆ Fully "B" - Series Compatible

Inputs	Output
0 0 . . . 0	1
All other combinations	0

**FUNCTION DIAGRAMS**



**CONNECTION DIAGRAMS**  
(all packages)



**RECOMMENDED OPERATING CONDITIONS**

For maximum reliability:

DC Supply Voltage	$V_{DD} - V_{SS}$	3 to 15	Vdc
Operating Temperature	$T_A$		
C, D, F, H Device		-55 to +125	°C
E Device		-40 to +85	°C

## ELECTRICAL CHARACTERISTICS

### STATIC CHARACTERISTICS<sup>1</sup>

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

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

<sup>2</sup> T<sub>LOW</sub> = -55°C for C, D, F, H device.

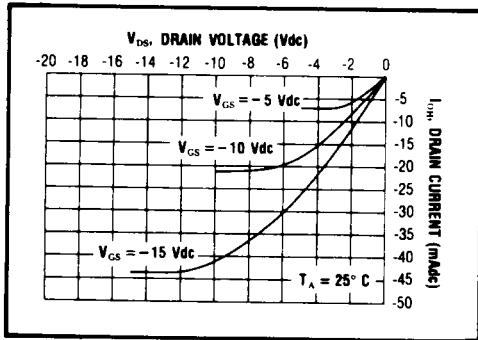
= -40°C for E device.

T<sub>HIGH</sub> = +125°C for C, D, F, H device.

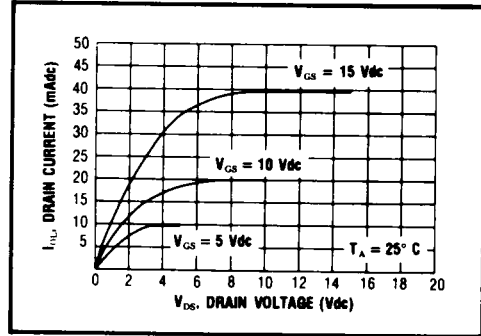
= + 85°C for E device.

### DYNAMIC CHARACTERISTICS (C<sub>L</sub> = 50pF, T<sub>A</sub> = 25°C)

PARAMETER		V <sub>DD</sub> (Vdc)	Min.	Typ.	Max.	Units
PROPAGATION DELAY TIME	t <sub>PLH</sub> , t <sub>PHL</sub>	5	—	125	250	ns
		10	—	60	120	
		15	—	45	90	
OUTPUT TRANSITION TIME	t <sub>TLH</sub> , t <sub>THL</sub>	5	—	100	200	ns
		10	—	50	100	
		15	—	40	80	

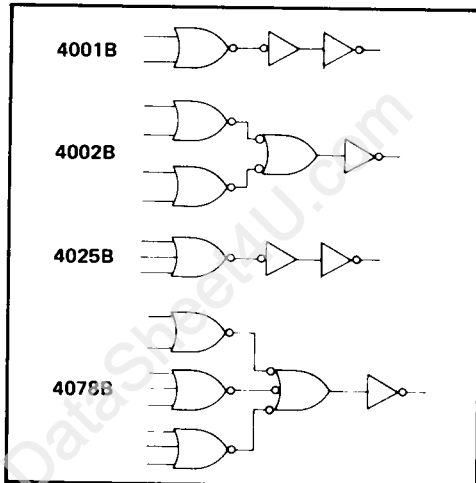


Typical P-Channel Source Current Characteristics



Typical N-Channel Sink Current Characteristics

### LOGIC DIAGRAMS



### SCHEMATIC DIAGRAM 4002B (1 of 2 gates)

