GD4028B
1-OF-10 DECODER

DESCRIPTION – The 4028B is a CMOS 4 Bit BCD to 1-of-10 active HIGH decoder. A 1-2-4-8 BCD code applied to inputs A_0 through A_3 causes the selected output to be HIGH, the other nine will be LOW. If desired, the 4028B may be used as a 1-of-8 decoder with enable; 3-bit octal inputs are applied to inputs A_0, A_1, and A_2 selecting an output 0 through 7. Input A_3 then becomes an active LOW enable, forcing the selected output LOW when A_3 is HIGH. The 4028B may also be used as an 8-input demultiplexer with an active LOW data input. The outputs are fully buffered for best performance.

- **BCD TO 1-OF-10 DECODER**
- **1-OF-8 DECODER WITH ACTIVE LOW ENABLE**
- **8-INPUT DEMULTIPLEXER WITH ACTIVE LOW DATA INPUT**

PIN NAMES

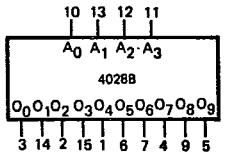
$A_0 - A_3$	Address Inputs, 1-2-4-8 BCD
$O_0 - O_9$	Outputs (Active HIGH)

TRUTH TABLE

INPUTS				OUTPUTS									
A_3	A_2	A_1	A_0	O_0	O_1	O_2	O_3	O_4	O_5	O_6	O_7	O_8	O_9
L	L	L	L	H	L	L	L	L	L	L	L	L	L
L	L	L	H	L	H	L	L	L	L	L	L	L	L
L	L	H	L	L	L	H	L	L	L	L	L	L	L
L	L	H	H	L	L	L	H	L	L	L	L	L	L
L	H	L	L	L	L	L	L	H	L	L	L	L	L
L	H	L	H	L	L	L	L	L	H	L	L	L	L
L	H	H	L	L	L	L	L	L	L	H	L	L	L
L	H	H	H	L	L	L	L	L	L	L	H	L	L
H	L	L	L	L	L	L	L	L	L	L	L	H	L
H	L	L	H	L	L	L	L	L	L	L	L	L	H
H	L	H	L	L	L	L	L	L	L	L	L	H	L
H	L	H	H	L	L	L	L	L	L	L	L	L	H
H	H	L	L	L	L	L	L	L	L	L	L	H	L
H	H	L	H	L	L	L	L	L	L	L	L	L	H
H	H	H	L	L	L	L	L	L	L	L	L	H	L
H	H	H	H	L	L	L	L	L	L	L	L	L	H

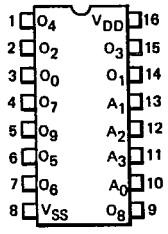
H = HIGH Level
L = LOW Level

LOGIC SYMBOL



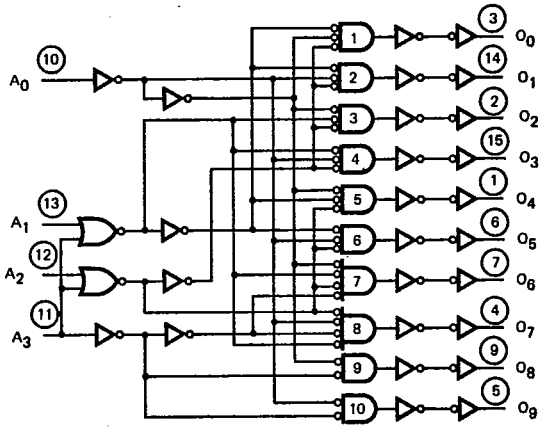
V_{DD} = Pin 16
V_{SS} = Pin 8

CONNECTION DIAGRAM
DIP (TOP VIEW)



NOTE:
The SO Package has the same pinouts (Connection Diagram) as the Dual In-line Package.

LOGIC DIAGRAM



V_{DD} = Pin 16
V_{SS} = Pin 8
○ = Pin Number

GS CMOS · GD4028B

DC CHARACTERISTICS: V_{DD} as shown, V_{SS} = 0 V (See Note 1)

SYMBOL	PARAMETER		LIMITS									UNITS	TEMP	TEST CONDITIONS
			V_{DD} = 5 V			V_{DD} = 10 V			V_{DD} = 15 V					
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX			
I_{DD}	Quiescent Power Supply Current	XC			20 150			40 300			80 600	μA	MIN, 25°C MAX	All inputs at 0 V or V_{DD}
		XM			5 150			10 300			20 600	μA	MIN, 25°C MAX	

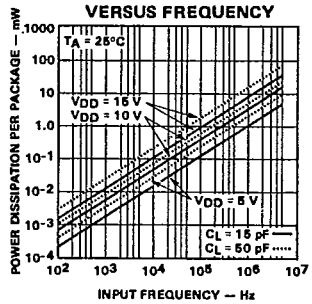
AC CHARACTERISTICS: V_{DD} as shown, V_{SS} = 0 V, T_A = 25°C (See Note 2)

SYMBOL	PARAMETER	LIMITS									UNITS	TEST CONDITIONS
		V_{DD} = 5 V			V_{DD} = 10 V			V_{DD} = 15V				
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX		
t_{PLH}	Propagation Delay, A_n to O_n		167	325		66	145		45	53	ns	C_L = 50 pF,
t_{PHL}			157	325		57	145		40	46	ns	R_L = 200 kΩ
t_{TLH}	Output Transistion Time		85	200		40	100		31	70	ns	Input Transition
t_{THL}			110	200		37	100		25	70	ns	Times ≤ 20 ns

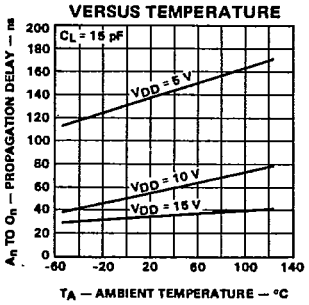
NOTES:
1. Additional DC Characteristics are listed in this section under 4000B Series CMOS Family Characteristics.
2. Propagation Delays and Output Transition Times are graphically described in this section under 4000B Series CMOS Family Characteristics.

TYPICAL ELECTRICAL CHARACTERISTICS

POWER DISSIPATION VERSUS FREQUENCY



PROPAGATION DELAY VERSUS TEMPERATURE



PROPAGATION DELAY VERSUS LOAD CAPACITANCE