



钜地半导体
Tudi Semiconductor

Product Specification

TUDI-CD4001BM96

网址 www.sztdbdtcom Q

用芯智造 · 卓越品质

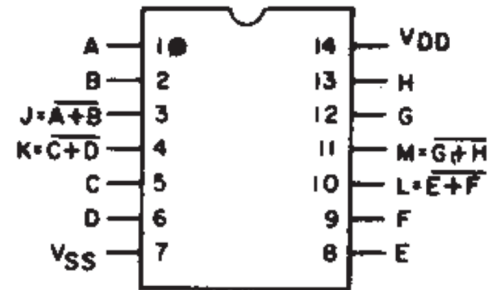
**semiconductor device
manufacturer**

- Design
- research and development
- production
- and sales



Features:

- Propagation delay time=60 ns (typ.) at $C_L=50$ pF, $V_{DD}=10V$
- Buffered inputs and outputs
- Standardized symmetrical output characteristics
- 100% tested for maximum quiescent current at 20V
- 5-V, 10-V, and 15-V parametric ratings
- Maximum input current of 1 μA at 18V over full package-temperature range; 100 nA at 18V and 25
- Noise margin (over full package temperature range):
1V at $V_{DD}=5V$
2V at $V_{DD}=10V$
2.5V at $V_{DD}=15V$
- Meets all requirements of JEDEC Tentative Standard No.13B, "Standard Specifications for Description of "B" Series CMOS Devices"



CD4001B

Description

- CD4001B, CD4002B, and CD4025B NOR gates provide the system designer with direct implementation of the NOR function and supplement the existing family of CMOS gates. All inputs and outputs are buffered.
- The CD4001B, CD4002B, and CD4025B types are supplied in 14-lead hermetic dual-in-line ceramic packages (F3A suffix), 14-lead dual-in-line plastic packages (E suffix), 14-lead small-outline packages (M, MT, M96, and NSR suffixes), and 14-lead thin shrink small-outline packages (PW and PWR suffixes).



STATIC ELECTRICAL CHARACTERISTICS

CHARACTER- ISTIC	CONDITIONS			LIMITS AT INDICATED TEMPERATURES (°C)							UNITS
	V _O (V)	V _{IN} (V)	V _{DD} (V)					+25			
				-55	-40	+85	+125	Min.	Typ.	Max.	
Quiescent Device Current, I _{DD} Max.	—	0,5	5	0.25	0.25	7.5	7.5	—	0.01	0.25	μA
	—	0,10	10	0.5	0.5	15	15	—	0.01	0.5	
	—	0,15	15	1	1	30	30	—	0.01	1	
	—	0,20	20	5	5	150	150	—	0.02	5	
Output Low (Sink) Current I _{OL} Min.	0.4	0,5	5	0.64	0.61	0.42	0.36	0.51	1	—	mA
	0.5	0,10	10	1.6	1.5	1.1	0.9	1.3	2.6	—	
	1.5	0,15	15	4.2	4	2.8	2.4	3.4	6.8	—	
Output High (Source) Current, I _{OH} Min.	4.6	0,5	5	-0.64	-0.61	-0.42	-0.36	-0.51	-1	—	mA
	2.5	0,5	5	-2	-1.8	-1.3	-1.15	-1.6	-3.2	—	
	9.5	0,10	10	-1.6	-1.5	-1.1	-0.9	-1.3	-2.6	—	
	13.5	0,15	15	-4.2	-4	-2.8	-2.4	-3.4	-6.8	—	
Output Voltage: Low-Level, V _{OL} Max.	—	0,5	5	0.05				—	0	0.05	V
	—	0,10	10	0.05				—	0	0.05	
	—	0,15	15	0.05				—	0	0.05	
Output Voltage: High-Level, V _{OH} Min.	—	0,5	5	4.95				4.95	5	—	V
	—	0,10	10	9.95				9.95	10	—	
	—	0,15	15	14.95				14.95	15	—	
Input Low Voltage, V _{IL} Max.	0.5,4.5	—	5	1.5				—	—	1.5	V
	1,9	—	10	3				—	—	3	
	1.5,13.5	—	15	4				—	—	4	
Input High Voltage, V _{IH} Min.	0.5	—	5	3.5				3.5	—	—	V
	1	—	10	7				7	—	—	
	1.5	—	15	11				11	—	—	
Input Current I _{IN} Max.		0,18	18	±0.1	±0.1	±1	±1	—	±10 ⁻⁵	±0.1	μA



RECOMMENDED OPERATING CONDITIONS

For maximum reliability, nominal operating conditions should be selected so that operation is always within the following ranges:

CHARACTERISTIC	LIMITS		UNITS
	MIN.	MAX.	
Supply-Voltage Range (For T_A = Full Package Temperature Range)	3	18	V

MAXIMUM RATINGS, Absolute-Maximum Values:

DC SUPPLY-VOLTAGE RANGE, (V_{DD})

Voltages referenced to V_{SS} Terminal) -0.5V to +20V

INPUT VOLTAGE RANGE, ALL INPUTS -0.5V to $V_{DD} + 0.5V$

DC INPUT CURRENT, ANY ONE INPUT $\pm 10mA$

POWER DISSIPATION PER PACKAGE (P_D):

For $T_A = -55^{\circ}C$ to $+100^{\circ}C$ 500mW

For $T_A = +100^{\circ}C$ to $+125^{\circ}C$ Derate Linearly at 12mW/ $^{\circ}C$ to 200mW

DEVICE DISSIPATION PER OUTPUT TRANSISTOR

FOR T_A = FULL PACKAGE-TEMPERATURE RANGE (All Package Types) 100mW

OPERATING-TEMPERATURE RANGE (T_A) $-55^{\circ}C$ to $+125^{\circ}C$

STORAGE TEMPERATURE RANGE (T_{stg}) $-65^{\circ}C$ to $+150^{\circ}C$

LEAD TEMPERATURE (DURING SOLDERING):

At distance $1/16 \pm 1/32$ inch ($1.59 \pm 0.79mm$) from case for 10s max $+265^{\circ}C$

DYNAMIC ELECTRICAL CHARACTERISTICS

At $T_A = 25^{\circ}C$; Input $t_r, t_f = 20ns$, $C_L = 50pF$, $R_L = 200k\Omega$

CHARACTERISTIC	TEST CONDITIONS	ALL TYPES LIMITS		UNITS	
		V _{DD} VOLTS	TYP.		MAX.
Propagation Delay Time, t _{PHL} , t _{PLH}		5 10 15	125 60 45	250 120 90	ns
Transition Time, t _{THL} , t _{TLH}		5 10 15	100 50 40	200 100 80	ns
Input Capacitance, C _{IN}	Any Input		5	7.5	pF

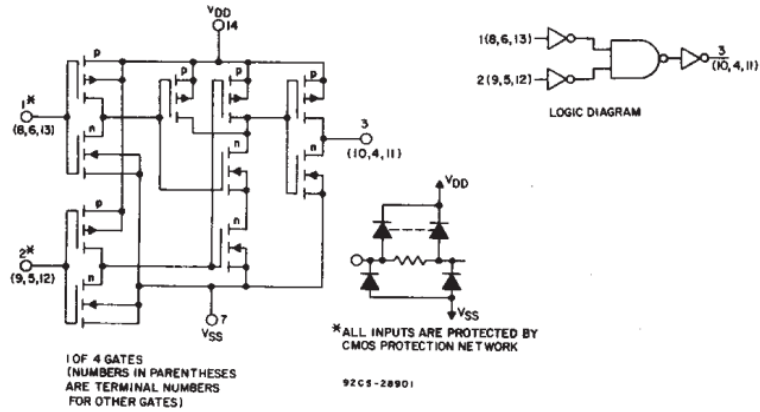


Fig.5 - Schematic and logic diagrams for CD4001B.

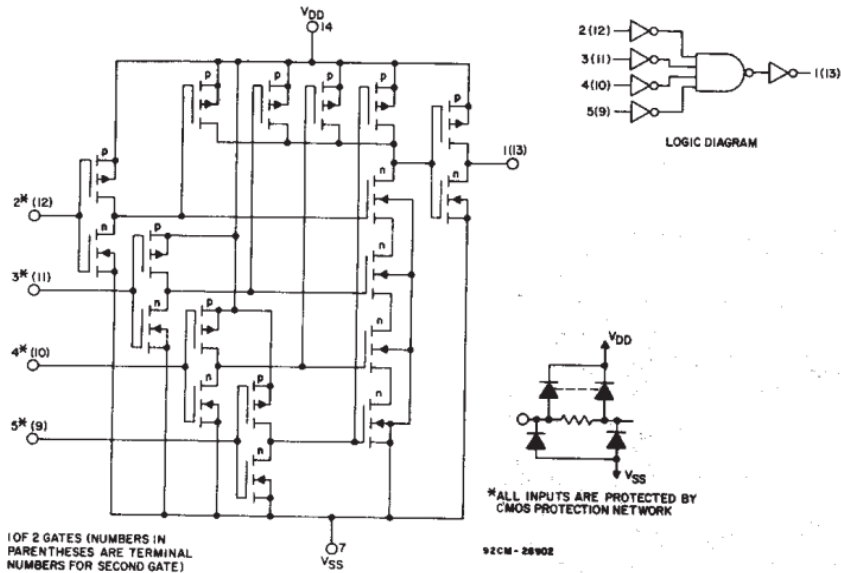


Fig. 6 - Schematic and logic diagrams for CD4002B.

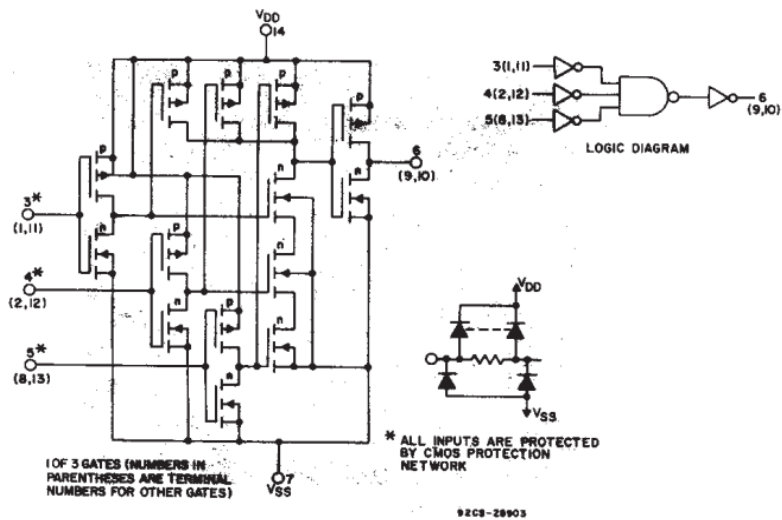


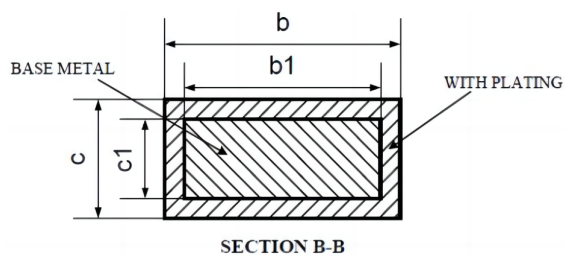
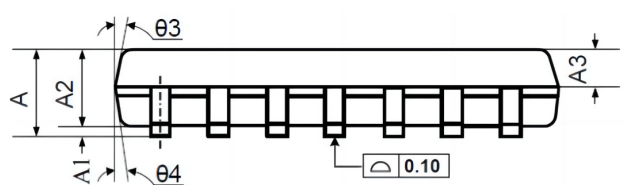
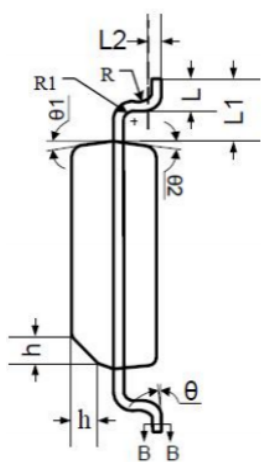
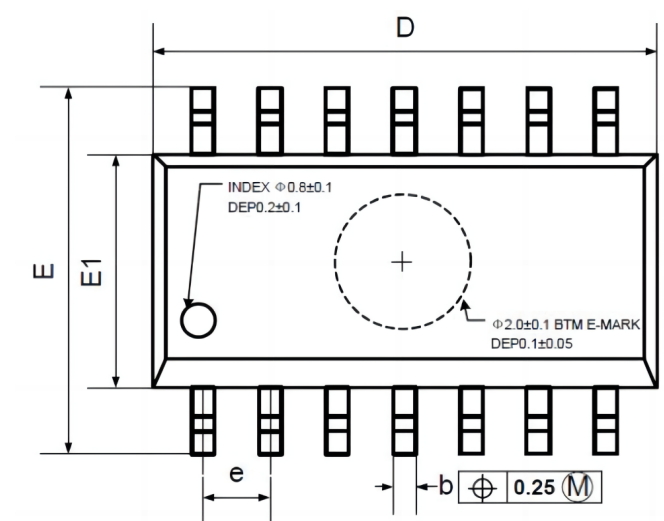
Fig. 7 - Schematic and logic diagrams for CD4025B.



Order information

Order Number	Package	Package Quantity	Marking On The park
CD4001BM96-TUDI	SOP14	Tape,Reel,2500	CD4001BM96

Package SOP14



Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	1.35	1.60	1.75
A1	0.10	0.15	0.25
A2	1.25	1.45	1.65
A3	0.55	0.65	0.75
b	0.36		0.49
b1	0.35	0.40	0.45
C	0.16		0.25
c1	0.15	0.20	0.25
D	8.53	8.63	8.73
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27 BSC		
L	0.45	0.60	0.80
L1	1.04 REF		
L2	0.25 BSC		
R	0.07		
R1	0.07		
h	0.30	0.40	0.50
θ	0°		8°
θ1	6°	8°	10°
θ2	6°	8°	10°
θ3	5°	7°	9°
θ4	5°	7°	9°



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