

DESCRIPTION

The 8250, 8251 and 8252 are gate arrays for decoding and logic conversion applications.

The 8250 converts 3 lines of input to a one-of-eight output. The fourth input line (D) is utilized as an inhibit to allow use in larger decoding networks.

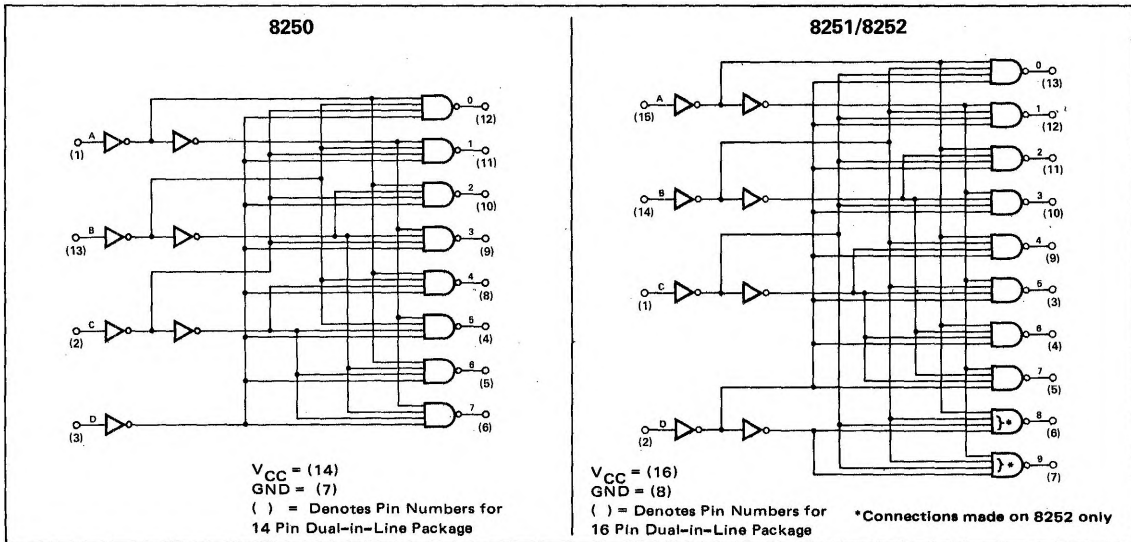
The 8251 and 8252 convert a 4 line input code (with

1-2-4-8 weighting) to a one-of-ten output as shown in the Truth Table.

The 8252 is a direct replacement for the 9301 with all outputs being forced high when a binary code greater than nine is applied to the inputs.

The selected output is a logic "0"

LOGIC DIAGRAMS



TRUTH TABLE

INPUT STATE				OUTPUT STATES									
				8250								8251	
				0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	1	1	1	1	1	1	1	1	1
1	0	0	0	1	0	1	1	1	1	1	1	1	1
0	1	0	0	1	1	0	1	1	1	1	1	1	1
1	1	0	0	1	1	1	0	1	1	1	1	1	1
0	0	1	0	1	1	1	1	0	1	1	1	1	1
1	0	1	0	1	1	1	1	1	0	1	1	1	1
0	1	1	0	1	1	1	1	1	1	0	1	1	1
1	1	1	0	1	1	1	1	1	1	1	0	1	1
0	0	0	1	1	1	1	1	1	1	1	1	0	1
1	0	0	1	1	1	1	1	1	1	1	1	1	0
0	1	0	1	1	1	1	1	1	1	1	1	0	1
1	1	0	1	1	1	1	1	1	1	1	1	1	0
0	0	1	1	1	1	1	1	1	1	1	1	0	1
1	0	1	1	1	1	1	1	1	1	1	1	1	0
0	1	1	1	1	1	1	1	1	1	1	1	1	0
1	1	1	1	1	1	1	1	1	1	1	1	1	0

ELECTRICAL CHARACTERISTICS (Over Recommended Operating Temperature And Voltage)

CHARACTERISTICS	LIMITS				A	B	C	D	OUTPUTS	NOTES
	MIN.	TYP.	MAX.	UNITS						
"1" Output Voltage	2.6	3.5		V					-800 μ A	6, 10
"0" Output Voltage			0.4	V					16mA	7, 10
"1" Input Current A, B, C, D			40	μ A	4.5V	4.5V	4.5V	4.5V		
"0" Input Current A, B, C (8250, 8251)	-0.1		-1.2	mA	0.4V	0.4V	0.4V			
A, B, C, D (8252)	-0.1		-1.6	mA	0.4V	0.4V	0.4V	0.4V		
D (8251 Only)	-0.1		-1.2	mA				0.4V		
D (8250 Only)	-0.1		-1.0	mA				0.4V		

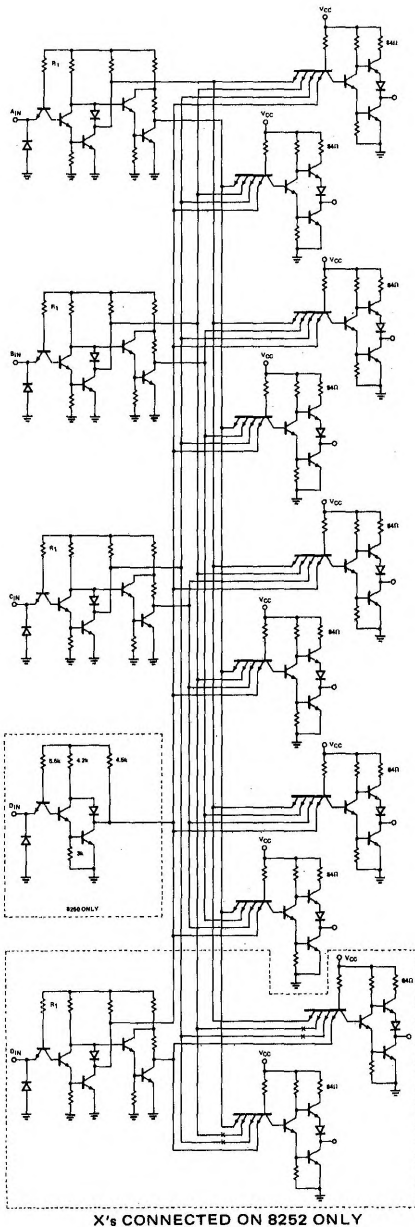
 $T_A = 25^\circ\text{C}$ and $V_{CC} = 5.0\text{V}$

CHARACTERISTICS	LIMITS				A	B	C	D	OUTPUTS	NOTES
	MIN.	TYP.	MAX.	UNITS						
Turn-on Delay t_{on}		20	35	ns						8
Turn-off Delay t_{off}		20	35	ns						8
Power/Current Consumption (8251 Only)			135/25.7	mW/mA	5.25V	5.25V	5.25V	0V		11
(8250 Only)			125/23.8	mW/mA	5.25V	5.25V	5.25V	0V		11
Input Voltage Rating	5.5			V	10mA	10mA	10mA	10mA		
Output Short Circuit Current										
Outputs 1 thru 9	-10		-55	mA	0V	0V	0V	0V	0V	9, 11
Output 0	-10		-55	mA	5.0V	0V	0V	0V	0V	9, 11

NOTES:

- All voltage measurements are referenced to the ground terminal. Terminals not specifically referenced are left electrically open.
- All measurements are taken with ground pin tied to zero volts.
- Positive current flow is defined as into the terminal referenced.
- Positive logic definition:
"UP" Level = "1", "DOWN" Level = "0"
- Precautionary measures should be taken to ensure current limiting in accordance with Absolute Maximum Ratings should the isolation diodes become forward biased.
- Output source current is supplied through a resistor to ground.
- Output sink current is supplied through a resistor to V_{CC} .
- Refer to AC Test Figures and waveforms.
- Manufacturer reserves the right to make design and process changes and improvements.
- Inputs for "1" and "0" output voltage test is per TRUTH table with threshold levels of 0.8V for logical "0" and 2.0V for logical "1".
- Not more than one output should be shorted at a time.
- $V_{CC} = 5.25$ volts.

SCHEMATIC DIAGRAM



AC TEST FIGURE AND WAVEFORMS

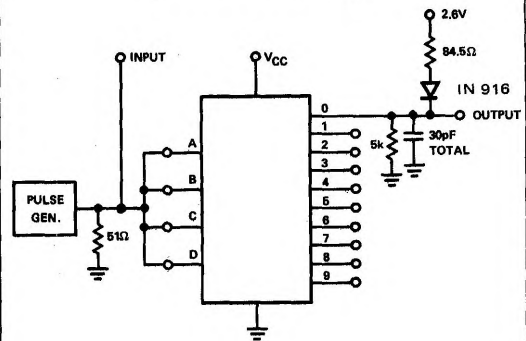
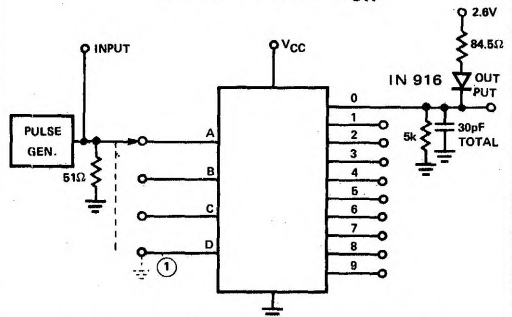
TURN-ON DELAY (t_{on})

FIGURE 1

TURN-OFF DELAY (t_{off})

① Non-selected inputs are connected to ground.

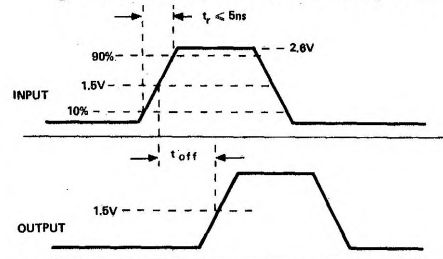
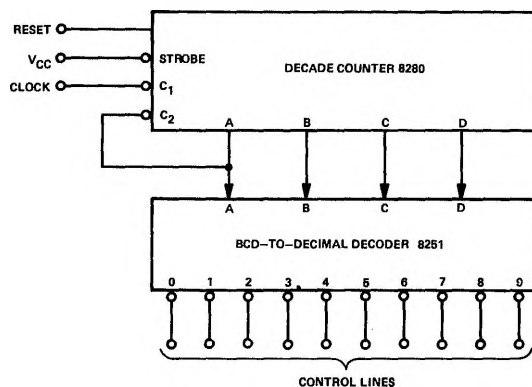


FIGURE 2

TYPICAL APPLICATIONS

ONE-OF-10 DECODER



ONE-OF-64 DECODER

