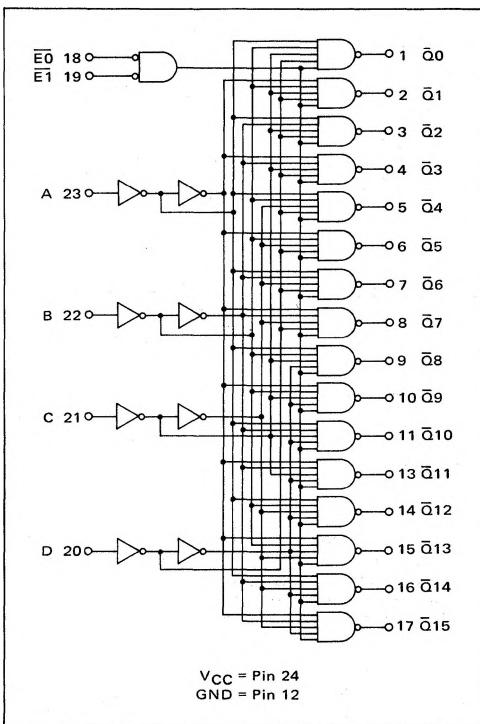


# MC9300/MC8300 series

ONE-OF-SIXTEEN DECODER

## MC8311P\*



This device converts four BCD inputs to select one of sixteen outputs. The selected output is in the logic "0" state while all other outputs are in the logic "1" state. Two Enable inputs are provided for increased logic capability. This device is useful in memory selection and data routing applications.

Input Loading Factor = 1  
Output Loading Factor = 10

Total Power Dissipation = 175 mW typ/pkg  
Propagation Delay Time Enable to Output = 26 ns max

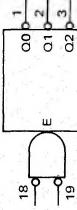
INPUT						OUTPUT															
E0	E1	D	C	B	A	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1	1	X	X	X	X	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	0	X	X	X	X	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	X	X	X	X	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1
0	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1
0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1
0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1
0	0	1	0	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
0	0	1	0	0	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
0	0	1	0	1	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
0	0	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	1	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
X	Don't care																				

\*P suffix = 24-pin dual in-line plastic package (Case 649).

## MC8311(continued)

### ELECTRICAL CHARACTERISTICS

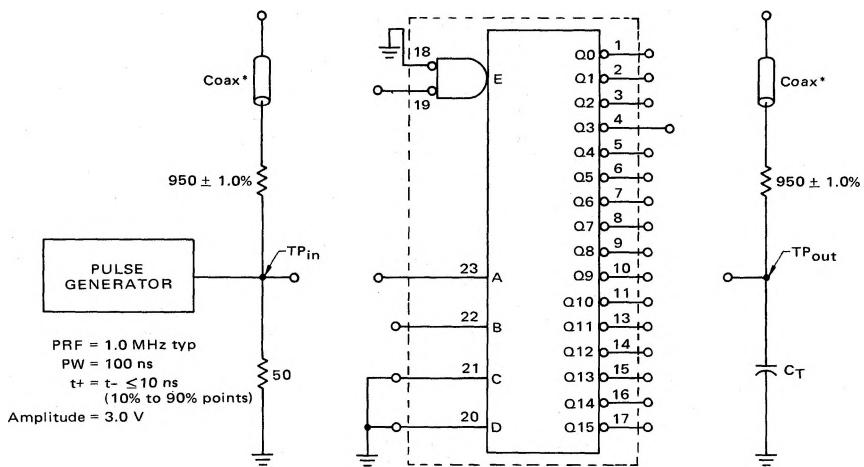
Test procedures are shown for only one input and one output. Test other inputs and outputs in a similar manner according to the truth table. Additionally, test all input-output combinations according to the truth table.



Characteristic	Symbol	MC8311 Test Limits						TEST CURRENT/VOLTAGE APPLIED TO PINS LISTED BELOW:											
		0°C +25°C			+75°C			0°C +25°C			+75°C			0°C +25°C			+75°C		
Input Forward Current	I <sub>F1</sub>	18	-	-1.6	-	-1.6	-	-1.6	mAdc	-	-	-	-	-	-	-	-	24	12
	I <sub>F2</sub>	18	-	-1.41	-	-1.41	-	-1.41	mAdc	-	-	-	-	-	-	-	-	24	12
	I <sub>R</sub>	18	-	60	-	60	-	60	μAdc	-	-	-	-	-	-	-	-	18	12
	I <sub>D</sub>	18	-	-	-1.5	-	-1.5	-	Vdc	-	-	-18	-	-	-	-	20	-	12
	V <sub>O1</sub>	1	-	0.45	-	0.45	-	0.45	Vdc	1	-	-	-	-	-	-	-	24	-
	V <sub>O2</sub>	1	-	0.45	-	0.45	-	0.45	Vdc	-	1	-	-	-	-	-	-	24	12
	V <sub>OH</sub>	1	2.4	-	2.4	-	2.4	-	Vdc	-	-	1	-	-	-	-	24	-	12
Power Requirements (Total Device)	I <sub>PD</sub>	24	-	-	-	60	-	-	mAdc	-	-	-	-	-	-	-	24	-	12
Switching Parameters	V <sub>IHX</sub> = 2.4 Vdc																		
Turn-On Delay - E	t <sub>pd-</sub>	19.4	-	-	26	-	-	ns	19	4	-	-	22.23	-	-	-	24	-	12,18,20,21
Turn-Off Delay - E	t <sub>pd+</sub>	19.4	-	-	31	-	-	ns	19	4	-	-	22.23	-	-	-	24	-	12,18,20,21
Turn-On Delay - A	t <sub>pd-</sub>	23.4	-	-	35	-	-	ns	23	4	-	-	22	-	-	-	24	-	12,18,19,20,21
Turn-Off Delay - A	t <sub>pd+</sub>	23.4	-	-	40	-	-	ns	23	4	-	-	22	-	-	-	24	-	12,18,19,20,21

## MC8311(continued)

SWITCHING TIME TEST CIRCUIT AND VOLTAGE WAVEFORMS



$C_T = 15$  pF = total parasitic capacitance, which includes probe, wiring, and load capacitances.

\*The coax delays from input to scope and output to scope must be matched. The scope must be terminated in 50-ohm impedance. The 950-ohm resistor and the scope termination impedance constitute a 20:1 attenuator probe. Coax shall be CT-070-50 or equivalent.

