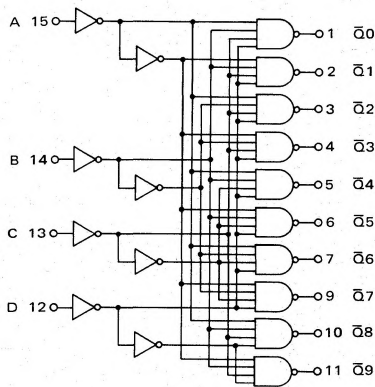


BCD TO ONE-OF-TEN
DECODER/DRIVERS

MC5400/7400 series

MC5445L • MC7445L,P*
MC54145L • MC74145L,P*



V_{CC} = Pin 16
GND = Pin 8

These devices are intended for use as drivers for indicators or relays, rather than drivers for MTTL logic gates, as is the case with the MC5442/7442, which is functionally identical. The output transistors of these devices are capable of sinking 80 mA, and have breakdown voltages of 30 V (MC5445/7445) and 15 V (MC54145/74145). The outputs are suitable for open-collector logic applications, and are compatible for interfacing with most MOS integrated circuits. Since full decoding is included, all outputs remain off for non-BCD inputs

Total Power Dissipation = 215 mW typ/pkg
Propagation Delay Time = 50 ns max

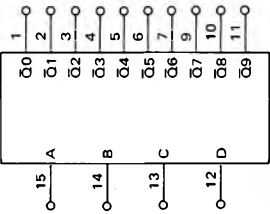
INPUTS				OUTPUTS									
D	C	B	A	Q ₉	Q ₈	Q ₇	Q ₆	Q ₅	Q ₄	Q ₃	Q ₂	Q ₁	Q ₀
0	0	0	0	1	1	1	1	1	1	1	1	1	0
0	0	0	1	1	1	1	1	1	1	1	1	0	1
0	0	1	0	1	1	1	1	1	1	1	0	1	1
0	0	1	1	1	1	1	1	1	1	0	1	1	1
0	1	0	0	1	1	1	1	1	0	1	1	1	1
0	1	0	1	1	1	1	1	0	1	1	1	1	1
0	1	1	0	1	1	1	0	1	1	1	1	1	1
0	1	1	1	1	1	0	1	1	1	1	1	1	1
1	0	0	0	1	0	1	1	1	1	1	1	1	1
1	0	0	1	0	1	1	1	1	1	1	1	1	1
1	0	1	0	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	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	1	0	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1

*L suffix = 16-pin dual in-line ceramic package (Case 620).
P suffix = 16-pin dual in-line plastic package (Case 612).

MC5445L, MC7445L,P/MC54145L, MC74145L,P (continued)

ELECTRICAL CHARACTERISTICS

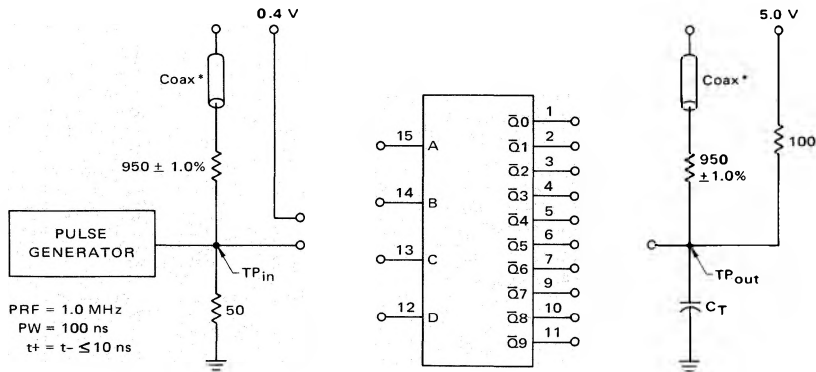
Test procedures are shown for only one input and one output. Test other inputs and outputs in the same manner according to the truth table. Test all input-output combinations according to the truth table.



										TEST CURRENT/VOLTAGE VALUES (All Temperatures)												
										mA						Volts						
										I _{OL1}		I _{OL2}		I _{CEX}	V _{IL}	V _{IH}	V _{IHH}	V _{th1}	V _{th0}	V _{CC}	V _{CCL}	V _{CCH}
										20	80	20	80	0.25	0.4	2.4	5.5	2.0	0.8	5.0	4.5	5.5
										20	80	0.25	0.4	2.4	5.5	2.0	0.8	5.0	4.75	5.25		
										TEST CURRENT/VOLTAGE APPLIED TO PINS LISTED BELOW:												
										I _{OL1}	I _{OL2}	I _{CEX}	V _{IL}	V _{IH}	V _{IHH}	V _{th1}	V _{th0}	V _{CC}	V _{CCL}	V _{CCH}		
Input																				Gnd		
Forward Current	I _F	12	—	-1.6	mAdc	—	-1.6	mAdc	—	12	—	—	—	—	—	—	—	—	16	8		
Leakage Current	I _{R1}	12	—	40	μAdc	—	40	μAdc	—	—	12	—	—	—	—	—	—	—	16	8		
	I _{R2}	12	—	1.0	mAdc	—	1.0	mAdc	—	—	—	12	—	—	—	—	—	—	16	8		
Output	V _{OL}	1	—	0.9	Vdc	—	0.9	Vdc	—	—	—	—	—	—	—	12,13,14,15	12,13,14,15	—	16	8		
		1	—	0.4	Vdc	—	0.4	Vdc	—	1	—	—	—	—	—	12,13,14,15	12,13,14,15	—	16	8		
	V _{CEX}	1	30	—	Vdc	30	—	Vdc	—	—	1	—	—	—	—	12,13,14,15	12,13,14,15	—	16	8		
Power Requirements		1	15	—	Vdc	15	—	Vdc	—	—	—	—	—	—	—	12,13,14,15	12,13,14,15	—	16	8		
	(Total Device)																					
Power Supply Drain	I _{PD}	16	—	62	mAdc	—	70	mAdc	—	—	—	—	—	—	—	—	—	—	16	8,12,13,14,15		
Switching Parameters																						
Turn-On Delay	t _{pd-}	15,1	—	50#	ns	—	50#	ns	15	1	1	12,13,14	—	—	—	—	—	—	16	8		
Turn-Off Delay	t _{pd+}	15,1	—	50#	ns	—	50#	ns	15	1	1	12,13,14	—	—	—	—	—	—	16	8		

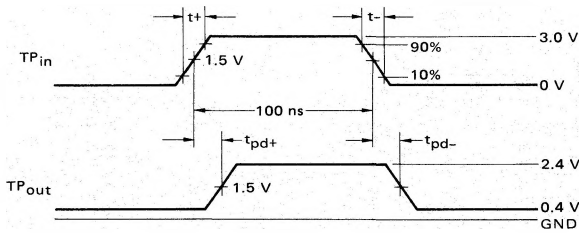
#Tested only at 25°C.

SWITCHING TIME TEST CIRCUIT AND VOLTAGE WAVEFORMS



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



MC5445L, MC7445L,P/MC54145L, MC74145L,P (continued)

TYPICAL APPLICATIONS

Two MC5445/7445 or MC54145/74145 decoder/drivers (depending on drive requirements) may be used to perform 4-line to 16-line decoding. Data inputs A, B, and C are applied to both decoder/drivers, while input D is applied to one decoder and $\bar{D}$ to the other. (See Figure 1.)

In addition to the obvious decoder applications, these circuits can also be used for data distribution (Figure 2). Inputs A, B, and C of the decoder/driver are used as control inputs, while the D input serves as the data input. In a typical compound data routing application, origin data is selected by the control inputs of the MC54151/74151 8-channel data selector. The data is then routed to the proper destination by means of the MC5445/7445 decoder/driver control lines.

FIGURE 1 – BINARY-TO-DECIMAL DECODING USING MC5445/7445 OR MC54145/74145

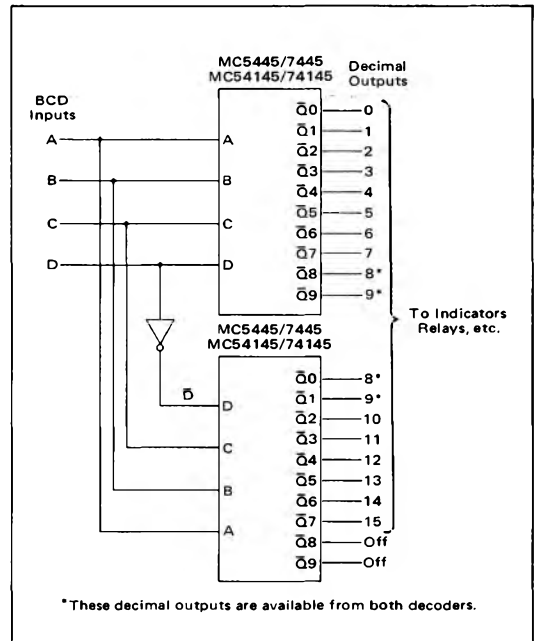


FIGURE 2 – COMPOUND DATA ROUTING USING MC5445/7445

