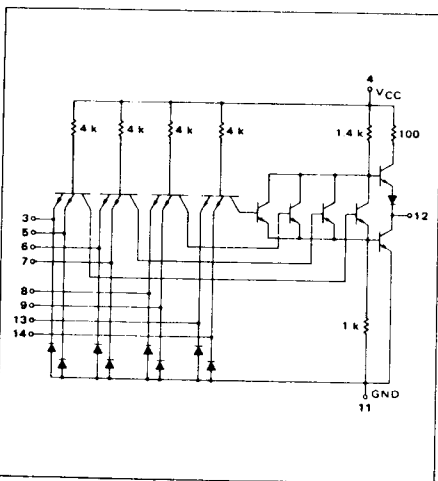


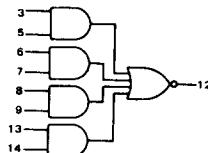
4-WIDE 2-INPUT
"AND-OR-INVERT" GATE

MTTL MC5400F/7400F series

MC5454F*
MC7454F*



This device consists of four 2-input AND gates ORed together and inverted.



Positive Logic

$$12 = (3 \times 5) + (6 \times 7) + (8 \times 9) + (13 \times 14)$$

Negative Logic

$$12 = (3 \times 5) + (6 \times 7) + (8 \times 9) + (13 \times 14)$$

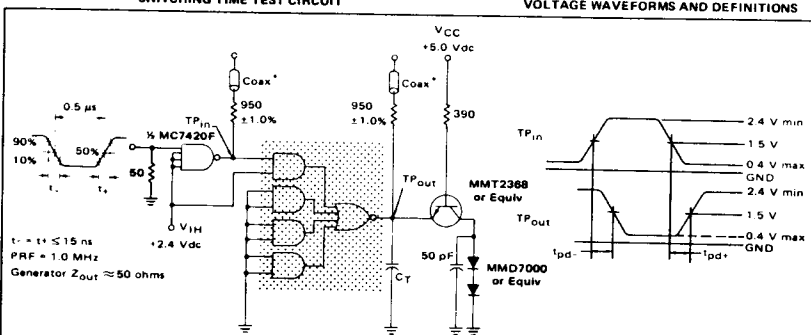
Input Loading Factor = 1
Output Loading Factor = 10

Total Power Dissipation = 22 mW typ/pkg
Propagation Delay Time = 13 ns typ

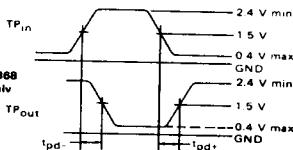
*F suffix = TO-98 ceramic package (Case 608).
See General Information section for package outline dimensions.

SWITCHING TIME TEST CIRCUIT

VOLTAGE WAVEFORMS AND DEFINITIONS



$t_r = t_f \leq 15$ ns
PRF = 1.0 MHz
Generator $Z_{out} \approx 50$ ohms



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

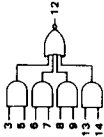
*The coax delays from input to scope and output to scope must be matched. The scope must be terminated in 50 ohm impedance. The 950 ohm resistor and the scope termination impedance constitute a 20:1 attenuator probe. Coax shall be CT-070-50 or equivalent

MC5454F, MC7454F (continued)

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ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one input of this device. To complete testing, sequence through remaining inputs in the same manner.



TEST CURRENT/VOLTAGE VALUES (All Temperatures)																			
mA	Volts																		
	I _{OL}	I _{OH}	V _{IL}	V _{IH}	V _{MH}	V _{RL}	V _{R1}	V _{R2}	V _{N1}	V _{N0}	V _{CC}	V _{ECCH}							
16	-0.4	0.4	2.4	5.3	4.5	3.6	2.6	0.6	3.6	4.3	5.3	-							
16	-0.4	0.4	2.4	5.3	4.5	3.0	2.4	0.6	3.6	4.3	5.3	-							
TEST CURRENT/VOLTAGE APPLIED TO PINS LISTED BELOW																			
Characteristic	Symbol	Pin Under Test	MC5454 Test Limits -55 to +125°C		MC7454 Test Limits 0 to +70°C		I _{OL}	I _{OH}	V _{IL}	V _{IH}	V _{MH}	V _{RL}	V _{R1}	V _{R2}	V _{N1}	V _{N0}	V _{CC}	V _{ECCH}	
			Min	Max	Unit	Min													Max
Input Forward Current	I _F	3	-	-1.6	mA	-	-	3	-	-	-	-	5	-	-	-	-	4	11
Leakage Current	I _{R1}	3	-	40	μA	-	-	-	3	-	-	-	-	-	-	-	-	4	5.6, 7.8, 9.1, 13, 14
	I _{R2}	3	-	1.0	mA	-	-	-	-	3	-	-	-	-	-	-	-	4	5.6, 7.8, 9.1, 13, 14
Output Output Voltage	V _{OL}	12	-	0.4	V	-	-	-	-	-	-	-	-	-	3.5	-	-	4	6.7, 8.9, 11, 13, 14
	V _{OH}	12	2.4	-	V	2.4	-	-	-	-	-	-	5.7, 9.14	-	-	-	-	4	6.7, 8.9, 11, 13, 14
Short-Circuit Current	I _{SC}	12	-20	-15	mA	15	-	-	-	-	-	-	-	-	-	-	-	4	3.5, 6.7, 8.9, 11, 13, 14
Power Requirements																			
Power Supply Current	I _{PS}	4	-	9.2	μA	-	-	-	-	-	-	-	-	-	-	-	-	4	3.5, 6.7, 8.9, 11, 13, 14
	I _{PS}	4	-	7.2	μA	-	-	-	-	-	-	-	-	-	-	-	-	4	3.5, 6.7, 8.9, 11, 13, 14
Switching Parameters																			
Turn-On Delay	t _{PHL}	3, 12	-	15**	ns	-	-	5	-	-	-	-	-	-	-	-	-	4	6.7, 8.9, 11, 13, 14
Turn-Off Delay	t _{PLH}	3, 12	-	20**	ns	-	-	5	-	-	-	-	-	-	-	-	-	4	6.7, 8.9, 11, 13, 14

** Tested only at 25°C.

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