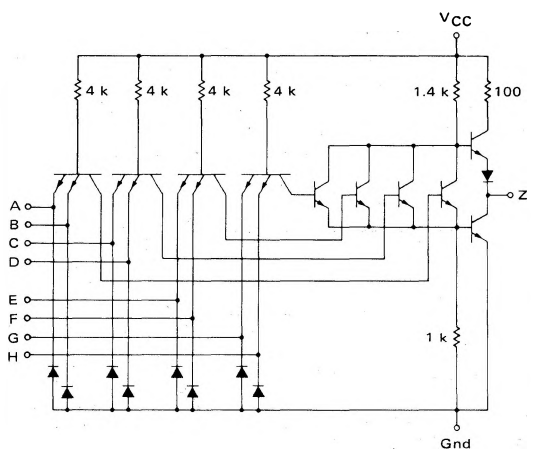
4-WIDE 2-INPUT
"AND-OR-INVERT" GATE

MC5454 • MC7454

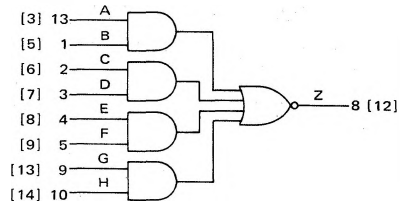
Add Suffix F for TO-86 ceramic package (Case 607).
Suffix L for TO-116 ceramic package (Case 632).
Suffix P for TO-116 plastic package (Case 605) MC7454 only.

CIRCUIT SCHEMATIC



V_{CC} = Pin 14 [4]
Gnd = Pin 7 [11]

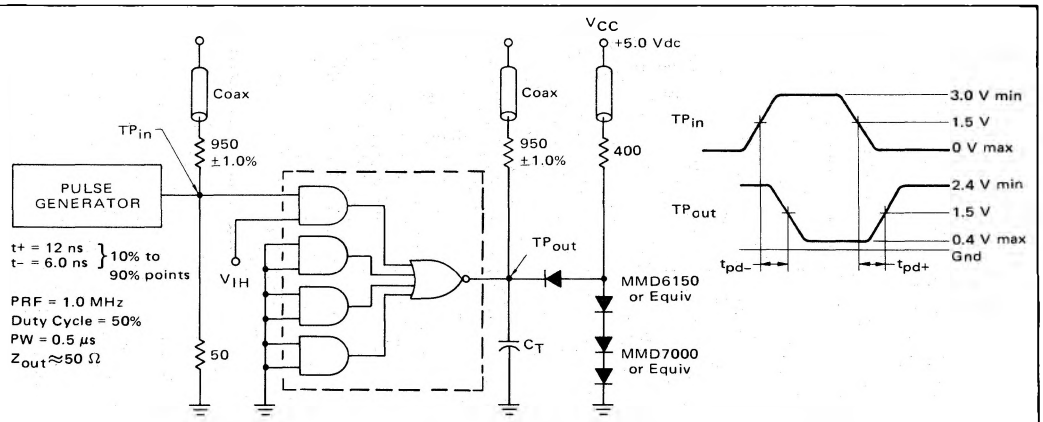
[FLAT Pkg Pin] DIL Pkg Pin



Positive Logic:
$Z = \overline{(A \bullet B) + (C \bullet D) + (E \bullet F) + (G \bullet H)}$
Negative Logic:
$Z = \overline{(A + B) \bullet (C + D) \bullet (E + F) \bullet (G + H)}$

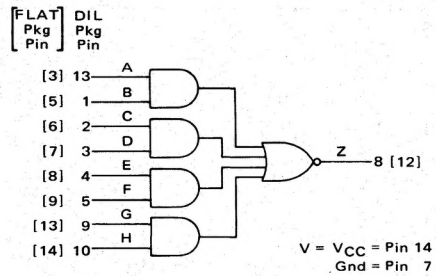
Input Loading Factor = 1
Output Loading Factor = 10
Total Power Dissipation = 22 mW typ/pkg
Propagation Delay Time = 13 ns typ

SWITCHING TIME TEST CIRCUIT AND 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.



ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one input. 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_{IHH}	V_{R1}	V_{R2}	V_{th1}	V_{th0}	V_{CC}	V_{CCL}	V_{CCH}
MC5454	16	-0.4	0.4	2.4	5.5	4.5	5.0	2.0	0.8	5.0	4.50	5.50
MC7454	16	-0.4	0.4	2.4	5.5	4.5	5.0	2.0	0.8	5.0	4.75	5.25

Characteristic	Symbol	Pin Under Test	MC5454 Test Limits −55 to +125°C			MC7454 Test Limits 0 to +70°C			TEST CURRENT/VOLTAGE APPLIED TO PINS LISTED BELOW:											Pin 7[11] is grounded for all tests in addition to the pins listed below:
			Min	Max	Unit	Min	Max	Unit	I_{OL}	I_{OH}	V_{IL}	V_{IH}	V_{IHH}	V_{R1}	V_{R2}	V_{th1}	V_{th0}	V_{CC}	V_{CCL}	V_{CCH}	Gnd
Input																					
Forward Current	I_F	B	-	-1.6	mAdc	-	-1.6	mAdc	-	-	B	-	-	A	-	-	-	-	-	V	-
Leakage Current	I_{R1}	B	-	40	μAdc	-	40	μAdc	-	-	-	B	-	-	-	-	-	-	-	V	A,C,D,E,F,G,H
	I_{R2}	B	-	1.0	mAdc	-	1.0	mAdc	-	-	-	-	B	-	-	-	-	-	-	V	A,C,D,E,F,G,H
Output																					
Output Voltage	V_{OL}	Z	-	0.4	Vdc	-	0.4	Vdc	Z	-	-	-	-	-	-	A,B	-	-	V	-	C,D,E,F,G,H
	V_{OH}	Z	2.4	-	Vdc	2.4	-	Vdc	-	Z	-	-	-	A,D,F,H	-	-	B,C,E,G	-	V	-	-
Short-Circuit Current	I_{SC} †	Z	-20	-55	mAdc	-18	-55	mAdc	-	-	-	-	-	-	-	-	-	-	-	V	All Inputs, Z
Power Requirements																					
Power Supply Drain	I_{PDH}	V	-	9.5	mAdc	-	9.5	mAdc	-	-	-	-	-	-	All Inputs	-	-	-	-	V	-
	I_{PDL}	V	-	8.0	mAdc	-	8.0	mAdc	-	-	-	-	-	-	-	-	-	-	-	V	All Inputs
Switching Parameters									Pulse In	Pulse Out											
Turn-On Delay	t_{pd-}	B,Z	-	15*	ns	-	15*	ns	B	Z	-	A	-	-	-	-	-	V	-	-	C,D,E,F,G,H
Turn-Off Delay	t_{pd+}	B,Z	-	22*	ns	-	22*	ns	B	Z	-	A	-	-	-	-	-	V	-	-	C,D,E,F,G,H

† Only one output should be shorted at a time.
*Tested only at 25°C.