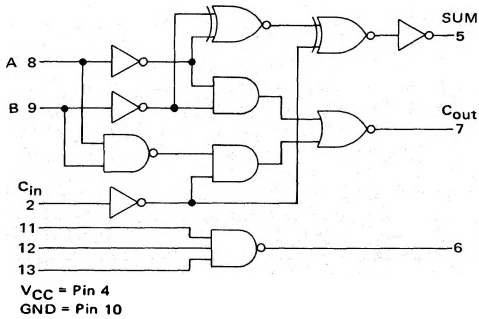


FULL ADDERS

MC4300/MC4000 series

MC4326F,L • MC4327F,L*
MC4026F,L,P • MC4027F,L,P*



Input Loading Factor:

A, B = 2
 C_{in}, Pins 11, 12, 13 = 1

Output Loading Factor:

MC4326 = 15 MTTL I Loads
 MC4327 = 7 MTTL I Loads
 MC4026 = 12 MTTL I Loads
 MC4027 = 6 MTTL I Loads

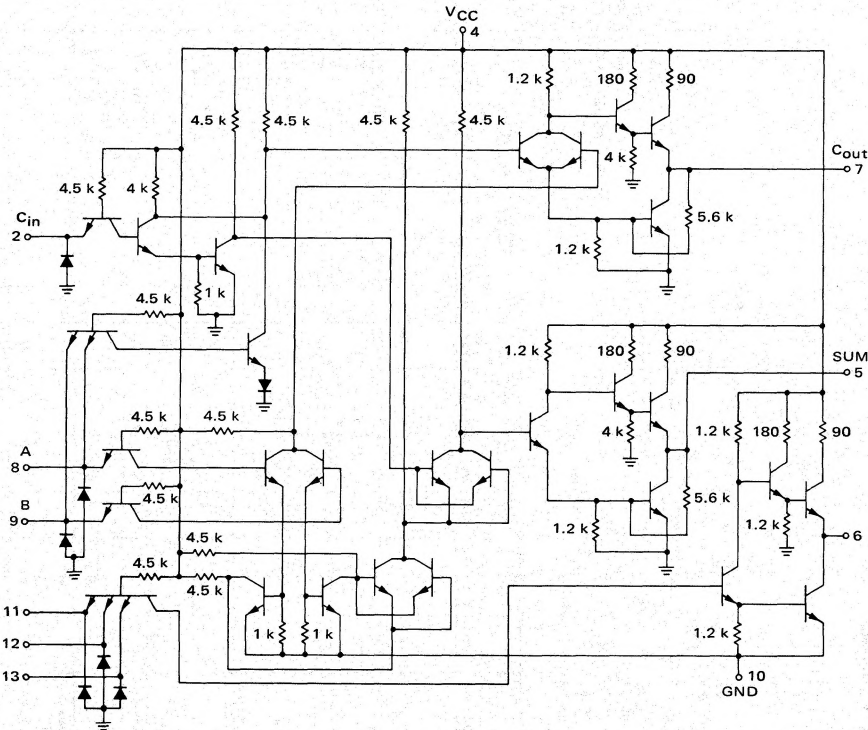
These full adders are designed for serial and ripple-carry parallel adder systems. True Sum and Carry are produced at the output from the input information. A separate 3-input NAND gate is provided on the monolithic chip to provide the inverted Sum or Carry output.

TRUTH TABLE

Input Pins			Output Pins	
8	9	2	5	7
A	B	C _{in}	SUM	C _{out}
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

Total Power Dissipation = 90 mW typ/pkg
 Add Delay = 25 ns typ
 Carry Delay = 13 ns typ

CIRCUIT SCHEMATIC



*F suffix = TO-86 ceramic flat package (Case 607).

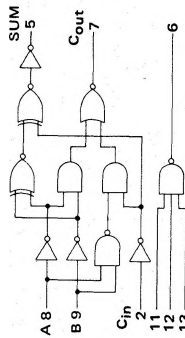
L suffix = TO-116 ceramic dual in-line package (Case 632).

P suffix = TO-116 plastic dual in-line package (Case 605).

MC4326F,L, MC4327F,L, MC4026F,L,P, MC4027F,L,P (continued)

ELECTRICAL CHARACTERISTICS

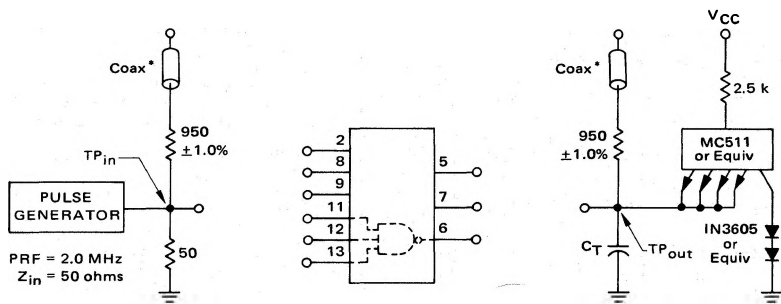
Test procedures are shown for inputs A and C_{in}. Other inputs are tested in the same manner. Output tests should be completed according to the truth table.



Characteristic		TEST CURRENT/VOLTAGE VALUES											
		mA						Volts					
		I _{OL}	Pr ⁺	Std	Pr ⁻	Std	I _{OH}	V _{IL}	V _{IH}	V _{OL}	V _{OH}	V _{max}	V _{CC}
Input	Forward Current	20	10	-2.2	-1.2	-	-	0.45	2.8	4.5	2.0	0.9	5.5
		20	10	-2.2	-1.2	-	-	0.45	2.8	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	2.8	4.5	1.4	0.8	5.5
		20	10	-2.2	-1.2	-	-	0.45	2.8	4.5	1.9	1.0	5.5
Leakage Current		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.8	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.8	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
Inverse Beta Current		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
Breakdown Voltage		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
Output		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
Output Voltage		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
Leakage Current		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
Short-Circuit Current		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
Output Voltage		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
Power Requirements (Total Power)		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
Maximum Power Supply Current		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
Power Supply Drain		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
Power Supply Drain		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
Power Supply Drain		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5
		20	10	-2.2	-1.2	-	-	0.45	3.0	4.5	1.7	1.0	5.5

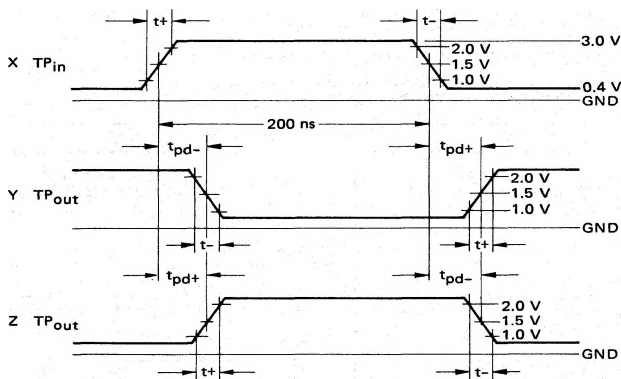
MC4326F,L, MC4327F,L, MC4026F,L,P, MC4027F,L,P (continued)

SWITCHING TIME TEST CIRCUIT AND WAVEFORMS



$C_T = 15 \text{ pF}$ = 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.



SWITCHING TIME TEST PROCEDURES

(Letters shown in test columns refer to waveforms.)

[illegible]