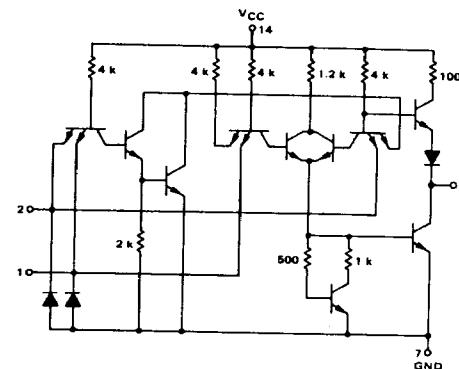


QUAD 2-INPUT
EXCLUSIVE "NOR" GATE

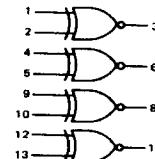
MTTL III MC3100/3000 series

MC3122F • MC3022F
MC3122L • MC3022L,P

1/4 OF CIRCUIT SHOWN



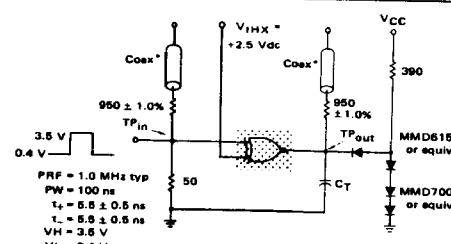
This device consists of four 2-input Exclusive NOR gates. They can be used to build parity checking/generating functions. Up/down counters can be built using these gates and J-K flip-flops.



Positive Logic: $3 = \bar{1} \cdot \bar{2} + 1 \cdot 2$

Input Loading Factor = 1.6
Output Loading Factor = 8
Total Power Dissipation = 85 mW typ/pkg
Propagation Delay Time = 14 ns typ

SWITCHING TIME TEST CIRCUIT

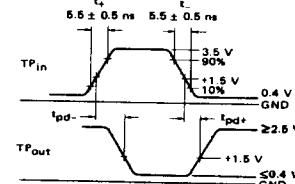


*The coax delays from input to scope and output to scope must be matched. The scope must be terminated in 50-ohm impedance. The 950-ohm resistor and the scope termination impedance constitute a 20:1 attenuator probe. Coax shall be CT-070-80 or equivalent.

CT = 25 pF = total parasitic capacitance, which includes probe, wiring, and load capacitances.

Ground inputs of gates not under test.

VOLTAGE WAVEFORMS AND DEFINITIONS



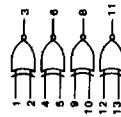
See General Information section for packaging.

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MC3122F, MC3022F/MC3122L, MC3022L,P (continued)

ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one gate. The other gate is tested in the same manner. Further, test procedures are shown for only one input of the gate under test. To complete testing, sequence through remaining inputs.



TEST CURRENT/VOLTAGE VALUES												
	V _{DD}											
	I _{G1}			I _{G2}			I _{G3}			I _{G4}		
	I _{G1}	V _{G1}	I _{G2}	I _{G3}	V _{G2}	I _{G4}	V _{G3}	I _{G1}	V _{G4}	I _{G2}	V _{G1}	I _{G3}
① Test Temperature	I _{G1}	I _{G2}	I _{G3}	I _{G4}	V _{G1}	V _{G2}	V _{G3}	V _{G4}	V _{DD}	V _{DD}	V _{DD}	V _{DD}
MC3122	-55°C	16	-1.4	-	-	1.1	2.0	0.6	3.4	4.0	2.0	4.5
	+25°C	16	-1.4	2.0	-10	1.1	1.8	0.4	3.4	4.0	3.0	5.5
	+75°C	16	-1.6	-	-	0.8	1.8	0.4	3.4	4.0	3.0	5.5
MC3022	-55°C	16	-1.6	2.0	-10	1.1	1.8	0.4	3.5	4.0	3.0	5.25
	+25°C	16	-1.6	2.0	-10	1.1	1.8	0.4	3.5	4.0	3.0	5.25
	+75°C	16	-1.6	-	-	0.8	1.8	0.4	3.5	4.0	3.0	5.25
MC3122 Test Limits												
	Min	-55°C	+25°C	+75°C	Unit	Min	Max	Min	Max	Unit	Min	Max
Forward Current	I _F	1	-3.0	-	-3.0	-	-3.0	-	-3.0	mA/dc	-	-
Latching Current	I _L	1	-100	-100	μA/dc	-100	-100	-100	-100	μA/dc	-	-
Breakdown Voltage	V _{BR}	1	-	5.5	-	-	5.5	-	-	Vdc	-	-
Clamp Voltage	V _D	1	-	-1.5	-	-	-1.5	-	-	Vdc	-	-
Output Current	V _{OL}	3	0.4	0.4	0.4	Vdc	0.4	0.4	0.4	Vdc	3	-
V _{OH}	I _{OL}	3	2.4	2.4	2.4	Vdc	2.5	2.5	2.5	Vdc	3	-
Short-Circuit Current	I _{SC}	3	-20	-65	-20	-65	-20	-65	-20	-65	mA/dc	-
Power Requirements	I _{SS}	14	-	-	24.0	-	-	24.0	-	-	mA/dc	-
Other Switching Parameters	I _{DSAT}	14	-	-	24.0	-	-	24.0	-	-	mA/dc	-
Power Supply Draw	I _{PDI}	14	-	32.4	-	32.4	-	32.4	-	32.4	mA/dc	-
	I _{POL}	14	-	16.8	-	16.8	-	16.8	-	16.8	mA/dc	-
Switching Parameters	I _{ON}	1.5	-	-	22	-	-	22	-	-	ns	-
Turn-On Delay	I _{OFF}	1.5	-	-	22	-	-	22	-	-	ns	-
Turn-Off Delay												

Plus not listed are left open.

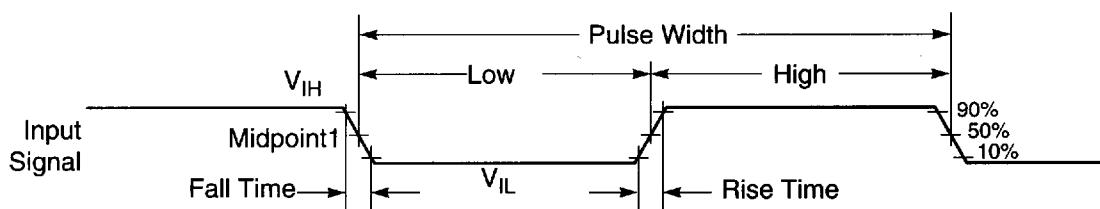
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Specifications

AC Electrical Characteristics

AC ELECTRICAL CHARACTERISTICS

The timing waveforms in the AC Electrical Characteristics are tested with a V_{IL} maximum of 0.5 V and a V_{IH} minimum of 2.4 V for all pins, except EXTAL, RESET, MODA, MODB, and MODC. These pins are tested using the input levels set forth in the DC Electrical Characteristics. AC timing specifications that are referenced to a device input signal are measured in production with respect to the 50% point of the respective input signal's transition. DSP56002 output levels are measured with the production test machine V_{OL} and V_{OH} reference levels set at 0.8 V and 2.0 V, respectively.



Note: The midpoint is $V_{IL} + (V_{IH} - V_{IL})/2$.

AA0179

Figure 2-1 Signal Measurement Reference