

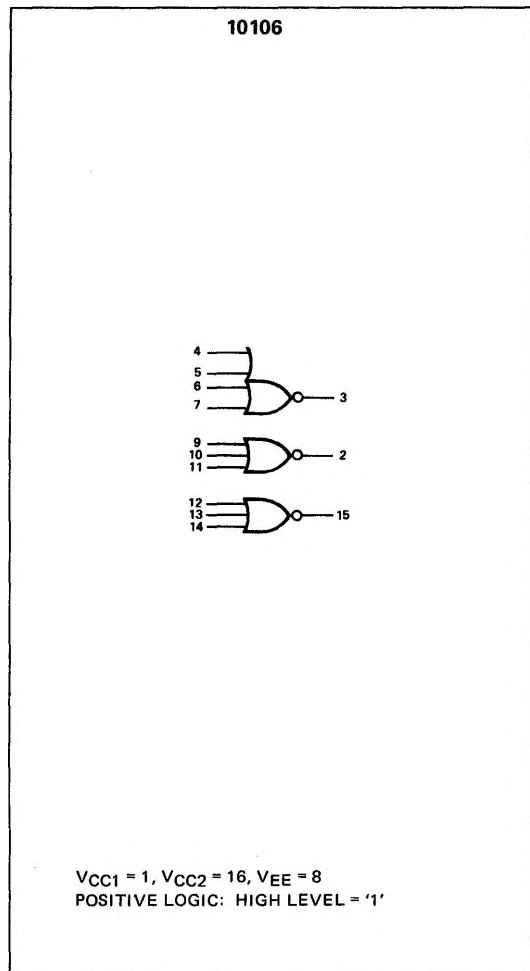
10106B,F: -30 to +85°C

DIGITAL 10,000 SERIES ECL

## DESCRIPTION

The 10106 package contains one 4 input NOR gate and two 3 input NOR gates. The 10106 is optimized for high performance logic applications. The gate has an excellent speed power product of 50 picojoules. All inputs are terminated with a 50 kΩ resistor to V<sub>EE</sub> which eliminates the need to tie unused inputs low. The high impedance inputs and high output fanout is ideal for a transmission line environment. This gate meets the ECL 10,000 Series standard voltage, current and rise and fall time specifications.

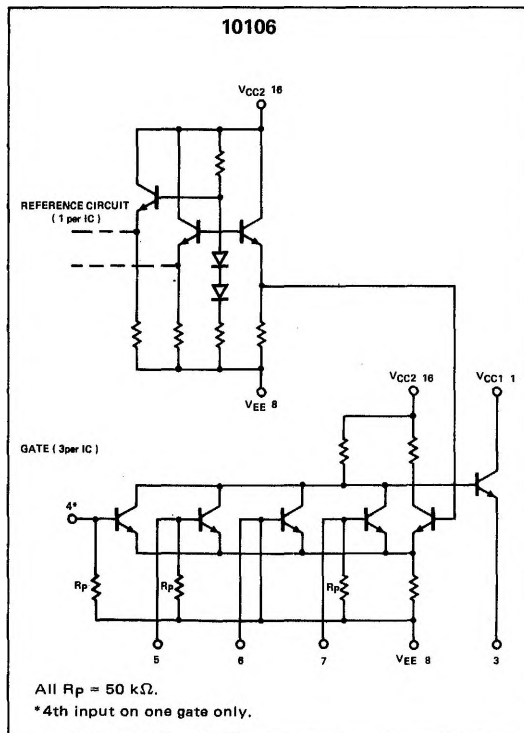
## LOGIC DIAGRAM



## FEATURES

- FAST PROPAGATION DELAY = 2.0 ns TYP
- LOW POWER DISSIPATION = 75 mW/PACKAGE TYP (NO LOAD)
- VERY HIGH FANOUT CAPABILITY
  - CAN DRIVE 50 Ω LINES
- HIGH Z INPUTS – INTERNAL 50 kΩ PULLDOWNS
- HIGH IMMUNITY FROM POWER SUPPLY VARIATIONS: V<sub>EE</sub> = -5.2 V ±5% RECOMMENDED
- OPEN EMITTER LOGIC AND BUSSING CAPABILITY

## CIRCUIT SCHEMATIC



## TEMPERATURE RANGE

- -30 to +85°C Operating Ambient

## PACKAGE TYPE

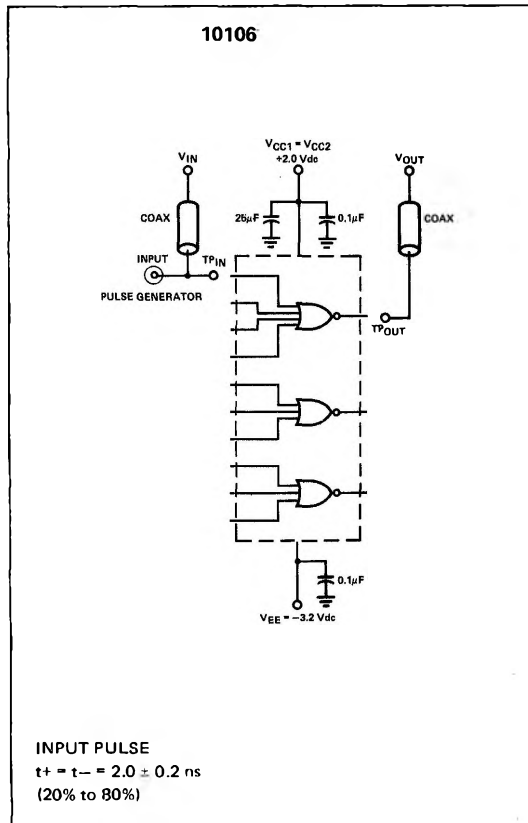
- B: 16-Pin Silicone DIP
- F: 16-Pin CERDIP

**ELECTRICAL CHARACTERISTICS**  
(at Listed Voltages and Ambient Temperatures).

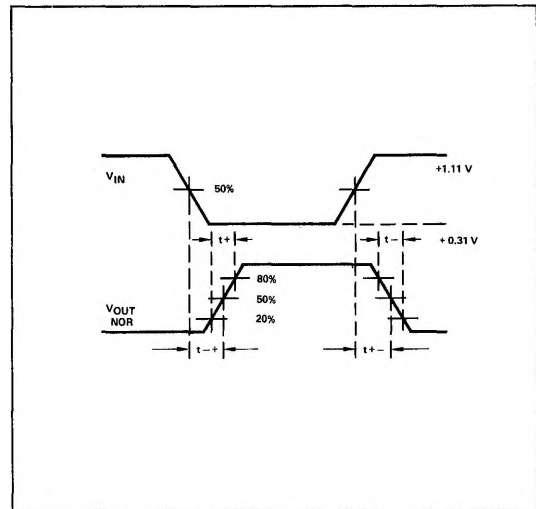
Characteristic	Symbol	Pin Under Test	10106 Test Limits												Unit	TEST VOLTAGE APPLIED TO PINS LISTED BELOW:					(V <sub>CC</sub> ) Gnd
			-30°C		+25°C		+85°C		V <sub>IH</sub> max	V <sub>IL</sub> min	V <sub>IHA</sub> min	V <sub>IHA</sub> max	V <sub>EE</sub>								
			Min	Max	Min	Typ	Max	Min	Max	Min	Max	Min	Max								
Power Supply Drain Current	I <sub>E</sub>	8	—	—	—	15	21	—	—	—	—	—	—	—	—	—	—	—	8	1,16	
Input Current	I <sub>IH</sub>	4	—	—	—	—	265	—	—	—	—	—	—	—	—	—	—	—	8	1,16	
	I <sub>IL</sub>	4	—	—	0.6	—	—	—	—	—	—	—	—	—	—	—	—	—	8	1,16	
Logic "1" Output Voltage	V <sub>OH</sub>	3	-1.060	-0.890	-0.860	—	-0.810	-0.880	-0.700	—	—	—	—	—	—	—	—	—	8	1,16	
		2	-1.060	-0.880	-0.860	—	-0.810	-0.880	-0.700	—	—	—	—	—	—	—	—	—	8	1,16	
Logic "0" Output Voltage	V <sub>OL</sub>	3	-1.890	-1.875	-1.850	—	-1.850	-1.825	-1.815	—	—	—	—	—	—	—	—	—	8	1,16	
		2	-1.890	-1.875	-1.850	—	-1.850	-1.825	-1.815	—	—	—	—	—	—	—	—	—	8	1,16	
Logic "1" Threshold Voltage	V <sub>OHA</sub>	3	-1.080	—	-0.980	—	—	-0.910	—	—	—	—	—	—	—	—	—	—	8	1,16	
		2	-1.080	—	-0.980	—	—	-0.910	—	—	—	—	—	—	—	—	—	—	8	1,16	
Logic "0" Threshold Voltage	V <sub>OLA</sub>	3	—	-1.855	—	—	-1.830	—	-1.695	—	—	—	—	—	—	—	—	—	8	1,16	
		2	—	-1.855	—	—	-1.630	—	-1.695	—	—	—	—	—	—	—	—	—	8	1,16	
Switching Times * (50-ohm load)																					
Propagation Delay	14+ 3-	3	1.0	3.1	1.0	2.0	2.8	1.0	3.3	ns	—	—	4	3	8	1,16					
	14- 3+		1.0	3.1	1.0		2.9	1.0	3.3												
Rise Time (20% to 80%)	13+		1.1	3.6	1.1		3.3	1.1	3.7												
Fall Time (20% to 80%)	13-		1.1	3.6	1.1		3.3	1.1	3.7												

\*Unused outputs connected to a 50-ohm resistor to ground.

**SWITCHING TIME TEST CIRCUIT**



**PROPAGATION DELAY WAVEFORMS @ 25°C**



**NOTES:**

- Each ECL 10,000 series device has been designed to meet the DC specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 linear fpm is maintained. Voltage levels will shift approximately 3 mV with an air flow of 200 linear fpm. Outputs are terminated through a 50-ohm resistor to 2.0 volts.
- For AC tests, all input and output cables to the scope are equal lengths of 50-ohm coaxial cable. Wire length should be < 1/4 inch from TP<sub>IN</sub> to input pin and TP<sub>OUT</sub> to output pin. A 50-ohm termination to ground is located in each scope input. Unused outputs are connected to a 50-ohm resistor to ground.
- Test procedures are shown for only one input or set of input conditions. Other inputs are tested in the same manner.
- All voltage measurements are referenced to the ground terminal. Terminals not specifically referenced are left electrically open.