

10107B,F: -30 to +85°C

DIGITAL 10,000 SERIES ECL

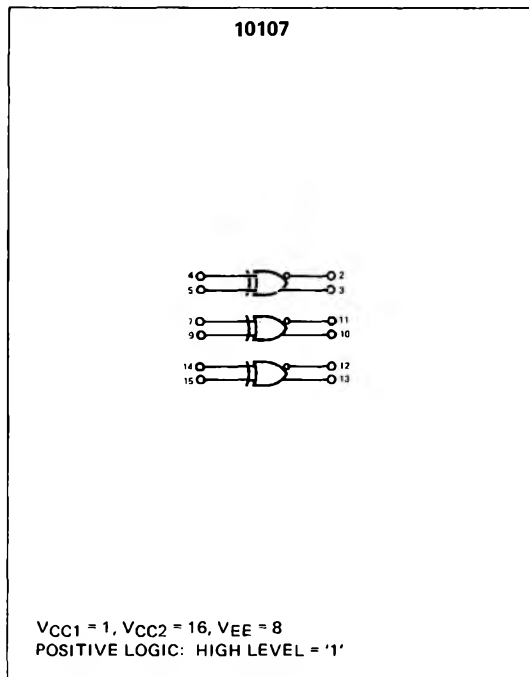
DESCRIPTION

The 10107 is a triple high speed 2-input Exclusive OR/Exclusive NOR gate. The 10107 is optimized for high speed comparator and parity functions, and has an excellent speed power product for this function. All inputs are terminated with a 50 kΩ resistor to V_{EE} which eliminates the need to tie unused inputs low. The high impedance inputs and high output fanout are ideal for a transmission line environment. The 10107 contains a temperature tracking internal bias which insures that the threshold point remains in the center of the transition region over temperature. The 10107 has complementary outputs.

FEATURES

- FAST PROPAGATION DELAY
 - 2.0 ns TYP (INPUTS 4, 9, 14)
 - 2.8 ns TYP (INPUTS 5, 7, 15)
- LOW POWER DISSIPATION = 115 mW/PACKAGE TYP (NO LOAD)
- VERY HIGH FANOUT CAPABILITY
 - CAN DRIVE SIX 50 Ω LINES
- HIGH Z INPUTS - INTERNAL 50 kΩ PULLDOWNS
- HIGH IMMUNITY FROM POWER SUPPLY VARIATIONS: V_{EE} = -5.2 V ±5% RECOMMENDED
- COMPLEMENTARY OR/NOR OUTPUTS
- OPEN EMITTERS FOR BUSSING AND LOGIC CAPABILITY

LOGIC DIAGRAM



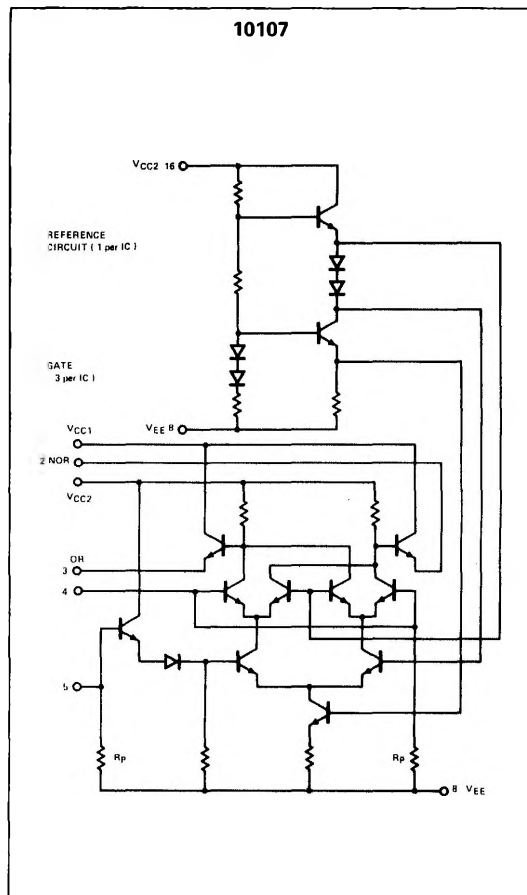
TEMPERATURE RANGE

- -30 to +85°C Operating Ambient

PACKAGE TYPE

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

CIRCUIT SCHEMATIC

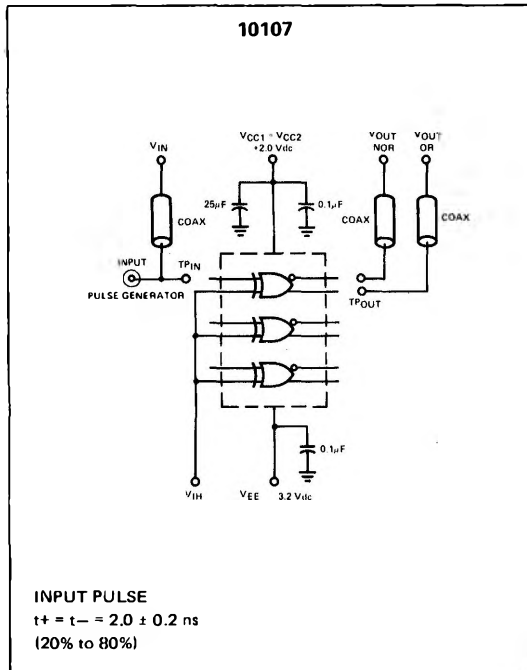


ELECTRICAL CHARACTERISTICS
(at Listed Voltages and Ambient Temperatures).

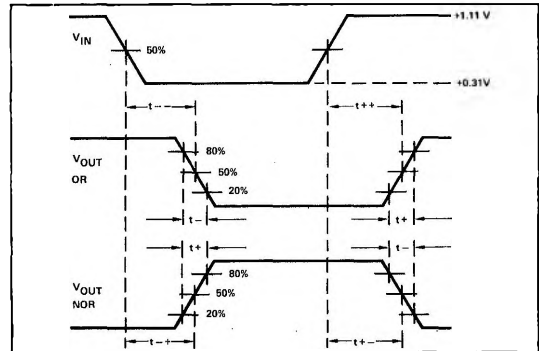
Characteristic	Symbol	P.in Under Test	10107 Test Limits										TEST VOLTAGE VALUES					V _{CC1} Gnd	
			-30°C		+25°C		+85°C		TEST VOLTAGE APPLIED TO PINS LISTED BELOW					V _{CC1} Gnd					
			Min	Max	Min	Max	Min	Max	Unit	V _{IH} max	V _{IL} min	V _{IHA} min	V _{IHA} max		V _{EE}				
Power Supply Drain Current	I _E	8	-	-	-	28	-	-	-	-	-	mAdc	All Inputs	-	-	-	-	8	1,16
	I _{inH}	4,9,14	-	-	-	265	-	-	-	-	-	μAdc	*	-	-	-	-	8	1,16
	I _{inL}	5,7,15	-	-	-	220	-	-	-	-	-	μAdc	*	-	-	-	-	8	1,16
	I _{inL}	*	-	-	-	0.5	-	-	-	-	-	μAdc	-	*	-	-	-	8	1,16
Logic "1" Output Voltage	V _{OH}	2	-1.060	-0.890	-0.960	-0.810	-0.890	-0.700	-	-	-	Vdc	4,5	-	-	-	-	8	1,16
		2	-1.060	-0.890	-0.960	-0.810	-0.890	-0.700	-	-	-	Vdc	4,5	4,5	-	-	-	8	1,16
		3	-1.060	-0.890	-0.960	-0.810	-0.890	-0.700	-	-	-	Vdc	4	5	-	-	-	8	1,16
		3	-1.060	-0.890	-0.960	-0.810	-0.890	-0.700	-	-	-	Vdc	5	4	-	-	-	8	1,16
Logic "0" Output Voltage	V _{OL}	2	-1.890	-1.675	-1.650	-1.850	-1.650	-1.615	-	-	-	Vdc	4	5	-	-	-	8	1,16
		2	-1.890	-1.675	-1.650	-1.850	-1.650	-1.825	-1.615	-	-	Vdc	5	4	-	-	-	8	1,16
		3	-1.890	-1.675	-1.650	-1.850	-1.650	-1.825	-1.615	-	-	Vdc	4,5	4	-	-	-	8	1,16
		3	-1.890	-1.675	-1.650	-1.850	-1.650	-1.825	-1.615	-	-	Vdc	-	4,5	-	-	-	8	1,16
Logic "1" Threshold Voltage	V _{OHA}	2	-1.080	-	-0.980	-	-0.910	-	-	-	-	Vdc	5	-	4	-	-	8	1,16
		2	-1.080	-	-0.980	-	-0.910	-	-	-	-	Vdc	-	-	4	-	-	8	1,16
		3	-1.080	-	-0.980	-	-0.910	-	-	-	-	Vdc	-	-	4	-	-	8	1,16
		3	-1.080	-	-0.980	-	-0.910	-	-	-	-	Vdc	-	-	5	-	-	8	1,16
Logic "0" Threshold Voltage	V _{OLA}	2	-	-1.655	-	-1.630	-	-1.595	-	-	-	Vdc	-	-	4	-	-	8	1,16
		2	-	-1.655	-	-1.630	-	-1.595	-	-	-	Vdc	-	-	5	-	-	8	1,16
		3	-	-1.655	-	-1.630	-	-1.595	-	-	-	Vdc	-	-	4	-	-	8	1,16
		3	-	-1.655	-	-1.630	-	-1.595	-	-	-	Vdc	-	-	4	-	-	8	1,16
Switching Times† (50-ohm load)					Min	Typ	Max			Unit	+1 V		Pulse In	Pulse Out	-3.2 V	+2.0 V			
Propagation Delay	t _{PH}	Inputs	1.0	3.8	1.1	2.0	3.7	1.1	4.0	ns	5,7,15	-	Input	Corresponding Ex-OR/Ex-NOR Outputs	8	1,16			
	t _{PL}	4,9, or 14 to either											Input	Corresponding Ex-OR/Ex-NOR Outputs					
	t _{HL}	Output											14	Corresponding Ex-OR/Ex-NOR Outputs					
	t _{PH}	Inputs				2.8					4,9,14	-	Input	Corresponding Ex-OR/Ex-NOR Outputs					
	t _{PL}	5,7, or 15 to either											5,7, or 15	Corresponding Ex-OR/Ex-NOR Outputs					
	t _{HL}	Output											Any input	Corresponding Ex-OR/Ex-NOR Outputs					
Rise Time (20% to 80%)	t _r	**	1.1	3.6		2.6	3.6		3.8		4,9,14	-	Any input	Corresponding Ex-OR/Ex-NOR Outputs					
Fall Time (20% to 80%)	t _f	**	1.1	3.6		2.6	3.6		3.8		4,9,14	-	Any input	Corresponding Ex-OR/Ex-NOR Outputs					

* Individually test each input applying V_{IH} or V_{IL} to input under test.
 ** Any Output
 † 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 4 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_{in} to input pin and TP_{out} 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.