

# DUAL 2-WIDE 2,3-INPUT 10117 OR-AND/OR-AND-INVERT GATE

10117B,F: -30 to +85°C

## DIGITAL 10,000 SERIES ECL

LOGIC DIAGRAM

#### DESCRIPTION

The 10117 package contains two 2 input/3 input OR-AND/ OR-AND INVERT complex gates. Pin 9 is common to both gates. This function is particularly useful in data control, multiplexing and distribution. The 10117 is optimized for high performance applications and has an excellent speed power product. All inputs are terminated with a 50 k $\Omega$ resistor to VEE which eliminates the need to tie unused inputs low. The high impedance inputs and high output fanout is ideal for a transmission line environment.

#### **FEATURES**

- FAST PROPAGATION DELAY FOR TWO LOGIC LEVELS = 2.3 ns TYP
- POWER DISSIPATION = 100 mW/PACKAGE TYP (NO LOAD)
- VERY HIGH FANOUT CAPABILITY
  CAN DRIVE 50 Ω LINES
- HIGH Z INPUTS 50 kΩ PULLDOWNS
- HIGH IMMUNITY FROM POWER SUPPLY VARIA-TIONS: VEE = -5.2 V ±5% RECOMMENDED
- OPEN EMITTERS FOR BUSSING AND LOGIC CAPABILITY
- OUTPUTS MAY BE CROSS COUPLED BACK TO INPUTS TO MAKE A LATCH FUNCTION

### CIRCUIT SCHEMATIC



#### **TEMPERATURE RANGE**

● -30 to+85

#### PACKAGE TYPE

B: 16 Pin Silicone DIP F: 16 Pin CERDIP



TEST VOLTAGE VALUES

#### ELECTRICAL CHARACTERISTICS

Ø Tert										(Volts)						
at Listed Voltage and Ambient Temperatures).									peratura	VIH max	VIL min -1.890	VIHA min -1.205	VILA max -1.500	VEE -6.2	1	
									30° C	-0.890					1	
			+26°C			-0.810	-1.850	-1.105	-1.475	-6.2	1					
	Symbol									+86° C	-0.700	-1.825	-1.035	-1.440	-5.2	
Characteristic		Pin Under Test	10117 Test Limits								TEST VOLTAGE APPLIED TO PINS LISTED BELOW:					1
			-30°C		+25°C			+85°C								
			Min	Max	Min	Тур	Max	Min	Mex	Unit	VIH max	VIL min	VIHA min	VILA max	VEE	Gnd
Power Supply Drain Current	IE -	8		-	-	20	26	-	-	mAdc	-		-		8	1,16
Input Current	linH	4	-	-	-	-	265		-	#Adc	4	-	-	-	8	1,16
		9	-	-	-	-	370	-	-	µAdc	9	-		-	8	1,16 -
	linL	4	-	-	0.5	-	-	-	-	µAdc	-	4	-	1	8	1,16
		9	-	-	0.5	-	-	-	-	µAdc	-	9	-	-	8	1,16
Logic "1" Output Voltage	VOH	2	-1.060	-0.890	-0.960		-0.810	-0.890	-0.700	Vdc	4,9	-	-	-	8	1,16
	4.00	3	-1.060	-0.780	-0.960	-	-0.700	-0.890	-0.590	Vdc	-	4,9	-	-	8	1,16
Logic "0" Output Voltage	VOL	2	-2.000	-1.675	-1.990	-	-1.650	-1.920	-1.616	Vdc	-	4,9	-	~	8	1,16
		3	-1.890	-1.676	-1.850	-	-1.660	-1.826	-1.615	Vdc	4,9	-		-	В	1,18
Logic "1" Threshold Voltage	VOHA	2	-1.080	-	-0.980	-		-0.910	-	Vdc	9	1	• 4	-	8	1,18
		3	-1.080	-	-0.980	-	1 -	-0.910	-	Väc	9	-	-	4	8	1,16
Logic "0" Threshold Voltage	VOLA	2	-	-1.655			-1.630	-	-1.595	Vdc	9		E.	4	8	1,16
		3	-	-1.655	-	-	-1.630	-	-1.696	Vdc	9	·-	4	-	8	1,16
Switching Times *						1.1	0.2.7				+1.11 V		Pulse In	Pulse Out	-3.2 V	+2.0 V
Propagation Dalay	14+ 2+	2	1.4	3.9	1.4	2.3	3.4	1.4	3.8	ns	9	-	4	2	8	1,16
	14-2-	2				T	1		111				1 1	2		
	14+ 3-	3										-		3		
	14- 3+	3	- T	1		- T -		1	1			-	1 1	3		
Rise Time (20% to 80%)	12+	2	0.9	4.1	1.1	2.2	4.0	1.1	4.6					2		
	t3+	3		T		1		1 1	1					3		1
Fall Time (20% to 80%)	t2-	2				1						1141		2		
	t3-	3				1	1	1 1	1			-		.3		

\*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.
- 2. 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<sup>6</sup> 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.
- 3. Test procedures are shown for only one input or set of input conditions. Other inputs are tested in the same manner.
- 4. All voltage measurements are referenced to the ground terminal. Terminals not specifically referenced are left electrically open.