

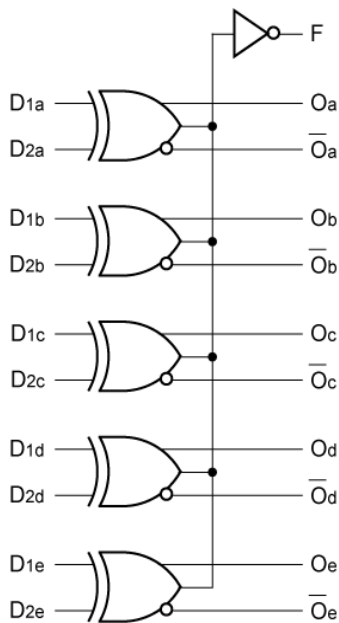
**FEATURES**

- Max. propagation delay of 1000ps
- IEE min. of -58mA
- Extended supply voltage option:  
VEE = -4.2V to -5.5V
- Voltage and temperature compensation for improved noise immunity
- Internal 75kΩ input pull-down resistors
- 50% faster than Fairchild 300K at lower power
- Function and pinout compatible with Fairchild F100K
- Available in 28-pin PLCC package

**DESCRIPTION**

The SY100S307 is an ultra-fast quint exclusive-OR/NOR gate designed for use in high-performance ECL systems. A function output that is the wire-OR result of the exclusive-OR outputs is also available. The inputs on the device have 75kΩ pull-down resistors.

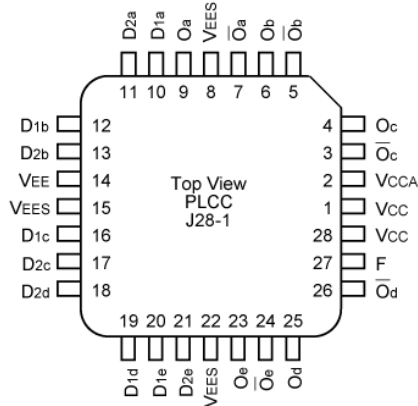
**BLOCK DIAGRAM**



**PIN NAMES**

Pin	Function
Dna – Dne	Data Inputs (n-1...5)
E	Enable Input
Oa – Oe	Data Outputs
$\bar{O}a - \bar{O}e$	Complementary Data Outputs
VEES	VEE Substrate
VCCA	Vcco for ECL Outputs

**PACKAGE/ORDERING INFORMATION**



**28-Pin PLCC (J28-1)**

**Ordering Information**

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100S307JC	J28-1	Commercial	SY100S307JC	Sn-Pb
SY100S307JCTR <sup>(1)</sup>	J28-1	Commercial	SY100S307JC	Sn-Pb
SY100S307JZ <sup>(2)</sup>	J28-1	Commercial	SY100S307JZ with Pb-Free bar-line indicator	Matte-Sn
SY100S307JZTR <sup>(1,2)</sup>	J28-1	Commercial	SY100S307JZ with Pb-Free bar-line indicator	Matte-Sn
SY100S307JY <sup>(2)</sup>	J28-1	Industrial	SY100S307JY with Pb-Free bar-line indicator	Matte-Sn
SY100S307JYTR <sup>(1,2)</sup>	J28-1	Industrial	SY100S307JY with Pb-Free bar-line indicator	Matte-Sn

**Notes:**

1. Tape and Reel.
2. Pb-Free package is recommended for new designs.

### LOGIC EQUATION

$$F = (D1a \oplus D2a) + (D1b \oplus D2b) + (D1c \oplus D2c) + (D1d \oplus D2d) + (D1e \oplus D2e).$$

### DC ELECTRICAL CHARACTERISTICS

$V_{EE} = -4.2V$  to  $-5.5V$  unless otherwise specified,  $V_{CC} = V_{CCA} = GND$

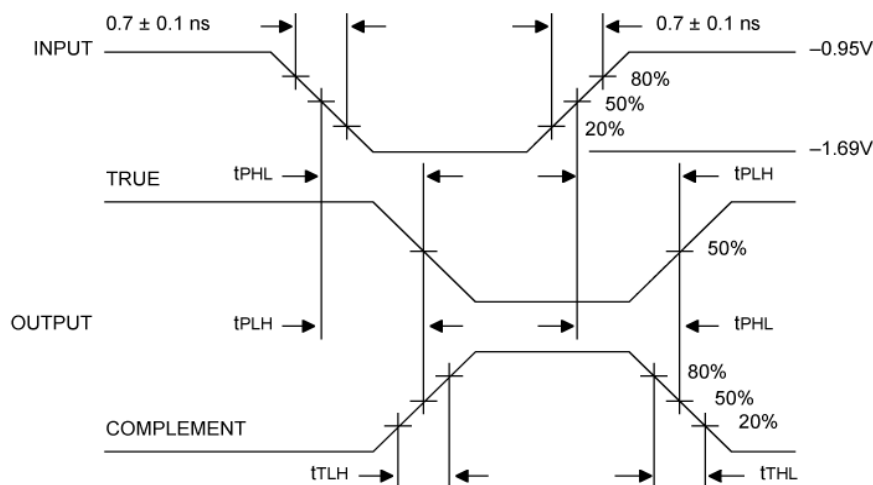
Symbol	Parameter	Min.	Typ.	Max.	Unit	Condition
I <sub>IH</sub>	Input HIGH Current	—	—	200	μA	V <sub>IN</sub> = V <sub>IH</sub> (Max.)
	D2a — D2e	—	—	250		
I <sub>EE</sub>	Power Supply Current	-58	-40	-27	mA	Inputs Open

### AC ELECTRICAL CHARACTERISTICS

$V_{EE} = -4.2V$  to  $-5.5V$  unless otherwise specified,  $V_{CC} = V_{CCA} = GND$

Symbol	Parameter	TA = -40°C		TA = 0°C		TA = +25°C		TA = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
t <sub>PLH</sub> t <sub>PH2</sub>	Propagation Delay D2a — D2e to O, $\bar{O}$	300	1000	300	1000	300	1000	300	1000	ps	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay D1a — D1e to O, $\bar{O}$	300	900	300	900	300	900	300	930	ps	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay Data to F	300	1425	300	1425	300	1425	300	1425	ps	
t <sub>TLH</sub> t <sub>THL</sub>	Transition Time 3 20% to 80%, 80% to 20%	00	900	00	900	300	900	300	900	ps	

### TIMING DIAGRAM

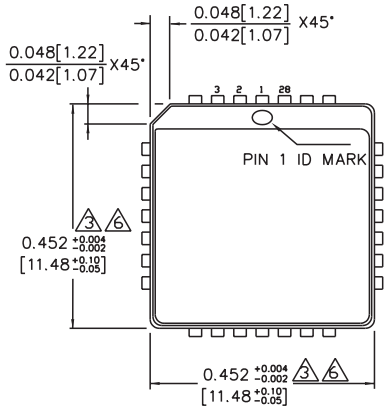


Propagation Delay and Transition Times

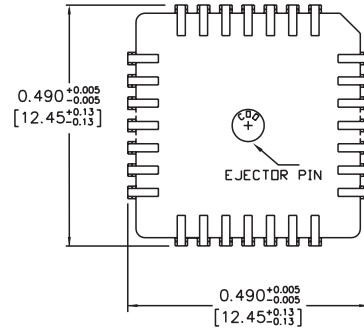
**NOTE:**

$V_{EE} = -4.2V$  to  $-5.5V$  unless otherwise specified,  $V_{CC} = V_{CCA} = GND$

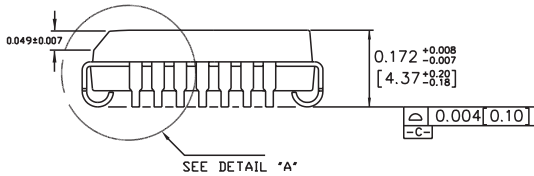
**28-PIN PLCC (J28-1)**



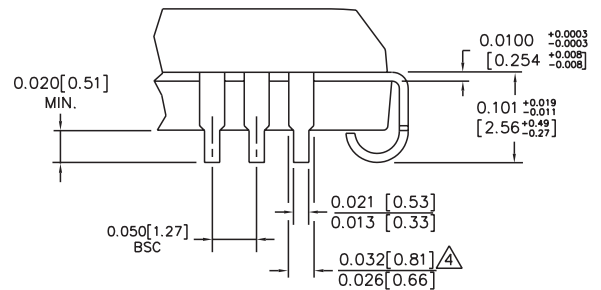
TOP VIEW



BOTTOM VIEW



SIDE VIEW



DETAIL "A"

NOTES:

1. DIMENSIONS ARE IN INCHES [MM].
2. CONTROLLING DIMENSION: INCHES.
3. DIMENSION DOES NOT INCLUDE MOLD FLASH OR PROTRUSIONS, EITHER OF WHICH SHALL NOT EXCEED 0.008 [0.203].
4. LEAD DIMENSION DOES NOT INCLUDE DAMBAR PROTRUSION.
5. MAXIMUM AND MINIMUM SPECIFICATIONS ARE INDICATED AS FOLLOWS: MAX/MIN
6. PACKAGE TOP DIMENSION MAY BE SLIGHTLY SMALLER THAN BOTTOM DIMENSION.

Rev. A

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