# QUINT EXCLUSIVE OR/NOR GATE

SY100S307

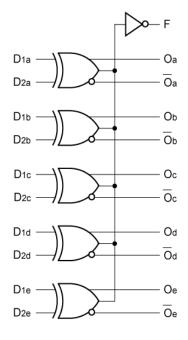
#### **FEATURES**

- 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  $75 k\Omega$  pull-down resistors.

# **BLOCK DIAGRAM**

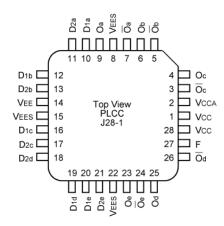


#### **PIN NAMES**

Pin	Function
Dna – Dne	Data Inputs (n-15)
E	Enable Input
Oa – Oe	Data Outputs
Oa − Oe	Complementary Data Outputs
VEES	VEE Substrate
VCCA	Vcco for ECL Outputs

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# 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.

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# **LOGIC EQUATION**

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

# DC ELECTRICAL CHARACTERISTICS

VEE = -4.2V to -5.5V unless otherwise specified, VCC = VCCA = GND

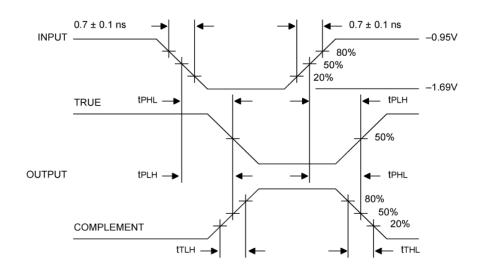
Symbol	Parameter	Min.	Тур.	Max.	Unit	Condition
Iн	Input HIGH Current				μA	VIN = VIH (Max.)
	D2a — D2e	_	_	200		·
	D2a — D2e	_	_	250		
IEE	Power Supply Current	-58	-40	-27	mA	Inputs Open

# **AC ELECTRICAL CHARACTERISTICS**

VEE = -4.2V to -5.5V unless otherwise specified, VCC = VCCA = GND

		TA = -40°C		TA = 0°C		TA = +25°C		TA = +85°C			
Symbol	Parameter	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Unit	Condition
tPLH tPH2	Propagation Delay D2a — D2e to O, O	300	1000	300	1000	300	1000	300	1000	ps	
tPLH tPHL	Propagation Delay D1a — D1e to O, O	300	900	300	900	300	900	300	930	ps	
tPLH tPHL	Propagation Delay Data to F	300	1425	300	1425	300	1425	300	1425	ps	
ttlh tthl	Transition Time 3 20% to 80%, 80% to 20%	00	900	00	900	300	900	300	900	ps	

# **TIMING DIAGRAM**



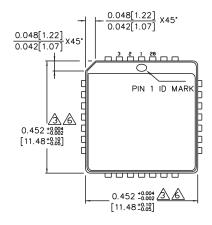
**Propagation Delay and Transition Times** 

NOTE:

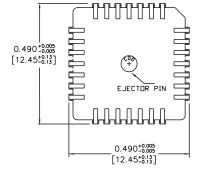
VEE = -4.2V to -5.5V unless otherwise specified, VCC = VCCA = GND

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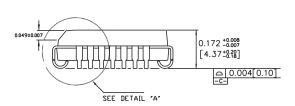
#### 28-PIN PLCC (J28-1)



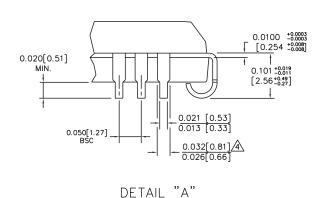
TOP VIEW



BOTTOM VIEW



SIDE VIEW



Rev. A

#### NOTES:

- DIMENSIONS ARE IN INCHES [MM].
  CONTROLLING DIMENSION: INCHES.
  DIMENSION DOES NOT INCLUDE MOLD FLASH
  OR PROTRUSIONS, EITHER OF WHICH SHALL NOT
  EXCEED 0.008 [0.203].
  LEAD DIMENSION DOES NOT INCLUDE DAMBAR
  PROTRUSION.
  MAXIMUM AND MINIMUM SPECIFICATIONS ARE
  INDICATED AS FOLLOWS: MAX/MIN
  DACKAGE TOP DIMENSION MAY BE SLICHTLY

- PACKAGE TOP DIMENSION MAY BE SLIGHTLY SMALLER THAN BOTTOM DIMENSION.

# MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USA

TEL + 1 (408) 944-0800 FAX + 1 (408) 474-1000 WEB http://www.micrel.com

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