

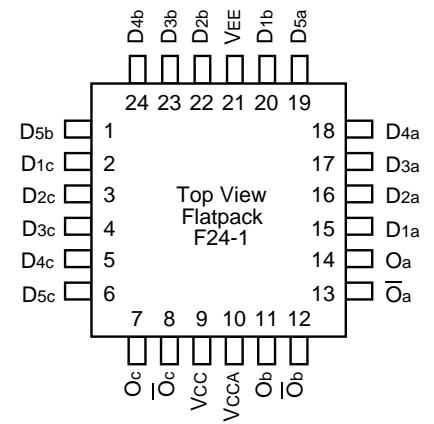
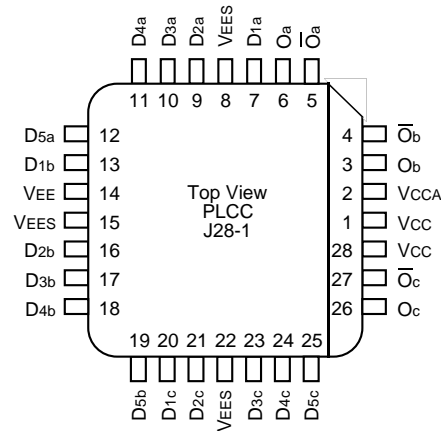
**FEATURES**

- Max. propagation delay of 750ps
- IEE min. of -25mA
- Industry standard 100K ECL levels
- Extended supply voltage option:  
VEE = -4.2V to -5.5V
- Voltage and temperature compensation for improved noise immunity
- 20% faster than Fairchild 300K at lower power
- Internal 75KΩ input pull-down resistors
- Function and pinout compatible with Fairchild F100K
- Available in 24-pin CERPACK and 28-pin PLCC packages

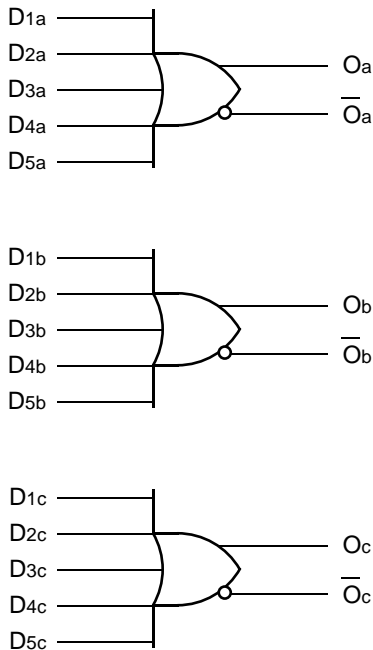
**DESCRIPTION**

The SY100S301 is an ultra-fast triple 5-input OR/NOR gate designed for use in high-performance ECL systems. The inputs on this device have 75KΩ pull-down resistors.

**PIN CONFIGURATIONS**



**BLOCK DIAGRAM**



**PIN NAMES**

Pin	Function
Dna, Dnb, Dnc	Data Inputs (n-1...5)
O <sub>a</sub> , O <sub>b</sub> , O <sub>c</sub>	Data Outputs
O <sub>a</sub> , O <sub>b</sub> , O <sub>c</sub>	Complementary Data Outputs
VEES	VEE Substrate
VCCA	Vcco for ECL Outputs

**LOGIC EQUATION**

$$O_a = D_{1a} + D_{2a} + D_{3a} + D_{4a} + D_{5a}$$

$$O_b = D_{1b} + D_{2b} + D_{3b} + D_{4a} + D_{5b}$$

$$O_c = D_{1c} + D_{2c} + D_{3c} + D_{4c} + D_{5c}$$

**GUARANTEED OPERATING CONDITIONS**

Symbol	Parameter	Min.	Typ.	Max.	Unit
VEE	Input HIGH Current	-5.5	-4.5	-4.2	V
TA	Power Supply Current	0	25	85	°C

**ABSOLUTE MAXIMUM RATINGS<sup>(1)</sup>**

Symbol	Rating	Value	Unit
VEE	Power Supply	-0.5 to +7.0	V
VIN	Input Voltage	-0.5 to VEE	V
IOUT	DC Output Current	-50	mA
TC	Temperature Under Bias	-55 to +125	°C
TJ	Junction Temperature	+150	°C
Tstore	Storage Temperature	-65 to +150	°C

**NOTE:**

1. Permanent device damage may occur if ABSOLUTE MAXIMUM RATINGS are exceeded. This is a stress rating only and functional operation is not implied at conditions other than those detailed in the operational sections of this data book. Exposure to ABSOLUTE MAXIMUM RATING conditions for extended periods may affect device reliability.

**DC ELECTRICAL CHARACTERISTICS**

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

Symbol	Parameter	Min.	Typ.	Max.	Unit	Condition
I <sub>IH</sub>	Input HIGH Current	—	—	200	μA	—
I <sub>EE</sub>	Power Supply Current	-25	-17	-11	mA	Inputs Open

**AC ELECTRICAL CHARACTERISTICS****CERPACK**

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

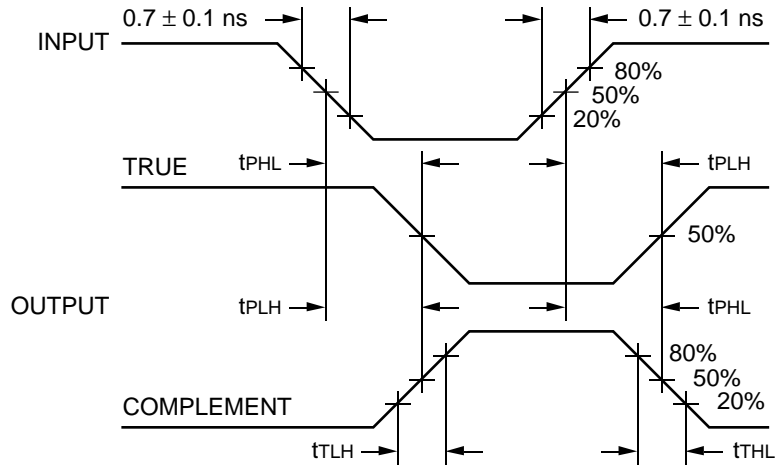
Symbol	Parameter	TA = 0°C		TA = +25°C		TA = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay Data to Output	300	800	300	800	300	800	ps	
t <sub>TLH</sub> t <sub>THL</sub>	Transition Time 20% to 80%, 80% to 20%	300	900	300	900	300	900	ps	

**PLCC**

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

Symbol	Parameter	TA = 0°C		TA = +25°C		TA = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay Data to Output	300	750	300	750	300	750	ps	
t <sub>TLH</sub> t <sub>THL</sub>	Transition Time 20% to 80%, 80% to 20%	300	900	300	900	300	900	ps	

**TIMING DIAGRAM**

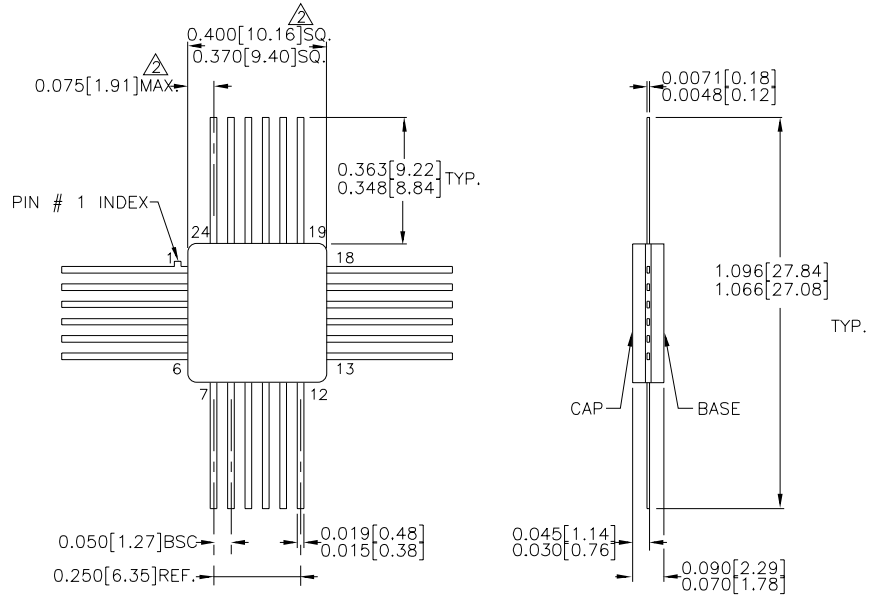


Propagation Delay and Transition Times

**PRODUCT ORDERING CODE**

Ordering Code	Package Type	Operating Range
SY100S301FC	F24-1	Commercial
SY100S301JC	J28-1	Commercial
SY100S301JCTR	J28-1	Commercial

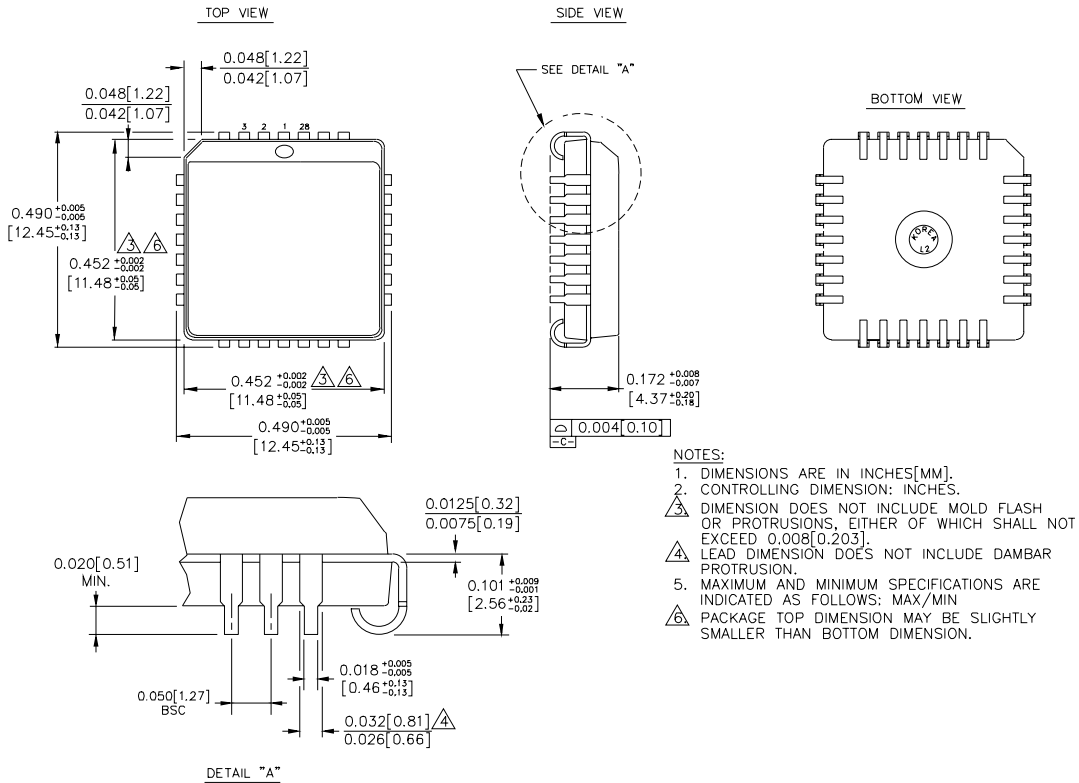
**24 LEAD CERPACK (F24-1)**



- NOTES:**
1. DIMENSIONS ARE IN INCHES[MM].
  2. THIS DIMENSION INCLUDES GLASS PROTRUSION AND CAP TO BASE ALIGNMENT TOLERANCES.
  3. DIMENSIONS SHOWN ARE MAX/MIN, WHERE NOTED.

Rev. 03

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



Rev. 03

**MICREL-SYNERGY 3250 SCOTT BOULEVARD SANTA CLARA CA 95054 USA**

TEL + 1 (408) 980-9191 FAX + 1 (408) 914-7878 WEB <http://www.micrel.com>

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