

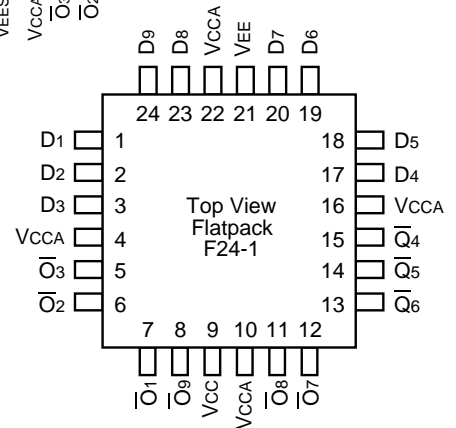
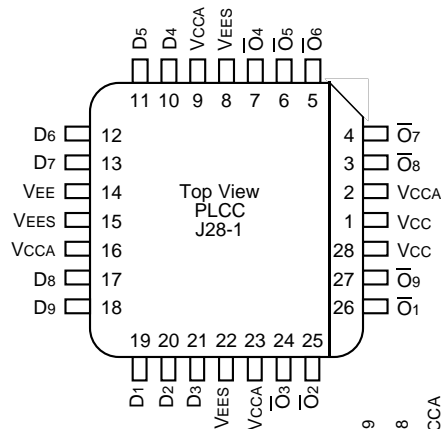
**FEATURES**

- Max. propagation delay of 700ps
- IEE min. of -55mA
- Extended supply voltage option:  
VEE = -4.2V to -5.5V
- Voltage and temperature compensation for improved noise immunity
- 70% 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

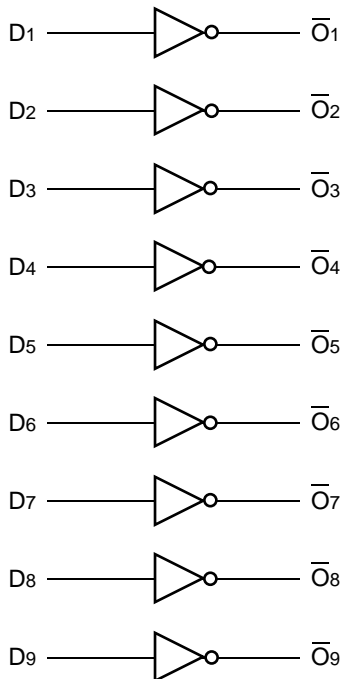
**DESCRIPTION**

The SY100S321 is a monolithic 9-bit inverter. The device contains nine inverting buffer gates with single input and output.

**PIN CONFIGURATIONS**



**BLOCK DIAGRAM**



**PIN NAMES**

Pin	Function
D1 – D9	Data Inputs
$\bar{Q}1 – \bar{Q}9$	Data Outputs
VEES	VEE Substrate
VCCA	Vcco for ECL Outputs

## 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
$I_{IH}$	Input HIGH Current	—	—	200	$\mu A$	$V_{IN} = V_{IH} (Max.)$
$I_{EE}$	Power Supply Current	-55	-41	-25	mA	Inputs Open

## AC ELECTRICAL CHARACTERISTICS

### CERPACK

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

Symbol	Parameter	$T_A = 0^\circ C$		$T_A = +25^\circ C$		$T_A = +85^\circ C$		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
$t_{PLH}$ $t_{PHL}$	Propagation Delay <sup>(1)</sup> Data to Output	300	800	300	800	300	800	ps	
$t_{TLH}$ $t_{THL}$	Transition Time <sup>(1)</sup> 20% to 80%, 80% to 20%	300	900	300	900	300	900	ps	
$t_s, G-G$	Skew, Gate-to-Gate	—	200	—	200	—	200	ps	

**NOTE:**

- Reference figures 1 and 2

### PLCC

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

Symbol	Parameter	$T_A = 0^\circ C$		$T_A = +25^\circ C$		$T_A = +85^\circ C$		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
$t_{PLH}$ $t_{PHL}$	Propagation Delay <sup>(1)</sup> Data to Output	300	700	300	700	300	700	ps	
$t_{TLH}$ $t_{THL}$	Transition Time <sup>(1)</sup> 20% to 80%, 80% to 20%	300	900	300	900	300	900	ps	
$t_s, G-G$	Skew, Gate-to-Gate	—	200	—	200	—	200	ps	

**NOTE:**

- Reference figures 1 and 2

**TEST CIRCUITRY<sup>(1)</sup>**

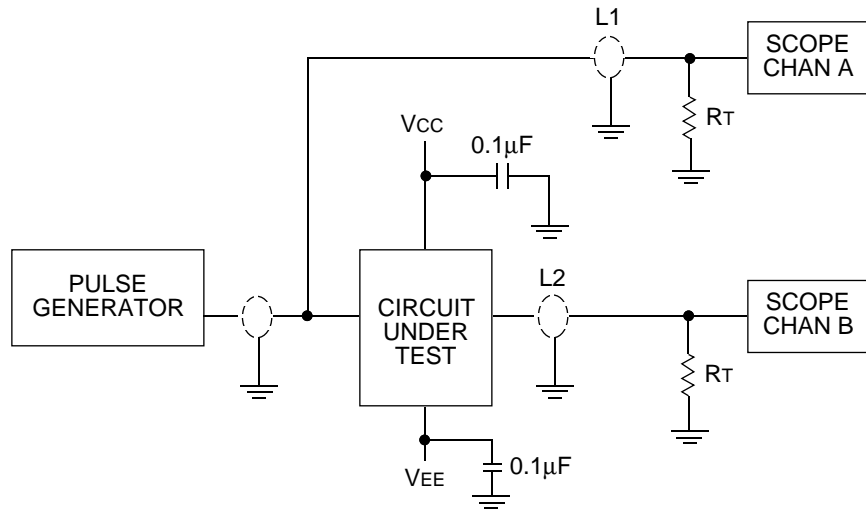


Figure 1. AC Test Circuit

**NOTE:**

- 1. VCC, VCCA = +2V, VEE = -2.5V.
- L1 and L2 = equal length 50Ω impedance lines.
- RT = 50Ω terminator internal to scope.
- Decoupling 0.1µF from GND to Vcc and VEE.
- All unused outputs are loaded with 50Ω to GND.
- CL = Fixture and stray capacitance ≤ 3pF.

**SWITCHING WAVEFORMS**

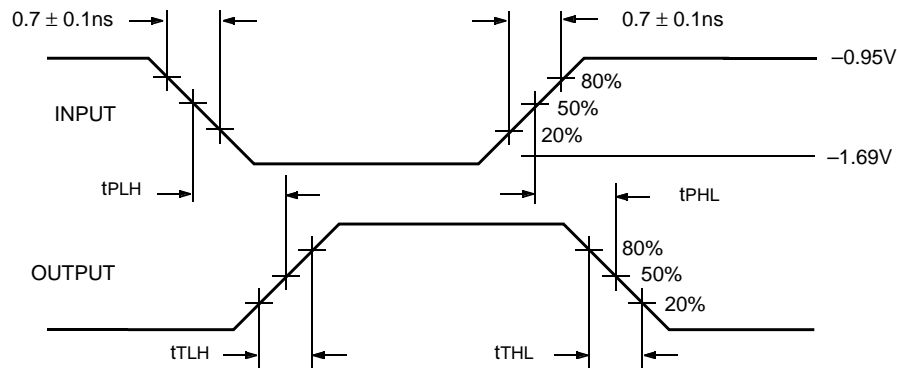


Figure 2. Propagation Delay and Transition Times

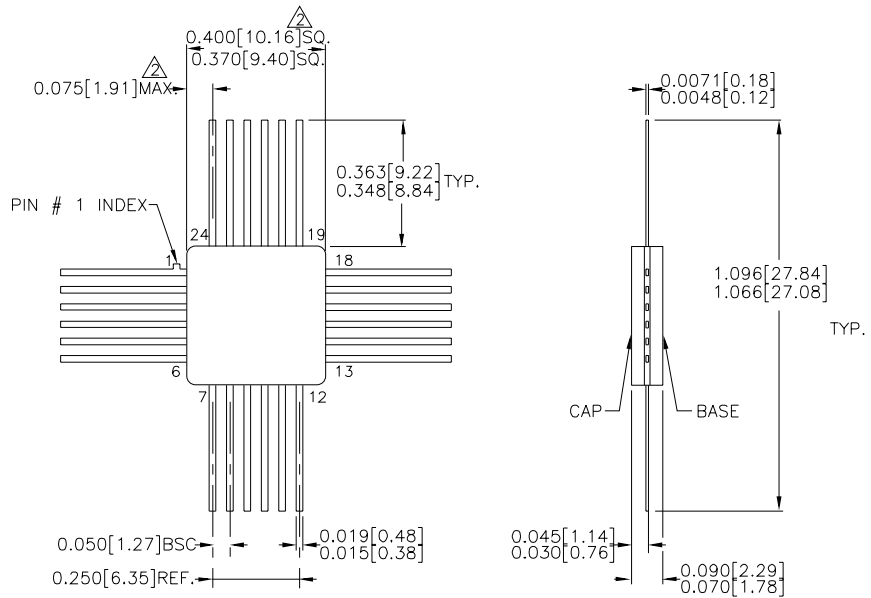
**NOTE:**

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

**PRODUCT ORDERING CODE**

Ordering Code	Package Type	Operating Range
SY100S321FC	F24-1	Commercial
SY100S321JC	J28-1	Commercial
SY100S321JCTR	J28-1	Commercial

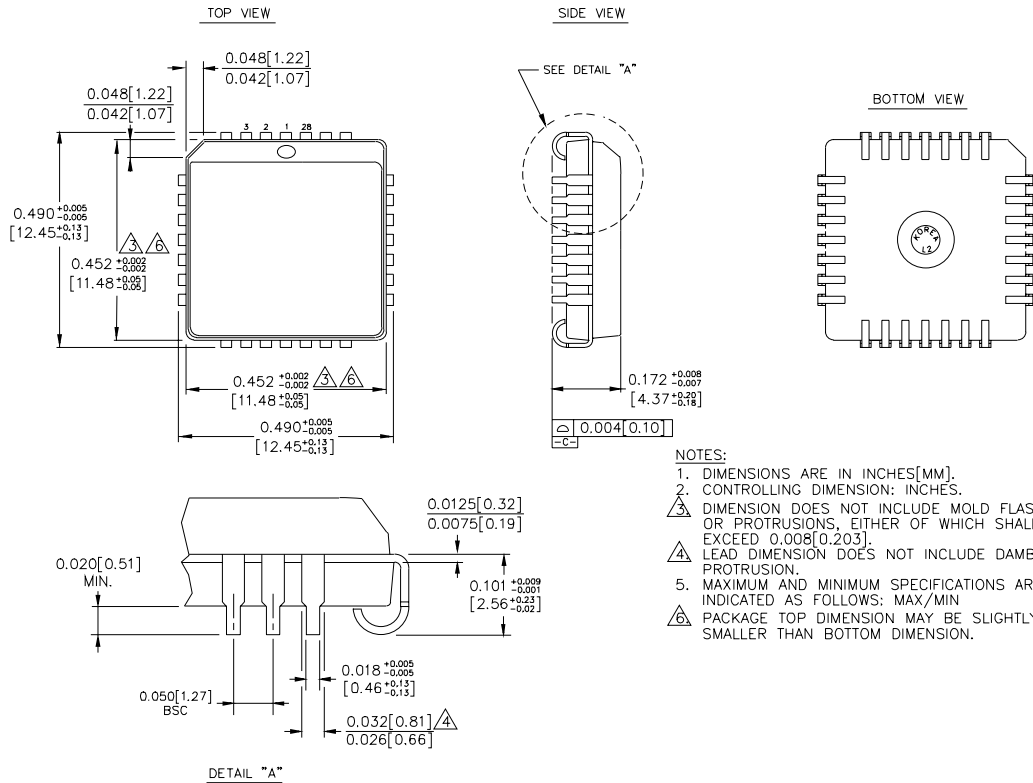
**24 LEAD CERPACK (F24-1)**



- 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**

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