



## 8-BIT SHIFT REGISTER

SY100S341

### FEATURES

- Max. shift frequency of 600MHz
- Max. Clock to Q delay of 1200ps
- IEE min. of -150mA
- Industry standard 100K ECL levels
- Extended supply voltage option:  
VEE = -4.2V to -5.5V
- Voltage and temperature compensation for improved noise immunity
- Internal 75k $\Omega$  input pull-down resistors
- 70% faster than Fairchild 300K at lower power
- Function and pinout compatible with Fairchild F100K
- Available in 28-pin PLCC package

### DESCRIPTION

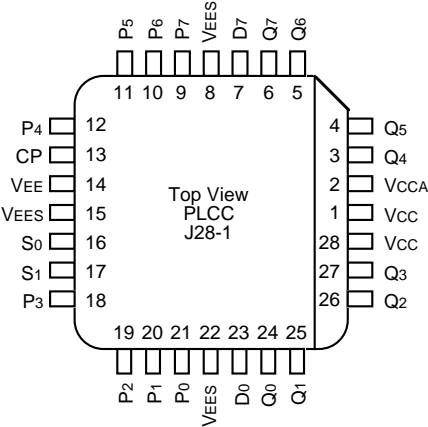
The SY100S341 offer eight D-type, edge-triggered flip-flops with both individual inputs for parallel operation as well as serial inputs for bidirectional shifting, and are designed for use in high-performance ECL systems. Data is clocked into the flip-flops on the rising edge of the clock.

The mode of operation is selected by two Select inputs (S<sub>0</sub>, S<sub>1</sub>) which determine if the device performs a shift, hold or parallel entry function, as described in the Truth Table. The inputs on these devices have 75k $\Omega$  pull-down resistors.

### PIN NAMES

Label	Function
CP	Clock Pulse Input
S <sub>0</sub> — S <sub>1</sub>	Select Inputs
D <sub>0</sub> — D <sub>7</sub>	Serial Inputs
P <sub>0</sub> — P <sub>7</sub>	Parallel Inputs
Q <sub>0</sub> — Q <sub>7</sub>	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
SY100S341JC	J28-1	Commercial	SY100S341JC	Sn-Pb
SY100S341JCTR <sup>(1)</sup>	J28-1	Commercial	SY100S341JC	Sn-Pb
SY100S341JZ <sup>(2)</sup>	J28-1	Commercial	SY100S341JZ with Pb-Free bar-line indicator	Matte-Sn
SY100S341JZTR <sup>(1, 2)</sup>	J28-1	Commercial	SY100S341JZ with Pb-Free bar-line indicator	Matte-Sn

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



## TRUTH TABLE

Function	Inputs					Outputs							
	D7	D0	S1	S0	CP	Q7	Q6	Q5	Q4	Q3	Q2	Q1	Q0
Load Register	X	X	L	L	u	P7	P6	P5	P4	P3	P2	P1	P0
Shift Left	X	L	L	H	u	Q6	Q5	Q4	Q3	Q2	Q1	Q0	L
Shift Left	X	H	L	H	u	Q6	Q5	Q4	Q3	Q2	Q1	Q0	H
Shift Right	L	X	H	L	u	L	Q7	Q6	Q5	Q4	Q3	Q2	Q1
Shift Right	H	X	H	L	u	H	Q7	Q6	Q5	Q4	Q3	Q2	Q1
Hold	X	X	H	H	X	No Change							
Hold	X	X	X	X	H								
Hold	X	X	X	X	L								

### NOTE:

1. H = HIGH Voltage Level  
L = LOW Voltage Level  
X = Don't Care  
u = LOW-to-HIGH Transition

## DC ELECTRICAL CHARACTERISTICS

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

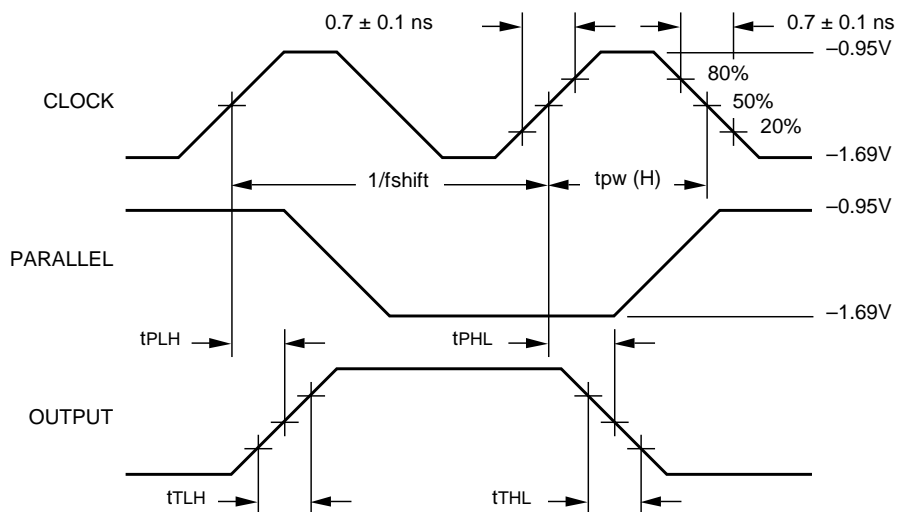
Symbol	Parameter	Min.	Typ.	Max.	Unit	Condition
I <sub>IH</sub>	Input HIGH Current, All Inputs	—	—	200	μA	$V_{IN} = V_{IH} (Max.)$
I <sub>EE</sub>	Power Supply Current	-150	-102	-71	mA	Inputs Open

## AC ELECTRICAL CHARACTERISTICS

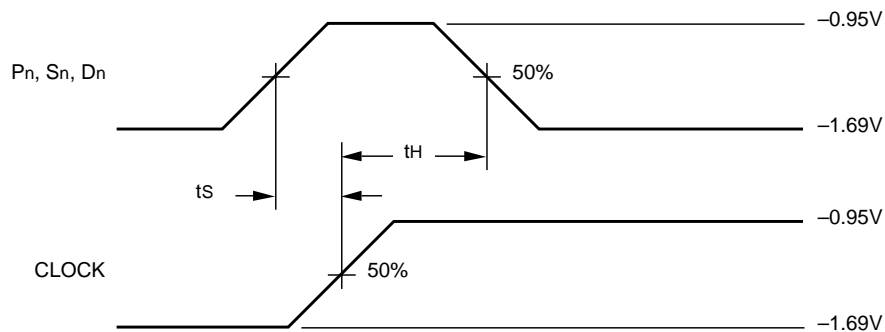
$V_{EE} = -4.2V$  to  $-5.5V$  unless otherwise specified;  $V_{CC} = V_{CCA} = GND$

Symbol	Parameter	T <sub>A</sub> = 0°C		T <sub>A</sub> = +25°C		T <sub>A</sub> = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
f <sub>shift</sub>	Shift Frequency	600	—	600	—	600	—	MHz	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay CP to Output	450	1200	450	1200	450	1200	ps	
t <sub>TLH</sub> t <sub>THL</sub>	Transition Time 20% to 80%, 80% to 20%	300	900	300	900	300	900	ps	
t <sub>s</sub>	Set-up Time D <sub>n</sub> , P <sub>n</sub> S <sub>n</sub>	300 600	— —	300 600	— —	300 600	— —	ps	
t <sub>h</sub>	Hold Time D <sub>n</sub> , P <sub>n</sub> S <sub>n</sub>	300 0	— —	300 0	— —	300 0	— —	ps	
t <sub>pw</sub> (H)	Pulse Width HIGH, CP	—	600	—	600	—	600	ps	

## TIMING DIAGRAMS



Propagation Delay and Transition Times

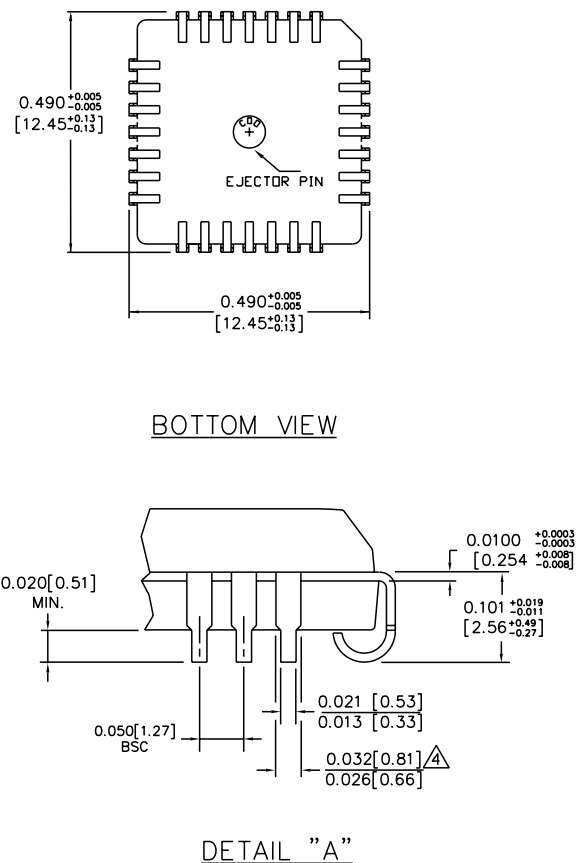
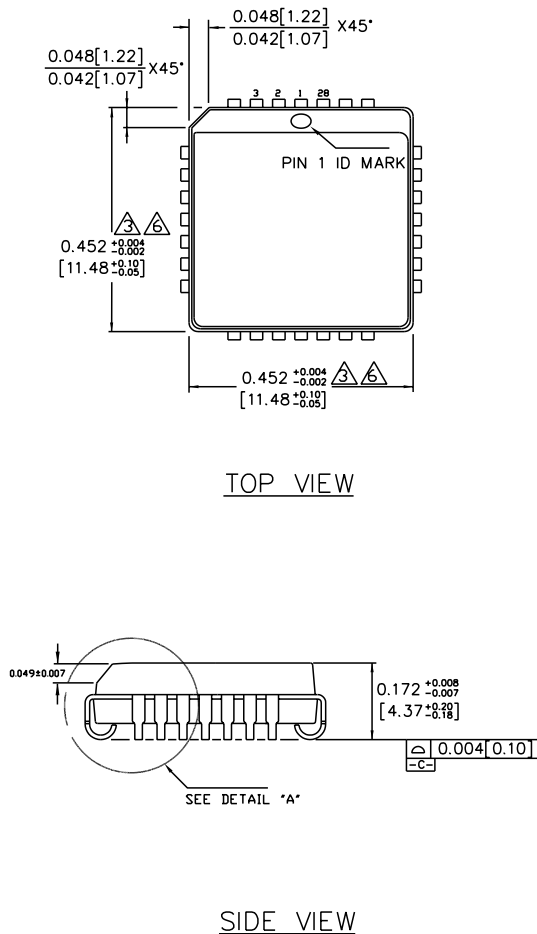


Set-up and Hold Times

**Notes:**

1.  $V_{EE} = -4.2V$  to  $-5.5V$  unless otherwise specified;  $V_{CC} = V_{CCA} = GND$ .
2.  $t_s$  is the minimum time before the transition of the clock that information must be present at the data input.
3.  $t_h$  is the minimum time after the transition of the clock that information must remain unchanged at the data input.

## 28-PIN PLCC (J28-1)



### 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

**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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