FEATURES

- **Max. shift frequency of 600MHz**
- **Max. Clock to Q delay of 1200ps**
- **I_{EE} min. of –150mA**
- **Industry standard 100K ECL levels**
- **Extended supply voltage option: V_{EE} = –4.2V to –5.5V**
- **Voltage and temperature compensation for improved noise immunity**
- **Internal 75kΩ 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

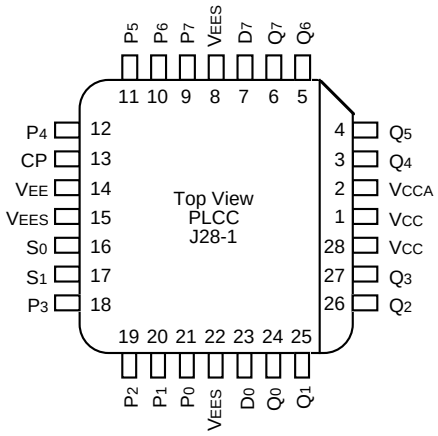
The SY100S341 offer eight D-type, edge-triggered flip-flops with both individual inputs for parallel operation as well as serial inputs for bidirectional shifting, and are designed for use in high-performance ECL systems. Data is clocked into the flip-flops on the rising edge of the clock.

The mode of operation is selected by two Select inputs (S_0, S_1) 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 75kΩ pull-down resistors.

PIN NAMES

Label	Function
CP	Clock Pulse Input
S_0 — S_1	Select Inputs
D_0 — D_7	Serial Inputs
P_0 — P_7	Parallel Inputs
Q_0 — Q_7	Data Outputs
V_{EES}	V_{EE} Substrate
V_{CCA}	V_{CCO} for ECL Outputs

PACKAGE/ORDERING INFORMATION



28-Pin PLCC (J28-1)

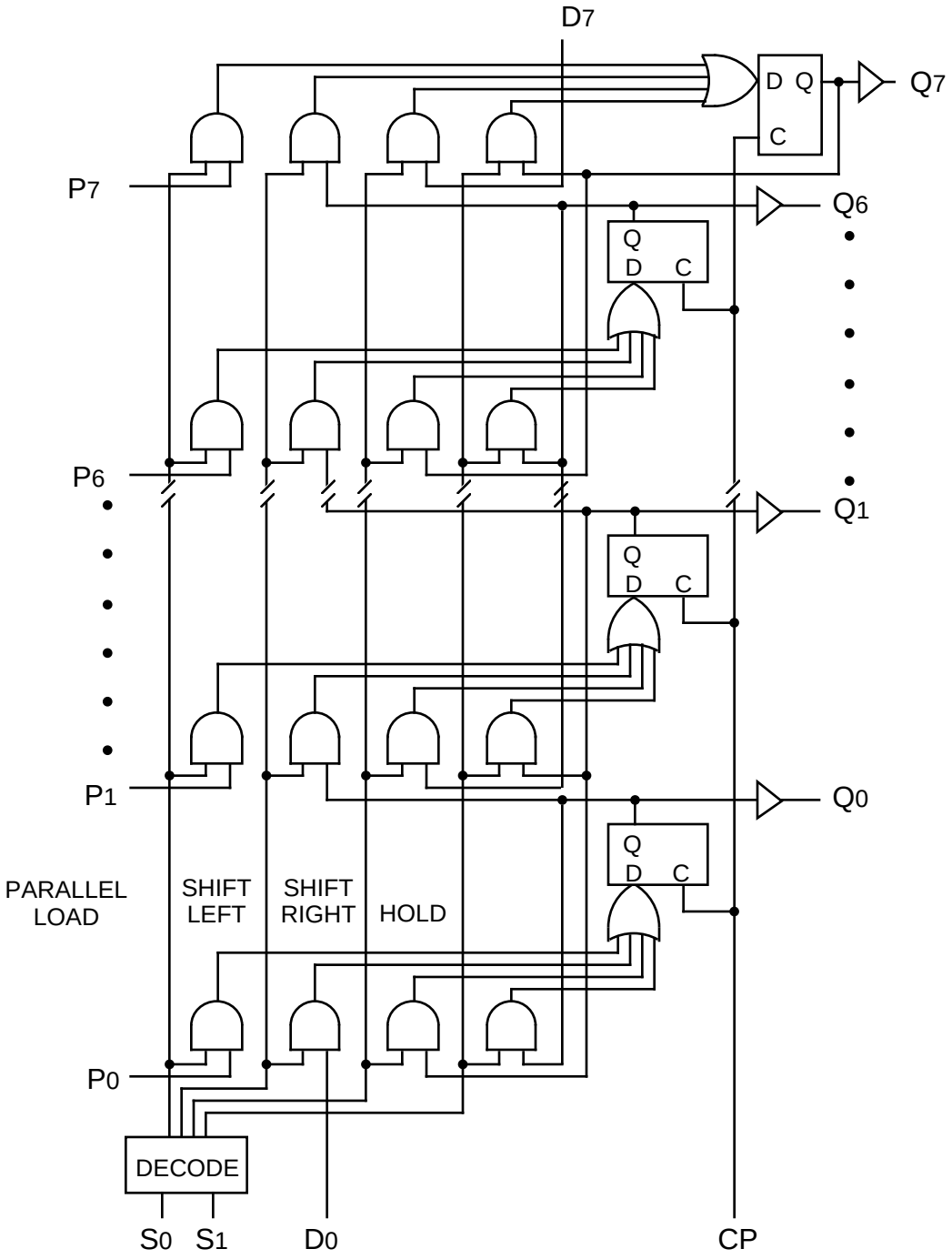
Ordering Information

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100S341JC	J28-1	Commercial	SY100S341JC	Sn-Pb
SY100S341JCTR[1]	J28-1	Commercial	SY100S341JC	Sn-Pb
SY100S341JZ[2]	J28-1	Commercial	SY100S341JZ with Pb-Free bar-line indicator	Matte-Sn
SY100S341JZTR[1, 2]	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.

BLOCK DIAGRAM



TRUTH TABLE

Function	Inputs					Outputs							
	D_7	D_0	S_1	S_0	CP	Q_7	Q_6	Q_5	Q_4	Q_3	Q_2	Q_1	Q_0
Load Register	X	X	L	L	u	P_7	P_6	P_5	P_4	P_3	P_2	P_1	P_0
Shift Left	X	L	L	H	u	Q_6	Q_5	Q_4	Q_3	Q_2	Q_1	Q_0	L
Shift Left	X	H	L	H	u	Q_6	Q_5	Q_4	Q_3	Q_2	Q_1	Q_0	H
Shift Right	L	X	H	L	u	L	Q_7	Q_6	Q_5	Q_4	Q_3	Q_2	Q_1
Shift Right	H	X	H	L	u	H	Q_7	Q_6	Q_5	Q_4	Q_3	Q_2	Q_1
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

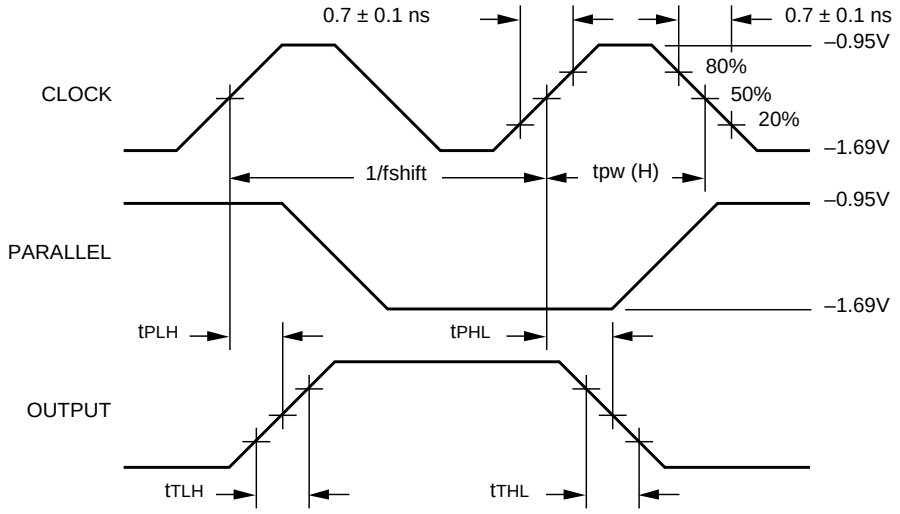
Symbol	Parameter	Min.	Typ.	Max.	Unit	Condition
I_{IH}	Input HIGH Current, All Inputs	—	—	200	µA	V_{IN} = V_{IH} (Max.)
I_{EE}	Power Supply Current	–150	–102	–71	mA	Inputs Open

AC ELECTRICAL CHARACTERISTICS

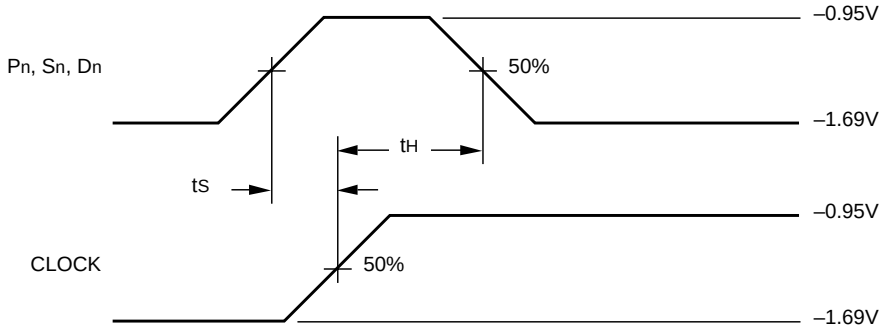
V_{EE} = –4.2V to –5.5V unless otherwise specified; V_{CC} = V_{CCA} = GND

Symbol	Parameter	T_A = 0°C		T_A = +25°C		T_A = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
f_{shift}	Shift Frequency	600	—	600	—	600	—	MHz	
t_{PLH} t_{PHL}	Propagation Delay CP to Output	450	1200	450	1200	450	1200	ps	
t_{TLH} t_{THL}	Transition Time 20% to 80%, 80% to 20%	300	900	300	900	300	900	ps	
t_S	Set-up Time D_n, P_n S_n	 300 600	 — —	 300 600	 — —	 300 600	 — —	ps	
t_H	Hold Time D_n, P_n S_n	 300 0	 — —	 300 0	 — —	 300 0	 — —	ps	
t_{pw} (H)	Pulse Width HIGH, CP	—	600	—	600	—	600	ps	

TIMING DIAGRAMS



Propagation Delay and Transition Times

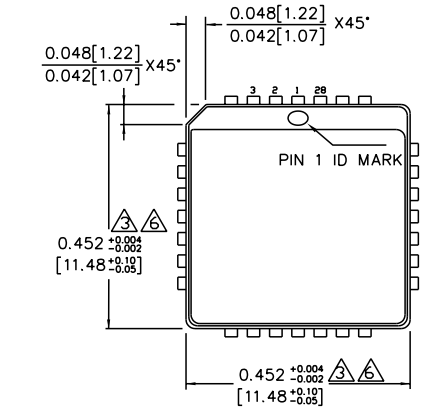


Set-up and Hold Times

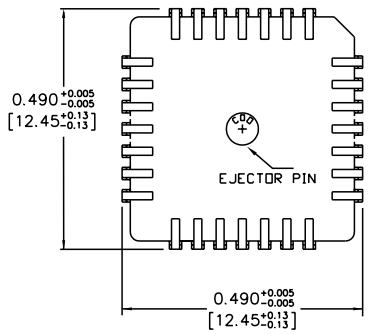
Notes:

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.

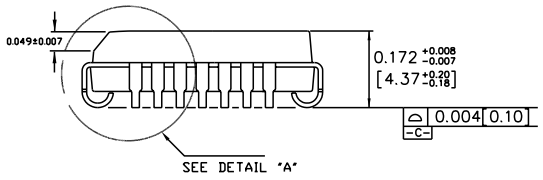
28-PIN PLCC (J28-1)



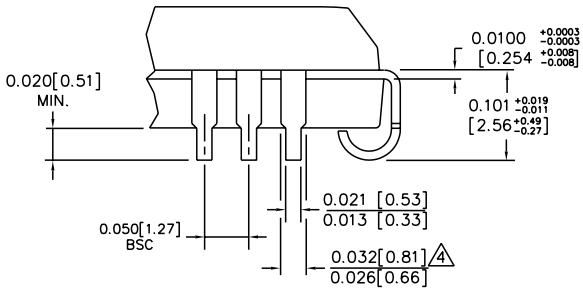
TOP VIEW



BOTTOM VIEW



SIDE VIEW



DETAIL "A"

Rev. 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.

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