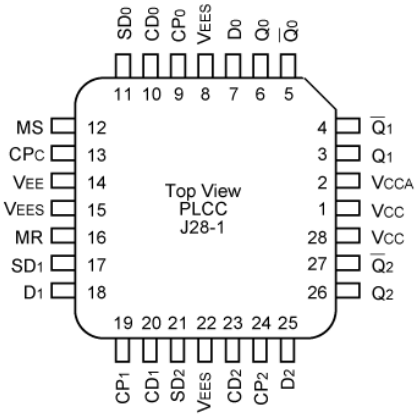
PACKAGE/ORDERING INFORMATION



28-Pin PLCC (J28-1)

Ordering Information

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100S331JC	J28-1	Commercial	SY100S331JC	Sn-Pb
SY100S331JCTR[1]	J28-1	Commercial	SY100S331JC	Sn-Pb
SY100S331JZ[2]	J28-1	Commercial	SY100S331JZ with Pb-Free bar-line indicator	Matte-Sn
SY100S331JZTR[1, 2]	J28-1	Commercial	SY100S331JZ with Pb-Free bar-line indicator	Matte-Sn
SY100S331JY[2]	J28-1	Industrial	SY100S331JY with Pb-Free bar-line indicator	Matte-Sn
SY100S331JYTR[1,2]	J28-1	Industrial	SY100S331JY with Pb-Free bar-line indicator	Matte-Sn

Notes:

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

TRUTH TABLES

Asynchronous Operation[1]

Inputs					Outputs
D_n	CP_n	CP_C	MS SD_n	MR DC_n	Q_n (t+1)
X	X	X	H	L	H
X	X	X	L	H	L
X	X	X	H	H	U

NOTE:

1. H = High Voltage Level, L = Low Voltage Level, X = Don't Care, U = Undefined, t = Time before CP Positive Transition, t+1 = Time after CP Positive Transition, u = Low-to-High Transition

Synchronous Operation[1]

Inputs					Outputs
D_n	CP_n	CP_C	MS SD_n	MR DC_n	Q_n
L	u	L	L	L	L
H	u	L	L	L	H
L	L	u	L	L	L
H	L	u	L	L	H
X	L	L	L	L	Q_n (t)
X	H	X	L	L	Q_n (t)
X	X	H	L	L	Q_n (t)

NOTE:

1. H = High Voltage Level, L = Low Voltage Level, X = Don't Care, U = Undefined, t = Time before CP Positive Transition, t+1 = Time after CP Positive Transition, u = Low-to-High Transition

DC ELECTRICAL CHARACTERISTICS

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

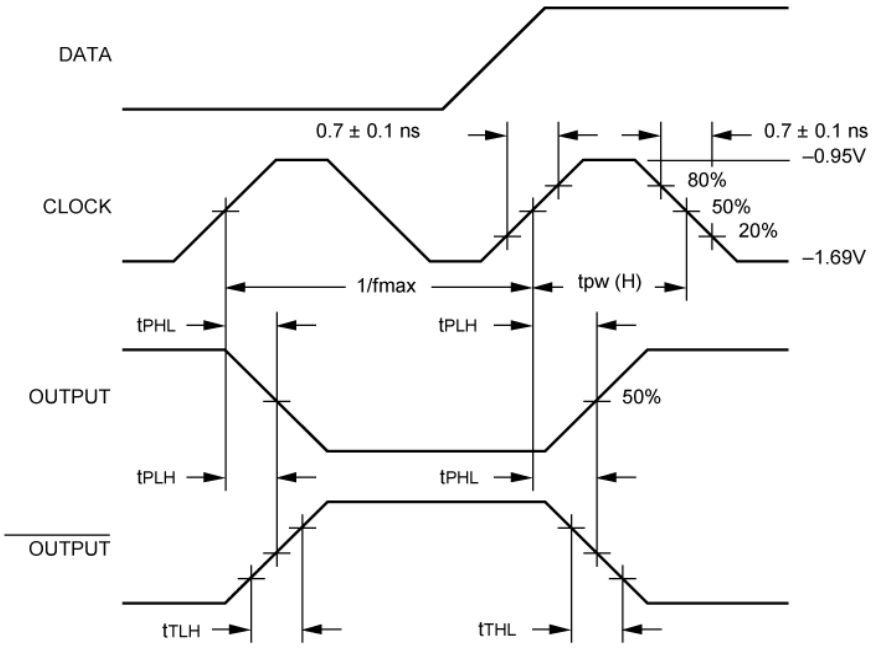
Symbol	Parameter	Min.	Typ.	Max.	Unit	Condition
I_{IH}	Input HIGH Current, All Inputs	—	—	200	µA	V_{IN} = V_{IH} (Max.)
I_{EE}	Power Supply Current	–80	–65	–35	mA	Inputs Open

AC ELECTRICAL CHARACTERISTICS

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

		T_A = -40°C		T_A = 0°C		T_A = +25°C		T_A = +85°C			
Symbol	Parameter	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Unit	Condition
f_{max}	Toggle Frequency	800	—	800	—	800	—	800	—	MHz	
t_{PLH} t_{PHL}	Propagation Delay CP_C to Output	300	700	300	700	300	700	300	700	ps	
t_{PLH} t_{PHL}	Propagation Delay CP_n to Output	300	700	300	700	300	700	300	700	ps	
t_{PLH} t_{PHL}	Propagation Delay CD_n, SD_n to Output	300	800	300	800	300	800	300	800	ps	
t_{PLH} t_{PHL}	Propagation Delay MS, MR to Output	300	900	300	900	300	900	300	900	ps	
t_{TLH} t_{THL}	Transition Time 20% to 80%, 80% to 20%	300	900	300	900	300	900	300	900	ps	
t_S	Set-up Time D_n CD_n, SD_n (Release Time) MS, MR (Release Time)	 400 500 800	 — — —	 400 500 800	 — — —	 400 500 800	 — — —	 400 500 800	 — — —	ps	
t_H	Hold Time D_n	300	—	300	—	300	—	300	—	ps	
t_{pw} (H)	Pulse Width HIGH CP_n, CP_C, DC_n SD_n, MR, MS	800	—	800	—	800	—	800	—	ps	

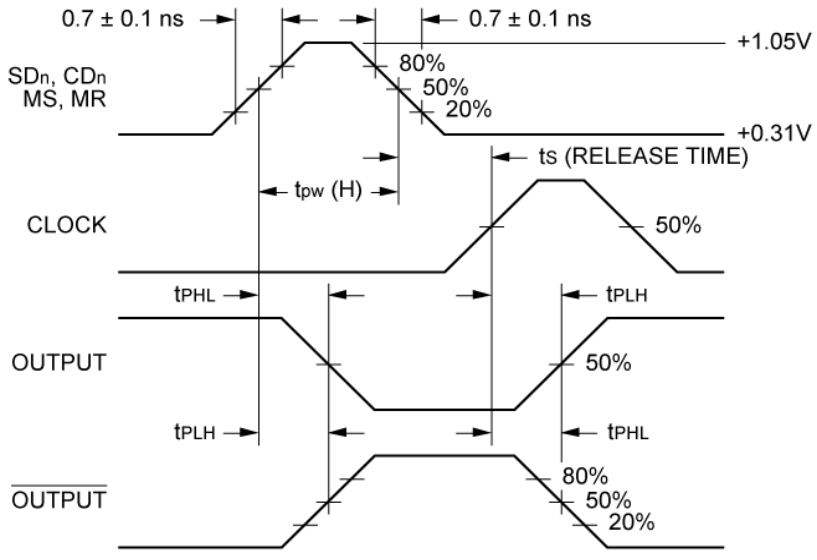
TIMING DIAGRAMS



Propagation Delay (Clock) and Transition Times

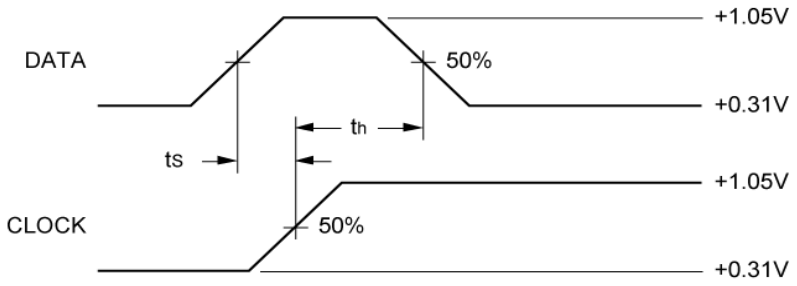
Note:

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



Propagation Delay (Sets and Resets)

TIMING DIAGRAMS



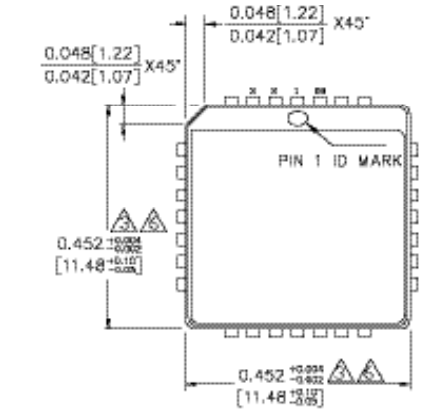
Data Setup and Hold Time

Notes:

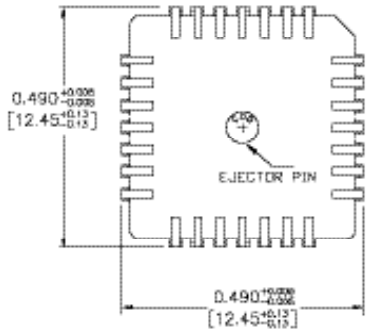
t_s is the minimum time before the transition of the clock that information must be present at the data input.

t_h is the minimum time after the transition of the clock that information must remain unchanged at the data input.

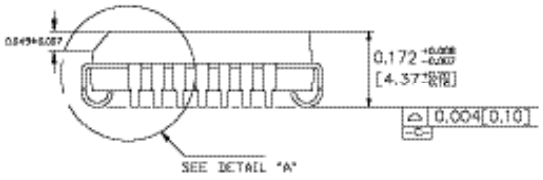
28-PIN PLCC (J28-1)



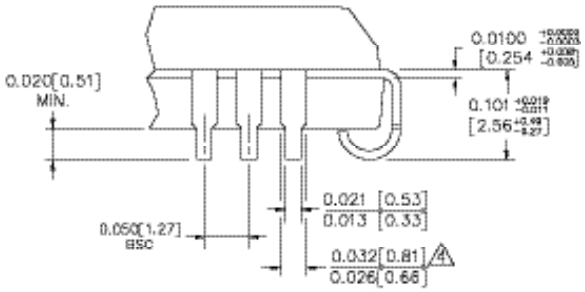
TOP VIEW



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.

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