FEATURES

- **Max. propagation delay of 1500ps**
- **I_{EE} min. of –120mA**
- **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**
- **120% faster than Fairchild**
- **Approximately 40% lower power than Fairchild**
- **Function and pinout compatible with Fairchild F100K**
- **Available in 28-pin PLCC packages**

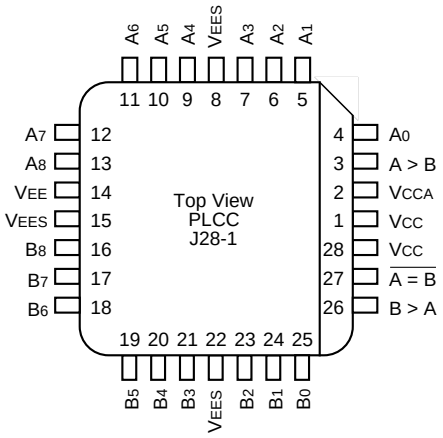
DESCRIPTION

The SY100S366 is an ultra-fast 9-bit magnitude comparator designed for use in high-performance ECL systems. The device compares the arithmetic value of two 9-bit words and indicates whether one word is greater than or equal to the other. The inputs on the device have 75kΩ pull-down resistors.

PIN NAMES

Pin	Function
A_0 – A_8	A Data Inputs
B_0 – B_8	B Data Inputs
A > B	A Greater Than B Output
B > A	B Greater Than A Output
$\overline{A = B}$	Complement A Equal to B Output (Active LOW)
V_{EES}	V_{EE} Substrate
V_{CCA}	V_{CCO} for ECL Outputs

PACKAGE/ORDERING INFORMATION



28-Pin PLCC (J28-1)

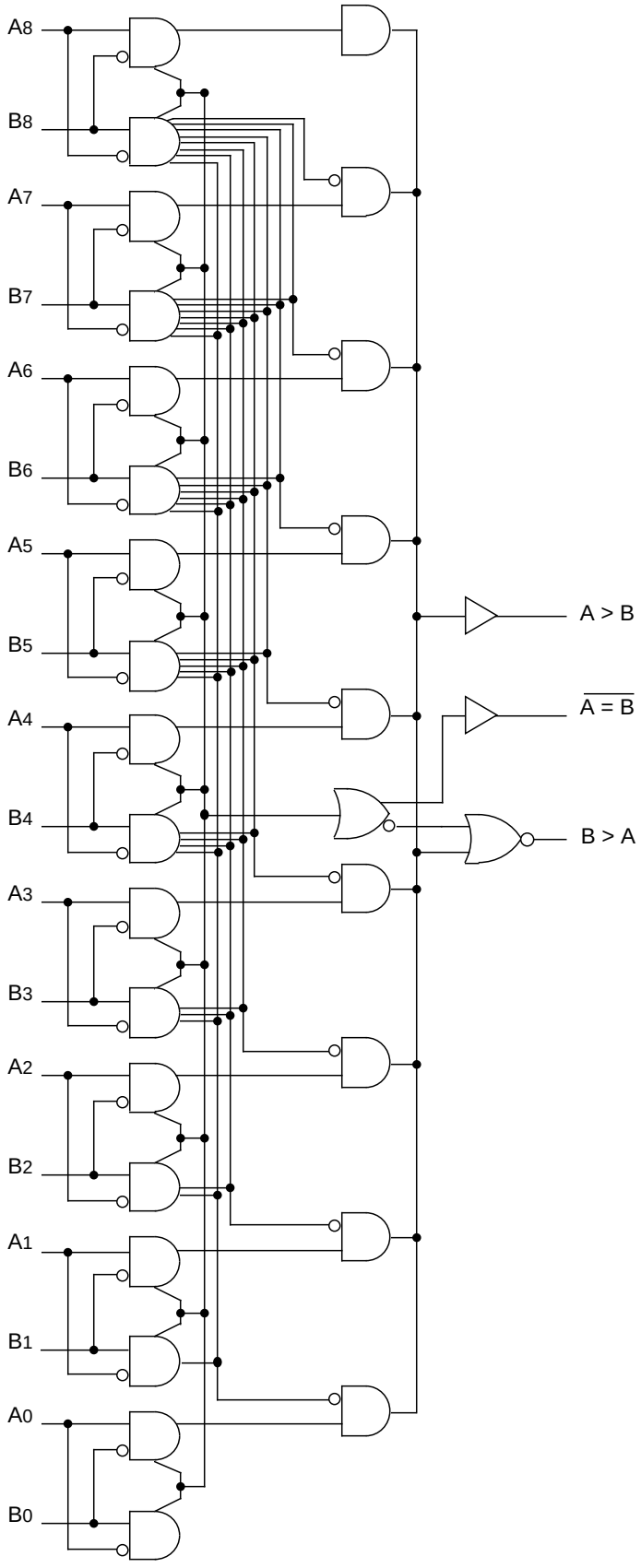
Ordering Information

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100S366JC	J28-1	Commercial	SY100S366JC	Sn-Pb
SY100S366JCTR[1]	J28-1	Commercial	SY100S366JC	Sn-Pb
SY100S366JZ[2]	J28-1	Commercial	SY100S366JZ with Pb-Free bar-line indicator	Matte-Sn
SY100S366JZTR[1, 2]	J28-1	Commercial	SY100S366JZ 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[1]

Inputs									Outputs		
A_8B_8	A_7B_7	A_6B_6	A_5B_5	A_4B_4	A_3B_3	A_2B_2	A_1B_1	A_0B_0	A > B	B > A	$\overline{A = B}$
H L L H $A_8 = B_8$	H L L H								H L H L	L H L H	H H H H
$A_8 = B_8$ $A_8 = B_8$ $A_8 = B_8$ $A_8 = B_8$	$A_7 = B_7$ $A_7 = B_7$ $A_7 = B_7$ $A_7 = B_7$	H L L H $A_6 = B_6$ $A_6 = B_6$	H L L H						H L H L	L H L H	H H H H
$A_8 = B_8$ $A_8 = B_8$ $A_8 = B_8$ $A_8 = B_8$	$A_7 = B_7$ $A_7 = B_7$ $A_7 = B_7$ $A_7 = B_7$	$A_6 = B_6$ $A_6 = B_6$ $A_6 = B_6$ $A_6 = B_6$	$A_5 = B_5$ $A_5 = B_5$ $A_5 = B_5$ $A_5 = B_5$	H L L H $A_4 = B_4$ $A_4 = B_4$	H L L H				H L H L	L H L H	H H H H
$A_8 = B_8$ $A_8 = B_8$ $A_8 = B_8$ $A_8 = B_8$	$A_7 = B_7$ $A_7 = B_7$ $A_7 = B_7$ $A_7 = B_7$	$A_6 = B_6$ $A_6 = B_6$ $A_6 = B_6$ $A_6 = B_6$	$A_5 = B_5$ $A_5 = B_5$ $A_5 = B_5$ $A_5 = B_5$	$A_4 = B_4$ $A_4 = B_4$ $A_4 = B_4$ $A_4 = B_4$	$A_3 = B_3$ $A_3 = B_3$ $A_3 = B_3$ $A_3 = B_3$	H L L H $A_2 = B_2$ $A_2 = B_2$	H L L H		H L H L	L H L H	H H H H
$A_8 = B_8$ $A_8 = B_8$ $A_8 = B_8$	$A_7 = B_7$ $A_7 = B_7$ $A_7 = B_7$	$A_6 = B_6$ $A_6 = B_6$ $A_6 = B_6$	$A_5 = B_5$ $A_5 = B_5$ $A_5 = B_5$	$A_4 = B_4$ $A_4 = B_4$ $A_4 = B_4$	$A_3 = B_3$ $A_3 = B_3$ $A_3 = B_3$	$A_2 = B_2$ $A_2 = B_2$ $A_2 = B_2$	$A_1 = B_1$ $A_1 = B_1$ $A_1 = B_1$	H L L H $A_0 = B_0$	H L L	L H H	H H H

Note:

1. H = HIGH Voltage Level, L = LOW Voltage Level, Blank = X = Don't Care

DC ELECTRICAL CHARACTERISTICS

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

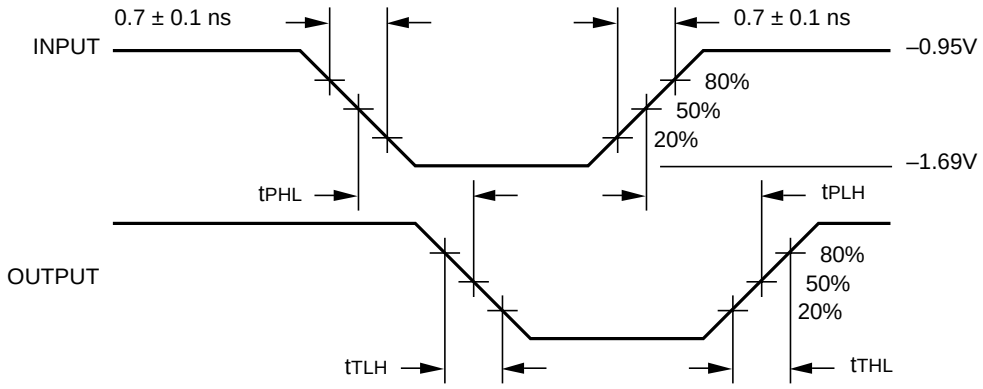
Symbol	Parameter	Min.	Typ.	Max.	Unit	Condition
I_{IH}	Input HIGH Current, All Inputs	—	—	200	µA	$V_{IN} = V_{IH}$ (Max.)
I_{EE}	Power Supply Current	–120	–86	–60	mA	Inputs Open

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.		
t_{PLH} t_{PHL}	Propagation Delay Data to Output	400	1500	400	1500	400	1500	ps	
t_{TLH} t_{THL}	Transition Time 20% to 80%, 80% to 20%	300	900	300	900	300	900	ps	

TIMING DIAGRAM

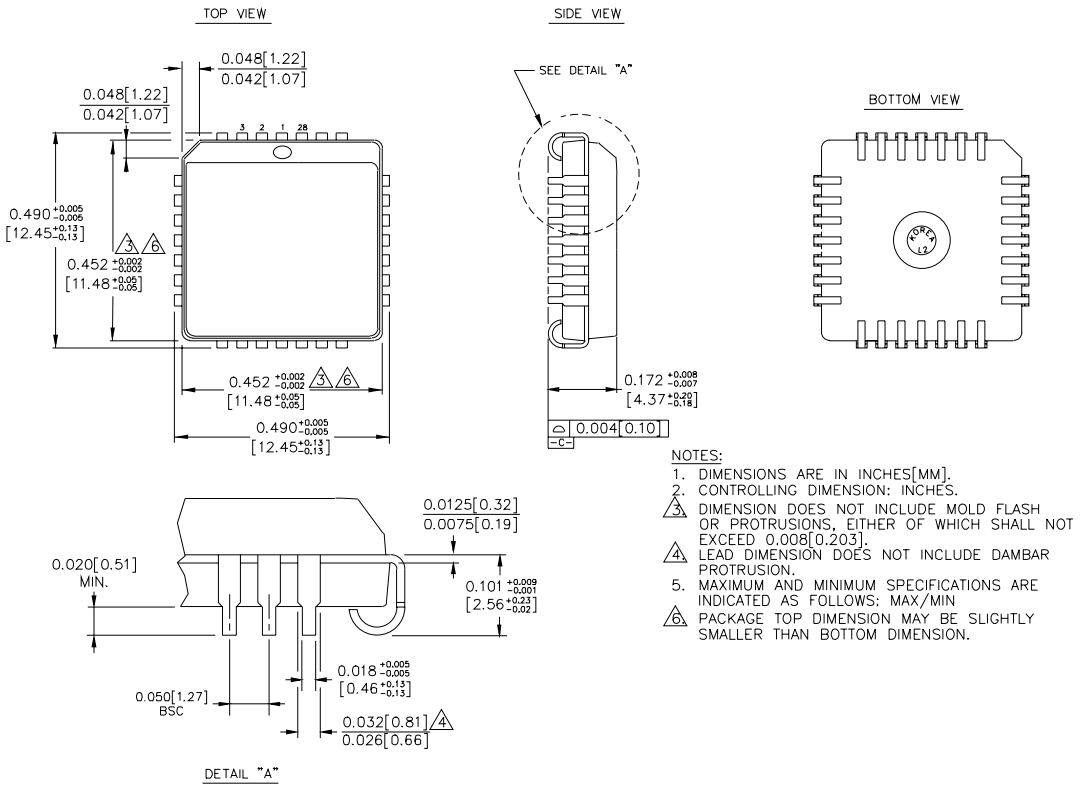


Propagation Delay and Transition Times

Note:

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

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.

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