

**9-BIT
COMPARATOR****SY100S366****FEATURES**

- Max. propagation delay of 1500ps
- IEE min. of -120mA
- Industry standard 100K ECL levels
- Extended supply voltage option:
VEE = -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

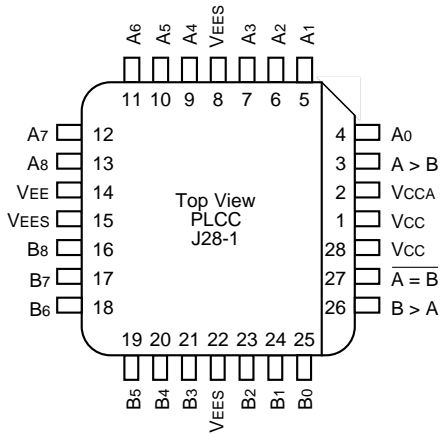
DESCRIPTION

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 |
|--------------------|---|
| A0 – A8 | A Data Inputs |
| B0 – B8 | 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) |
| VEES | VEE Substrate |
| VCCA | Vcco for ECL Outputs |

PACKAGE/ORDERING INFORMATION



28-Pin PLCC (J28-1)

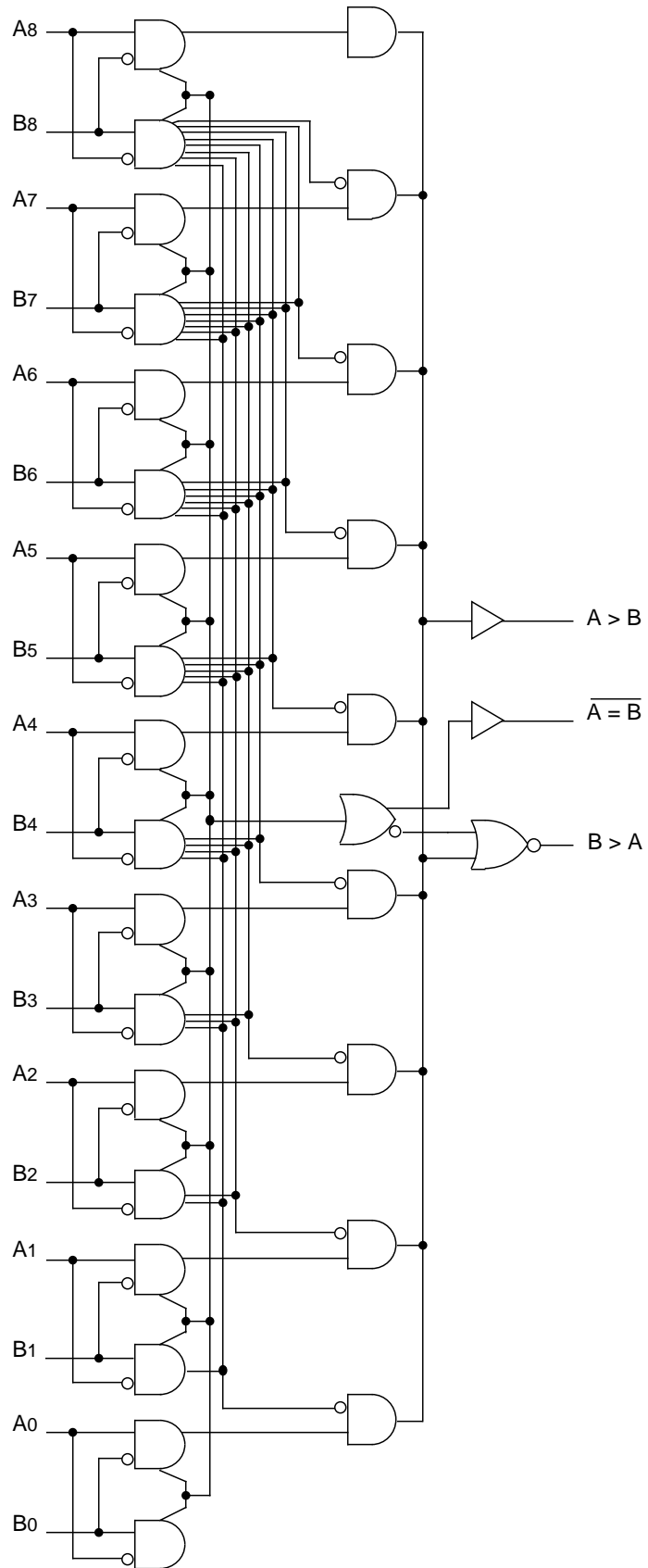
Ordering Information

| Part Number | Package Type | Operating Range | Package Marking | Lead Finish |
|---------------------------------|--------------|-----------------|---|-------------|
| 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 | | |
|--|--|--|--|--|--|--|--|----------------------------------|------------------|------------------|------------------|
| A8B8 | A7B7 | A6B6 | A5B5 | A4B4 | A3B3 | A2B2 | A1B1 | A0B0 | A > B | B > A | A = B |
| H L L H A8 = B8 A8 = B8 | H L L H | | | | | | | | H L H L | L H L H | H H H H |
| A8 = B8 A8 = B8 A8 = B8 A8 = B8 | A7 = B7 A7 = B7 A7 = B7 A7 = B7 | H L L H A6 = B6 A6 = B6 | H L L H A5 = B5 A5 = B5 | | | | | | H L H L | L H L H | H H H H |
| A8 = B8 A8 = B8 A8 = B8 A8 = B8 | A7 = B7 A7 = B7 A7 = B7 A7 = B7 | A6 = B6 A6 = B6 A6 = B6 A6 = B6 | A5 = B5 A5 = B5 A5 = B5 A5 = B5 | H L L H A4 = B4 A4 = B4 | | | | | H L H L | L H L H | H H H H |
| A8 = B8 A8 = B8 A8 = B8 A8 = B8 | A7 = B7 A7 = B7 A7 = B7 A7 = B7 | A6 = B6 A6 = B6 A6 = B6 A6 = B6 | A5 = B5 A5 = B5 A5 = B5 A5 = B5 | A4 = B4 A4 = B4 A4 = B4 A4 = B4 | A3 = B3 A3 = B3 A3 = B3 A3 = B3 | H L L H A2 = B2 A2 = B2 | | | H L H L | L H L H | H H H H |
| A8 = B8 A8 = B8 A8 = B8 A8 = B8 | A7 = B7 A7 = B7 A7 = B7 A7 = B7 | A6 = B6 A6 = B6 A6 = B6 A6 = B6 | A5 = B5 A5 = B5 A5 = B5 A5 = B5 | A4 = B4 A4 = B4 A4 = B4 A4 = B4 | A3 = B3 A3 = B3 A3 = B3 A3 = B3 | A2 = B2 A2 = B2 A2 = B2 A2 = B2 | A1 = B1 A1 = B1 A1 = B1 A1 = B1 | H L L H A0 = B0 A0 = B0 | H L L L | L H H 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

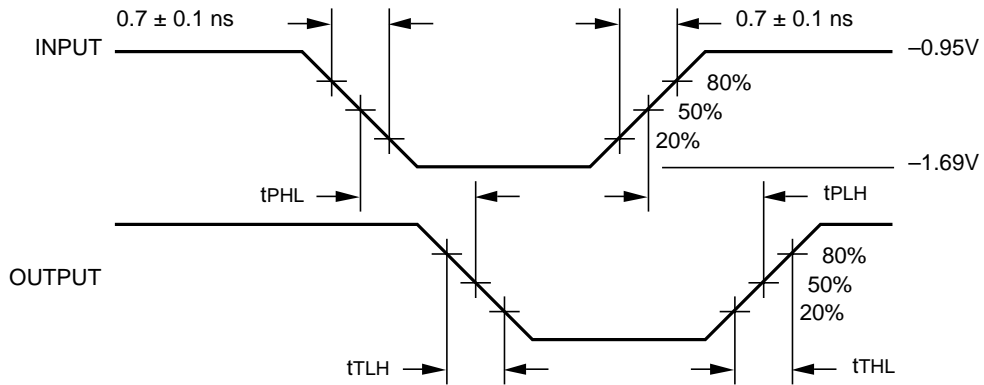
| Symbol | Parameter | Min. | Typ. | Max. | Unit | Condition |
|-----------------|--------------------------------|------|------|------|------|--|
| I _{IH} | Input HIGH Current, All Inputs | — | — | 200 | μA | V _{IN} = V _{IH} (Max.) |
| I _{EE} | Power Supply Current | -120 | -86 | -60 | mA | Inputs 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

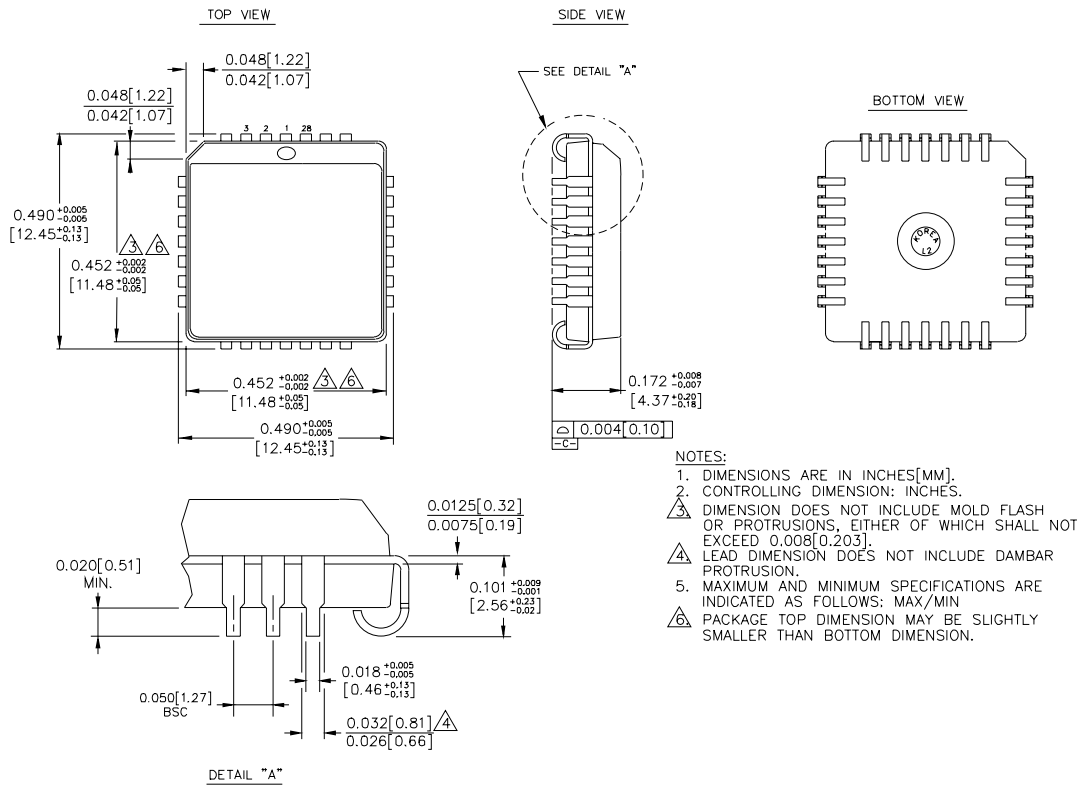


Propagation Delay and Transition Times

Note:

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

28-PIN PLCC (J28-1)



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