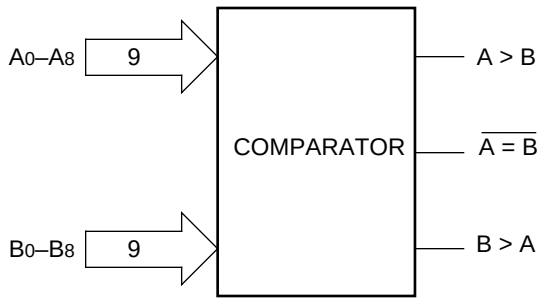
## Features

- **1100ps max. Propagation Delay $\overline{A = B}$**
- **Extended 100E $V_{EE}$ range of –4.2V to –5.5V**
- **Fully compatible with industry standard 10KH, 100K ECL levels**
- **Internal 75KΩ input pulldown resistors**
- **Fully compatible with Motorola MC10E/100E166**
- **Available in 28-pin PLCC package**

## General Description

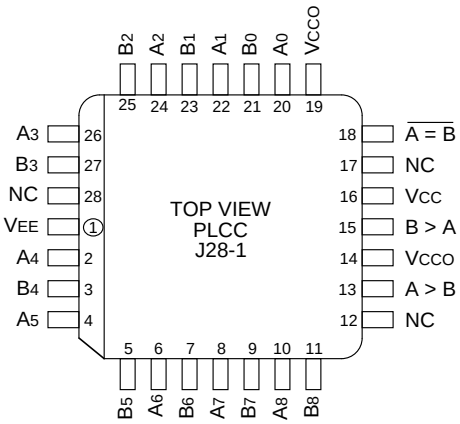
The SY10/100E166 are 9-bit magnitude comparators designed for use in new, high-performance ECL systems. The E166 compares the binary value of two 9-bit words and indicates whether one word is greater than or equal to the other.

## Block Diagram




## Pin Description

| 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 |
| $\overline{A = B}$ | A Equal to B Output (active-LOW) |
| $V_{CCO}$ | $V_{CC}$ to Output |




**28-Pin PLCC (J28-1)**

## Ordering Information[1]

| Part Number | Package Type | Operating Range | Package Marking | Lead Finish |
|---|---|---|---|---|
| SY10E166JC | J28-1 | Commercial | SY10E166JC | Sn-Pb |
| SY10E166JCTR[2] | J28-1 | Commercial | SY10E166JC | Sn-Pb |
| SY100E166JC | J28-1 | Commercial | SY100E166JC | Sn-Pb |
| SY100E166JCTR[2] | J28-1 | Commercial | SY100E166JC | Sn-Pb |
| SY10E166JZ[3] | J28-1 | Commercial | SY10E166JZ with Pb-Free bar-line indicator | Matte-Sn |
| SY10E166JZTR[2, 3] | J28-1 | Commercial | SY10E166JZ with Pb-Free bar-line indicator | Matte-Sn |
| SY100E166JZ[3] | J28-1 | Commercial | SY100E166JZ with Pb-Free bar-line indicator | Matte-Sn |
| SY100E166JZTR[2, 3] | J28-1 | Commercial | SY100E166JZ with Pb-Free bar-line indicator | Matte-Sn |

**Notes:**

1. Contact factory for die availability. Dice are guaranteed at $T_A$ = 25°C, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

## 10E

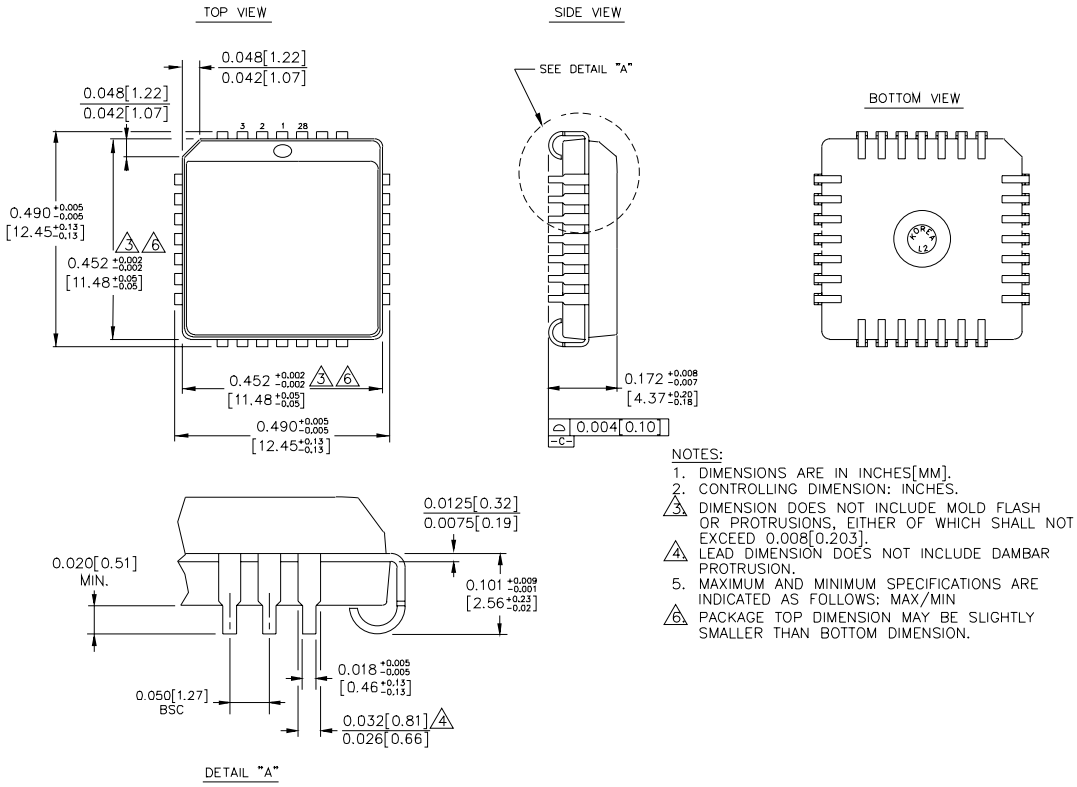
$V_{EE}$ = $V_{EE}$ (Min.) to $V_{EE}$ (Max.); $V_{CC}$ = $V_{CCO}$ = GND

| Symbol | Parameter | $T_A$ = 0°C | | | $T_A$ = +25°C | | | $T_A$ = +85°C | | | Unit | Condition |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | | |
| $I_{IH}$ | Input HIGH Current | — | — | 150 | — | — | 150 | — | — | 150 | µA | — |
| $I_{EE}$ | Power Supply Current | | | | | | | | | | mA | — |
| | 10E | — | 113 | 136 | — | 113 | 136 | — | 113 | 136 | | |
| | 100E | — | 113 | 136 | — | 113 | 136 | — | 130 | 156 | | |

## 100E

$V_{EE}$ = $V_{EE}$ (Min.) to $V_{EE}$ (Max.); $V_{CC}$ = $V_{CCO}$ = GND

| Symbol | Parameter | $T_A$ = 0°C | | | $T_A$ = +25°C | | | $T_A$ = +85°C | | | Unit | Condition |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | | |
| $t_P$ | Propagation Delay to Output | | | | | | | | | | ps | — |
| | D to A = B | 500 | 750 | 1100 | 500 | 750 | 1100 | 500 | 750 | 1100 | | |
| | D to A < B, A > B | 500 | 850 | 1400 | 500 | 850 | 1400 | 500 | 850 | 1400 | | |
| $t_r$<br>$t_f$ | Rise/Fall Time<br>20% to 80% | 300 | 450 | 800 | 300 | 450 | 800 | 300 | 450 | 800 | ps | — |




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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