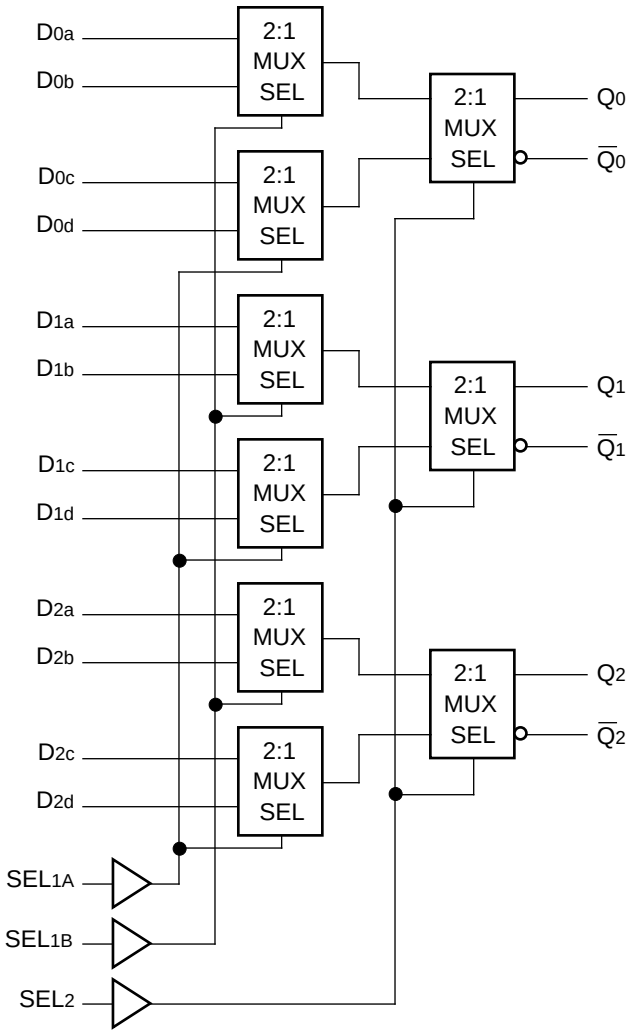
- **725ps max. D to output**
- **Extended 100E $V_{EE}$ range of –4.2V to –5.5V**
- **Differential outputs**
- **Split select architecture**
- **Fully compatible with industry standard 10KH, 100K ECL levels**
- **Internal 75KΩ input pulldown resistors**
- **Fully compatible with Motorola MC10E/100E171**
- **Available in 28-pin PLCC package**

The SY10/100E171 offer three 4:1 multiplexers with differential outputs, designed for use in new, high-performance ECL systems. The leading 4-bit multiplexer operation is organized pairwise, with each pair being a 2-bit multiplexer. Separate select ($SEL_{1A}$, $SEL_{1B}$) controls are provided within each pair. The $SEL_{1A}$ and $SEL_{1B}$ signals control the leading multiplexers, while the $SEL_2$ signal controls the output multiplexer. The three select signals can be used to determine which of the four data inputs will be propagated to the corresponding outputs.

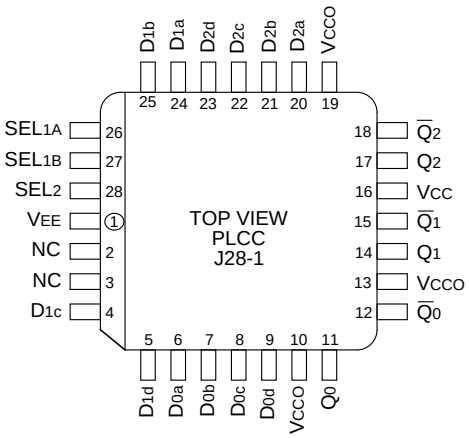
## BLOCK DIAGRAM




## PIN NAMES

| Pin | Function |
|---|---|
| $D_{0x}$–$D_{2x}$ | Data Inputs |
| $SEL_{1A}$, $SEL_{1B}$ | First-stage Select Inputs |
| $SEL_2$ | Second-stage Select Input |
| $Q_0$–$Q_2$ | True Output |
| $\overline{Q}_0$–$\overline{Q}_2$ | Inverted Output |
| $V_{CCO}$ | $V_{CC}$ to Output |

## PACKAGE/ORDERING INFORMATION




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

## Ordering Information[1]

| Part Number | Package Type | Operating Range | Package Marking | Lead Finish |
|---|---|---|---|---|
| SY10E171JC | J28-1 | Commercial | SY10E171JC | Sn-Pb |
| SY10E171JCTR[2] | J28-1 | Commercial | SY10E171JC | Sn-Pb |
| SY100E171JC | J28-1 | Commercial | SY100E171JC | Sn-Pb |
| SY100E171JCTR[2] | J28-1 | Commercial | SY100E171JC | Sn-Pb |
| SY10E171JZ[3] | J28-1 | Commercial | SY10E171JZ with Pb-Free bar-line indicator | Matte-Sn |
| SY10E171JZTR[2, 3] | J28-1 | Commercial | SY10E171JZ with Pb-Free bar-line indicator | Matte-Sn |
| SY100E171JZ[3] | J28-1 | Commercial | SY100E171JZ with Pb-Free bar-line indicator | Matte-Sn |
| SY100E171JZTR[2, 3] | J28-1 | Commercial | SY100E171JZ 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.

## TRUTH TABLE

| Pin | State | Operation |
|---|---|---|
| $SEL_2$ | H | Output c/d data |
| $SEL_{1A}$ | H | Input d data |
| $SEL_{1B}$ | H | Input b data |

## DC ELECTRICAL CHARACTERISTICS

$V_{EE}$ = $V_{EE}$ (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 | — | 56 | 67 | — | 56 | 67 | — | 56 | 67 | | |
| | 100E | — | 56 | 67 | — | 56 | 67 | — | 65 | 77 | | |

## AC ELECTRICAL CHARACTERISTICS

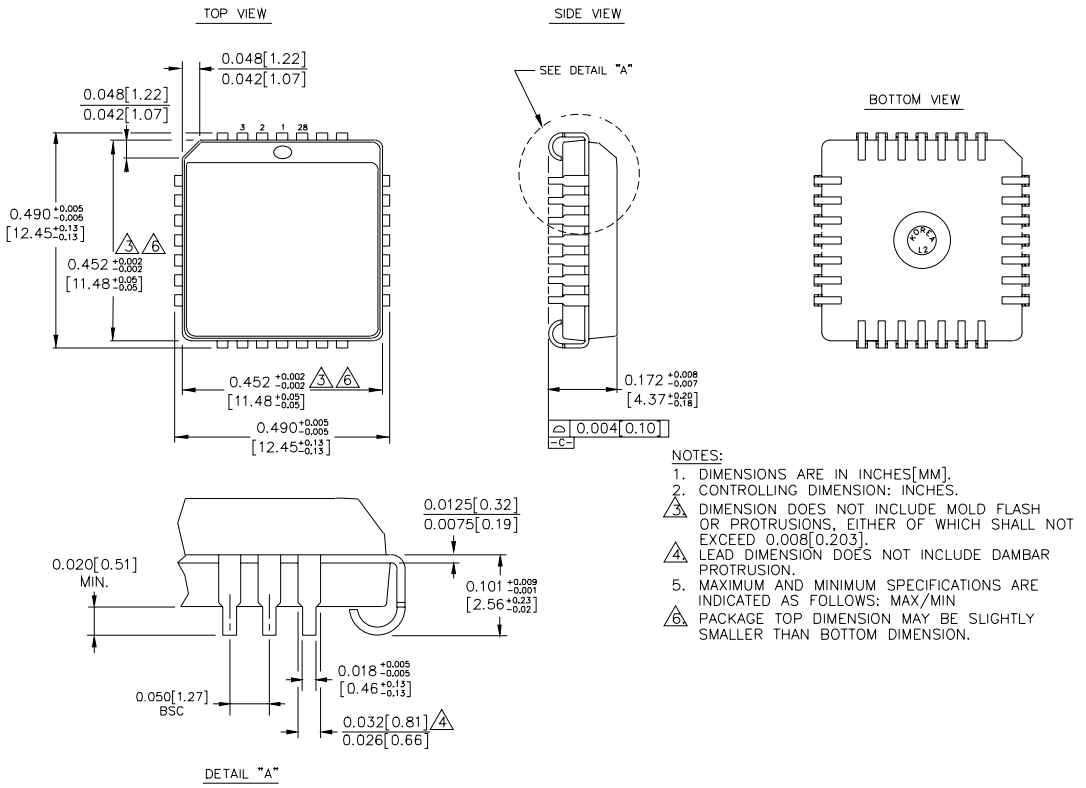
$V_{EE}$ = $V_{EE}$ (Min.) to $V_{EE}$ (Max.); $V_{CC}$ = $V_{CCO}$ = GND

| 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. | | |
| $t_{PD}$ | Propagation Delay to Output | | | | | | | | | | ps | — |
| | D | 275 | 480 | 650 | 275 | 480 | 650 | 275 | 480 | 650 | | |
| | $SEL_1$ | 450 | 650 | 850 | 450 | 650 | 850 | 450 | 650 | 850 | | |
| | $SEL_2$ | 350 | 550 | 700 | 350 | 550 | 700 | 350 | 550 | 700 | | |
| $t_{skew}$ | Within-Device Skew | | | | | | | | | | ps | 1 |
| | $D_{nm}$, $D_{nm}$ to $Q_n$ | — | 60 | — | — | 60 | — | — | 60 | — | | |
| | $D_a$, $D_b$, $D_c$, $D_d$ to Q | — | 40 | — | — | 40 | — | — | 40 | — | | |
| $t_r$ | Rise/Fall Time | 300 | 475 | 650 | 300 | 475 | 650 | 300 | 475 | 650 | ps | — |
| $t_f$ | 20% to 80% | | | | | | | | | | | |

**Note:**

1. Within-device skew is defined as identical transitions on similar paths through a device; n = 0, 1, 2  m = a, b, c, d.

## 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.

Rev. 03

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