# 16:1 MULTIPLEXER

**SY10E164**
**SY100E164**

## FEATURES

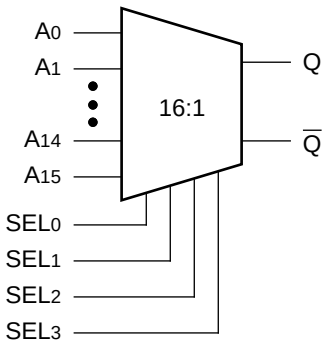
- **850ps Data Input to Output**
- **Extended 100E $V_{EE}$ range of –4.2V to –5.5V**
- **Differential output**
- **Fully compatible with industry standard 10KH, 100K ECL levels**
- **Internal 75KΩ input pull-down resistors**
- **Fully compatible with Motorola MC10E/100E164**
- **Available in 28-pin PLCC package**

## DESCRIPTION

The SY10/100E164 are 16:1 multiplexers with a differential output. The select inputs ($SEL_{0,1,2,3}$) control which one of the sixteen data inputs ($A_0$–$A_{15}$) is propagated to the output.

Special attention to the design layout results in a typical skew between the 16 inputs of only 50ps.

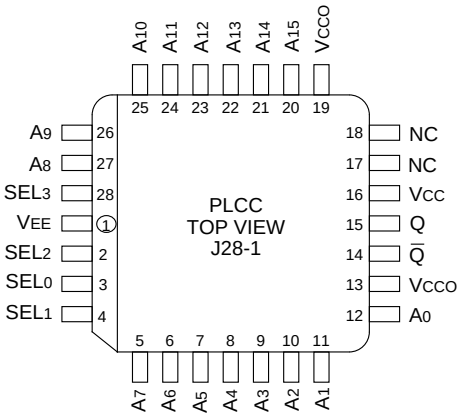
## BLOCK DIAGRAM




## PIN NAMES

| Pin | Function |
|---|---|
| $A_0$ – $A_{15}$ | Data Inputs |
| SEL[0:3] | Select Inputs |
| $\overline{Q}$, Q | Outputs |
| $V_{CCO}$ | $V_{CC}$ to Output |

## PACKAGE/ORDERING INFORMATION




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

## Ordering Information[1]

| Part Number | Package Type | Operating Range | Package Marking | Lead Finish |
|---|---|---|---|---|
| SY10E164JC | J28-1 | Commercial | SY10E164JC | Sn-Pb |
| SY10E164JCTR[2] | J28-1 | Commercial | SY10E164JC | Sn-Pb |
| SY100E164JC | J28-1 | Commercial | SY100E164JC | Sn-Pb |
| SY100E164JCTR[2] | J28-1 | Commercial | SY100E164JC | Sn-Pb |
| SY10E164JZ[3] | J28-1 | Commercial | SY10E164JZ with Pb-Free bar-line indicator | Matte-Sn |
| SY10E164JZTR[2, 3] | J28-1 | Commercial | SY10E164JZ with Pb-Free bar-line indicator | Matte-Sn |
| SY100E164JZ[3] | J28-1 | Commercial | SY100E164JZ with Pb-Free bar-line indicator | Matte-Sn |
| SY100E164JZTR[2, 3] | J28-1 | Commercial | SY100E164JZ 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

| $SEL_3$ | $SEL_2$ | $SEL_1$ | $SEL_0$ | Data |
|---|---|---|---|---|
| L | L | L | L | $A_0$ |
| L | L | L | H | $A_1$ |
| L | L | H | L | $A_2$ |
| L | L | H | H | $A_3$ |
| L | H | L | L | $A_4$ |
| L | H | L | H | $A_5$ |
| L | H | H | L | $A_6$ |
| L | H | H | H | $A_7$ |

| $SEL_3$ | $SEL_2$ | $SEL_1$ | $SEL_0$ | Data |
|---|---|---|---|---|
| H | L | L | L | $A_8$ |
| H | L | L | H | $A_9$ |
| H | L | H | L | $A_{10}$ |
| H | L | H | H | $A_{11}$ |
| H | H | L | L | $A_{12}$ |
| H | H | L | H | $A_{13}$ |
| H | H | H | L | $A_{14}$ |
| H | H | H | H | $A_{15}$ |

## 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 | — | 59 | 71 | — | 59 | 71 | — | 59 | 71 | | |
| | 100E | — | 59 | 71 | — | 59 | 71 | — | 68 | 81 | | |

## AC ELECTRICAL CHARACTERISTICS

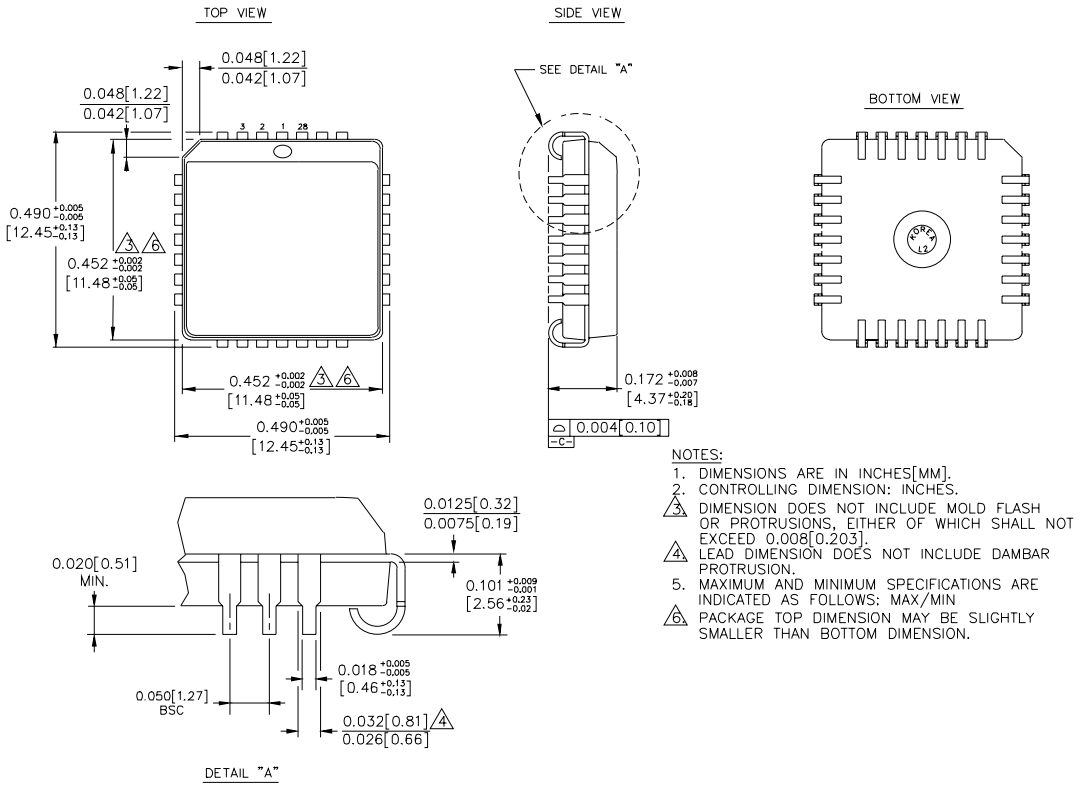
$V_{EE}$ = $V_{EE}$ (Min.) to $V_{EE}$ (Max.); $V_{CC}$ = $V_{CCO}$ = GND

| 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 | — |
| | A Input | 350 | 600 | 850 | 350 | 600 | 850 | 350 | 600 | 850 | | |
| | $SEL_0$ | 500 | 700 | 900 | 500 | 700 | 900 | 500 | 700 | 900 | | |
| | $SEL_1$ | 400 | 675 | 900 | 400 | 675 | 900 | 400 | 675 | 900 | | |
| | $SEL_2$ | 400 | 675 | 900 | 400 | 675 | 900 | 400 | 675 | 900 | | |
| | $SEL_3$ | 400 | 550 | 700 | 400 | 550 | 700 | 400 | 550 | 700 | | |
| $t_{skew}$ | Within-Device Skew | — | 50 | — | — | 50 | — | — | 50 | — | ps | 1 |
| $t_r$ | Rise/Fall Times | 275 | 400 | 550 | 275 | 400 | 550 | 275 | 400 | 550 | ps | — |
| $t_f$ | 20–80% | | | | | | | | | | | |

**Note:**

1. Within-device skew is defined as the difference in the A to Q delay between the 16 different A inputs.

## 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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