

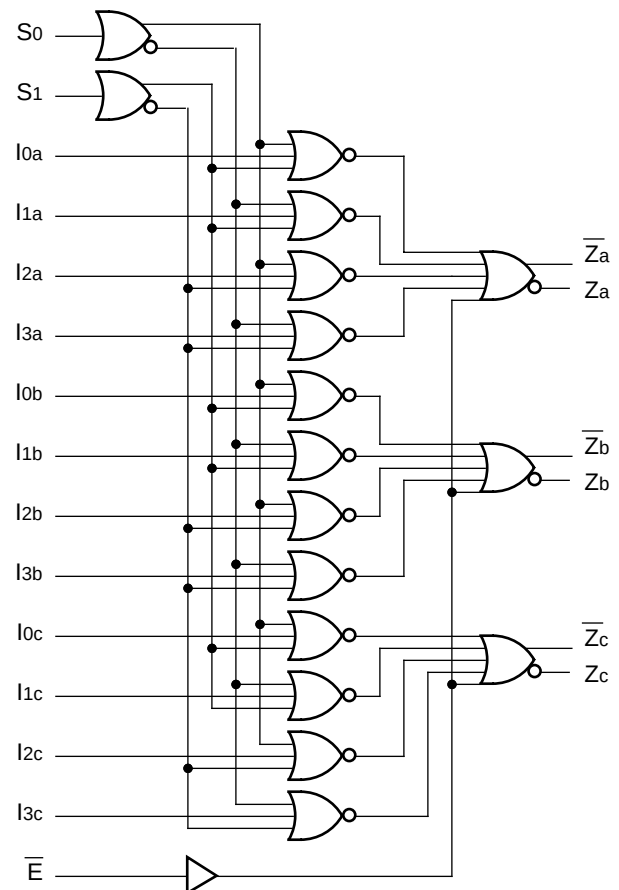
### FEATURES

- Max. propagation delay of 1000ps
- IEE min. of -68mA
- 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
- 40% faster than Fairchild
- 40% lower power than Fairchild
- Function and pinout compatible with Fairchild F100K
- Available in 24-pin CERPACK and 28-pin PLCC packages

### DESCRIPTION

The SY100S371 is an ultra-fast triple 4-input multiplexer with true and complementary outputs designed for use in high-performance ECL systems. The multiplexer is controlled by common select inputs S0 and S1. A logic HIGH on the Enable ( $\bar{E}$ ) control input takes the outputs to a logic LOW. The inputs on the device have 75KΩ pull-down resistors.

### BLOCK DIAGRAM



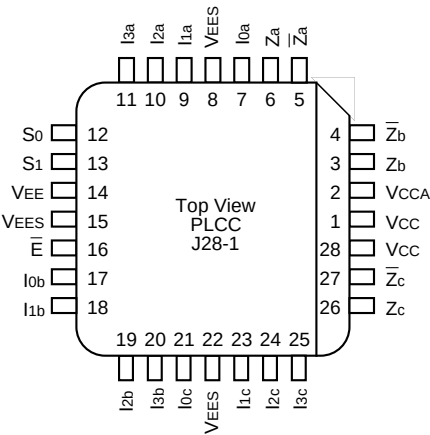
PACKAGE/ORDERING INFORMATION

Ordering Information

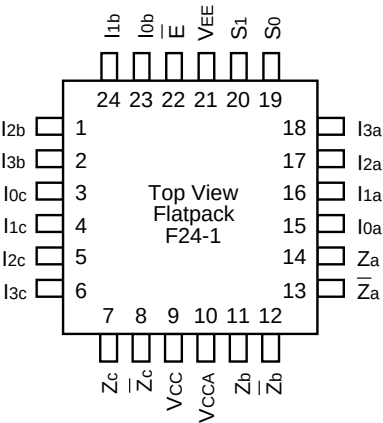
| Part Number                     | Package Type | Operating Range | Package Marking                             | Lead Finish |
|---------------------------------|--------------|-----------------|---------------------------------------------|-------------|
| SY100S371FC                     | F24-1        | Commercial      | SY100S371FC                                 | Sn-Pb       |
| SY100S371FCTR <sup>(1)</sup>    | F24-1        | Commercial      | SY100S371FC                                 | Sn-Pb       |
| SY100S371JC                     | J28-1        | Commercial      | SY100S371JC                                 | Sn-Pb       |
| SY100S371JCTR <sup>(1)</sup>    | J28-1        | Commercial      | SY100S371JC                                 | Sn-Pb       |
| SY100S371JZ <sup>(2)</sup>      | J28-1        | Commercial      | SY100S371JZ with Pb-Free bar-line indicator | Matte-Sn    |
| SY100S371JZTR <sup>(1, 2)</sup> | J28-1        | Commercial      | SY100S371JZ with Pb-Free bar-line indicator | Matte-Sn    |

Notes:

- 1. Tape and Reel.
- 2. Pb-Free package is recommended for new designs.



28-Pin PLCC (J28-1)



24-Pin Cerpack (F24-1)

**PIN NAMES**

| Pin                               | Function                    |
|-----------------------------------|-----------------------------|
| I <sub>0X</sub> – I <sub>3X</sub> | Data Inputs (x = a, b or c) |
| S <sub>0</sub> , S <sub>1</sub>   | Select Inputs               |
| $\bar{E}$                         | Enable Input (Active LOW)   |
| Z <sub>a</sub> – Z <sub>c</sub>   | Data Outputs                |
| $\bar{Z}_a$ – $\bar{Z}_c$         | Complementary Data Outputs  |
| VEES                              | VEE Substrate               |
| VCCA                              | VCCO for ECL Outputs        |

**TRUTH TABLE<sup>(1)</sup>**

| Inputs    |                |                | Outputs         |
|-----------|----------------|----------------|-----------------|
| $\bar{E}$ | S <sub>0</sub> | S <sub>1</sub> | Z <sub>n</sub>  |
| L         | L              | L              | I <sub>0X</sub> |
| L         | H              | L              | I <sub>1X</sub> |
| L         | L              | H              | I <sub>2X</sub> |
| L         | H              | H              | I <sub>3X</sub> |
| H         | X              | X              | L               |

**NOTE:**

1. H = HIGH Voltage Level

L = LOW Voltage Level

X = Don't Care

**DC ELECTRICAL CHARACTERISTICS**V<sub>EE</sub> = –4.2V to –5.5V unless otherwise specified; V<sub>CC</sub> = V<sub>CCA</sub> = GND

| Symbol          | Parameter                                                                                              | Min. | Typ. | Max.       | Unit | Condition                                |
|-----------------|--------------------------------------------------------------------------------------------------------|------|------|------------|------|------------------------------------------|
| I <sub>IH</sub> | Input HIGH Current<br>I <sub>0X</sub> – I <sub>3X</sub><br>S <sub>0</sub> , S <sub>1</sub> , $\bar{E}$ | —    | —    | 250<br>300 | μA   | V <sub>IN</sub> = V <sub>IH</sub> (Max.) |
| I <sub>EE</sub> | Power Supply Current                                                                                   | –68  | –48  | –34        | mA   | Inputs Open                              |

## AC ELECTRICAL CHARACTERISTICS

### CERPACK

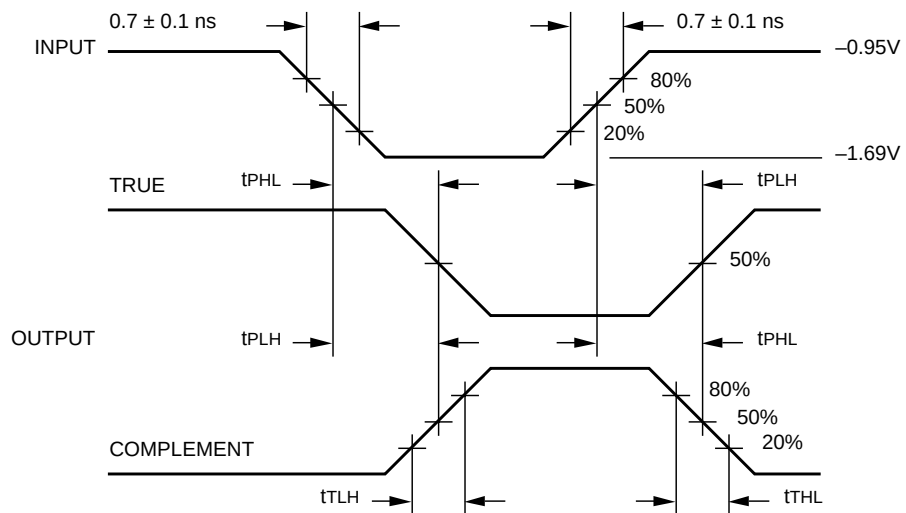
$V_{EE} = -4.2V$  to  $-5.5V$  unless otherwise specified;  $V_{CC} = V_{CCA} = GND$

| Symbol                               | Parameter                                                        | $T_A = 0^{\circ}C$ |      | $T_A = +25^{\circ}C$ |      | $T_A = +85^{\circ}C$ |      | Unit | Condition |
|--------------------------------------|------------------------------------------------------------------|--------------------|------|----------------------|------|----------------------|------|------|-----------|
|                                      |                                                                  | Min.               | Max. | Min.                 | Max. | Min.                 | Max. |      |           |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay<br>I <sub>ox</sub> – I <sub>3x</sub> to Output | 300                | 1100 | 300                  | 1100 | 300                  | 1100 | ps   |           |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay<br>S <sub>0</sub> , S <sub>1</sub> to Output   | 400                | 1500 | 400                  | 1500 | 400                  | 1500 | ps   |           |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay<br>$\bar{S}_0$ , S <sub>1</sub> to Output      | 400                | 1400 | 400                  | 1400 | 400                  | 1400 | ps   |           |
| t <sub>TLH</sub><br>t <sub>THL</sub> | Transition Time<br>20% to 80%, 80% to 20%                        | 300                | 900  | 300                  | 900  | 300                  | 900  | ps   |           |

### PLCC

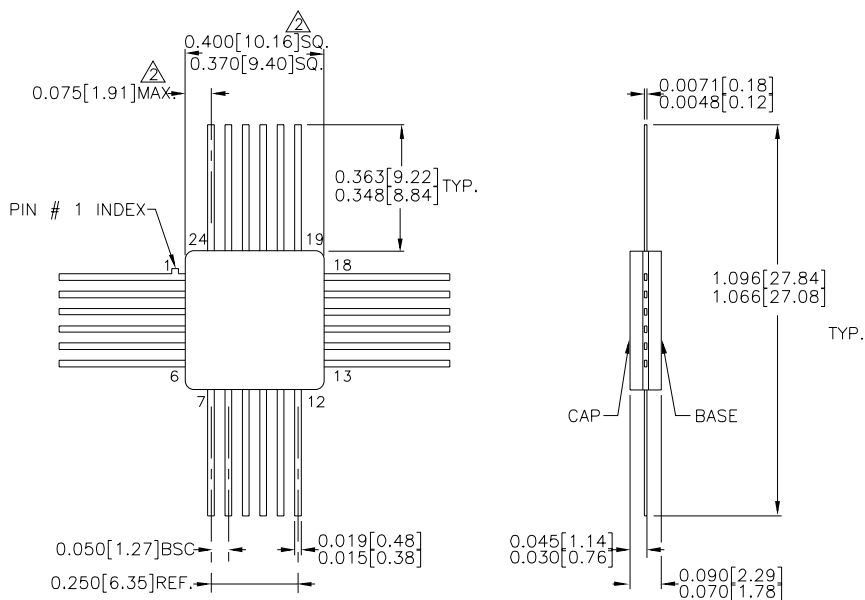
$V_{EE} = -4.2V$  to  $-5.5V$  unless otherwise specified;  $V_{CC} = V_{CCA} = GND$

| Symbol                               | Parameter                                                        | $T_A = 0^{\circ}C$ |      | $T_A = +25^{\circ}C$ |      | $T_A = +85^{\circ}C$ |      | Unit | Condition |
|--------------------------------------|------------------------------------------------------------------|--------------------|------|----------------------|------|----------------------|------|------|-----------|
|                                      |                                                                  | Min.               | Max. | Min.                 | Max. | Min.                 | Max. |      |           |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay<br>I <sub>ox</sub> – I <sub>3x</sub> to Output | 300                | 1000 | 300                  | 1000 | 300                  | 1000 | ps   |           |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay<br>S <sub>0</sub> , S <sub>1</sub> to Output   | 400                | 1400 | 400                  | 1400 | 400                  | 1400 | ps   |           |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay<br>$\bar{S}_0$ , S <sub>1</sub> to Output      | 400                | 1300 | 400                  | 1300 | 400                  | 1300 | ps   |           |
| t <sub>TLH</sub><br>t <sub>THL</sub> | Transition Time<br>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;  $V_{CC} = V_{CCA} = GND$

## 24-PIN CERPACK (F24-1)

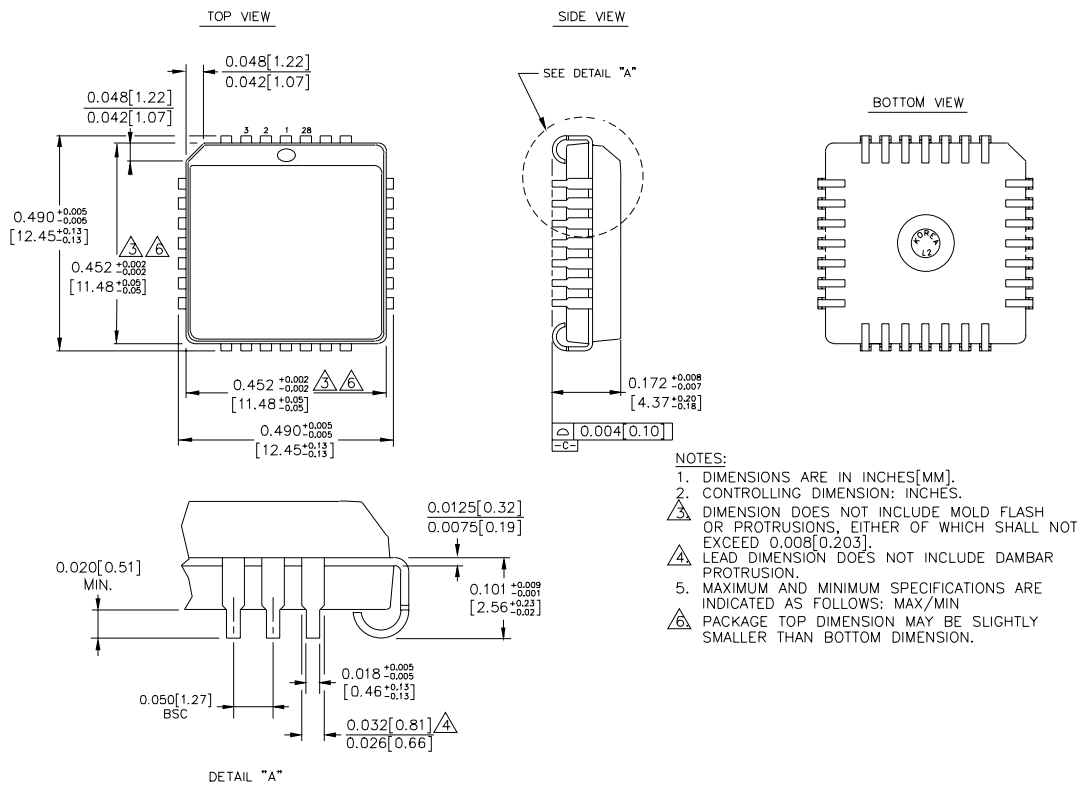


### NOTES:

1. DIMENSIONS ARE IN INCHES[MM].
2. THIS DIMENSION INCLUDES GLASS PROTRUSION AND CAP TO BASE ALIGNMENT TOLERANCES.
3. DIMENSIONS SHOWN ARE MAX/MIN, WHERE NOTED.

Rev. 03

## 28-PIN PLCC (J28-1)



Rev. 03

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