

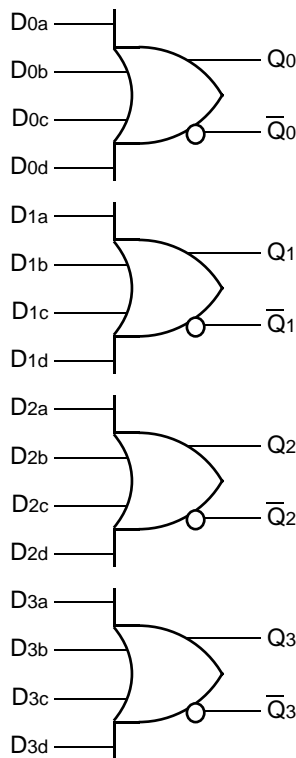
## FEATURES

- 500ps max. propagation delay
- Extended 100E VEE range of -4.2V to -5.5V
- True and complementary outputs
- Fully compatible with industry standard 10KH, 100K I/O levels
- Internal 75KΩ input pulldown resistors
- Fully compatible with Motorola MC10E/100E101
- Available in 28-pin PLCC package

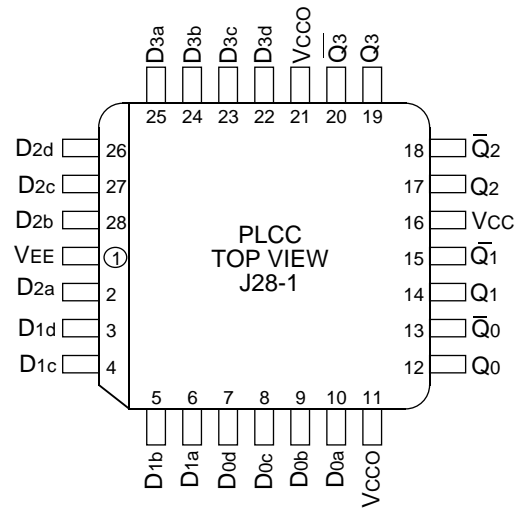
## DESCRIPTION

The SY10/100E101 are quad 4-input OR/NOR gates designed for use in new, high-performance ECL systems. The E101 features both true and complementary outputs.

## BLOCK DIAGRAM



## PIN CONFIGURATION



## PIN NAMES

| Pin                | Function          |
|--------------------|-------------------|
| Dna, Dnb, Dnc, Dnd | Data Inputs       |
| Q0-Q3              | True Outputs      |
| Q0-bar-Q3-bar      | Inverting Outputs |
| Vcco               | Vcc to Output     |

**LOGIC EQUATION**

$$Q_n = D_{na} + D_{nb} + D_{nc} + D_{nd}$$

**DC ELECTRICAL CHARACTERISTICS**

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

| Symbol          | Parameter            | $T_A = -40^\circ\text{C}$ |      |      | $T_A = 0^\circ\text{C}$ |      |      | $T_A = +25^\circ\text{C}$ |      |      | $T_A = +85^\circ\text{C}$ |      |      | Unit |
|-----------------|----------------------|---------------------------|------|------|-------------------------|------|------|---------------------------|------|------|---------------------------|------|------|------|
|                 |                      | Min.                      | Typ. | Max. | Min.                    | Typ. | Max. | Min.                      | Typ. | Max. | Min.                      | Typ. | Max. |      |
| I <sub>IH</sub> | Input HIGH Current   | —                         | —    | 150  | —                       | —    | 150  | —                         | —    | 150  | —                         | —    | 150  | μA   |
| I <sub>EE</sub> | Power Supply Current | —                         | —    | —    | —                       | —    | —    | —                         | —    | —    | —                         | —    | —    | mA   |
|                 | 10EL                 | —                         | 30   | 36   | —                       | 30   | 36   | —                         | 30   | 36   | —                         | 30   | 36   |      |
|                 | 100EL                | —                         | 30   | 36   | —                       | 30   | 36   | —                         | 30   | 36   | —                         | 35   | 42   |      |

**AC ELECTRICAL CHARACTERISTICS**

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

| Symbol                               | Parameter                             | $T_A = -40^\circ\text{C}$ |      |      | $T_A = 0^\circ\text{C}$ |      |      | $T_A = +25^\circ\text{C}$ |      |      | $T_A = +85^\circ\text{C}$ |      |      | Unit |
|--------------------------------------|---------------------------------------|---------------------------|------|------|-------------------------|------|------|---------------------------|------|------|---------------------------|------|------|------|
|                                      |                                       | Min.                      | Typ. | Max. | Min.                    | Typ. | Max. | Min.                      | Typ. | Max. | Min.                      | Typ. | Max. |      |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay to<br>Output D to Q | 150                       | —    | 550  | 200                     | 350  | 500  | 200                       | 350  | 500  | 200                       | 350  | 500  | ps   |
| t <sub>skew</sub>                    | Within-Device Skew <sup>(1)</sup>     | —                         | 50   | —    | —                       | 50   | —    | —                         | 50   | —    | —                         | 50   | —    | ps   |
|                                      | Within-Gate Skew <sup>(2)</sup>       | —                         | 25   | —    | —                       | 25   | —    | —                         | 25   | —    | —                         | 25   | —    | ps   |
| t <sub>r</sub><br>t <sub>f</sub>     | Rise/Fall Time<br>20% to 80%          | 275                       | —    | 625  | 300                     | 380  | 575  | 300                       | 380  | 575  | 300                       | 380  | 575  | ps   |

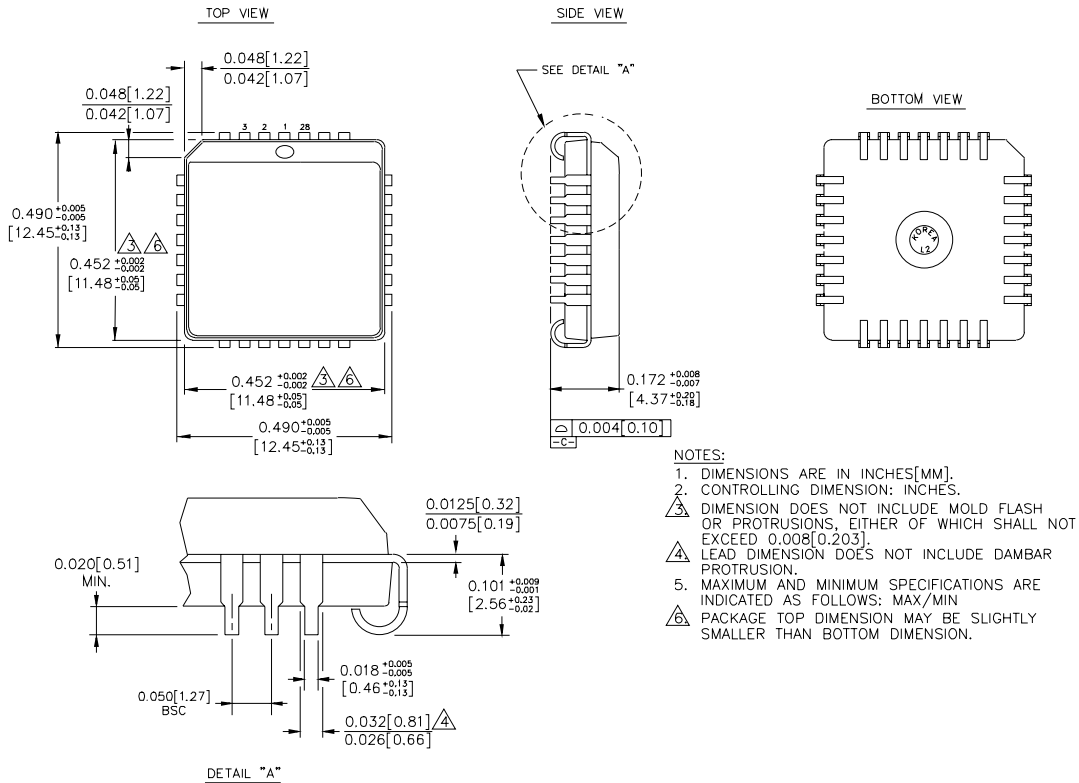
**NOTES:**

1. Within-device skew is defined as identical transitions on similar paths through a device.
2. Within-gate skew is defined as the variation in propagation delays through a single gate when driven from its different inputs.

**PRODUCT ORDERING CODE**

| Ordering Code | Package Type | Operating Range | Ordering Code | Package Type | Operating Range |
|---------------|--------------|-----------------|---------------|--------------|-----------------|
| SY10E101JC    | J28-1        | Commercial      | SY10E101JI    | J28-1        | Industrial      |
| SY10E101JCTR  | J28-1        | Commercial      | SY10E101JITR  | J28-1        | Industrial      |
| SY100E101JC   | J28-1        | Commercial      | SY100E101JI   | J28-1        | Industrial      |
| SY100E101JCTR | J28-1        | Commercial      | SY100E101JITR | J28-1        | Industrial      |

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



Rev. 03

**MICREL-SYNERGY 3250 SCOTT BOULEVARD SANTA CLARA CA 95054 USA**

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