

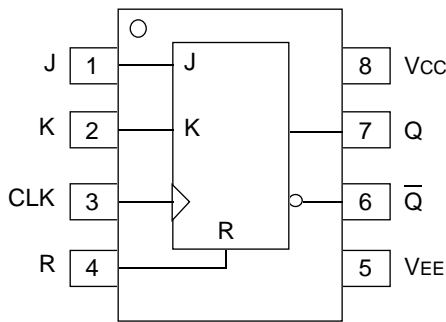
**FEATURES**

- 525ps propagation delay
- 2.2GHz toggle frequency
- High bandwidth output transistions
- Internal 75KΩ input pull-down resistors
- Available in 8-pin SOIC package

**DESCRIPTION**

The SY10/100EL35 are high-speed JK Flip-Flops. The J/K data enters the master portion of the flip-flop when the clock is LOW and is transferred to the slave and, thus, the outputs, upon a positive transition of the clock. The reset pin is asynchronous and is activated with a logic HIGH.

**PIN CONFIGURATION/BLOCK DIAGRAM**



**SOIC  
TOP VIEW**

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

| J | K | R | CLK | Q <sub>n+1</sub> |
|---|---|---|-----|------------------|
| L | L | L | Z   | Q <sub>n</sub>   |
| L | H | L | Z   | L                |
| H | L | L | Z   | H                |
| H | H | L | Z   | $\bar{Q}_n$      |
| X | X | H | X   | L                |

**NOTE:**

1. Z = LOW-to-HIGH transition.

**DC ELECTRICAL CHARACTERISTICS**V<sub>EE</sub> = V<sub>EE</sub> (Min.) to V<sub>EE</sub> (Max.); V<sub>CC</sub> = GND

| Symbol          | Parameter            | T <sub>A</sub> = -40°C |      |      | T <sub>A</sub> = 0°C |      |      | T <sub>A</sub> = +25°C |      |      | T <sub>A</sub> = +85°C |      |      | Unit |
|-----------------|----------------------|------------------------|------|------|----------------------|------|------|------------------------|------|------|------------------------|------|------|------|
|                 |                      | Min.                   | Typ. | Max. | Min.                 | Typ. | Max. | Min.                   | Typ. | Max. | Min.                   | Typ. | Max. |      |
| I <sub>EE</sub> | Power Supply Current | —                      | 27   | 32   | —                    | 27   | 32   | —                      | 27   | 32   | —                      | 27   | 32   | mA   |
|                 | 10EL                 | —                      | 27   | 32   | —                    | 27   | 32   | —                      | 27   | 32   | —                      | 27   | 32   |      |
|                 | 100EL                | —                      | 27   | 32   | —                    | 27   | 32   | —                      | 27   | 32   | —                      | 32   | 37   |      |
| V <sub>EE</sub> | Power Supply Voltage | —                      | -5.2 | —    | -4.75                | -5.2 | -5.5 | -4.75                  | -5.2 | -5.5 | -4.75                  | -5.2 | -5.5 | V    |
|                 | 10EL                 | —                      | -4.5 | —    | -4.20                | -4.5 | -5.5 | -4.20                  | -4.5 | -5.5 | -4.20                  | -4.5 | -5.5 |      |
|                 | 100EL                | —                      | -4.5 | —    | -4.20                | -4.5 | -5.5 | -4.20                  | -4.5 | -5.5 | -4.20                  | -4.5 | -5.5 |      |
| I <sub>IH</sub> | Input HIGH Current   | —                      | —    | 150  | —                    | —    | 150  | —                      | —    | 150  | —                      | —    | 150  | μA   |

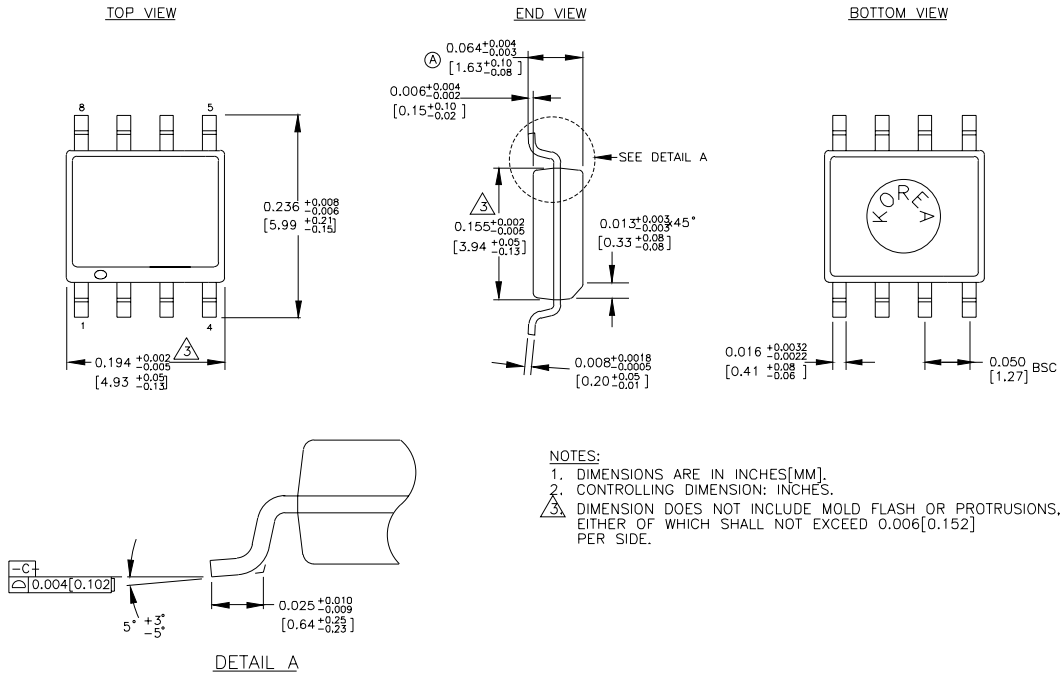
**AC ELECTRICAL CHARACTERISTICS**V<sub>EE</sub> = V<sub>EE</sub> (Min.) to V<sub>EE</sub> (Max.); V<sub>CC</sub> = GND

| Symbol                               | Parameter                                | T <sub>A</sub> = -40°C |            |      | T <sub>A</sub> = 0°C |            |            | T <sub>A</sub> = +25°C |            |            | T <sub>A</sub> = +85°C |            |            | Unit |
|--------------------------------------|--|------------------------|------------|------|----------------------|------------|------------|------------------------|------------|------------|------------------------|------------|------------|------|
|                                      |  | Min.                   | Typ.       | Max. | Min.                 | Typ.       | Max.       | Min.                   | Typ.       | Max.       | Min.                   | Typ.       | Max.       |      |
| f <sub>MAX</sub>                     | Maximum Toggle Frequency                 | 1.4                    | 2.0        | —    | 1.8                  | 2.2        | —          | 1.8                    | 2.2        | —          | 1.8                    | 2.2        | —          | GHz  |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay<br>to Output           | 290<br>225             | 515<br>450 | —    | 340<br>275           | 515<br>450 | 690<br>625 | 350<br>275             | 525<br>450 | 700<br>625 | 395<br>350             | 570<br>525 | 745<br>700 | ps   |
| t <sub>S</sub>                       | Set-up Time                              | 150                    | 0          | —    | 150                  | 0          | —          | 150                    | 0          | —          | 150                    | 0          | —          | ps   |
| t <sub>H</sub>                       | Hold Time                                | 250                    | 100        | —    | 250                  | 100        | —          | 250                    | 100        | —          | 250                    | 100        | —          | ps   |
| t <sub>RR</sub>                      | Reset Recovery                           | 400                    | 200        | —    | 400                  | 200        | —          | 400                    | 200        | —          | 400                    | 200        | —          | ps   |
| t <sub>PW</sub>                      | Minimum Pulse Width<br>CLK, Reset        | 400                    | —          | —    | 400                  | —          | —          | 400                    | —          | —          | 400                    | —          | —          | ps   |
| t <sub>r</sub><br>t <sub>f</sub>     | Output Rise/Fall Times Q<br>(20% to 80%) | 100                    | 225        | 350  | 100                  | 225        | 350        | 100                    | 225        | 350        | 100                    | 225        | 350        | ps   |

**PRODUCT ORDERING CODE**

| Ordering Code | Package Type | Operating Range |
|---------------|--------------|-----------------|
| SY10EL35ZC    | Z8-1         | Commercial      |
| SY10EL35ZCTR  | Z8-1         | Commercial      |
| SY100EL35ZC   | Z8-1         | Commercial      |
| SY100EL35ZCTR | Z8-1         | Commercial      |

**8 LEAD SOIC .150" WIDE (Z8-1)**



Rev. 03

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

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