

FEATURES

- 700MHz min. shift frequency
- Extended 100E VEE range of -4.2V to -5.5V
- 8 bits wide
- Bi-directional
- Four selectable modes for full functionality
- Asynchronous Master Reset
- Fully compatible with industry standard 10KH, 100K ECL levels
- Internal 75KΩ input pulldown resistors
- Fully compatible with Motorola MC10E/100E141
- Pin-compatible with E241
- Available in 28-pin PLCC package

DESCRIPTION

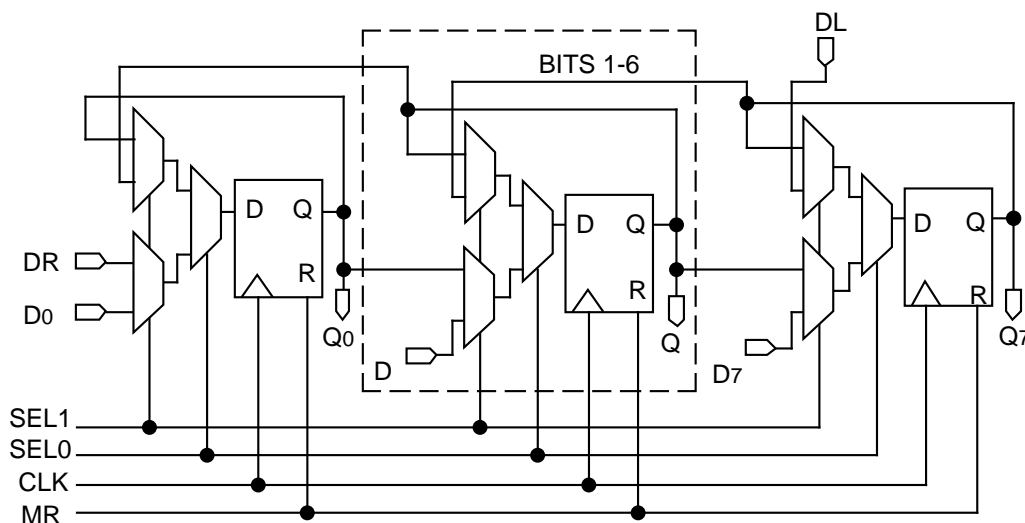
The SY10/100E141 are 8-bit, full-function shift registers designed for use in new, high-performance ECL systems. The E141 performs serial/parallel in and serial/parallel out, shifting in either direction. The eight inputs D₀-D₇ accept parallel input data, while DL/DR accept serial input data for left/right shifting.

The two select pins, SEL₀ and SEL₁ permit four modes of operation: Load, Hold, Shift Left and Shift Right, as shown in the Truth Table. Input data is clocked into the register on the rising clock edge after meeting the minimum set-up time. A logic HIGH on the Master Reset (MR) pin asynchronously resets all the registers to zero.

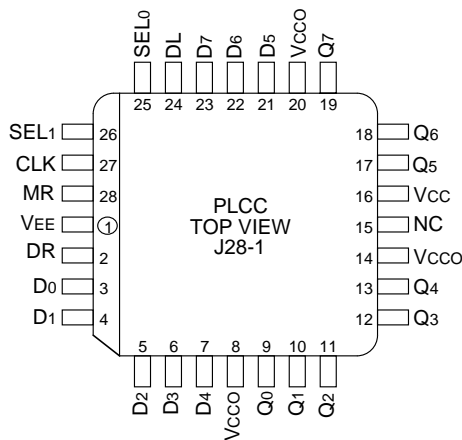
PIN NAMES

| Pin | Function |
|-------------------------------------|----------------------|
| D ₀ -D ₇ | Parallel Data Inputs |
| DL, DR | Serial Data Inputs |
| SEL ₀ , SEL ₁ | Mode Select Inputs |
| CLK | Clock |
| Q ₀ -Q ₇ | Data Outputs |
| MR | Master Reset |
| V _{CC0} | Vcc to Output |

BLOCK DIAGRAM



PACKAGE/ORDERING INFORMATION



28-Pin PLCC (J28-1)

Ordering Information⁽¹⁾

| Part Number | Package Type | Operating Range | Package Marking | Lead Finish |
|---------------------------------|--------------|-----------------|---------------------------------------------|-------------|
| SY10E141JC | J28-1 | Commercial | SY10E141JC | Sn-Pb |
| SY10E141JCTR ⁽²⁾ | J28-1 | Commercial | SY10E141JC | Sn-Pb |
| SY100E141JC | J28-1 | Commercial | SY100E141JC | Sn-Pb |
| SY100E141JCTR ⁽²⁾ | J28-1 | Commercial | SY100E141JC | Sn-Pb |
| SY10E141JY ⁽³⁾ | J28-1 | Industrial | SY10E141JY with Pb-Free bar-line indicator | Matte-Sn |
| SY10E141JYTR ^(2, 3) | J28-1 | Industrial | SY10E141JY with Pb-Free bar-line indicator | Matte-Sn |
| SY100E141JY ⁽³⁾ | J28-1 | Industrial | SY100E141JY with Pb-Free bar-line indicator | Matte-Sn |
| SY100E141JYTR ^(2, 3) | J28-1 | Industrial | SY100E141JY 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

| Function | DL | DR | SEL ₀ | SEL ₁ | MR | CLK | Q ₀ | Q ₁ | Q ₂ | Q ₃ | Q ₄ | Q ₅ | Q ₆ | Q ₇ |
|-------------|----|----|------------------|------------------|----|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Load | X | X | L | L | L | Z | D ₀ | D ₁ | D ₂ | D ₃ | D ₄ | D ₅ | D ₆ | D ₇ |
| Shift Right | X | L | L | H | L | Z | L | Q ₀ | Q ₁ | Q ₂ | Q ₃ | Q ₄ | Q ₅ | Q ₆ |
| | X | H | L | H | L | Z | H | L | Q ₀ | Q ₁ | Q ₂ | Q ₃ | Q ₄ | Q ₅ |
| Shift Left | L | X | H | L | L | Z | L | Q ₀ | Q ₁ | Q ₂ | Q ₃ | Q ₄ | Q ₅ | L |
| | H | X | H | L | L | Z | Q ₀ | Q ₁ | Q ₂ | Q ₃ | Q ₄ | Q ₅ | L | H |
| Hold | X | X | H | H | L | Z | Q ₀ | Q ₁ | Q ₂ | Q ₃ | Q ₄ | Q ₅ | L | H |
| | X | X | H | H | L | Z | Q ₀ | Q ₁ | Q ₂ | Q ₃ | Q ₄ | Q ₅ | L | H |
| Reset | X | X | X | X | H | X | L | L | L | L | L | L | L | L |

DC ELECTRICAL CHARACTERISTICSV_{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 | — | 131 | 157 | — | 131 | 157 | — | 131 | 157 | | |
| | 100E | — | 131 | 157 | — | 131 | 157 | — | 151 | 181 | | |

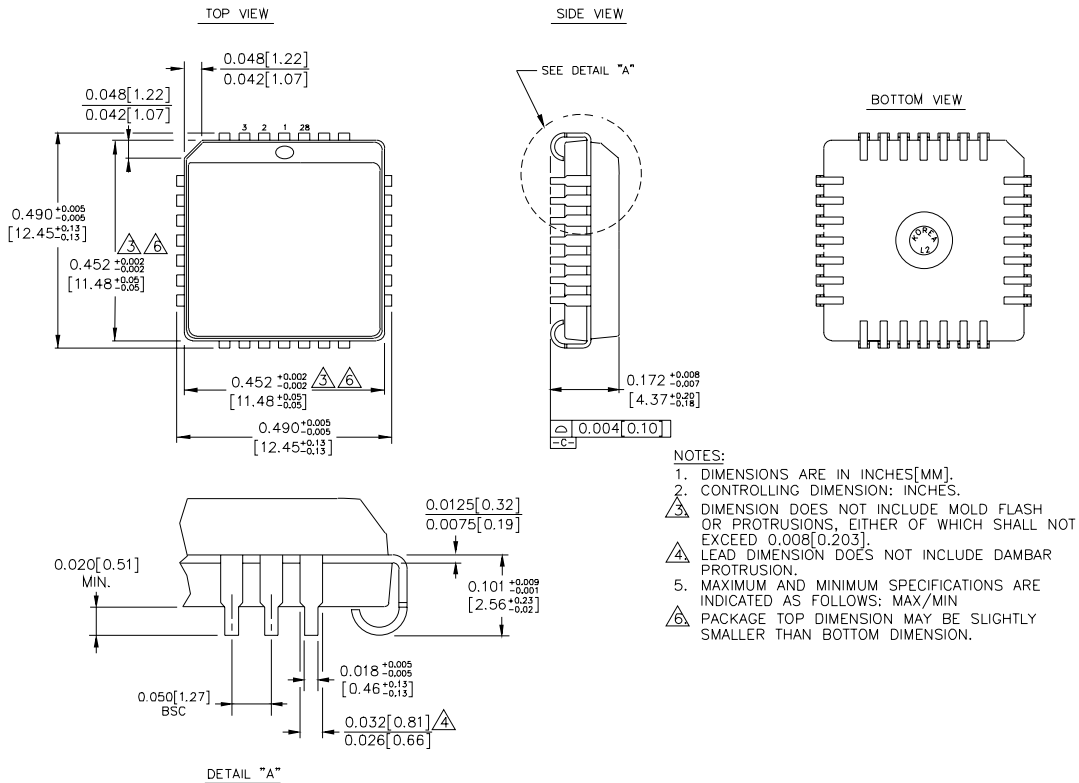
AC ELECTRICAL CHARACTERISTICSV_{EE} = V_{EE} (Min.) to V_{EE} (Max.); V_{CC} = V_{CCO} = GND

| 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. | | |
| f _{SHIFT} | Max. Shift Frequency | 700 | 900 | — | 700 | 900 | — | 700 | 900 | — | MHz | — |
| t _{PD} | Propagation Delay to Output CLK | 625 | 750 | 975 | 625 | 750 | 975 | 625 | 750 | 975 | ps | — |
| | MR | 600 | 725 | 975 | 600 | 725 | 975 | 600 | 725 | 975 | | |
| t _s | Set-up Time D | 175 | 25 | — | 175 | 25 | — | 175 | 25 | — | ps | — |
| | SEL ₀ | 350 | 200 | — | 350 | 200 | — | 350 | 200 | — | | |
| | SEL ₁ | 300 | 150 | — | 300 | 150 | — | 300 | 150 | — | | |
| t _H | Hold Time D | 200 | -25 | — | 200 | -25 | — | 200 | -25 | — | ps | — |
| | SEL ₀ | 100 | -200 | — | 100 | -200 | — | 100 | -200 | — | | |
| | SEL ₁ | 100 | -150 | — | 100 | -150 | — | 100 | -150 | — | | |
| t _{RR} | Reset Recovery Time | 900 | 700 | — | 900 | 700 | — | 900 | 700 | — | ps | — |
| t _{PW} | Minimum Pulse Width CLK, MR | 400 | — | — | 400 | — | — | 400 | — | — | ps | — |
| t _{skew} | Within-Device Skew | — | 60 | — | — | 60 | — | — | 60 | — | ps | 1 |
| t _r | Rise/Fall Time | 300 | 525 | 800 | 300 | 525 | 800 | 300 | 525 | 800 | ps | — |
| t _f | 20% to 80% | | | | | | | | | | | |

Note:

1. Within-device skew is defined as identical transitions on similar paths through a device.

28-PIN PLCC (J28-1)



Rev. 03

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