

## 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

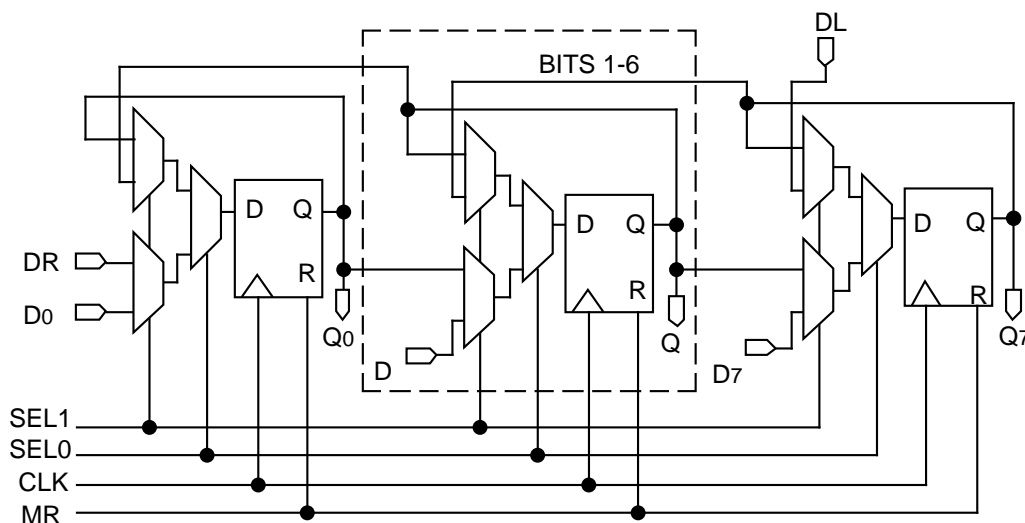
The SY10/100E141 are 8-bit, full-function shift registers designed for use in new, high-performance ECL systems. The E141 performs serial/parallel in and serial/parallel out, shifting in either direction. The eight inputs D<sub>0</sub>-D<sub>7</sub> accept parallel input data, while DL/DR accept serial input data for left/right shifting.

The two select pins, SEL<sub>0</sub> and SEL<sub>1</sub> 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.

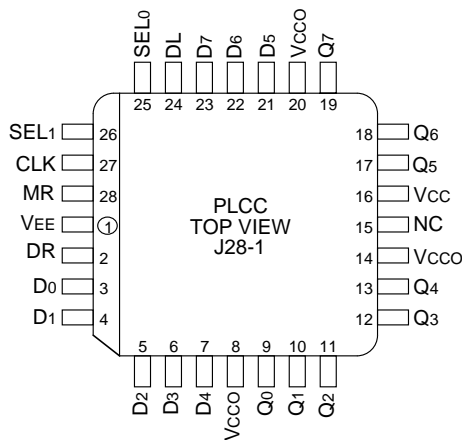
## PIN NAMES

Pin	Function
D <sub>0</sub> -D <sub>7</sub>	Parallel Data Inputs
DL, DR	Serial Data Inputs
SEL <sub>0</sub> , SEL <sub>1</sub>	Mode Select Inputs
CLK	Clock
Q <sub>0</sub> -Q <sub>7</sub>	Data Outputs
MR	Master Reset
V <sub>CC0</sub>	Vcc to Output

## BLOCK DIAGRAM



**PACKAGE/ORDERING INFORMATION**



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

**Ordering Information<sup>(1)</sup>**

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

**Notes:**

1. Contact factory for die availability. Dice are guaranteed at T<sub>A</sub> = 25°C, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

**TRUTH TABLE**

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

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

Symbol	Parameter	T <sub>A</sub> = 0°C			T <sub>A</sub> = +25°C			T <sub>A</sub> = +85°C			Unit	Condition
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
I <sub>IH</sub>	Input HIGH Current	—	—	150	—	—	150	—	—	150	μA	—
I <sub>EE</sub>	Power Supply Current	—	—	—	—	—	—	—	—	—	mA	—
	10E	—	131	157	—	131	157	—	131	157		
	100E	—	131	157	—	131	157	—	151	181		

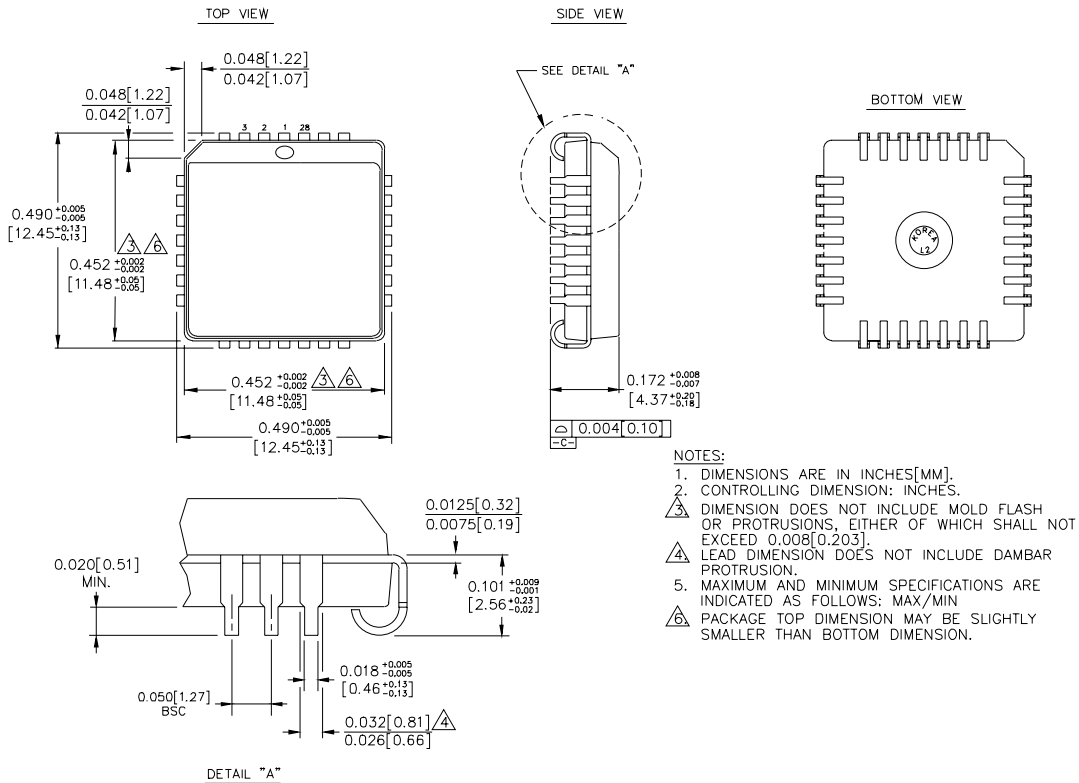
**AC ELECTRICAL CHARACTERISTICS**V<sub>EE</sub> = V<sub>EE</sub> (Min.) to V<sub>EE</sub> (Max.); V<sub>CC</sub> = V<sub>CCO</sub> = GND

Symbol	Parameter	T <sub>A</sub> = 0°C			T <sub>A</sub> = +25°C			T <sub>A</sub> = +85°C			Unit	Condition
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
f <sub>SHIFT</sub>	Max. Shift Frequency	700	900	—	700	900	—	700	900	—	MHz	—
t <sub>PD</sub>	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 <sub>s</sub>	Set-up Time D	175	25	—	175	25	—	175	25	—	ps	—
	SEL <sub>0</sub>	350	200	—	350	200	—	350	200	—		
	SEL <sub>1</sub>	300	150	—	300	150	—	300	150	—		
t <sub>H</sub>	Hold Time D	200	-25	—	200	-25	—	200	-25	—	ps	—
	SEL <sub>0</sub>	100	-200	—	100	-200	—	100	-200	—		
	SEL <sub>1</sub>	100	-150	—	100	-150	—	100	-150	—		
t <sub>RR</sub>	Reset Recovery Time	900	700	—	900	700	—	900	700	—	ps	—
t <sub>PW</sub>	Minimum Pulse Width CLK, MR	400	—	—	400	—	—	400	—	—	ps	—
t <sub>skew</sub>	Within-Device Skew	—	60	—	—	60	—	—	60	—	ps	1
t <sub>r</sub> t <sub>f</sub>	Rise/Fall Time 20% to 80%	300	525	800	300	525	800	300	525	800	ps	—

**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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