



**9-BIT SHIFT REGISTER**

**SY10E142  
SY100E142**

**FEATURES**

- 700MHz min. shift frequency
- Extended 100E VEE range of -4.2V to -5.5V
- 9 bits wide for byte-parity applications
- Asynchronous Master Reset
- Dual clocks
- Fully compatible with industry standard 10KH, 100K ECL levels
- Internal 75KΩ input pulldown resistors
- Fully compatible with Motorola MC10E/100E142
- Available in 28-pin PLCC package

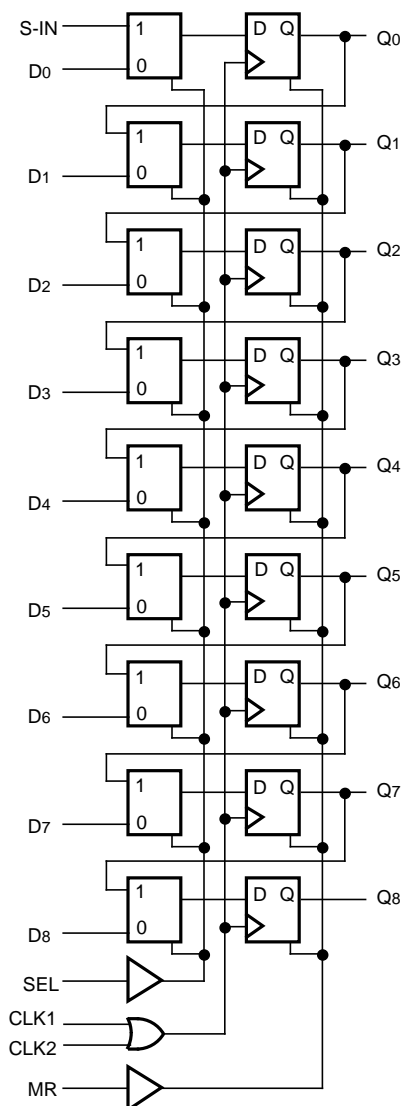
**DESCRIPTION**

The SY10/100E142 are high-speed 9-bit shift registers designed for use in new, high-performance ECL systems. The E142 can accept serial or parallel data to be shifted out in one direction as both serial and parallel outputs. The nine inputs, D<sub>0</sub>-D<sub>8</sub>, accept parallel input data, while S-IN accepts serial input data.

The SEL (Select) control pin serves to determine the mode of operation, either SHIFT or LOAD. The shift direction is from bit 0 to bit 8. The input data has to meet the set-up time before being clocked into the nine input registers on the rising edge of CLK<sub>1</sub> or CLK<sub>2</sub>. Shifting is also performed on the rising edge of either CLK<sub>1</sub> or CLK<sub>2</sub>. The MR (Master Reset) control signal asynchronously resets all nine registers to a logic LOW when a logic HIGH is applied to MR.

The E142 is designed for applications such as diagnostic scan registers, parallel-to-serial conversions and is also suitable for byte-wide parity.

**BLOCK DIAGRAM**

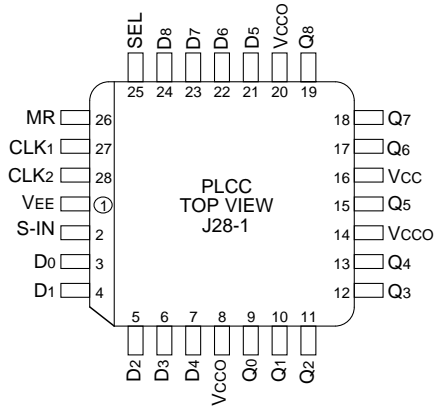


**PIN NAMES**

Pin	Function
D <sub>0</sub> -D <sub>8</sub>	Parallel Data Inputs
S-IN	Serial Data Input
SEL	Mode Select Input
CLK <sub>1</sub> , CLK <sub>2</sub>	Clock Inputs
MR	Master Reset
Q <sub>0</sub> -Q <sub>8</sub>	Data Outputs
V <sub>CCO</sub>	V <sub>CC</sub> to Output

**PACKAGE/ORDERING INFORMATION**

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



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

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10E142JC	J28-1	Commercial	SY10E142JC	Sn-Pb
SY10E142JCTR <sup>(2)</sup>	J28-1	Commercial	SY10E142JC	Sn-Pb
SY100E142JC	J28-1	Commercial	SY100E142JC	Sn-Pb
SY100E142JCTR <sup>(2)</sup>	J28-1	Commercial	SY100E142JC	Sn-Pb
SY10E142JY <sup>(3)</sup>	J28-1	Industrial	SY10E142JY with Pb-Free bar-line indicator	Matte-Sn
SY10E142JYTR <sup>(2, 3)</sup>	J28-1	Industrial	SY10E142JY with Pb-Free bar-line indicator	Matte-Sn
SY100E142JZ <sup>(3)</sup>	J28-1	Commercial	SY100E142JZ with Pb-Free bar-line indicator	Matte-Sn
SY100E142JZTR <sup>(2, 3)</sup>	J28-1	Commercial	SY100E142JZ 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**

SEL	MODE
L	LOAD
H	SHIFT

**DC ELECTRICAL CHARACTERISTICS**V<sub>EE</sub> = V<sub>EE</sub> (Min.) to V<sub>EE</sub> (Max.); V<sub>CC</sub> = V<sub>CC0</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	120	145	120	145	120	145	120	145		
		100E	120	145	120	145	138	165				

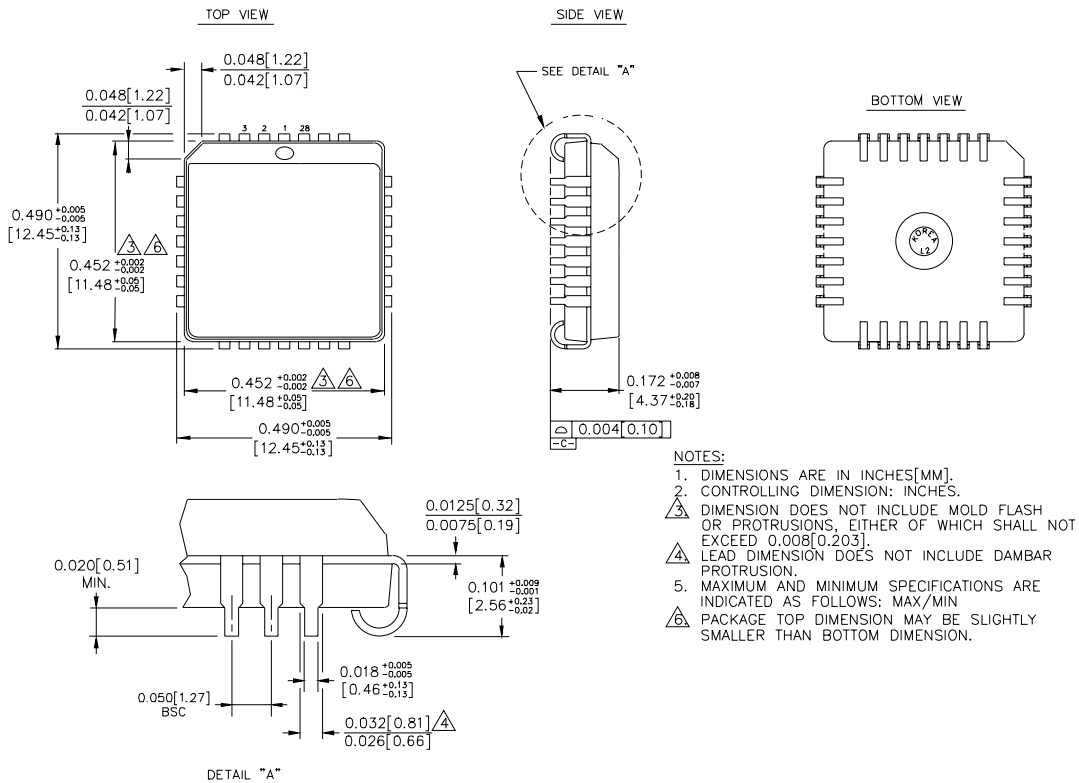
**AC ELECTRICAL CHARACTERISTICS**V<sub>EE</sub> = V<sub>EE</sub> (Min.) to V<sub>EE</sub> (Max.); V<sub>CC</sub> = V<sub>CC0</sub> = GND

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 MR	600	800	1000	600	800	1000	600	800	1000	ps	—
		600	800	1000	600	800	1000	600	800	1000		
t <sub>s</sub>	Set-up Time D SEL	50	-100	—	50	-100	—	50	-100	—	ps	—
		300	150	—	300	150	—	300	150	—		
t <sub>H</sub>	Hold Time D SEL	300	100	—	300	100	—	300	100	—	ps	—
		75	-150	—	75	-150	—	75	-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	—	75	—	—	75	—	—	75	—	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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