9-Bit Shift Register

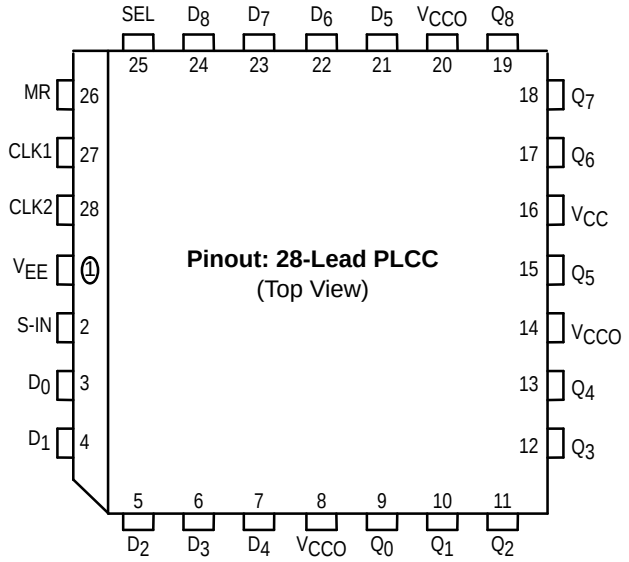
MC10E142
MC100E142

9-BIT SHIFT REGISTER

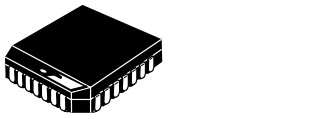
The MC10E/100E142 is a 9-bit shift register, designed with byte-parity applications in mind. The E142 performs serial/parallel in and serial/parallel out, shifting in one direction. The nine inputs D0 – D8 accept parallel input data, while S-IN accepts serial input data. The Qn outputs do not need to be terminated for the shift operation to function. To minimize noise and power, any Q output not used should be left unterminated.

- 700MHz Min. Shift Frequency
- 9-Bit for Byte-Parity Applications
- Asynchronous Master Reset
- Dual Clocks
- Extended 100E V_{EE} Range of – 4.2V to – 5.46V
- 75kΩ Input Pulldown Resistors

The SEL (Select) input pin is used to switch between the two modes of operation — SHIFT and LOAD. The shift direction is from bit 0 to bit 8. Input data is accepted by the registers a set-up time before the positive going edge of CLK1 or CLK2; shifting is also accomplished on the positive clock edge. A HIGH on the Master Reset pin (MR) asynchronously resets all the resisters to zero.

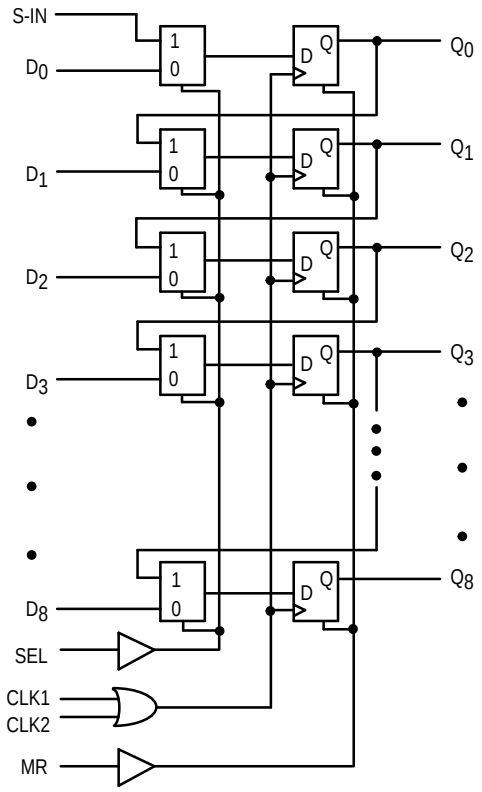


* All V_{CC} and V_{CCO} pins are tied together on the die.



FN SUFFIX
PLASTIC PACKAGE
CASE 776-02

LOGIC DIAGRAM



PIN NAMES

Pin	Function
$D_0 – D_8$	Parallel Data Inputs
S-IN	Serial Data Input
SEL	Mode Select Input
CLK1, CLK2	Clock Inputs
MR	Master Reset
$Q_0 – Q_8$	Data Outputs

FUNCTIONS

SEL	Mode
L	Load
H	Shift

DC CHARACTERISTICS (V_{EE} = V_{EE}(min) to V_{EE}(max); V_{CC} = V_{CCO} = GND)

		0°C			25°C			85°C				
Symbol	**Characteristic**	**min**	**typ**	**max**	**min**	**typ**	**max**	**min**	**typ**	**max**	**Unit**	**Condition**
I_{IH}	Input HIGH Current			150			150			150	μA	
I_{EE}	Power Supply Current										mA	
	10E		120	145		120	145		120	145		
	100E		120	145		120	145		138	165		

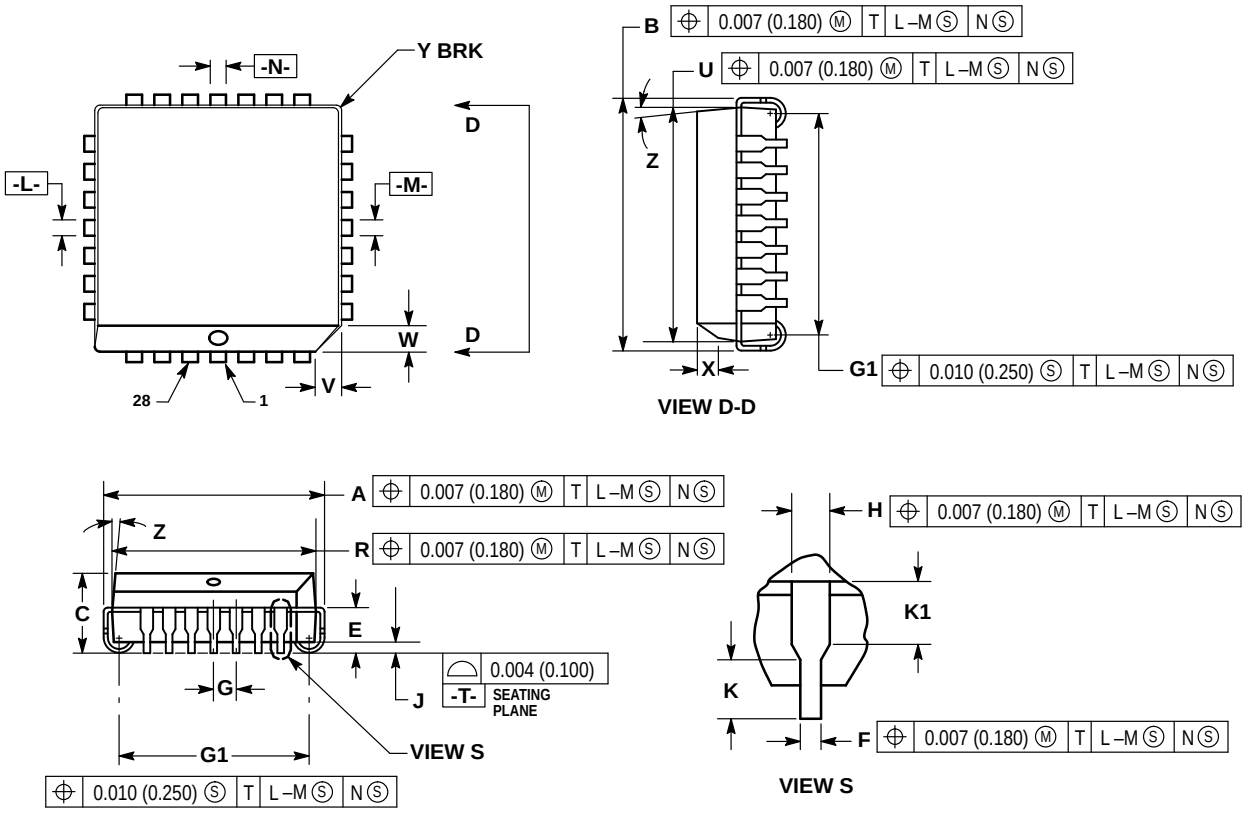
AC CHARACTERISTICS (V_{EE} = V_{EE}(min) to V_{EE}(max); V_{CC} = V_{CCO} = GND)

		0°C			25°C			85°C				
Symbol	**Characteristic**	**min**	**typ**	**max**	**min**	**typ**	**max**	**min**	**typ**	**max**	**Unit**	**Condition**
f_{SHIFT}	Max. Shift Frequency	700	900		700	900		700	900		MHz	
t_{PLH}	Propagation Delay to Output										ps	
t_{PHL}	Clk	600	800	1000	600	800	1000	600	800	1000		
	MR	600	800	1000	600	800	1000	600	800	1000		
t_S	Setup Time										ps	
	D	50	–100		50	–100		50	–100			
	SEL	300	150		300	150		300	150			
t_h	Hold Time										ps	
	D	300	100		300	100		300	100			
	SEL	75	–150		75	–150		75	–150			
t_{RR}	Reset Recovery Time	900	700		900	700		900	700		ps	
t_{PW}	Minimum Pulse Width										ps	
	Clk, MR	400			400			400				
t_{SKEW}	Within-Device Skew		75			75			75		ps	Note 1
t_r	Rise/Fall Times										ps	
t_f	20 - 80%	300	525	800	300	525	800	300	525	800		

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

OUTLINE DIMENSIONS

FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 776–02
ISSUE D



NOTES:
1. DATUMS -L-, -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
2. DIM G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.
3. DIM R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
4. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
5. CONTROLLING DIMENSION: INCH.
6. THE PACKAGE TOP MAY BE SMALLER THAN THE PACKAGE BOTTOM BY UP TO 0.012 (0.300). DIMENSIONS R AND U ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY EXCLUSIVE OF MOLD FLASH, TIE BAR BURRS, GATE BURRS AND INTERLEAD FLASH, BUT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY.
7. DIMENSION H DOES NOT INCLUDE DAMBAR PROTRUSION OR INTRUSION. THE DAMBAR PROTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE GREATER THAN 0.037 (0.940). THE DAMBAR INTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE SMALLER THAN 0.025 (0.635).

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.485	0.495	12.32	12.57
B	0.485	0.495	12.32	12.57
C	0.165	0.180	4.20	4.57
E	0.090	0.110	2.29	2.79
F	0.013	0.019	0.33	0.48
G	0.050 BSC		1.27 BSC	
H	0.026	0.032	0.66	0.81
J	0.020	—	0.51	—
K	0.025	—	0.64	—
R	0.450	0.456	11.43	11.58
U	0.450	0.456	11.43	11.58
V	0.042	0.048	1.07	1.21
W	0.042	0.048	1.07	1.21
X	0.042	0.056	1.07	1.42
Y	—	0.020	—	0.50
Z	2°	10°	2°	10°
G1	0.410	0.430	10.42	10.92
K1	0.040	—	1.02	—

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