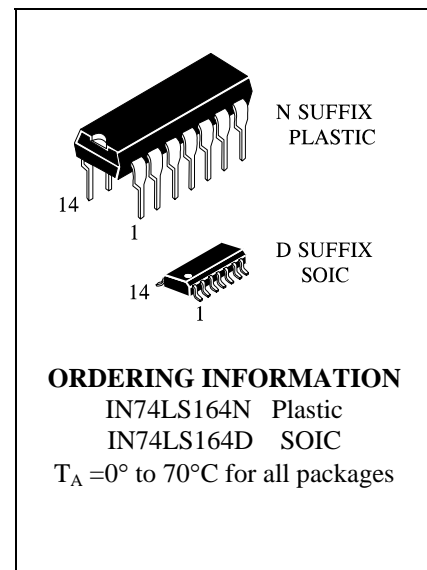


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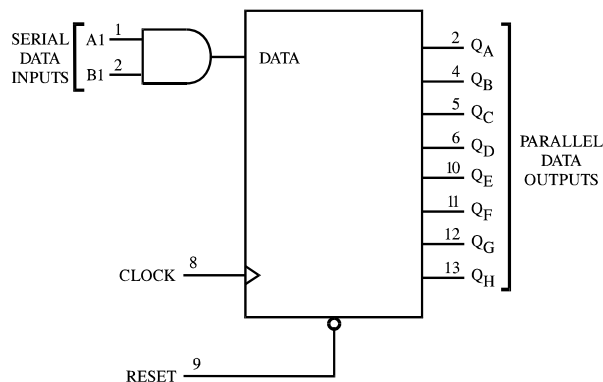
## 8-Bit Serial-Input/Parallel-Output Shift Register

This 8-bit shift register features gated serial inputs and an asynchronous reset. The gated serial inputs (A and B) permit complete control over incoming data as a low at either (or both) input(s) inhibits entry of the new data and resets the first flip flop to the low level at the next clock pulse. A high level input enables the other input which will then determine the state of the first flip-flop. Data at the serial inputs may be changed while the clock is high or low, but only information meeting the setup requirements will be entered clocking occurs or the low-to-high level transition of the clock input. All inputs are diode-clamped to minimize transmission-line effects.

- Gated (Enable/Disable) Serial Inputs
- Fully Buffered Clock and Serial Inputs
- Asynchronous Clear

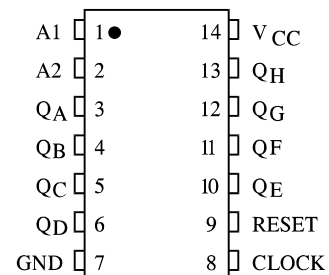


### LOGIC DIAGRAM



PIN 14 = V<sub>CC</sub>  
 PIN 7 = GND

### PIN ASSIGNMENT



### FUNCTION TABLE

Inputs				Outputs			
Reset	Clock	A1	A2	Q <sub>A</sub>	Q <sub>B</sub>	...	Q <sub>H</sub>
L	X	X	X	L	L	...	L
H		X	X	no change			
H		H	D	D	Q <sub>An</sub>	...	Q <sub>Gn</sub>
H		D	H	D	Q <sub>An</sub>	...	Q <sub>Gn</sub>
H		L	L	L	Q <sub>An</sub>	...	Q <sub>Gn</sub>

D = data input

X = don't care

Q<sub>An</sub> - Q<sub>Gn</sub> = data shifted from the previous stage on a rising edge at the clock input.

**MAXIMUM RATINGS\***

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Supply Voltage	7.0	V
V <sub>IN</sub>	Input Voltage	7.0	V
V <sub>OUT</sub>	Output Voltage	5.5	V
T <sub>stg</sub>	Storage Temperature Range	-65 to +150	°C

\*Maximum Ratings are those values beyond which damage to the device may occur. Functional operation should be restricted to the Recommended Operating Conditions.

**RECOMMENDED OPERATING CONDITIONS**

Symbol	Parameter	Min	Max	Unit
V <sub>CC</sub>	Supply Voltage	4.75	5.25	V
V <sub>IH</sub>	High Level Input Voltage	2.0		V
V <sub>IL</sub>	Low Level Input Voltage		0.8	V
I <sub>OH</sub>	High Level Output Current		-0.4	mA
I <sub>OL</sub>	Low Level Output Current		8.0	mA
T <sub>A</sub>	Ambient Temperature Range	0	+70	°C
f <sub>clock</sub>	Clock Frequency	0	25	MHz
t <sub>su</sub>	Setup Time, A1 or A2 to Clock	15		ns
t <sub>h</sub>	Hold Time, Clock to A1 or A2	5		ns
t <sub>w</sub>	Pulse Width, Clock	20		ns
t <sub>w</sub>	Pulse Width, Reset	20		ns
t <sub>rec</sub>	Recovery Time	5		ns

**DC ELECTRICAL CHARACTERISTICS** over full operating conditions

Symbol	Parameter	Test Conditions	Guaranteed Limit		Unit
			Min	Max	
V <sub>IK</sub>	Input Clamp Voltage	V <sub>CC</sub> = min, I <sub>IN</sub> = -18 mA		-1.5	V
V <sub>OH</sub>	High Level Output Voltage	V <sub>CC</sub> = min, I <sub>OH</sub> = -0.4 mA	2.7		V
V <sub>OL</sub>	Low Level Output Voltage	V <sub>CC</sub> = min, I <sub>OL</sub> = 4 mA		0.4	V
		V <sub>CC</sub> = min, I <sub>OL</sub> = 8 mA		0.5	
I <sub>IH</sub>	High Level Input Current	V <sub>CC</sub> = max, V <sub>IN</sub> = 2.7 V		20	mA
		V <sub>CC</sub> = max, V <sub>IN</sub> = 7.0 V		0.1	mA
I <sub>IL</sub>	Low Level Input Current	V <sub>CC</sub> = max, V <sub>IN</sub> = 0.4 V		-0.4	mA
I <sub>O</sub>	Output Short Circuit Current	V <sub>CC</sub> = max, V <sub>O</sub> = 0 V (Noote 1)	-20	-100	mA
I <sub>CC</sub>	Supply Current	V <sub>CC</sub> = max (Note 2)		27	mA

Note 1: Not more than one output should be shorted at a time, and duration should not exceed one second.

Note 2: I<sub>CC</sub> is measured with outputs open, serial inputs grounded, the clock input at 2.4 V, and a momentary ground, then 4.5 V applied.

**AC ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$ ,  $V_{CC} = 5.0\text{ V}$ ,  $C_L = 15\text{ pF}$ ,  $R_L = 2\text{ k}\Omega$ ,  $t_r = 15\text{ ns}$ ,  $t_f = 6.0\text{ ns}$ )

Symbol	Parameter	Min	Max	Unit
$t_{PLH}$	Propagation Delay Time, Clock to Q		27	ns
$t_{PHL}$	Propagation Delay Time, Clock to Q		32	ns
$t_{PHL}$	Propagation Delay Time, Reset to Q		36	ns
$t_{su}$	Setup Time, A1 or A2 to Clock	15		ns
$t_h$	Hold Time, Clock to A1 or A2	5		ns
$t_w$	Pulse Width, Clock	20		ns
$t_w$	Pulse Width, Reset	20		ns

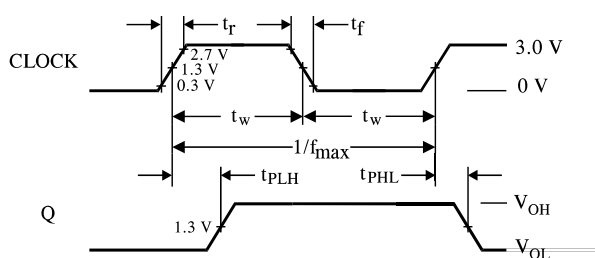


Figure 1. Switching Waveforms

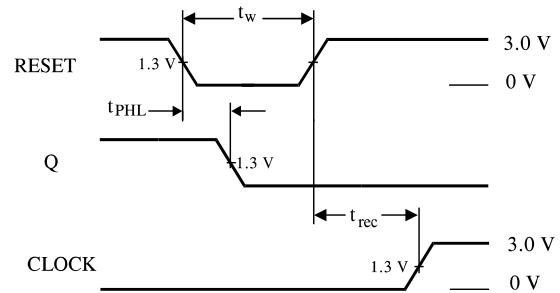


Figure 2. Switching Waveforms

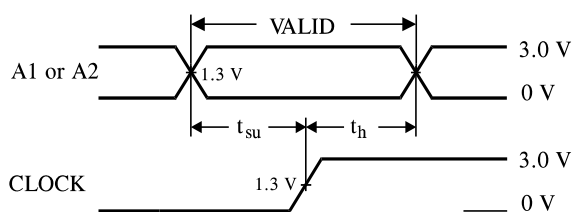
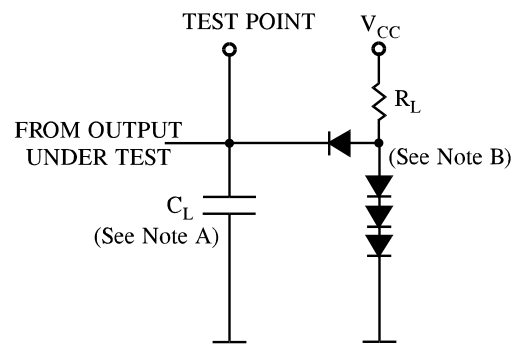


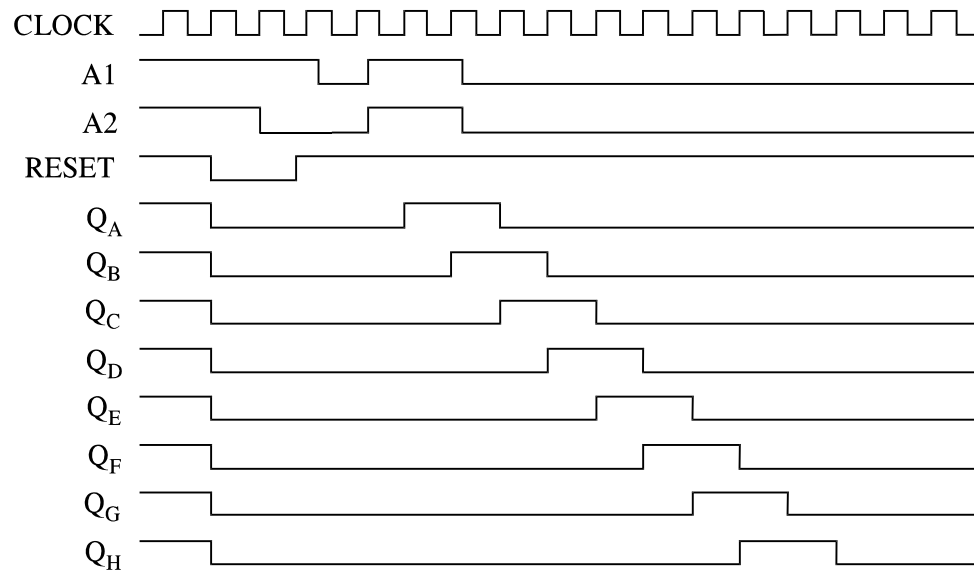
Figure 3. Switching Waveform



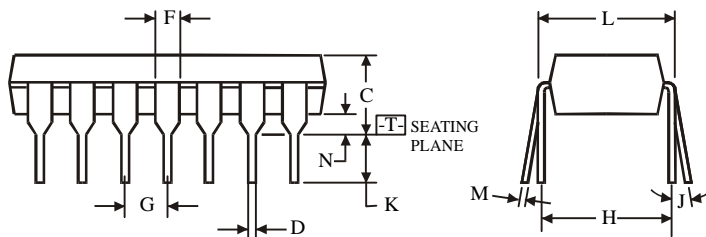
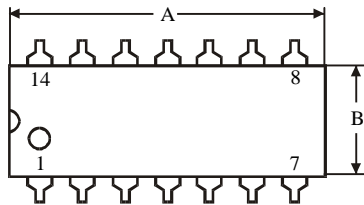
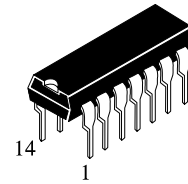
NOTES A.  $C_L$  includes probe and jig capacitance.  
 B. All diodes are 1N916 or 1N3064.

Figure 4. Test Circuit

TIMING DIAGRAM



**N SUFFIX PLASTIC DIP  
(MS - 001AA)**



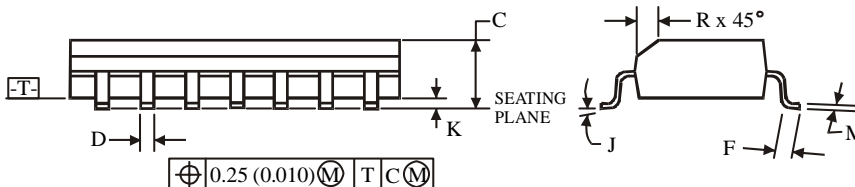
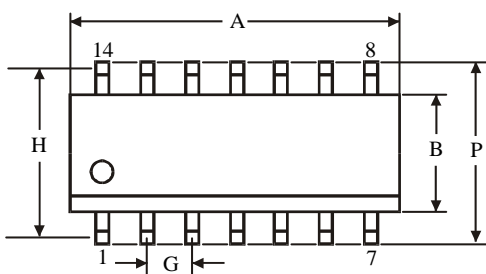
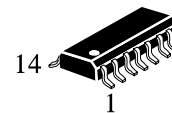
$$\oplus 0.25 (0.010) \text{ (M) T}$$

**NOTES:**

- Dimensions "A", "B" do not include mold flash or protrusions.  
Maximum mold flash or protrusions 0.25 mm (0.010) per side.

Symbol	Dimension, mm	
	MIN	MAX
A	18.67	19.69
B	6.1	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.2	0.36
N	0.38	

**D SUFFIX SOIC  
(MS - 012AB)**



$$\oplus 0.25 (0.010) \text{ (M) T C (M)}$$

**NOTES:**

- Dimensions A and B do not include mold flash or protrusion.
- Maximum mold flash or protrusion 0.15 mm (0.006) per side for A; for B - 0.25 mm (0.010) per side.

Symbol	Dimension, mm	
	MIN	MAX
A	8.55	8.75
B	3.8	4
C	1.35	1.75
D	0.33	0.51
F	0.4	1.27
G	1.27	
H	5.27	
J	0°	8°
K	0.1	0.25
M	0.19	0.25
P	5.8	6.2
R	0.25	0.5