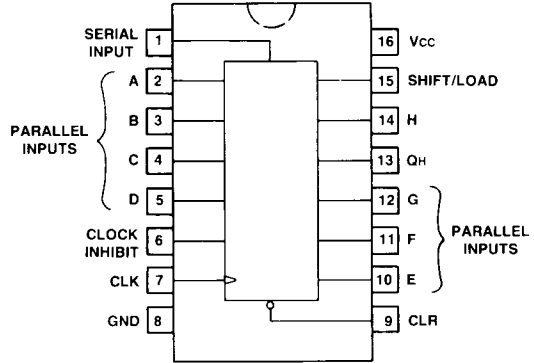


8-Bit Parallel/Serial-In/Serial-Out Shift Register

The LS166 is a bipolar, NPN, sealed-junction, silicon integrated circuit. It is manufactured in low-power Schottky technology and is available in a wire-bonded, 16-pin plastic DIP or surface mount package. The shift register function is implemented with edge-triggered D-type flip-flops. Serial and parallel inputs are synchronous, with state changes initiated by positive-edge-triggered clock pulsing.



Truth Table

Clear	Inputs				Serial	Paralle A...H	Internal Outputs		Output QH
	Shift/ Load	Clock Inhibit	Clock	QA			QB		
								QA	
L	X	X	X	X	X	L	L	L	
H	X	L	L	X	X	QA0	QB0	QH0	
H	L	L	↑	X	a...h	a	b	h	
H	H	L	↑	H	X	H	QAn	QGn	
H	H	L	↑	L	X	L	QAn	QGn	
H	X	H	↑	X	X	QA0	QB0	QH0	

H = High level (steady state)

L = Low level (steady state)

↑ = Transition from low to high level

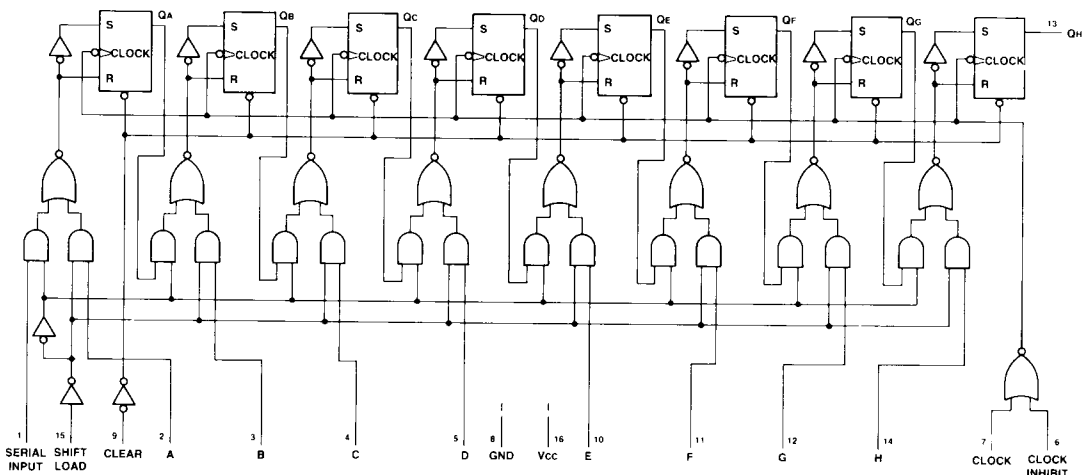
X = Irrelevant (any input, including transitions)

a...h = The level of steady-state input at inputs A through H respectively

QA0, QB0, QC0, QD0 = The level of QA, QB, QC, or QD, respectively, before the indicated steady-state input conditions were established

QAn, QBn, Qcn = The level of QA, QB, or QC, respectively, before the most recent transition of the clock

Logic Diagram



Electrical Characteristics

VCC = 5.0 ±0.5 V, TA = -55 to +125°C (WA-LS)

VCC = 5.0 ±0.25 V, TA = 0 to 70°C (WP90349L4)

VCC = 5.0 ±0.5 V, TA = -40 to +85°C (WA-LSD, WP90401L3)

Parameter	Symbol	WA-LS		WP, WA-LSD		Units
		Min	Max	Min	Max	
Output Voltage, VCC = 4.5 V (WA-LS), 4.75 V (WP, WA-LSD)						
Low, IOL = 4.0 mA	VOL	—	0.4	—	0.4	V
IOL = 8.0 mA	VOL	—	0.5	—	0.5	V
High, IOH = -0.4 mA	VOH	2.5	—	2.7	—	V
Input Voltage, VCC = 4.5 V (WA-LS), 4.75 V (WP, WA-LSD)						
Low	VIL	—	0.7	—	0.8*	V
High	VIH	2.0	7.5	2.0	5.5	V
Clamp, IIN = -18.0 mA	VIK	—	-1.5	—	-1.5	V
Input Current, VCC = 5.5 V (WA-LS), 5.25 V (WP, WA-LSD)						
Low, VIL = 0.4 V	IIL	—	-0.4	—	-0.4	mA
High, VIH = 2.7 V	IiH	—	20.0	—	20.0	µA
@ Vi max, Vi = 7.0 V (WA-LS), 5.5 V (WP, WA-LSD)	Ii	—	0.1	—	0.1	mA
Output Current, VCC = 5.5 V (WA-LS), 5.25 V (WP, WA-LSD)						
Short-Circuit	Ios	-20.0	-100.0	-20.0	-100.0	mA
Supply Current, VCC = 5.5 V (WA-LS), 5.25 V (WP, WA-LSD)	Icc	—	38.0	—	38.0	mA

* WA-LSD, WP90401L3: VIL = 0.7 V

Timing Diagrams

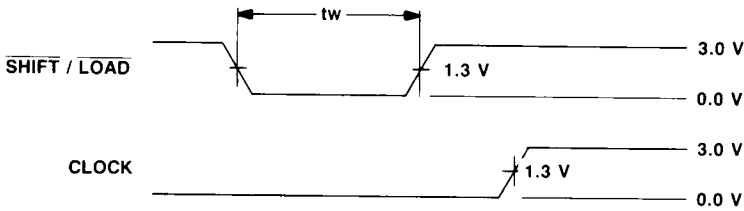


Figure 1. Shift Load and Output Waveforms

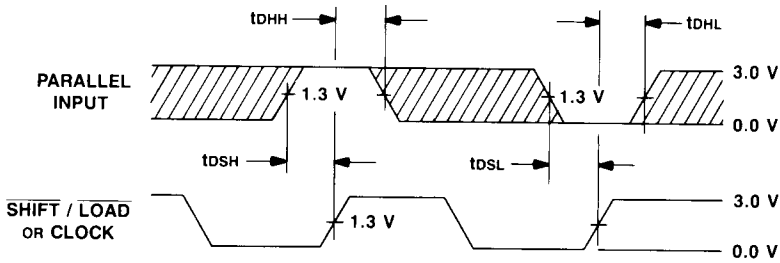


Figure 2. Parallel Inputs and Shift Load or Clock Waveforms

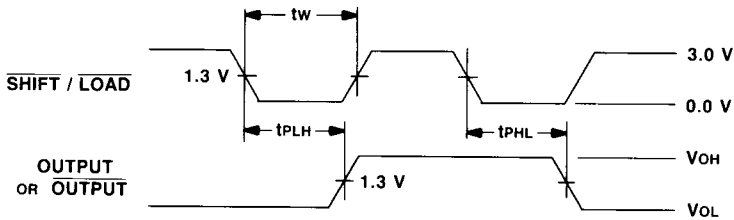


Figure 3. Shift Load and Clock Waveforms