

8-BIT SHIFT REGISTER

MC5400/7400 series

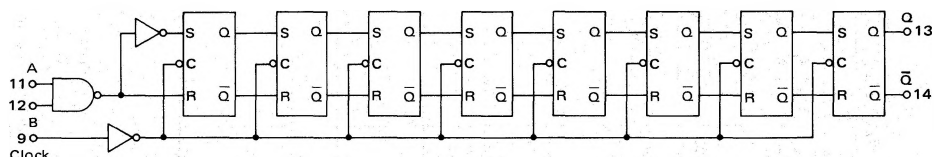
MC5491AL* MC7491AL,P*

The 8-bit serial-in, serial-out shift register is composed of eight R-S master-slave flip-flops, an input AND gate, and a clock driver.

Single rail data inputs are ANDed together and applied to the input of the first flip-flop. The clock inverter-driver

is common to all eight flip-flops and causes information to be shifted to the output on the positive edge of the input clock pulse. Both Q and $\bar{Q}$ are available from the last bit.

The 8-bit shift register may be used as an 8-bit delay line in data handling systems and control systems.



VCC = Pin 5
Gnd = Pin 10

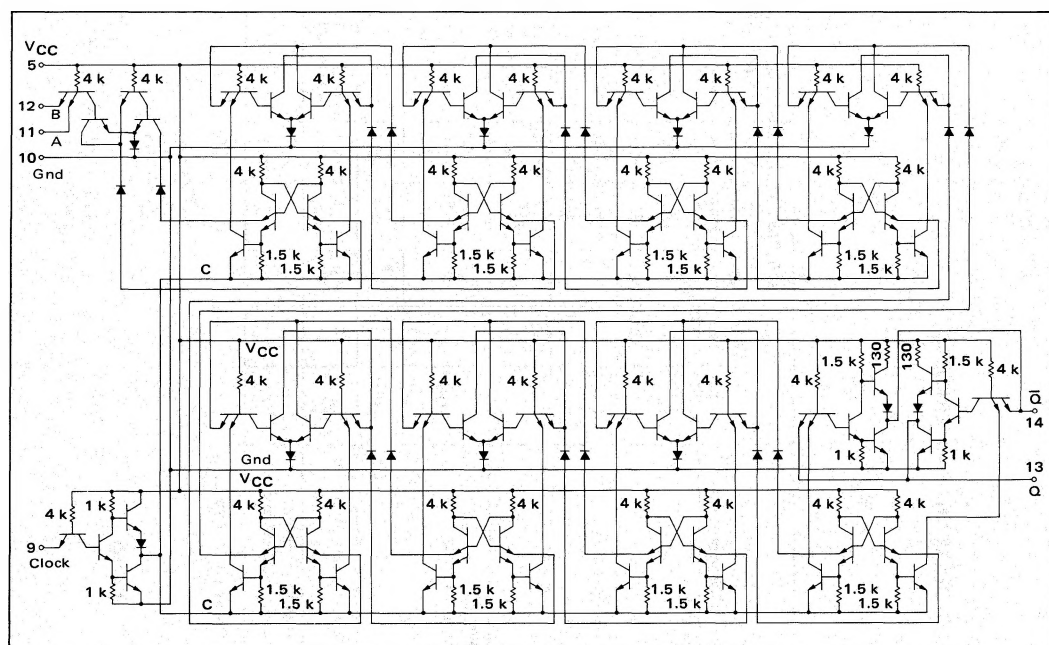
TRUTH TABLE

Synchronous Inputs

t_n		t_{n+8}	
A	B	Q	$\bar{Q}$
0	0	0	1
0	1	0	1
1	0	0	1
1	1	1	0

Input Loading Factor = 1
Output Loading Factor = 10

Total Power Dissipation = 175 mW typ/pkg
Propagation Delay Time = 25 ns typ
Operating Frequency = 18 MHz typ



*L suffix = TO-116 ceramic dual in-line package (Case 632).

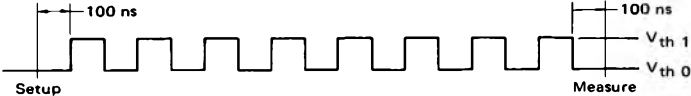
P suffix = TO-116 plastic dual in-line package (Case 605).

ELECTRICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS									TEST CURRENT / VOLTAGE VALUES (All Temperatures)													
									mA		Volts											
									I _{OL}	I _{OH}	V _{IL}	V _{IH}	V _{IHH}	V _{R1}	V _{R2}	V _{th 1}	V _{th 0}	V _{CCL}	V _{CCH}			
									16	-0.4	0.4	2.4	5.5	4.5	5.0	2.0	0.8	4.5	5.5			
MC5491A MC7491A									16	-0.4	0.4	2.4	5.5	4.5	5.0	2.0	0.8	4.75	5.25			
Characteristic	Symbol	Pin Under Test	MC5491A Test Limits -55 to +125°C			MC7491A Test Limits 0 to +70°C			TEST CURRENT / VOLTAGE APPLIED TO PINS LISTED BELOW:												**	Gnd
			Min	Max	Unit	Min	Max	Unit	I _{OL}	I _{OH}	V _{IL}	V _{IH}	V _{IHH}	V _{R1}	V _{R2}	V _{th 1}	V _{th 0}	V _{CCL}	V _{CCH}			
Input Forward Current	I _F	9	-	-1.6	mAdc	-	-1.6	mAdc	-	-	9	-	-	-	-	-	-	-	5	-	10	
		11	-	↓	↓	-	↓	↓	-	-	11	-	-	-	-	-	-	-	↓	-	↓	
		12	-			-			-	-	12	-	-	-	-	-	-	-		-		
Leakage Current	I _{R1}	9	-	40	μAdc	-	40	μAdc	-	-	-	9	-	-	-	-	-	-	5	-	10	
		11	-	↓	↓	-	↓	↓	-	-	-	11	-	-	-	-	-	-	↓	-	10,12	
	12	-			-			-	-	-	12	-	-	-	-	-	-	-		-	10,11	
	I _{R2}	9	-	1.0	mAdc	-	1.0	mAdc	-	-	-	9	-	-	-	-	-	-	5	-	10	
		11	-	↓	↓	-	↓	↓	-	-	-	11	-	-	-	-	-	-	↓	-	10,12	
	12	-			-			-	-	-	12	-	-	-	-	-	-	-		-	10,11	
Output Output Voltage	V _{OL}	13	-	0.4	Vdc	-	0.4	Vdc	13	-	-	-	-	-	-	-	11,12	5	-	9	10	
		13	-	↓	↓	-	↓	↓	13	-	-	-	-	-	-	12	11,12	↓	-	↓	↓	
	14	-			-			-	-	-	-	-	-	-	11,12	-		-				
	V _{OH}	13	2.4	-	Vdc	2.4	-	Vdc	-	13	-	-	-	-	-	11,12	-	5	-	9	10	
		14	2.4	-	Vdc	2.4	-	Vdc	-	14	-	-	-	-	-	12	-	5	-	9	10	
Short-Circuit Current	I _{SC}	13	-20	-57	mAdc	-18	-57	mAdc	-	-	-	-	-	-	-	-	-	-	5	-	9,10,11,12,13,14	
		14	-20	-57	mAdc	-18	-57	mAdc	-	-	-	-	-	-	-	-	-	-	5	-	9,10,11,12,13,14	
Power Requirements Power Supply Drain	I _{PD}	10	-	50*	mAdc	-	58*	mAdc	-	-	-	-	-	-	-	-	-	-	5	9	10,11,12	

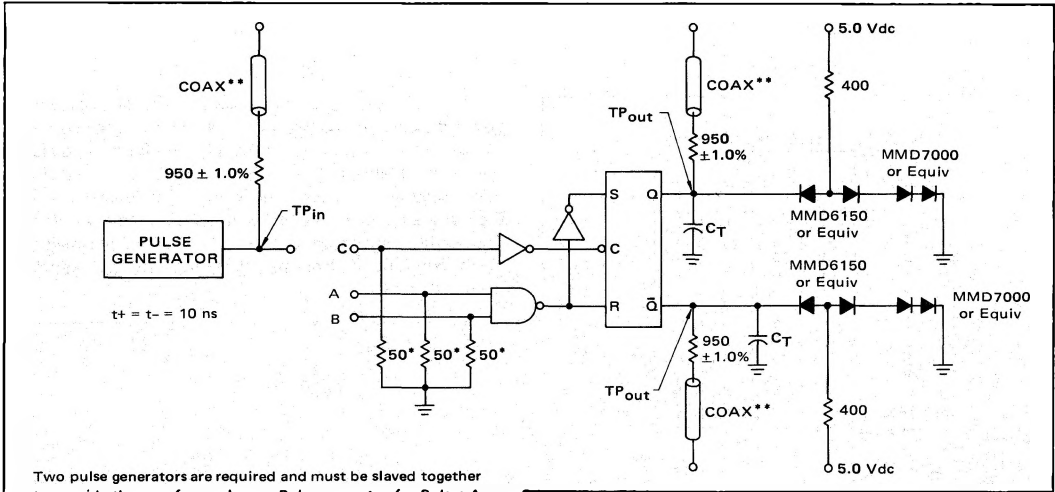
*Tested only at 25°C.

** Input pulse:



MC5491AL, MC7491AL, P (continued)

SWITCHING TIME TEST CIRCUIT



Two pulse generators are required and must be slaved together to provide the waveforms shown. Pulse generator for Pulses A and B must be operated in the double pulse mode.

* Resistor used only when that input is under test.

** The coax delays from input to scope and output to scope must be matched. The scope must be terminated in 50-ohm impedance. The 950-ohm resistor and the scope termination impedance constitute a 20:1 attenuator probe. Coax shall be CT-070-50 or equivalent.

C_T = 15 pF = total parasitic capacitance, which includes probe, wiring, and load capacitances.

TEST PROCEDURES

(Letters shown in test columns refer to waveforms)

TEST	INPUT			Q	Q̄	LIMITS		
	B	A	C			Min	Max	Unit
f _{Tog}	W	W	T	*	—	10	—	MHz
t _{pd+}	V	2.4 V	U	Y	—	—	40	ns
t _{pd+}	2.4 V	V	U	—	Y	—	40	ns
t _{pd-}	2.4 V	X	U	Z	—	—	40	ns
t _{pd-}	X	2.4 V	U	—	Z	—	40	ns

* Output shall toggle with each input pulse.

VOLTAGE WAVEFORMS AND DEFINITIONS

