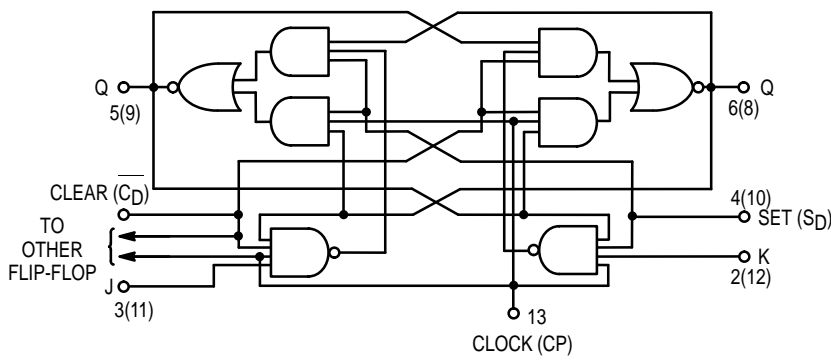




DUAL JK NEGATIVE EDGE-TRIGGERED FLIP-FLOP

The SN54/74LS114A offers common clock and common clear inputs and individual J, K, and set inputs. These monolithic dual flip-flops are designed so that when the clock goes HIGH, the inputs are enabled and data will be accepted. The logic level of the J and K inputs may be allowed to change when the clock pulse is HIGH and the bistable will perform according to the truth table as long as minimum set-up times are observed. Input data is transferred to the outputs on the negative-going edge of the clock pulse.

LOGIC DIAGRAM (Each Flip-Flop)



MODE SELECT — TRUTH TABLE

OPERATING MODE	INPUTS				OUTPUTS	
	S _D	C _D	J	K	Q	Q̄
Set	L	H	X	X	H	L
Reset (Clear)	H	L	X	X	L	H
*Undetermined	L	L	X	X	H	H
Toggle	H	H	h	h	q	q̄
Load "0" (Reset)	H	H	l	h	L	H
Load "1" (Set)	H	H	h	l	H	L
Hold	H	H	l	l	q	q̄

* Both outputs will be HIGH while both S_D and C_D are LOW, but the output states are unpredictable if S_D and C_D go HIGH simultaneously.

H, h = HIGH Voltage Level

L, l = LOW Voltage Level

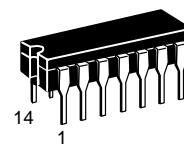
X = Don't Care

l, h (q) = Lower case letters indicate the state of the referenced input (or output) one set-up time prior to the HIGH to LOW clock transition.

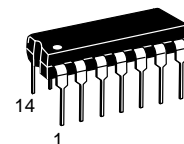
SN54/74LS114A

DUAL JK NEGATIVE EDGE-TRIGGERED FLIP-FLOP

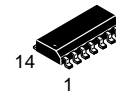
LOW POWER SCHOTTKY



J SUFFIX
CERAMIC
CASE 632-08



N SUFFIX
PLASTIC
CASE 646-06

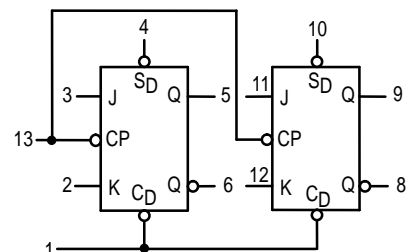


D SUFFIX
SOIC
CASE 751A-02

ORDERING INFORMATION

SN54LSXXXJ Ceramic
SN74LSXXXN Plastic
SN74LSXXXD SOIC

LOGIC SYMBOL



V_{CC} = PIN 14
GND = PIN 7

SN54/74LS114A

GUARANTEED OPERATING RANGES

Symbol	Parameter		Min	Typ	Max	Unit
V _{CC}	Supply Voltage	54 74	4.5 4.75	5.0 5.0	5.5 5.25	V
T _A	Operating Ambient Temperature Range	54 74	-55 0	25 25	125 70	°C
I _{OH}	Output Current — High	54, 74			-0.4	mA
I _{OL}	Output Current — Low	54 74			4.0 8.0	mA

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter		Limits			Unit	Test Conditions
			Min	Typ	Max		
V _{IH}	Input HIGH Voltage		2.0			V	Guaranteed Input HIGH Voltage for All Inputs
V _{IL}	Input LOW Voltage	54			0.7	V	Guaranteed Input LOW Voltage for All Inputs
		74			0.8		
V _{IK}	Input Clamp Diode Voltage			-0.65	-1.5	V	V _{CC} = MIN, I _{IN} = -18 mA
V _{OH}	Output HIGH Voltage	54	2.5	3.5		V	V _{CC} = MIN, I _{OH} = MAX, V _{IN} = V _{IH} or V _{IL} per Truth Table
		74	2.7	3.5		V	
V _{OL}	Output LOW Voltage	54, 74		0.25	0.4	V	I _{OL} = 4.0 mA
		74		0.35	0.5	V	I _{OL} = 8.0 mA
I _{IH}	Input HIGH Current	J, K Set Clear Clock			20 60 120 160	μA	V _{CC} = MAX, V _{IN} = 2.7 V
		J, K Set Clear Clock			0.1 0.3 0.6 0.8	mA	V _{CC} = MAX, V _{IN} = 7.0 V
I _{IL}	Input LOW Current	J, K Set Clear, Clock			-0.4 -0.8 -1.6	mA	V _{CC} = MAX, V _{IN} = 0.4 V
I _{OS}	Output Short Circuit Current (Note 1)		-20		-100	mA	V _{CC} = MAX
I _{CC}	Power Supply Current				6.0	mA	V _{CC} = MAX

Note 1: Not more than one output should be shorted at a time, nor for more than 1 second.

AC CHARACTERISTICS (T_A = 25°C, V_{CC} = 5.0 V)

Symbol	Parameter		Limits			Unit	Test Conditions
			Min	Typ	Max		
f _{MAX}	Maximum Clock Frequency		30	45		MHz	V _{CC} = 5.0 V C _L = 15 pF
t _{PLH} t _{PHL}	Propagation Delay, Clock, Clear, Set to Output			15	20	ns	
				15	20	ns	

AC SETUP REQUIREMENTS (T_A = 25°C, V_{CC} = 5.0 V)

Symbol	Parameter		Limits			Unit	Test Conditions
			Min	Typ	Max		
t _W	Clock Pulse Width High		20			ns	V _{CC} = 5.0 V
t _W	Clear, Set Pulse Width		25			ns	
t _S	Setup Time		20			ns	
t _H	Hold Time		0			ns	