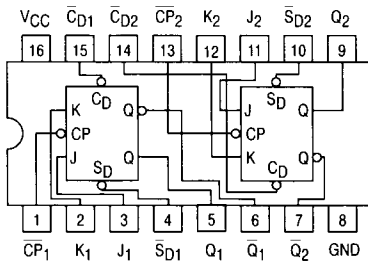


DUAL JK NEGATIVE EDGE-TRIGGERED FLIP-FLOP

The MC74F112 contains two independent, high-speed JK flip-flops with Direct Set and Clear inputs. Synchronous state changes are initiated by the falling edge of the clock. Triggering occurs at a voltage level of the clock and is not directly related to the transition time. The J and K inputs can change when the clock is in either state without affecting the flip-flop, provided that they are in the desired state during the recommended setup and hold times relative to the falling edge of the clock. A LOW signal on \bar{S}_D or \bar{C}_D prevents clocking and forces Q or \bar{Q} HIGH, respectively. Simultaneous LOW signals on \bar{S}_D and \bar{C}_D force both Q and \bar{Q} HIGH.

CONNECTION DIAGRAM



FUNCTION TABLE (Each Half)

Inputs		Output
@ t_n		@ $t_n + 1$
J	K	Q
L	L	Q_n
L	H	L
H	L	H
H	H	\bar{Q}_n

Asynchronous Inputs:

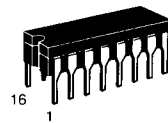
- LOW Input to \bar{S}_D sets Q to HIGH level
- LOW Input to \bar{C}_D sets Q to LOW level
- Clear and Set are independent of clock
- Simultaneous LOW on \bar{C}_D and \bar{S}_D makes both Q and \bar{Q} HIGH

- H = HIGH Voltage Level
- L = LOW Voltage Level
- t_n = Bit time before clock pulse
- $t_n + 1$ = Bit time after clock pulse

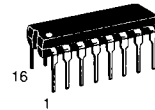
MC74F112

DUAL JK NEGATIVE EDGE-TRIGGERED FLIP-FLOP

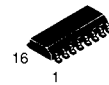
FAST™ SCHOTTKY TTL



J SUFFIX
CERAMIC
CASE 620-09



N SUFFIX
PLASTIC
CASE 648-08

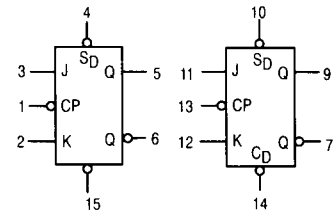


D SUFFIX
SOIC
CASE 751B-03

ORDERING INFORMATION

MC74FXXXJ Ceramic
MC74FXXXN Plastic
MC74FXXXD SOIC

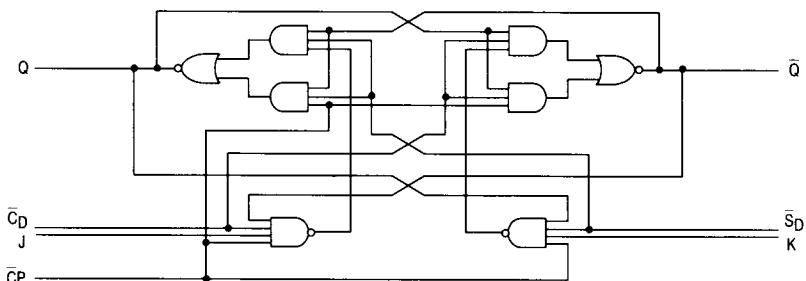
LOGIC SYMBOL



V_{CC} = PIN 16
GND = PIN 8

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LOGIC DIAGRAM (one half shown)



GUARANTEED OPERATING RANGES

Symbol	Parameter		Min	Typ	Max	Unit
V _{CC}	Supply Voltage	74	4.5	5.0	5.5	V
T _A	Operating Ambient Temperature Range	74	0	25	70	°C
I _{OH}	Output Current — High	74			-1.0	mA
I _{OL}	Output Current — Low	74			20	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
V _{IL}	Input LOW Voltage			0.8	V	Guaranteed Input LOW Voltage
V _{IK}	Input Clamp Diode Voltage			-1.2	V	I _{IN} = -18 mA V _{CC} = MIN
V _{OH}	Output HIGH Voltage	74	2.5	3.4	V	I _{OH} = -1.0 mA V _{CC} = 4.50 V
		74	2.7	3.4	V	I _{OH} = -1.0 mA V _{CC} = 4.75 V
V _{OL}	Output LOW Voltage		0.35	0.5	V	I _{OL} = 20 mA V _{CC} = MIN
I _{IH}	Input HIGH Current			20	μA	V _{CC} = MAX, V _{IN} = 2.7 V
				100	μA	V _{CC} = MAX, V _{IN} = 7.0 V
I _{IL}	Input LOW Current (J and K Inputs)			-0.6	mA	V _{CC} = MAX, V _{IN} = 0.5 V
	(C _P Inputs)			-2.4	mA	
	(C _D and S _D Inputs)			-3.0	mA	
I _{OS}	Output Short Circuit Current (Note 2)	-60		-150	mA	V _{CC} = MAX, V _{OUT} = 0 V
I _{CC}	Power Supply Current		12	19	mA	V _{CC} = MAX, V _{CP} = 0 V

NOTES:

- For conditions shown as MIN or MAX, use the appropriate value specified under guaranteed operating ranges.
- Not more than one output should be shorted at a time, nor for more than 1 second.

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AC CHARACTERISTICS

Symbol	Parameter	74F		74F		Unit
		T _A = +25°C		T _A = 0°C to +70°C		
		V _{CC} = +5.0 V		V _{CC} = 5.0 V ± 10%		
		C _L = 50 pF		C _L = 50 pF		
		Min	Max	Min	Max	
f _{max}	Maximum Clock Frequency	110				MHz
t _{PLH}	Propagation Delay	2.0	6.5	2.0	7.5	ns
t _{PHL}	\overline{CP}_n to Q _n or \overline{Q}_n	2.0	6.5	2.0	7.5	
t _{PLH}	Propagation Delay	2.0	6.5	2.0	7.5	ns
t _{PHL}	\overline{CD}_n or \overline{SD}_n to Q _n or \overline{Q}_n	2.0	6.5	2.0	7.5	

AC OPERATING REQUIREMENTS

Symbol	Parameter	74F			74F		Unit
		T _A = +25°C			T _A = 0°C to +70°C		
		V _{CC} = +5.0 V			V _{CC} = 5.0 V ± 10%		
		Min	Typ	Max	Min	Max	
t _S (H)	Setup Time, HIGH or LOW	4.0			4.0		ns
t _S (L)	J _n or K _n to \overline{CP}_n	3.0			3.0		
t _H (H)	Hold Time, HIGH or LOW	0			0		ns
t _H (L)	J _n or K _n to \overline{CP}_n	0			0		
t _w (H)	\overline{CP}_n Pulse Width, HIGH	4.5			4.5		ns
t _w (L)	or LOW	4.5			4.5		
t _w (L)	\overline{CD}_n or \overline{SD}_n Pulse Width, LOW	4.5			4.5		ns
t _{rec}	Recovery Time \overline{CD}_n or \overline{SD}_n to CP	4.0			5.0		ns