CD54HC109/3A
CD54HCT109/3A

Switching Speed (Limits with black dots (•) are tested 100%.)

SWITCHING CHARACTERISTICS (C_L = 50 pF, Input t_r, t_f = 6 ns)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS V_{CC} V	LIMITS 25°C HC Min.	HC Max.	HCT Min.	HCT Max.	-55°C to +125°C 54HC Min.	54HC Max.	54HCT Min.	54HCT Max.	UNITS
Propagation Delay CP → Q, $\overline{Q}$	t_{PLH} t_{PHL}	2	—	175	—	—	—	265	—	—	ns
		4.5	—	35•	—	40•	—	53•	—	60•	
		6	—	30	—	—	—	45	—	—	
$\overline{S}$ → Q	t_{PLH}	2	—	120	—	—	—	180	—	—	
		4.5	—	24•	—	30•	—	36•	—	45•	
		6	—	20	—	—	—	31	—	—	
$\overline{S}$ → $\overline{Q}$	t_{PHL}	2	—	155	—	—	—	235	—	—	
		4.5	—	31	—	45	—	47	—	68	
		6	—	26	—	—	—	40	—	—	
$\overline{R}$ → Q	t_{PHL}	2	—	185	—	—	—	280	—	—	
		4.5	—	37	—	45	—	56	—	68	
		6	—	31	—	—	—	48	—	—	
$\overline{R}$ → $\overline{Q}$	t_{PLH}	2	—	170	—	—	—	255	—	—	
		4.5	—	34•	—	37•	—	51•	—	56•	
		6	—	29	—	—	—	43	—	—	
Transition Times	t_{TLH} t_{THL}	2	—	75	—	—	—	110	—	—	
		4.5	—	15	—	15	—	22	—	22	
		6	—	13	—	—	—	19	—	—	
Input Capacitance	C_I	—	—	10	—	10	—	10	—	10	pF

Burn-In Test-Circuit Connections (Use Static II for /3A burn-in and Dynamic for Life Test.)

Static	STATIC BURN-IN I OPEN	GROUND	V_{CC} (6V)	STATIC BURN-IN II OPEN	GROUND	V_{CC} (6V)
CD54HC/HCT109	6,7,9,10	1-5,8,11-15	16	6,7,9,10	8	1-5,11-16
Dynamic	**OPEN**	**GROUND**	**1/2 V_{CC} (3V)**	**V_{CC} (6V)**	**OSCILLATOR 50 kHz**	**25 kHz**
CD54HC/HCT109	—	8	6,7,9,10	1-3,5,11, 13-16	4,12	—

NOTE: Each pin except V_{CC} and Gnd will have a resistor of 2k-47k ohms.

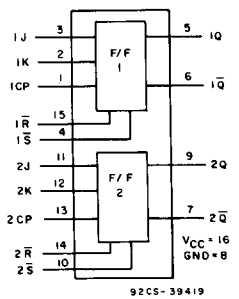
Dual J-K Flip-Flop w/SET and RESET

CD54HC112/3A
CD54HCT112/3A

The RCA-CD54HC112 and CD54HCT112 utilize silicon-gate CMOS technology to achieve operating speeds equivalent to LSTTL parts. They exhibit the low power consumption of standard CMOS integrated circuits, together with the ability to drive 10 LSTTL loads.

These flip-flops have independent J, K, Reset and Clock inputs and Q and $\overline{Q}$ outputs. They change state on the negative-going transition of the clock pulse. Set and reset are accomplished asynchronously by low-level inputs.

The 54HCT logic family is functionally as well as pin compatible with the standard 54LS logic family.



FUNCTIONAL DIAGRAM

Package Specifications

See Section 11, Fig. 11

CD54HC112/3A
CD54HCT112/3A

Static Electrical Characteristics (Limits with black dots (•) are tested 100%)

CHARACTERISTICS		TEST CONDITIONS HC/HCT V_{DD}	V_O	I_O	V_{CC} or GND	V_{IN} HC V_{IL} or V_{IH}	V_{IN} HCT V_{IL} or V_{IH}	LIMITS MIN.	LIMITS MAX.	UNITS
Quiescent Device Current I_{CC}	25°C	6	—	—	6, 0	—	—	—	4•	μA
	−55°C	6	—	—	6, 0	—	—	—	80•	
	+125°C									

The complete static electrical test specification consists of the above by-type static tests combined with the standard static tests in the beginning of this section.

HCT INPUT LOADING TABLE

INPUT	UNIT LOAD*
$\overline{1S}$, $\overline{2S}$	0.5
1K, 2K	0.6
$\overline{1R}$, $\overline{2R}$	0.65
1J, 2J, $\overline{1CP}$, $\overline{2CP}$	1

*Unit load is ΔI_{CC} limit specified in Static Characteristics Chart, e.g., 360 μA max. @ 25°C.

Switching Speed (Limits with black dots (•) are tested 100%.)

SWITCHING CHARACTERISTICS (C_L = 50 pF, Input t_r, t_f = 6 ns)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS V_{CC} V	LIMITS 25°C HC Min.	25°C HC Max.	25°C HCT Min.	25°C HCT Max.	−55°C to +125°C 54HC Min.	−55°C to +125°C 54HC Max.	−55°C to +125°C 54HCT Min.	−55°C to +125°C 54HCT Max.	UNITS
Propagation Delay $\overline{CP}$ to Q, $\overline{Q}$	t_{PLH} t_{PHL}	2	—	175	—	—	—	265	—	—	ns
		4.5	—	35•	—	35•	—	53•	—	53•	
		6	—	30	—	—	—	45	—	—	
$\overline{S}$ to Q, $\overline{Q}$		2	—	155	—	—	—	235	—	—	
		4.5	—	31•	—	32•	—	47•	—	48•	
		6	—	26	—	—	—	40	—	—	
$\overline{R}$ to Q, $\overline{Q}$		2	—	180	—	—	—	270	—	—	
		4.5	—	36•	—	37•	—	54•	—	56•	
		6	—	31	—	—	—	46	—	—	
Output Transition Time	t_{TLH} t_{THL}	2	—	75	—	—	—	110	—	—	
		4.5	—	15	—	15	—	22	—	22	
		6	—	13	—	—	—	19	—	—	
Input Capacitance	C_I	—	—	10	—	10	—	10	—	10	pF

Burn-In Test-Circuit Connections (Use Static II for /3A burn-in and Dynamic for Life Test.)

Static	STATIC BURN-IN I OPEN	STATIC BURN-IN I GROUND	STATIC BURN-IN I V_{CC} (6V)	STATIC BURN-IN II OPEN	STATIC BURN-IN II GROUND	STATIC BURN-IN II V_{CC} (6V)
CD54HC/HCT112	5-7,9	1-4,8,10-15	16	5-7,9	8	1-4,10-16
Dynamic	**OPEN**	**GROUND**	**1/2 V_{CC} (3V)**	**V_{CC} (6V)**	**OSCILLATOR 50 kHz**	**OSCILLATOR 25 kHz**
CD54HC/HCT112	—	8	5-7,9	2-4,10-12, 14-16	1,13	—

NOTE: Each pin except V_{CC} and Gnd will have a resistor of 2k-47k ohms.