

Hex D-Type Flip-Flop with Reset

The CD54HC174F3A and CD54HCT174F3A are edge-triggered flip-flops which utilize silicon-gate CMOS circuitry to implement D-type flip-flops. They possess low power and speeds comparable to low-power Schottky TTL circuits. The devices contain six master-slave flip-flops with a common clock and common reset. Data on the D input having the specified setup and hold times are transferred to the Q output on the low to high transition of the CLOCK input. The \overline{MR} input, when low, sets all outputs to a low state.

Each output can drive 10 low-power Schottky TTL equivalent loads. The CD54HCT174F3A is functionally as well as pin compatible to the 54LS174.

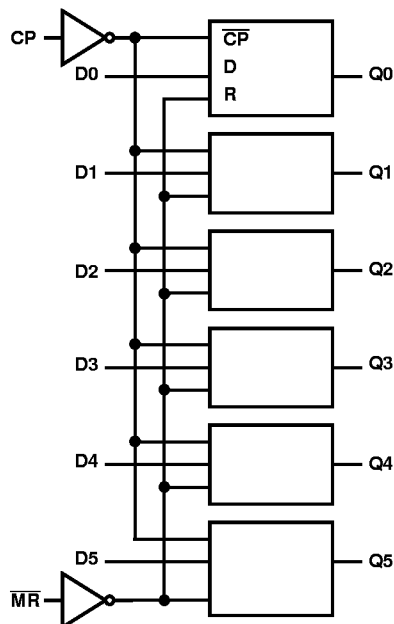
HCT INPUT LOAD TABLE

INPUT	UNIT LOAD (NOTE 1)
CP	0.80
\overline{MR}	0.55
D	0.15

NOTE:

- Unit load is ΔI_{CC} limit specified in DC Electrical Specifications Table, e.g., 360 μ A Max at +25°C.

Functional Diagram



Absolute Maximum Ratings

DC Supply Voltage, V_{CC}
 Voltages Referenced to GND. -0.5V to +7.0V
 DC Input Voltage Range, All Inputs, V_{IN} -0.5V to $V_{CC} + 0.5V$
 DC Output Voltage Range, All Outputs, V_{OUT} . . . -0.5V to $V_{CC} + 0.5V$
 DC Input Diode Current, I_{IK}
 For $V_I < -0.5V$ or $V_I > V_{CC} + 0.5V$ $\pm 20mA$
 DC Output Diode Current, I_{OK}
 For $V_O < -0.5V$ or $V_O > V_{CC} + 0.5V$ $\pm 20mA$
 DC Drain Current, Per Output, I_O , For $-0.5V < V_O < V_{CC} + 0.5V$
 Standard Output $\pm 25mA$
 Bus Driver Output $\pm 35mA$
 DC V_{CC} or GND Current, I_{CC}
 Standard Output $\pm 50mA$
 Bus Driver Output $\pm 70mA$

Power Dissipation Per Package, P_D
 $T_A = -55^\circ C$ to $+100^\circ C$ (Package F) 500mW
 $T_A = +100^\circ C$ to $+125^\circ C$ (Package F) Derate Linearly at
 8mW/ $^\circ C$ to 300mW

Operating Temperature Range, T_A
 Package Type F $-55^\circ C$ to $+125^\circ C$
 Storage Temperature, T_{STG} $-65^\circ C$ to $+150^\circ C$
 Lead Temperature (During Soldering)
 At Distance 1/16in. \pm 1/32in. (1.59mm \pm 0.79mm)
 From Case For 10s Max. $+265^\circ C$
 Unit Inserted Into a PC Board (Min Thickness 1/16in., 1.59mm)
 With Solder Contacting Lead Tips Only $+300^\circ C$

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

Recommended Operating Conditions

Supply Voltage Range, V_{CC}
 T_A = Full Package Temperature Range
 CD54HC Types 2V to 6V
 CD54HCT Types 4.5V to 5.5V
 DC Input or Output Voltage, V_{IN} , V_{OUT} 0V to V_{CC}

Operating Temperature Range, T_A $-55^\circ C$ to $+125^\circ C$
 Input Rise and Fall Times, t_R , t_F
 at 2V 0ns to 1000ns
 at 4.5V 0ns to 500ns
 at 6V 0ns to 400ns