



Dual D-Type Flip-Flop with Set and Reset

MARKING
DIAGRAMS

SOIC-14

MC74VHC74, MC74VHCT74A

The MC74VHC74 and MC74VHCT74A are high speed CMOS D Type Flip Flops fabricated with silicon gate CMOS technology. These achieve high speed operation similar to equivalent Bipolar Schottky TTL while maintaining CMOS low power dissipation.

The signal level applied to the D input is transferred to Q output during the positive going transition of the Clock pulse.

Reset (\overline{RD}) and Set (\overline{SD}) are independent of the Clock (CP) and are accomplished by setting the appropriate input Low.

The MC74VHC74 inputs are compatible with standard CMOS levels while the MC74VHCT74A inputs are compatible with TTL levels. This device can be used as a level converter for interfacing 3.3 V to 5.0 V, because it has full 5.0 V CMOS level output swings.

The MC74VHC74 and MC74VHCT74A internal circuits are composed of three stages, including a buffer output which provides high noise immunity and stable output. The input structures tolerate voltages up to 5.5 V, allowing the interface of 5 V systems to 3 V systems.

The MC74VHCT74A output structures provide protection when $V_{CC} = 0$ V. These output structures help prevent device destruction caused by supply voltage input/output voltage mismatch, battery backup, hot insertion, etc.

Features

High Speed: f_{max} (MC74VHC74) = 170 MHz (Typ) at $V_{CC} = 5$ V
 f_{max} (MC74VHCT74A) = 60 MHz (Typ) at $V_{CC} = 5$ V

Low Power Dissipation: $I_{CC} = 2$ μ A (Max) at $T_A = 25$ C

High Noise Immunity: $V_{NIH} = V_{NIL} = 28\%$ V_{CC}

Power Down Protection Provided on Inputs

Balanced Propagation Delays

Designed for 2.0 V to 5.5 V Operating Range

Low Noise: $V_{OLP} = 0.8$ V (Max)

Pin and Function Compatible with Other Standard Logic Families

Latchup Performance Exceeds 100 mA

ESD Performance:

Human Body Model > 2000 V

Chip Complexity: 128 FETs or 32 Equivalent Gates

Q Suffix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC Q100 Qualified and PPAP Capable

These Devices are Pb Free, Halogen Free/BFR Free and are RoHS Compliant



TSSOP-14
DT SUFFIX
CASE 948G

FUNCTION TABLE

Inputs				Outputs	
SD	RD	CP	D	Q	\overline{Q}
			↗		
			↘		
			↘		

ORDERING INFORMATION

MC74VHC74, MC74VHCT74A

D46 Tw3[6]C

MC74VHC74, MC74VHCT74A

AC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions	T _A = 25 C			T _A = -55 C to +125 C		Unit
			Min	Typ	Max	Min	Max	
	—							
	— — —							

MC74VHC74, MC74VHCT74A

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions	V _{CC} V	T _A = 25 C			T _A = - 55 to 125 C		Unit
				Min	Typ	Max	Min	Max	
	-								
	-								

MC74VHC74, MC74VHCT74A

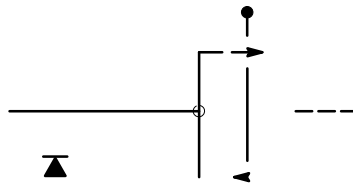
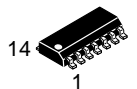


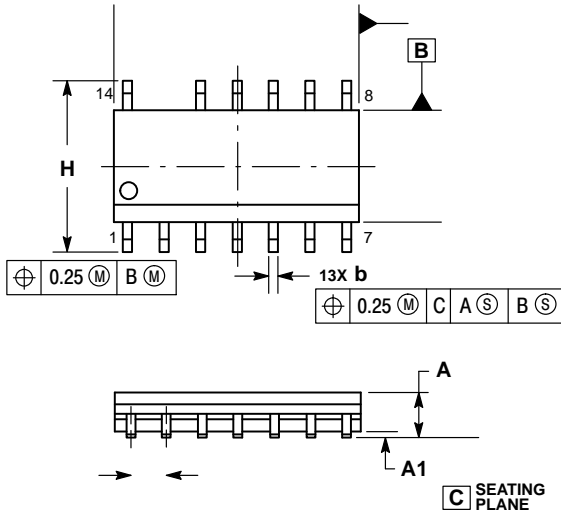
Figure 7. Input Equivalent Circuit



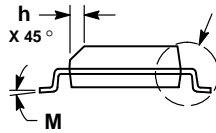
SCALE 1:1

SOIC 14 NB
CASE 751A-03
ISSUE L

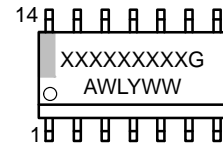
DATE 03 FEB 2016



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
 2. CONTROLLING DIMENSION: MILLIMETERS.
 3. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.13 TOTAL IN EXCESS OF AT MAXIMUM MATERIAL CONDITION.
 4. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSIONS.
 5. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.



GENERIC MARKING DIAGRAM*



- XXXXXX = Specific Device Code
- A = Assembly Location
- WL = Wafer Lot
- Y = Year
- WW = Work Week
- G = Pb-Free Package

STYLES ON PAGE 2

SOIC 14
CASE 751A-03
ISSUE L

DATE 03 FEB 2016

STYLE 7:
PIN 1. ANODE/CATHODE
2. COMMON ANODE
3. COMMON CATHODE
4. ANODE/CATHODE
5. ANODE/CATHODE

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