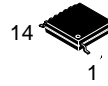


8-Bit Serial-In, Parallel-Out Shift Register

MARKING
DIAGRAM

74VHC164

TSSOP-14
DT SUFFIX
CASE 948G

General Description

The VHC164 is an advanced high-speed CMOS device fabricated with silicon gate CMOS technology. It achieves the high-speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation. The VHC164 is a high-speed 8-Bit Serial-In/Parallel-Out Shift Register. Serial data is entered through a 2-input AND gate synchronous with the LOW-to-HIGH transition of the clock. The device features an asynchronous Master Reset which clears the register, setting all outputs LOW independent of the clock. An input protection circuit insures that 0 V to 5.5 V can be applied to the input pins without regard to the supply voltage. This device can be used to interface 5 V to 3 V systems and two supply systems such as battery backup. This circuit prevents device destruction due to mismatched supply and input voltages.

Features

- High Speed: $f_{MAX} = 175$ MHz at $V_{CC} = 5$ V
- Low Power Dissipation: $I_{CC} = 4$ μ A (Max.) at $T_A = 25^\circ$ C
- High Noise Immunity: $V_{NIH} = V_{NIL} = 28\%$ V_{CC} (Min.)
- Power Down Protection Provided on All Inputs
- Low Noise: $V_{OLP} = 0.8$ V (Max.)
- Pin and Function Compatible with 74HC164
- This Device is Pb-Free, Halide Free and is RoHS Compliant

Functional Description

The VHC164 is an edge-triggered 8-bit shift register with serial data entry and an output from each of the eight stages. Data is entered serially through one of two inputs (A or B); either of these inputs can be used as an active High Enable for data entry through the other input. An unused input must be tied HIGH.

Each LOW-to-HIGH transition on the Clock (CP) input shifts data one place to the right and enters into Q_0 the logical AND of the two data inputs ($A \cdot B$) that existed before the rising clock edge. A LOW level on the Master Reset (\overline{MR}) input overrides all other inputs and clears the register asynchronously, forcing all Q outputs LOW.

74VHC164

Logic Symbol

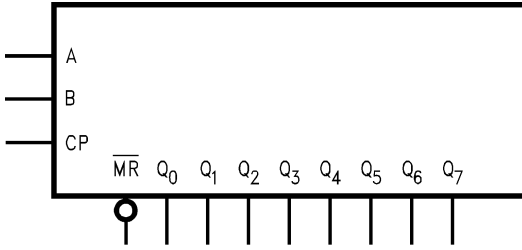


Figure 1. Logic Symbol

FUNCTIONAL TABLE

Operating Mode	Inputs			Outputs	
	\overline{MR}	A	B	Q_0	Q_1-Q_7
Reset (Clear)	L	X	X	L	L-L
Shift	H				

74VHC164

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V_{CC}	DC Supply Voltage	2.0	5.5	V
V_{IN}	DC Input Voltage (Note 3)	0	5.5	V
V_{OUT}	DC Output Voltage (Note 3)	0	V_{CC}	V
T_A	Operating Temperature	-40	+85	°C
t_r, t_f	Input Rise or Fall Rate $V_{CC} = 3.0\text{ V to }3.6\text{ V}$	0	100	ns/V

onsemi, **onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi**
