

## Dual Decade Counter

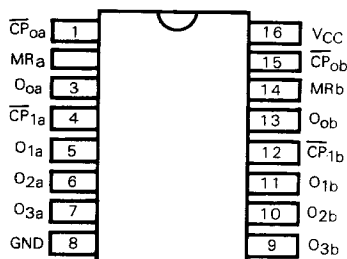
**Preliminary**

Device Parameter	High Speed (74HCT)	Standard (74SC)	Military (54HCT)
Dual Decade Counter	74HCT390	74SC390	54HCT390
Operating temperature range (°C)	-40 to +85	-40 to +85	-55 to +125
Recommended operating voltage (V)	4.75 to 5.25	4.75 to 5.25	4.50 to 5.50
Typical fmax MHz	—	20	—

### Features

- ☐ Pin and function compatible to 54/74LS equivalent circuits
- ☐ Typical DC operating supply current: 10 $\mu$ A
- ☐ MIL STD 883B Screening/Leadless chip carrier available
- ☐ Fast propagation delay times
- ☐ Fan out of 30 LSTTL loads
- ☐ Fully TTL and CMOS compatible
- ☐ -40°C to +85°C operating temperature range
- ☐ Capable of operating over 3-volt to 6-volt range
- ☐ High speed silicon-gate CMOS technology

### Pin Configuration



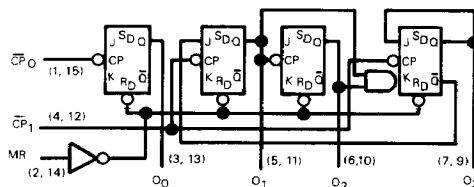
### General Description

The '390 is a dual 4-bit decade ripple counter divided into four separately clocked sections. The counter has two divide-by-two sections and two divide-by-five sections. These sections are normally used in a BCD decade or a bi-quinary configuration, since they share a common Master Reset input. If the two Master Resets can be used to simultaneously clear all 8 bits of the counter, a number of counting configurations are possible within one package. The separate clocks of each section allow ripple counter or frequency division applications of divide-by-2, 4, 5, 10, 20, 25, 50 or 100.

Each section is triggered by the HIGH-to-LOW transition of the Clock (CP) inputs. For BCD decade operation, the Q<sub>0</sub> output is connected to the CP<sub>1</sub> input of the divide-by-five section. For bi-quinary decade operation (50% duty cycle output), the Q<sub>3</sub> output is connected to the CP<sub>0</sub> input, and Q<sub>0</sub> becomes the decade output.

The Master Resets (MR<sub>a</sub> and MR<sub>b</sub>) are active HIGH asynchronous inputs to each decade counter which operate on the portion of the counter identified by the "a" and "b" suffixes in the Pin Configuration. A HIGH level on the MR input overrides the clocks and sets the four outputs LOW.

### Function Block Diagram



V<sub>CC</sub> = Pin 16  
GND = Pin 8  
( ) = Pin numbers