

Three Digits Counter

The three Digit Counter described on this page uses a 3-Digit BCD Counter ,CMOS CD14553 ,addressing a 3-Digit decoder/driver ,CMOS 14543 . It uses the multiplexing method of addressing the displays segments and needs three PNP transistors to either source or sink the current of each transistor serially activated by a signal from pins 1,2 and 15 of the 14553 .

The MC14553 by [Motorola](http://www.motorola.com) contains three counters . The information is timed/division multiplexed providing one BCD number or digit at a time , This process is done by an on board 100kHz oscillator and the frequency is set by the .001uF capacitor connected between pins 3 and 4.

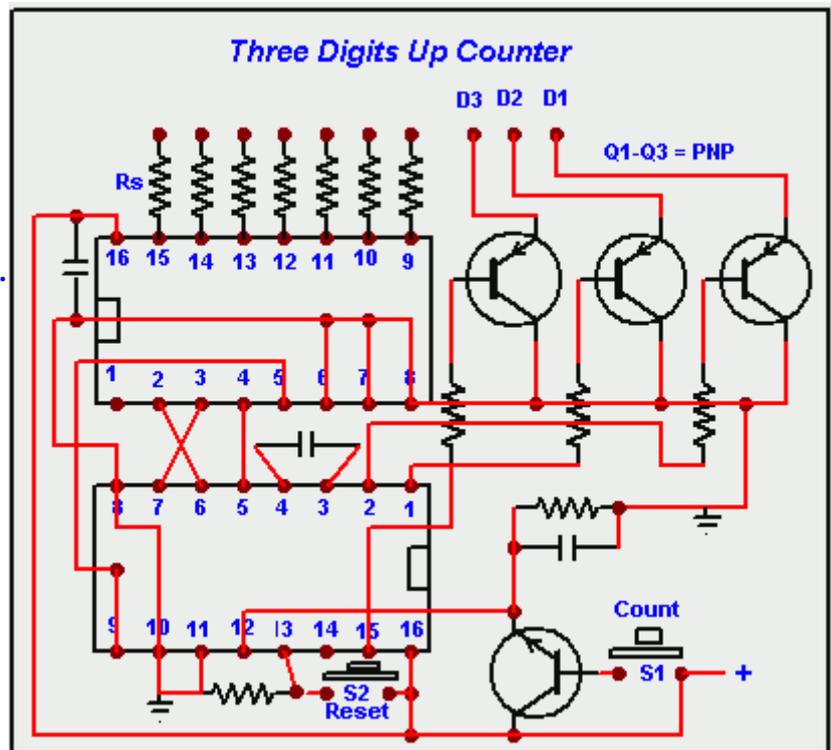
The circuit on the right is designed to drive Common Cathode Displays.

It can be made to drive Common Anode Displays with the following modifications.

a) Change the connection from pin #6 of the 14543 IC from the NEG. to the POS. bus

b) Reverse the polarity of the PNP transistors

c) change all the emitters connection from the NEG. to the POS.bus .



Using the counter

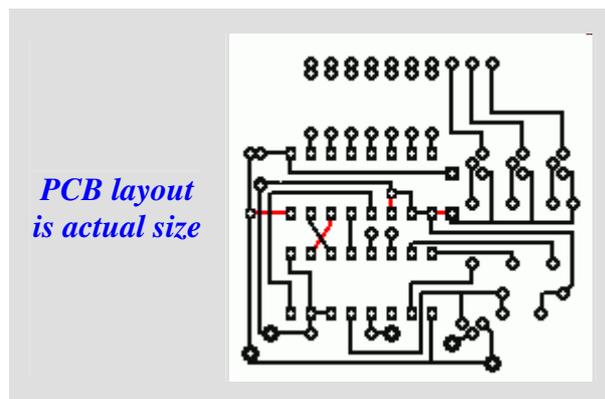
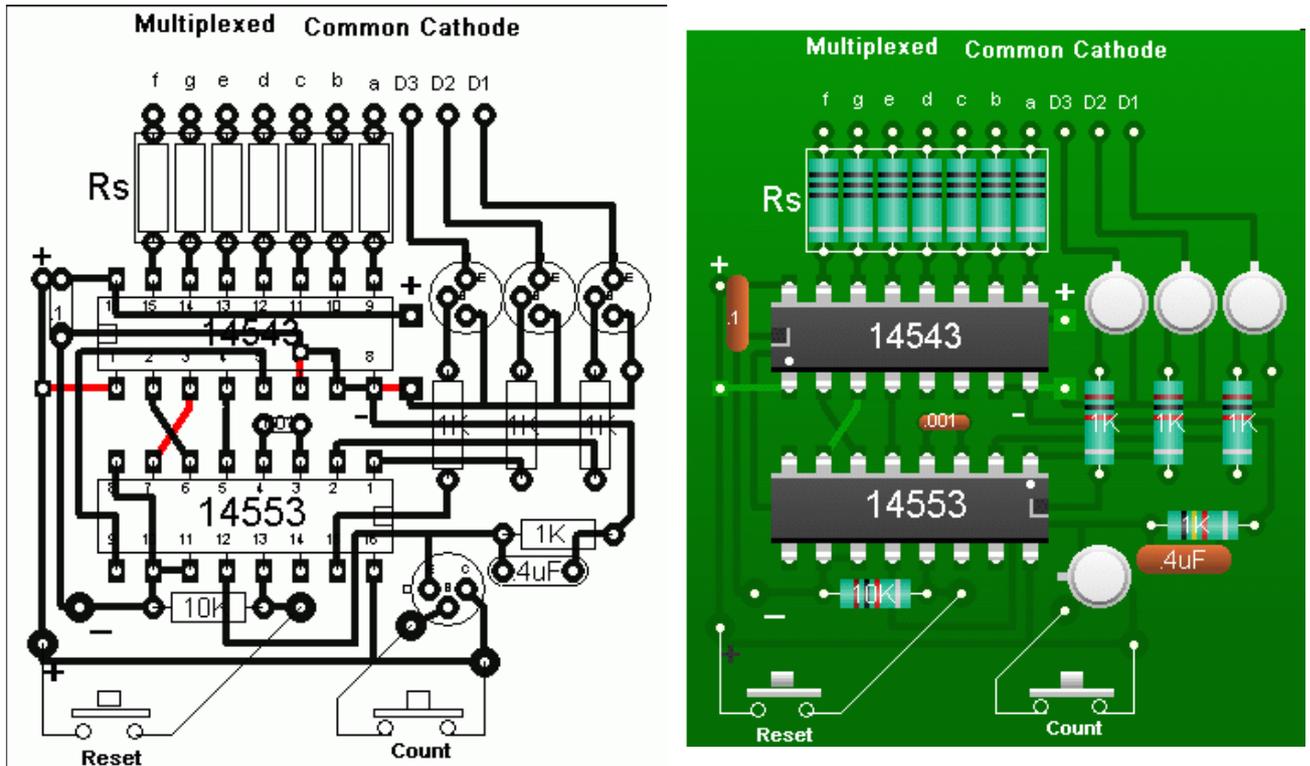
For the CD14553 to function the following conditions are required :

- For Common Cathode , pin 6 must be connected to ground , the PNP transistors collector leads connected to ground .
- For Common Anode operations , pin 6 must be connected to the positive supply , the transistors polarity reversed so that all emitters are then connected to the positive supply .
- " Latch Enable (LE) pin 10 must be LOW (0)
- " Disable " (Dis) pin 11 must be LOW (0) .
- " Master Reset " (MR) pin 13 must be HIGH (1) .
- " Overflow " (OF) pin 14 goes HIGH (1) at overflow (not connected)
- " Clock " (Count Input) pin 12 must HIGH (1) .

Construction

A suggested layout is shown below , it is strongly advised that IC sockets be used . Where the Rs resistors are shown 14 pin dip sockets can be inserted and the resistors can be inserted in the socket if preferred which will allow for change of Rs value if required .

The Layout and PCB provide for the modification to Common Anode by simply moving the jumpers (in red) from pin 6 to + or - as well as for the emitters/collectors connections as explained above .



As with the previous counter common anode and large displays can be used but first , modifications to the circuit as described above must be made .

For details see [Shuffle board](#) .