

3 Channel Quizmaster

E-mail : patkitsrus@gmail.com

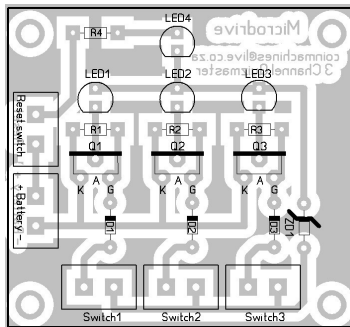
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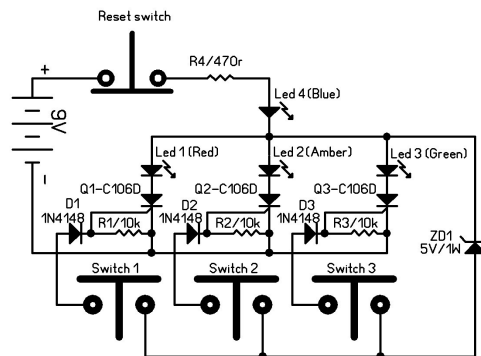
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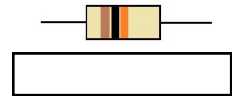
Pcb layout



Schematic



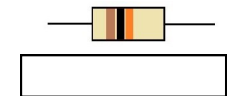
Battery



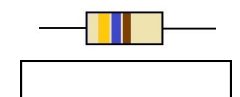
R1 - 10k



R2 - 10k



R3 - 10k



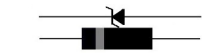
R4 - 470r



Battery clip



Reset switch



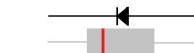
ZD1 - 5V/1W



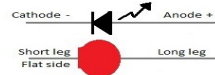
D1 - 1N4148



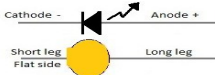
D2 - 1N4148



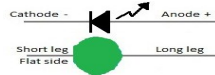
D3 - 1N4148



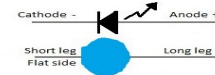
Cathode - Anode +
Short leg Flat side Long leg



Cathode - Anode +
Short leg Flat side Long leg



Cathode - Anode +
Short leg Flat side Long leg



Cathode - Anode +
Short leg Flat side Long leg

Led 1 - Red

Led 2 - Amber

Led 3 - Green

Led 4 - Blue



Q1 - C 106D



Q2 - C 106D



Q3 - C 106D



Switch 1

Switch 2

Switch 3



Terminal block 1



Terminal block 2



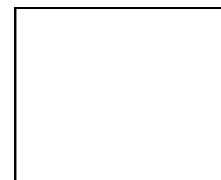
Terminal block 3



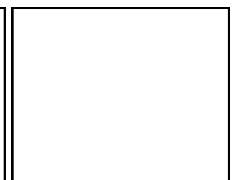
Terminal block 4



Terminal block 5



Hookup wire red (1m)



Hookup wire black (1m)

Assembly

Fit all of the components into the positions as indicated on the overlay. Make sure of the orientation of the polarized components such as the diodes, scr's and led's are correct. Make sure the soldering iron tip is bright and shiny and not covered with the previous plastic bottle debris. A dirty black soldering iron tip will not solder even if it is red hot. Clean if necessary. Trim off excess leads from components after soldering. Take note that the reset switch is a normally closed switch whereas the the other three switches are normal open types.

Operation

When power is applied, there is no current flowing through R4 and Led 4 with the result that the total battery voltage minus the 5 volt drop across the zener diode is available at the three common switch terminals. This voltage ($9 - 5 = 4V$) is enough to trigger any of the three scr's (Q1 - Q3) when any of the 3 switches are pushed. Once switched on the relevant scr will stay on and keep the led associated with it switched on until the power is removed by pushing the normal closed reset switch. With any one of the three led's (1 - 3) now switched on the voltage drop across R4 and Led 4 is about 5 volts leaving insufficient voltage to overcome the 5V zener breakdown voltage and therefore no further action can take place until reset. On the event that this circuit fails to work, check the for the following. 1) Battery voltage must be over 8 volts. 2) Polarity of battery connections. 3) Poor or bridged solder joint. 4) Reversed diodes, led's or scr's.