LED-BASED MESSAGE DISPLAY

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LEDs are advantageous due to their smaller size and low current consumption. Here is a running message display circuit wherein the letters formed by LED arrangement light up progressively. Once all the letters of the message have been lit up, the circuit gets reset. This message display circuit is built around readily available, low cost components. It is easy to fabricate and makes use of 3mm red LEDs. A total of 80 LEDs have been used to display the message "WELCOME".

The arrangement of LED1 through LED15 is used to display 'W' as shown in Fig. 1. The anodes of LED1 through LED15 are connected to point A and the cathodes of these LEDs are connected to point B. Similarly, Other letters can also be built.

Two ICs, the timer 555 (IC2) and decade counter CD4017 (IC3), are used to build the display circuit.

The timer IC NE555 (IC2) is wired as a astable multivibrator that produces 1Hz clock at its output pin 3. This output is connected to clock pin (pin 14) of the decade counter (IC3), which clocks the IC3 for sequencing operations.

One of the IC CD4017's features is its provision of ten fully decoded outputs, making the IC ideal for use in a whole

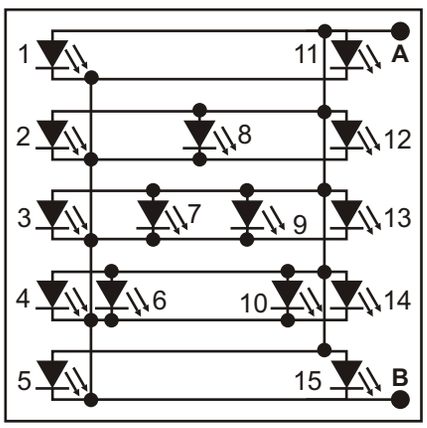
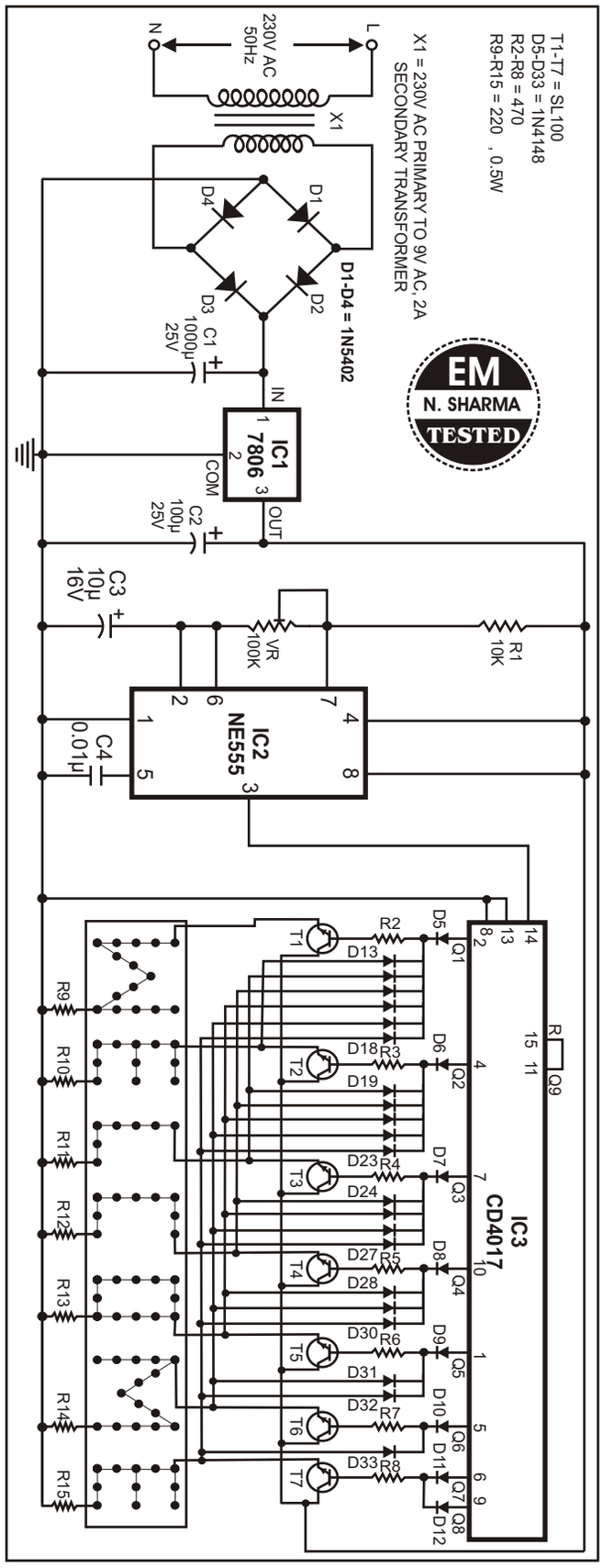


Fig.1:LED arrangement for word 'W'

Fig. 2: Circuit diagram of LED-based message display



range of sequencing operations. In the circuit only one of the outputs remains high and the output advances by one count every second (depending on the time period of astable multivibrator IC2). When Q1 output of IC3 goes high, transistor T1 conducts and the current flows through LED1 through LED15 via resistor R9. Now the letter 'W' built around LED1 through LED15 is illuminated on the LED arrangement board.

On the arrival of next clock pulse, Q1 goes low and Q2 goes high. Transistor T2 conducts and letter 'E' lights up. The preceding letter 'W' also remains lighted because of forward biasing of transistor T1 via diode D13.

Next, when Q3 output goes high, transistor T3 conducts and the letter 'L' lights up. The preceding letters 'W' and 'E' also remain lighted because of forward biasing of transistor T1 and T2 via diode D14 and D19 respectively.

In a similar fashion, on the arrival of each successive pulse, the preceding letters of the display are also remain lighted and finally the complete word becomes visible. Now the complete message "WELCOME" is displayed on the LED arrangement for two seconds (because the output Q7 and Q8 are driving the transistor T7).

On the following clock pulse output Q9 goes high, and IC3 is reset and the display is turned off for one second. Therefore the cycle repeats. The frequency of sequencing operations is controlled with the help of VR.

The power supply for the circuit comprises a 0-9V, 2A step-down transformer (X1), bridge rectifier comprising diodes D1 through D4, and a filter capacitor (C1). IC 7806 (IC1) provides regulated 6V DC to the circuit.