

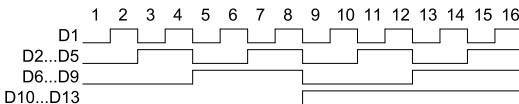
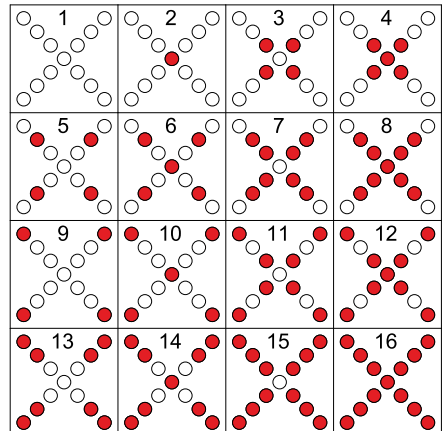
An easy to make, yet interesting LED effect that imitates a shining four-pointed star. It can be hung on a Christmas tree or in a window or even used as a shelf decoration.

Specifications

- light source - LEDs
- control - IC with integrated generator
- continuously variable frequency
- battery operation or external power supply possible
- supply: 5-12 VDC
- board size: 65×41 mm

Circuit description

Figure 1 shows the schematic diagram of the star. The U1 is 14-stage digital binary counter. Bits Q5-Q8 are used, on which states from 0000 to 1111 appear timed by the clock signal. LEDs were connected to these bits. The figures show the waveforms at outputs Q5-Q8 and the diode states for the individual clock cycles. Elements R5, R6, PR1 and C3 determine the frequency of the generator built on the internal gates of circuit U1. The frequency of the LEDs can be adjusted using potentiometer PR1 on the board.



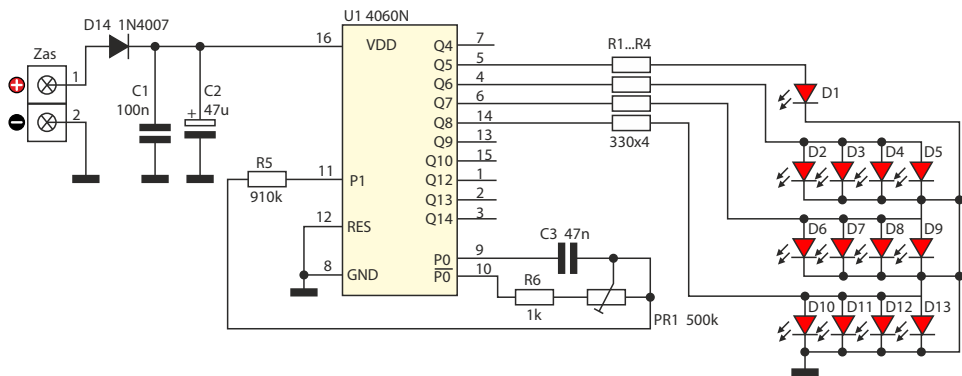


Fig. 1 Schematic diagram of the electronic star

Mounting and start-up

Schematic diagram of the device is shown in Figure 2. The board was designed on a single-sided laminate. The circuit is simple to assemble, all the components used are through-hole, and once assembled, all you need to do is connect the 5-12 VDC power supply and adjust the frequency with the PR1 potentiometer to your liking. The

D14 diode protects the circuit from incorrect polarity of the input voltage. The circuit can be powered by a 9V (6F22) battery.

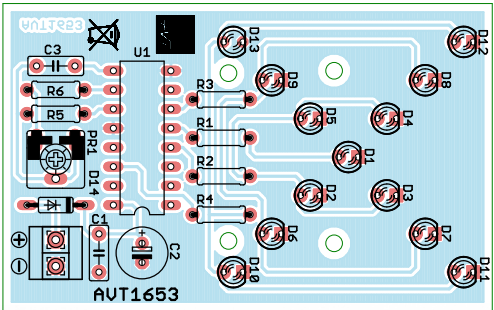
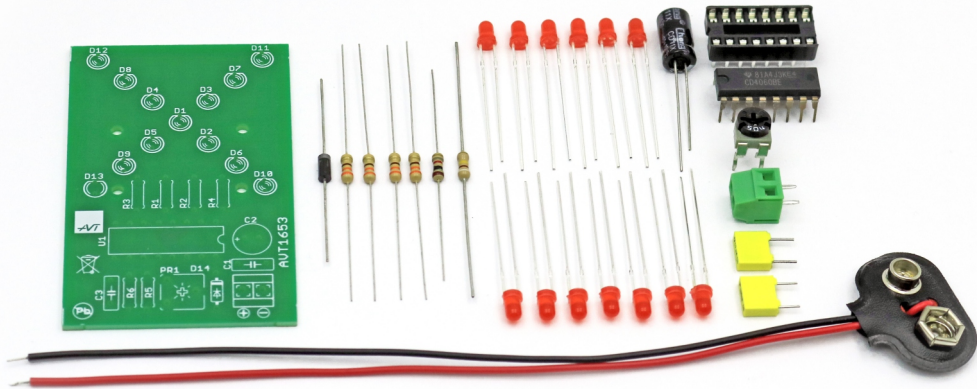


Fig. 2 Arrangement of components on the PCB



List of elements

Resistors:

R1-R4:330 Ω (orange-orange-brown-gold)

R5:910 k Ω (white-brown-yellow-gold)

R6:1 k Ω (brown-black-red-gold)

PR1:.....mounting potentiometer 500 k Ω

Capacitors:

C1:100 nF (can be labelled 104)

C2:100 μ F!

C3:47 μ F (can be labelled 473)

Semiconductors:

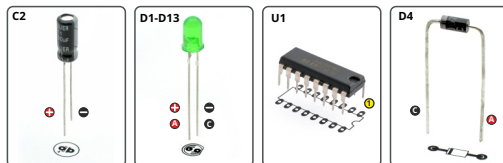
U1:4060

D1-D13:LED 3 mm

D14:1N4007

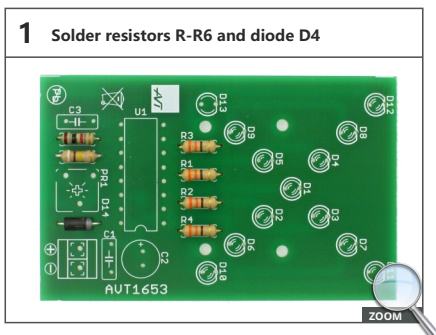
Other:

screw connector - 1 pc

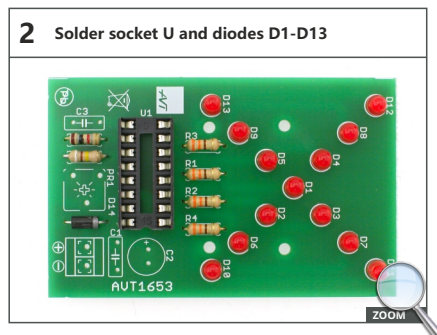


Recommended mounting sequence

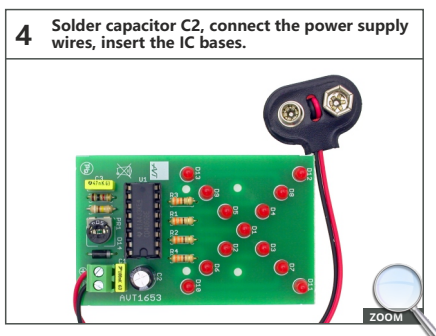
1 Solder resistors R-R6 and diode D4



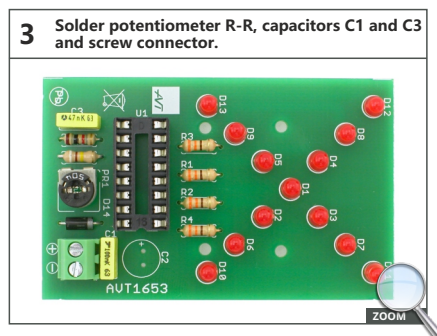
2 Solder socket U and diodes D1-D13



4 Solder capacitor C2, connect the power supply wires, insert the IC bases.



3 Solder potentiometer R-R, capacitors C1 and C3 and screw connector.



Begin assembly by soldering the components onto the board in order of size from smallest to largest. When mounting components marked with an exclamation mark, pay attention to their polarity. Photographs of the assembled kit may be helpful. To access high-resolution images, download the PDF file.



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