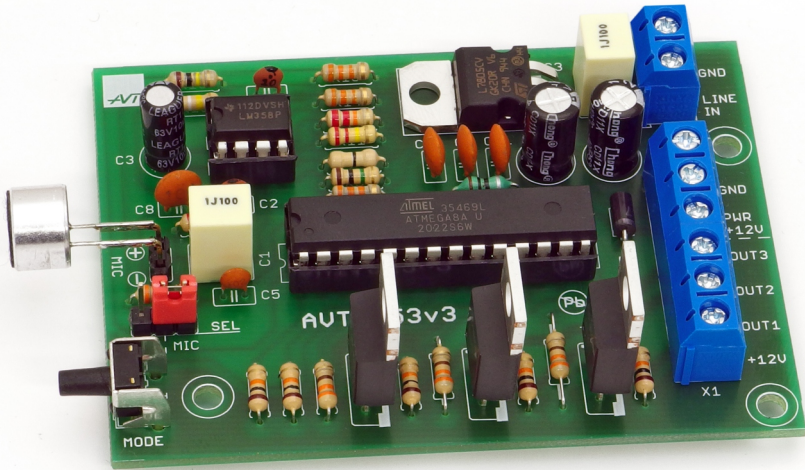




AVT 1853



ASSEMBLY DIFFICULTY

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The key to a successful event is not only a good music, but also good lighting. Presented RGB LED controller circuit will even meet the expectations of the fussiest of partygoers.

## Specifications

- working with LED strips or RGB modules
- single channel load: 3A
- selectable input signal:
  - microphone (MIC)
  - LINE IN socket
- 7 effects to choose from
- power supply: 12 VDC
- board size: 79×58 mm

## Circuit description

Electrical diagram of the device is shown in Figure 1. It consists of a microcontroller, an operational amplifier and power transistors. The input signal is provided by the C1 capacitor to the input of the operational amplifier. The input polarising voltage is determined by a divider made up of resistors R9, R10, R13, R14. The microcontroller (ATmega8) is clocked by an internal RC generator operating at 8 MHz. Analogue signal from the audio amplifier is measured using an A/D converter and is delivered to the PC0 input. The program 'selects' components in the following frequency ranges from the audio signal:

- High: 13...14 kHz.
- Medium 6...7 kHz.
- Low 500 Hz...2 kHz.

The programme then calculates the light intensity value for each channel and controls the output transistor in proportion to the result. Activators are transistors T1...T3 (BUZ11) with a high current-carrying capacity. There is a LINE IN input on the board for direct input of an AUDIO signal of 0.7 V (typical headphone output). You can select the sound source using the SEL jumper: CINCH (RCA) or microphone (MIC).

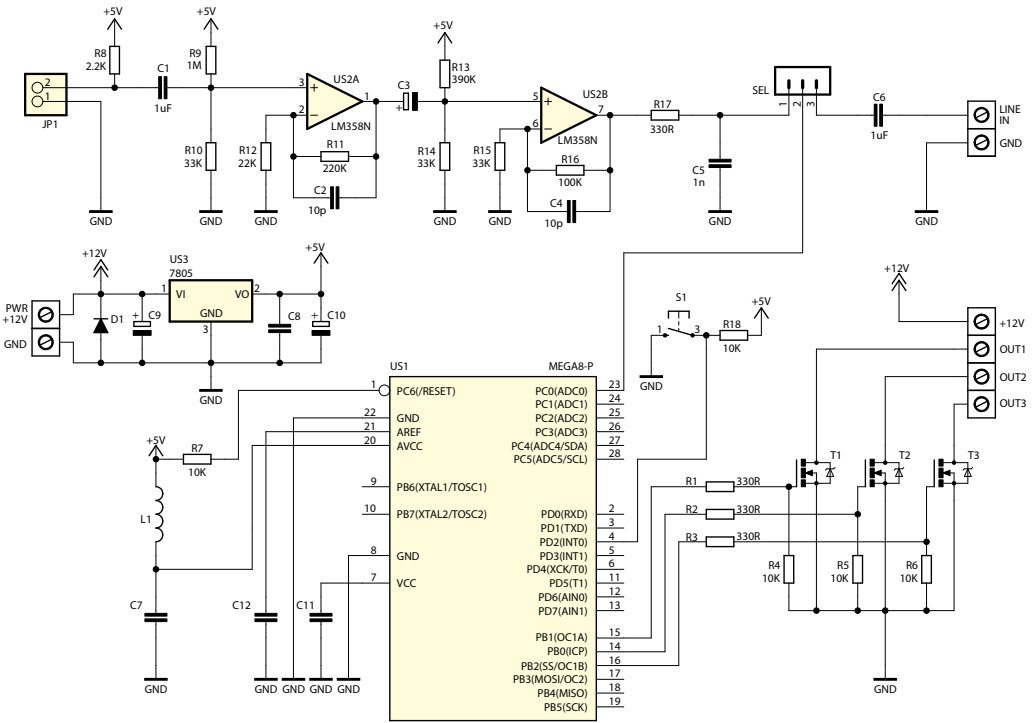


Fig. 1 Schematic diagram

## Mounting and start-up

The circuit must be assembled on a single-sided PCB as shown in Figure 2. Start by soldering resistors and other small components onto the board and finish by fitting electrolytic capacitors, transistors and screw connectors. Microphone can be soldered directly to

the angled goldpin strip. Device assembled flawlessly, using functioning components, will work as soon as the supply voltage is switched on.

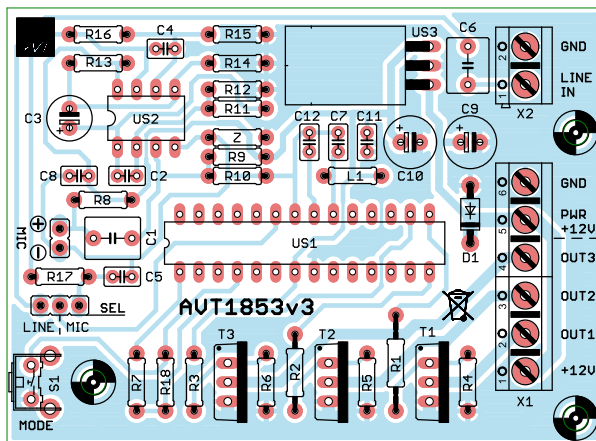


Fig. 2 Arrangement of components on the PCB

# Operation

You select the effect using the MODE button (S1):

- Red.
- Blue.
- Green.
- White.
- Illuminophony.
- Changing colour randomly to the bass rhythm.
- Off.

## List of elements

### Resistors:

- R1-R3, R17:.....330 Ω (orange-orange-brown-gold)  
R4-R7, R18:.....10 kΩ (brown-black-orange-gold)  
R8:.....2,2 kΩ (red-red-red-gold)  
R9:.....1 MΩ (brown-black-green-gold)  
R10, R14, R15:.....33 kΩ (orange-orange-orange-gold)  
R11:.....220 kΩ (red-red-yellow)  
R12:.....22 kΩ (red-red-orange)  
R13:.....390 kΩ (orange-white-yellow-gold)  
R16:.....100 kΩ (brown-black-yellow-gold)  
Z:.....jumper (0 Ω)

### Capacitors:

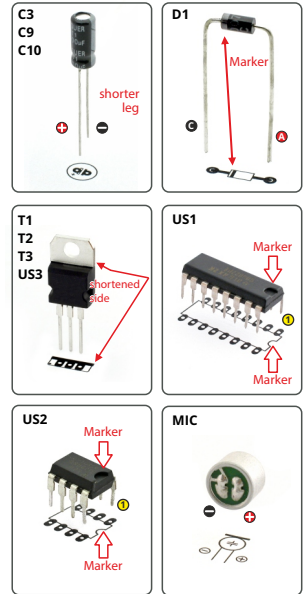
- C1, C6:.....1 μF (can be labelled 105)  
C2, C4:.....10 pF (can be labelled 10)  
C3:.....10 μF !  
C5:.....1 nF (can be labelled 102)  
C7, C8, C11, C12:.....100 nF (can be labelled 104)  
C9, C10:.....100 μF !

### Semiconductors:

- D1:.....1N4007 !  
T1, T2, T3:.....Power transistors, e.g... BUZ11 !  
US1:.....ATMEGA8 !  
US2:.....LM358 !  
US3:.....7805 !

### Other:

- L1:.....choke  
S1:.....Microswitch angle  
MIC:.....microphone electret  
SEL:.....goldpin 1×3 + JUMPER  
X1:.....connectors DG301/3 - 2 pcs  
X2:.....connector DG301/2 - 1pcs



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.

Frames with diagrams of the leads and symbols of these components on the PCB and photographs of the assembled kit may be helpful.

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