FUTURE KIT

HIGH QUALITY ELECTRONIC KITS

POWER AMPLIFIER FOR TEACHER

CODE 617 — LEVEL 2

This power amplifier circuit is constructed with the IC, capable of delivering 15Wrms at 4 ohms (BTL). With have build-in mono tone-control and pre-amplifier of microphone two inputs selection can be operated using push-on push-off switch.

Specification:

- supply voltage : 12VDC / more than 1A.
- music power output : 15Wrms @ 4Ω (BTL)
- total harmonic distortion (THD) : 0.1% @ 1W, 4Ω
- dimension : 4.10 x 2.31 inches.

How it works:

The circuit diagram shown in figure can be divided into three parts; input, ton-control and power amplifier. In the input part consist MIC input and LINE IN. The signal of microphone is also coupled to transistor TR3 via capacitor C25. Transistor TR3 pre-amplifier the signal of microphone. The signal of microphone is coupled to the volume control (VR1) by capacitor C22. VR1 is used to adjust the signal of microphone to tone-control part. At "LINE IN" point, the signal is coupled to the selector switch (SW) by capacitor C26 and C27. Which also blocks any DC voltage that may be present on the signal.

The selector switch (SW) is used to select MIC input and LINE IN. The signal from the selector switch is fed to the tone-control part. Transistor TR2 buffer the audio signal. Bass sound is fed to the pin center of bass control (VR2) through resistor R14. Treble sound is fed to the pin center of treble control (VR3) through capacitor C19. After bass and treble sound is fed to the base of transistor TR1. TR1 amplifier the audio signal. The audio signal is coupled the volume control (VR4) and feedback to the tone-control for boost and cut the audio signal. VR4 is used to adjust the input signal to amplifier. This amplifier is connected in a bridge configuration and can supply 15 watts into the 4 ohms loudspeaker.

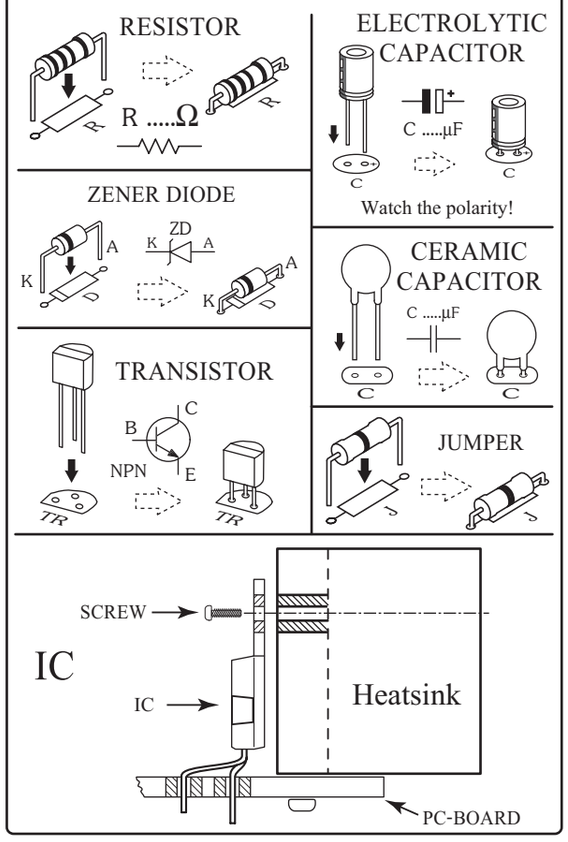
PCB assembly:

Shown in Figure 3 is the assembled PCB. Starting with the lowest height components first. All components with axial leads should be carefully bent to fit the position on the PCB and then soldered into place. Make sure that the electrolytic capacitors are inserted the correct way around. Now check that you really did mount them all the right way round!

Testing:

Connect the loudspeaker at "SP" point. Rotate all the potentiometer max. counterclockwise. Connect microphone to "MIC" point and cassette-tape to "LINE IN" point. After connect the power supply 12 volts to "12V" point. Push switch SW to "LR" position then rotate VR4 clockwise increase the audio level. Rotate VR3 clockwise until hear the treble sound and rotate VR2 clockwise until hear the bass sound. Push switch SW to "MIC" position then rotate VR1 clockwise increase the audio level. Speak into the microphone, sound come from the speaker.

Figure 1. Installing the componants



Troubleshooting:

The most problem like the fault soldering. Check all the soldering joint suspicious. If you discover the short track or the short soldering joint, re-solder at that point and check other the soldering joint. Check the position of all component on the PCB. See that there are no components missing or inserted in the wrong places. Make sure that all the polarised components have been soldered the right way round.

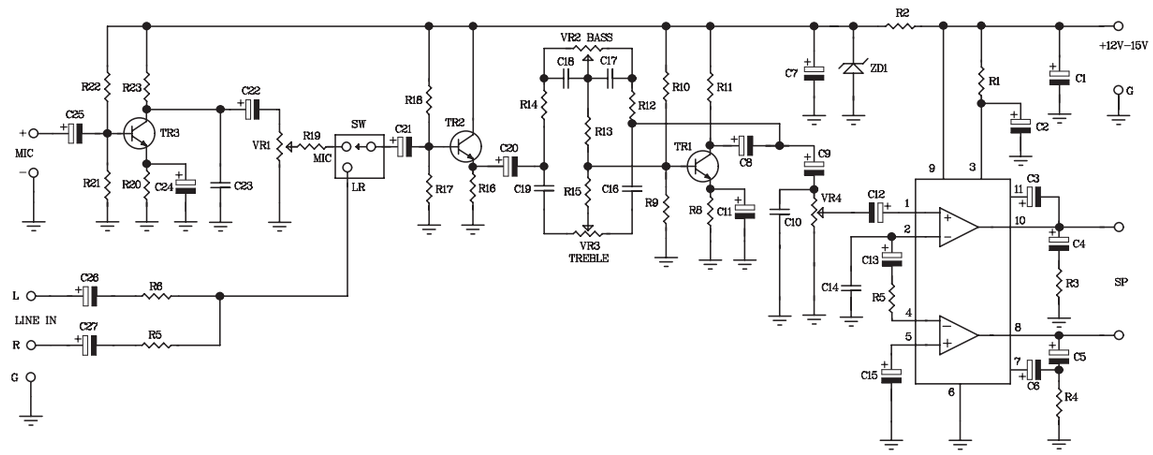


Figure 2. The power amplifier for teacher circuit

Figure 3. Connections