

POWER AMPLIFIER FOR TEACHER CODE NO.617

THIS AMPLIFIER IS CONSTRUCTED WITH THE TDA2004 IC, CAPABLE OF DELIVERING 15 W_{rms} 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. POWER SUPPLY : 12VDC / MAX. 1 A.

CIRCUIT DESCRIPTION: The circuit diagram shown in figure can be divided into three parts; input, tone-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. Transistor TR1 amplifier the audio signal. The audio signal is coupled to 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 IC TDA2004. This amplifier is connected in a bridge configuration and can supply 15 watts into the 4 ohms loudspeaker.

ASSEMBLY: Every the electronic circuit of "FUTURE KIT" will consist of components to be used in each circuit including the soldering tin and PC board. Every PC board of "FUTURE KIT" will have copper track and component mounting plan, which makes it easy the assembly of the components and careful in the soldering. The circuit will works according to the following instructions:-

** The soldering iron should be 25 watt with clean tip coated with soldering tin all the time. Clean it with cloth while heated and coat with soldering tin. Do not used the sand paper for cleaning.

** Soldering tin. It is advisable to work only with electronic resin-core solder with a tin-lead proportion of 60:40 or 63:37! It is also forbidden to use acidiferous soldering flux because it would damage the sensitive boards.

** All components with axial leads should be carefully bent to fit the position on the PC board and then soldered into place.

** Sometimes the pins of some components are too big for the holes, adjust the holes by a small drill in order to be easy for soldering.

** Before supplying the soldering tin, at first heat the soldering joint with the point of the soldering copper. Press the point slightly against the soldering joint so that the land of soldering on the PC board and the lead of the component are heated simultaneously. After approx. 1-2 seconds you may add the soldering tin without removing the soldering copper from the soldering joint in the meantime.

** The components which are sensitive to the heat such as IC, transistor, or semi-conductor, reduce the heat by gripping the pins of the components with the needle-nose pliers while soldering.

** Make sure not too much lead applied to the land of soldering, because it might cause a short circuit across the copper track. A good the land of soldering should be smooth and gloss.

** Use the desoldering pump or the desolder braid for removes unwanted solder from a soldering joint, in order not to spoil the copper track.

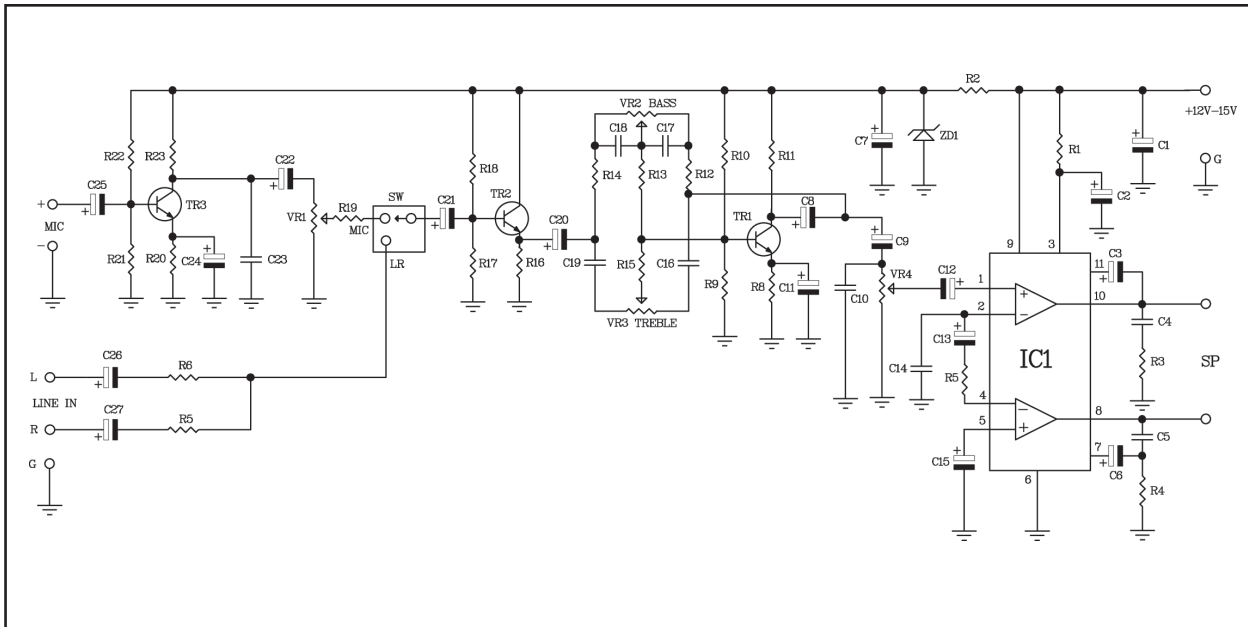
** After the soldering completed, cut the pins of the components carefully especially the small once, in care being violently twisted or pulled, so not break off from the PC board. Clean the soldering stain with alcohol or contact cleaner spray.

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 increases 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 increases the audio level. Speak into the microphone, sound come from the speaker.

TROUBLESHOOTING:

1. No sound comes from the loudspeaker. Measure the dc voltage at pin 8 and pin 10 of IC TDA2004 will have approximately 6 volts. But if have the voltage 12 volts or haven't the voltage, check IC TDA2004.
2. If have the voltage 6 volts, Measure the dc voltage at cathode of ZD1 will have approximately 7 volts. But if haven't the voltage, check R2 and ZD1. If have the voltage, check TR1, TR2, TR3 and selector switch (SW).
3. Microphone cannot be activated but LINE IN is activated, check TR3 and selector switch (SW).

THE CIRCUIT DIAGRAM AND INSTALLATION



FT405

