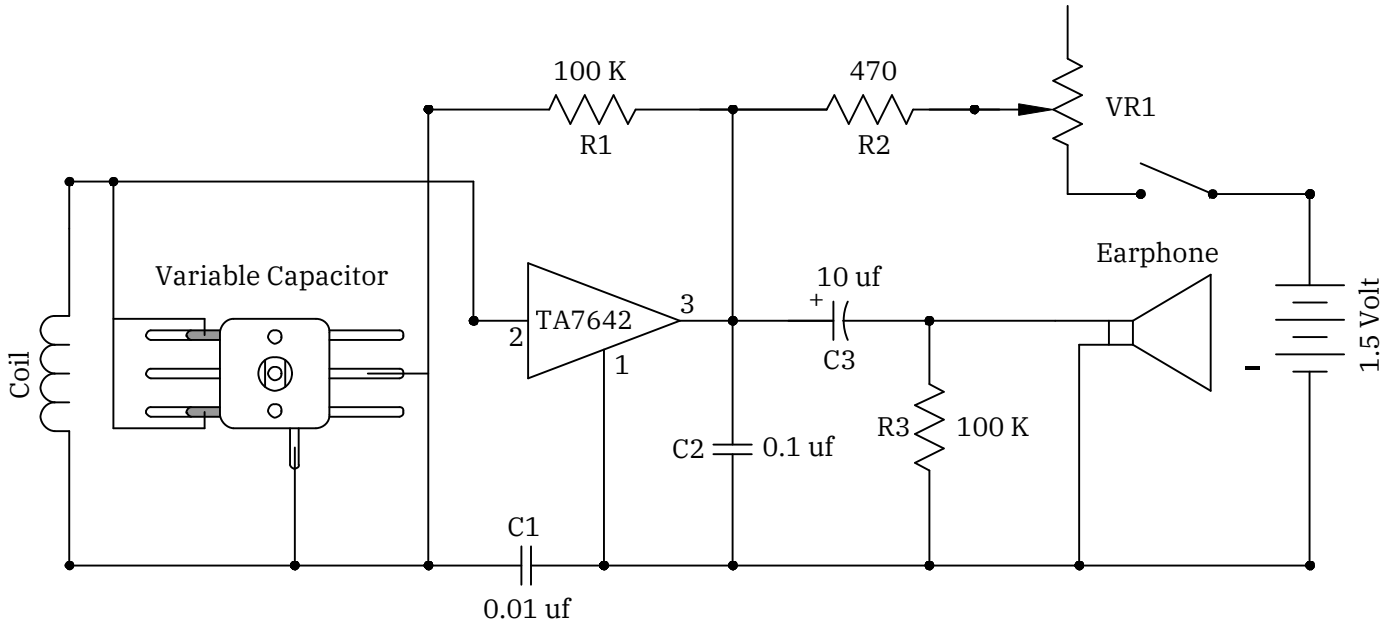
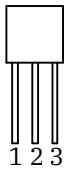
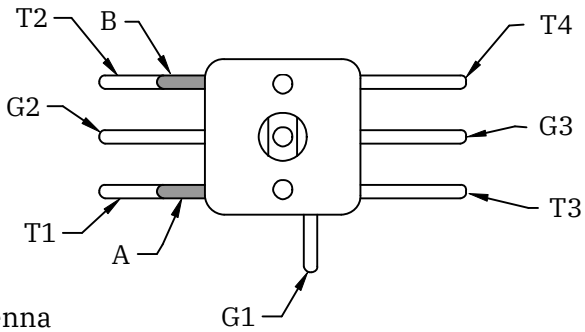
AM Radio IC Kit 2
Mike's Electronic Parts, LLC.



TA7642
Flat Side Up



1 - Ground
2 - Input
3 - Output



A 266pf
B 266pf
T1 T2 T3 T4 ~10pf Trimmers
G1 G2 G3 Ground

Parts List
1 - Circuit Board
1 - 180uh Ferrite Loopstick Antenna
1 - Plastic variable capacitor dual section 266pf
1 - TA7642 Radio IC
2 - 100K Resistors (brown black yellow gold)
1 - 470 Ohm Resistor (yellow violet brown gold)
1 - 0.01uf Capacitor (marked 103)
1 - 0.1uf Capacitor (marked 104)
1 - 10uf Capacitor
1 - Ceramic Earphone
1 - Variable Resistor with switch
1 - Variable Capacitor knob with shaft and screw
1 - Variable Resistor knob
1 - AA Battery Holder with screw
1 - approximately 6" pretinned wire
6 - 3/8" #4 Screws
2 - 1/2" #4 Screws
4 - #4 Nuts
4 - #4 Washers
2 - #4 Thumb Nuts
4 - Nylon Feet
2 - Coil Clamps

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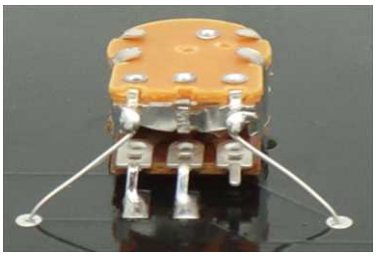
AM Radio IC Kit 2 is a simple basic AM radio made from the TA7642 Radio IC. This kit is not a beginners kit. It does require soldering and the ability to read a schematic.

All the variable capacitor pins can be pushed through the board. Cut the top of the pins off close to the top side of the board. Then solder from the top. The two variable resistor pins nearest the board can be bent towards the solder pad. Use the included pre-tinned wire to connect the two variable resistor pins farthest from the board (switch) to the solder pads near the variable resistor.



The thumb nuts are assembled using the 1/2" screws pushed through the board from the bottom. A nut is placed on the top side of the board to hold the 1/2" screw. On top the nut place a washer. And finally add the thumb nut. Place your wire under the washer then snug the thumb nut. The thumb nuts do not need to be really tight, just snug.

The coil clamps are assembled by placing a washer on a 3/8" screw. Use a nut from the bottom. Place both coil clamps in place with the nut left fairly loose. Slide the coil in place then tighten.

The legs are assembled with a 3/8" screw through the top of the board. No washer is neccessary.

The audio output can either be connected using the supplied thumb nuts or there are solder points to solder your audio output directly to the board. The audio output can be connected directly to a high impedance earphone or headphone. We have tested this kit with magnetic and piezoelectric headsets 2,000 Ohms and higher with good results. The audio output could also be fed directly to an audio amplifier.

Improper orientation of either the radio IC or the C3 electrolytic capacitor may cause your radio permanent damage. Use the flat on the radio ic and the image on the circuit board to align the radio IC. The side of C3 that has a white stripe marked with minus signs on one side faces the flat shown on the circuit board (opposite the plus sign).

The TA7642 IC looks like a transistor with three pins packaged in a TO-92 case. The TA7642 contains 10 transistors and has a gain of 72 db. It also has automatic gain control provided by the R1 100K resistor. The TA7642 is made to operate from 1.1 to 1.8 volts. Over 1.8 volts will destroy the chip and may have a tendency to oscillate at higher voltages. In addition to the automatic gain, the variable resistor and the R2 470 ohm resistor provide a range of 470 ohms to 2.47K of additional manual gain control.

The TA7642 radio integrated circuit is based off the ZN414 from the 1970s. There have been several manufactures of replacement integrated circuits for the ZN414. The default radio IC included with the kit is the TA7642. We currently supply several alternate radio integrated circuits; CD7642, MK484, TA7642, UTC7642, and YS414. Any of these can be substituted in the circuit for the TA7642. From our testing and customer feedback, the KM484 (not MK484) has the highest overall gain. However, it tends to fall into oscillation easily. The CD7642, TA7642, UTC7642, and YS414 have a gain just below the MK484.

Radio Operation

The tuning can be very sensitive. Turn the tuning knob very slowly.

The integrated circuits based off the ZN414, like the TA7642 in this kit, have a tendency to break out into oscillation. Oscillation will sound like a high pitch squeal. It will be a bit louder than you would expect a radio station to sound. Although the gain control will affect the volume, it's primary purpose is to control the gain level to prevent oscillation. As you turn the tuning knob, if you hear a loud squeal, lower the gain slowly until it goes away. Sometimes there is a station there or nearby. For weak stations turn the gain control up until the integrated circuit begins to oscillate (squeal). It may or may not squeal even all the way up. You may be using both knobs while tuning across the AM band. By turning both knobs you may find more stations hiding across the dial.