

INTRODUCTION

This circuit is an economical FM radio mini-receiver with a built in amplifier.

ASSEMBLY INSTRUCTIONS

Please follow the printed silkscreen on the PCB for component placement. It is best to add the lowest height components to the board first: the low resistant components first and then the higher. It is important to note the direction of polarity of the diodes, capacitors, and transistors. Please arrange them carefully according to polarity before mounting them on board. Care must be taken when bending any of the leads. Hold the leads in needle nose pliers when you bend the leads. Do not bend them against the case by pushing them over with your fingers as this can easily break the case.

CIRCUIT DESCRIPTION

This is a very simple circuit built with just a few components. The integrated circuit (IC) serves as the core of the functionality for the FM radio receiver. This allows for a minimal, compact tuner. The IC is composed of a local oscillator, IF amplification, quadrature detector, and muting. The radio frequency (RF) signal from the antenna passes through C3 into L1 at pin 11 and pin 12. C1 and C2 couple the signal, while C3-C9 and C16-C17 act as a filter of the amplification and demodulator circuit. Pin 14 of IC1 is connected to the negative current and pin 4 to the positive. Pin 2 is the output leg of R2 while C12 de-emphasizes the volume through C21 to pin 7 of IC2. IC2 amplifies the input signal and sends it out to the speaker.

Resistors

R1	10 kΩ	-br,blk,or,gd
R2	22 kΩ	-rd,rd,or,gd
R3	50 kΩ	-gr,blk,or,gd
R4,R5	10 Ω	-br,blk,blk,gd
R6	1 kΩ	-br,blk,rd,gd
R7	2 kΩ	-rd,blk,rd,gd

Transistor

TR1	=	BC547
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Ceramic Capacitors

C1,C3	=	-68 pF
C2	=	-100 pF
C4,C12	=	-473 pF
C5	=	-223 pF
C6	=	-180 pF
C7	=	-330 pF
C8, C20	=	-103 pF
C9	=	-470 pF
C10	=	-30 pF
C15	=	-220 pF
C16-C18	=	-302 pF
C23-C25	=	-0.1 μF

Electrolytic Capacitors

C11	=	-100 μF
C13	=	-47 μF
C14	=	-220 μF
C19	=	-1 μF
C21,C22	=	-10 μF

Diodes

D1	=	1N4007
D2	=	1N4V7

Potentiometer

VR1	=	10 kΩ
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ICs

IC1	=	TDA7088
IC2	=	TDA2822

TESTING

Turn the variable resistor (VR1) to MIN position. Connect a 6 VDC power supply to the circuit. Turn VR1 clockwise to slowly turn up the volume of the amplifying unit that is connected to it. You should hear sound from the speaker. Test by moving the variable capacitor position to where you hear back-to-back sounds from the radio stations. Compare with a radio at maximum modulation to start. If the tuner is idle, test by adjusting the trimmer until it can catch the sounds of the maximum frequency modulation (FM) station.

INSTALLING THE COMPONENTS

