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GSK-715 FM Radio Kit User Manual

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,lk,gd R4,R5 2 kΩ -rd,rd,or,gd R4,R5 10 Ω -br,blk,rd,gd R7 2 kΩ -rd,rd,or,gd Transistor - - TR1 $=$ BC547 Ceramic Case:tors C1,C3 $=$ -68 pF C2 $=$ -100 pF C4,C12 $=$ -473 pF C5 $=$ -230 pF C6 $=$ -180 pF C7 $=$ -30 pF C8,C20 $=$ -103 pF C9 $=$ -30 pF C16 $=$ -302 pF C3-C25 $=$ 0.1 µF C14 $=$ -220 µF C13 $=$ -10 µF C14 $=$ -10 µF C19 $=$ 1 µF C19 $=$			
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 -rd,blk,rd,gd TR1 = BC547 Ceramic Capacitors C1,C3 = -68 pF C2 = -100 pF C4,C12 = -473 pF C5 = -223 pF C6 = -180 pF C7 = -30 pF C8, C20 = -103 pF C9 = -470 pF C10 = -30 pF C15 = -220 pF C16-C18 = -302 pF C23-C25 = -01 μF C14 = -220 μF C13 = -47 μF C14 = -220 μF C15 = -10 μF C16-C18 <td< th=""><th>Resistors</th><th></th><th></th></td<>	Resistors		
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,hrd,gd R7 2 kΩ -rd,d0,rd,gd TR1 = BC547 Ceramic Capacitors C1,C3 = -68 pF C2 = -100 pF C4,C12 = -473 pF C5 = -223 pF C6 = -180 pF C7 = -30 pF C8, C20 = -103 pF C9 = -470 pF C16 = -30 pF C15 = -220 pF C16-C18 = -302 pF C16-C18 = -100 μF C13 = -47 μF C14 = -220 μF C13 = -10 μF C14 = -220 μF C15 = -10 μF C14 = -220 μF C15 =	R1	10 kΩ	-br,blk,or,gd
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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 C13 = -47 μF C14 = -220 μF C13 = -47 μF C14 = -220 μF C19 = -10 μF Diodes D1 = 1N4007 D2 = 1N4V7 Potentiometer VR1 = 10 kΩ IC1 = TDA7088 IC2 = TDA7088	C4,C12	=	-473 pF
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C10 = -30 pF C15 = -220 pF C16-C18 = -302 pF C23-C25 = -0.1 μ F Electrolytic Capacitors C11 = -100 μ F C13 = -47 μ F C14 = -220 μ F C19 = -1 μ F C21,C22 = -10 μ F Diodes D1 = 1N4007 D2 = 1N4V7 Potentiometer VR1 = 10 k Ω ICs = TDA7088 IC2 = TDA7088	C9	=	-470 pF
C15 = -220 pF C16-C18 = -302 pF C23-C25 = -0.1 μ F Electrolytic Capacitors C11 = -100 μ F C13 = -47 μ F C14 = -220 μ F C19 = -1 μ F C21,C22 = -10 μ F Diodes D1 = 1N4007 D2 = 1N4V7 Potentiometer VR1 = 10 k Ω IC1 = TDA7088 IC2 = TDA7088	C10	=	-30 pF
$\begin{array}{rcl} C16-C18 & = & -302 \ pF \\ C23-C25 & = & -0.1 \ \mu F \end{array}$ $\begin{array}{rcl} \hline Electrolytic Capacitors \\ \hline C11 & = & -100 \ \mu F \\ C13 & = & -47 \ \mu F \\ C14 & = & -220 \ \mu F \\ C19 & = & -1 \ \mu F \\ C21,C22 & = & -10 \ \mu F \end{array}$ $\begin{array}{rcl} \hline Diodes \\ \hline D1 & = & 1N4007 \\ D2 & = & 1N4V7 \end{array}$ $\begin{array}{rcl} \hline Potentiometer \\ \hline VR1 & = & 10 \ k\Omega \end{array}$ $\begin{array}{rcl} IC1 & = & TDA7088 \\ IC2 & = & TDA2822 \end{array}$	C15	=	-220 pF
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C11 = $-100 \mu\text{F}$ C13 = $-47 \mu\text{F}$ C14 = $-220 \mu\text{F}$ C19 = $-1 \mu\text{F}$ C21,C22 = $-10 \mu\text{F}$ Diodes D1 = $1N4007$ D2 = $1N4V7$ Potentiometer VR1 = $10 k\Omega$ IC1 = TDA7088 IC2 = TDA2822	Electrolytic	c Capacito	ors
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C14 = -220 μF C19 = -1 μF C21,C22 = -10 μF Diodes D1 = 1N4007 D2 = 1N4V7 Potentiometer VR1 = 10 kΩ IC1 = TDA7088 IC2 = TDA2822	C13	=	-47 μF
$\begin{array}{rcl} C19 & = & -1 \ \mu \bar{F} \\ C21,C22 & = & -10 \ \mu \bar{F} \\ \hline \hline Diodes \\ D1 & = & 1N4007 \\ D2 & = & 1N4V7 \\ \hline \hline Potentiometer \\ \hline VR1 & = & 10 \ k\Omega \\ \hline \hline ICS \\ IC1 & = & TDA7088 \\ IC2 & = & TDA2822 \\ \hline \end{array}$	C14	=	-220 μF
C21,C22 = $-10 \mu\text{F}$ Diodes D1 = 1N4007 D2 = 1N4V7 Potentiometer VR1 = $10 k\Omega$ ICs IC1 = TDA7088 IC2 = TDA2822	C19	=	-1 µF
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D1 = $1N4007$ D2 = $1N4V7$ Potentiometer VR1 = $10 kΩ$ ICs IC1 = TDA7088 IC2 = $TDA7088$	Diodes		
D2 = $1N4V7$ Potentiometer VR1 = $10 k\Omega$ ICs IC1 = TDA7088 IC2 = TDA222	D1	=	1N4007
Potentiometer $VR1$ = $10 k\Omega$ ICsIC1= $C2$ =TDA7088	D2	=	1N4V7
$VR1 = 10 k\Omega$ ICs $IC1 = TDA7088$ $IC2 = TDA2322$	Potentiom	eter	
$\frac{ICs}{IC1} = TDA7088$	VR1	=	10 kΩ
$\begin{array}{ccc} \hline & \\ IC1 & = & TDA7088 \\ IC2 & - & TDA2822 \end{array}$	ICs		
IC2 = TDA2822	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.





