FDIM 2009
BUILDATHON

Welcome to FDIM 2009 and this year's Buildathon. In an attempt to help you homebrew some of your equipment, we are focusing on the Manhattan style of construction. This is an outgrowth of the so called ugly construction where components are soldered to each other above a piece of copper clad board. The copper board is a ground plane and parts that require grounding are soldered directly to the copper. Manhattan style introduces small rectangular or circular copper pads plus other special pads that are glued to the copper board, but are insulated from the ground plane. This provides convenient places to connect components to each other and maintain isolation from the ground.

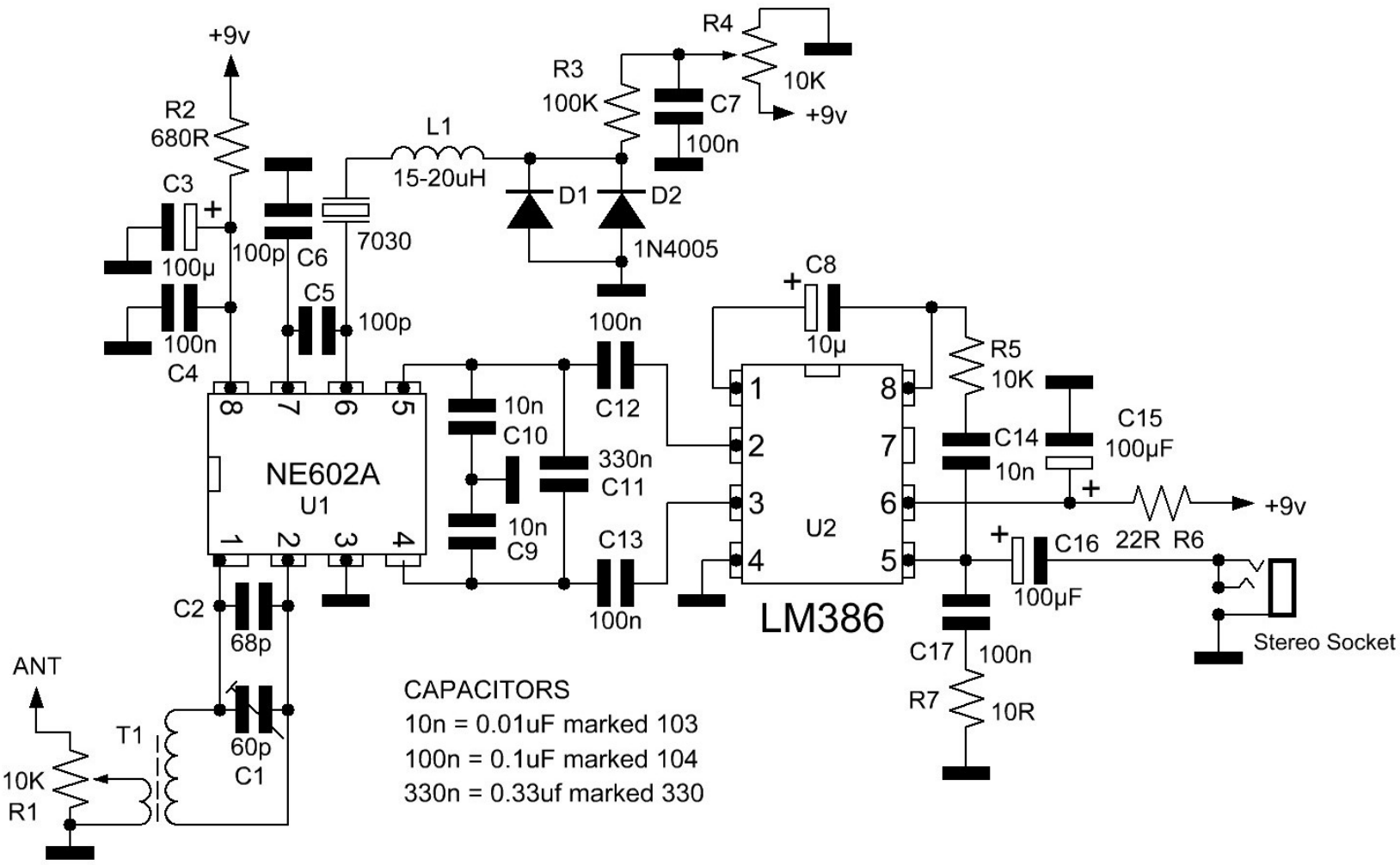
We will be building a direct conversion receiver for forty meters. It is a version of the Sudden receiver designed by George Dobbs, G3RJV. It uses a VXO control of an NE602 mixer with audio amplification being provided by an LM386. The schematic is shown on page 4 and the parts list is on page 5. The advantage of this type of construction is that the builder can quickly assemble and/or modify a circuit without going thru the process of laying out a printed circuit board (or waiting for someone else to do so).

The easiest way to build via Manhattan is to assemble the parts and lay pads down as needed in the same sequence as the schematic. A few exceptions would be controls or jacks which may be placed for the builder/users comfort when operating. A picture of the Sudden with all parts labeled and mounted is on page 6. This one person's way of placing parts. As you work with us you may choose to do things differently. For example, ICs U1 and U2 have sockets soldered on "paddy boards" that are glued to the copper. You may choose to mount the IC directly to the board or to the paddy board. The helpers will guide you through the process. Also note, we used small pads for C1 and the crystal socket. You may use more or less of these to help you with placement of parts. We encourage to experiment with your own parts placement.

We suggest you build the audio section plus the 9 volt buss first. Once completed, it can then be tested and cleared of any trouble before proceeding to the RF section. The audio and bus sections have enlarged pictures on pages 7 and 8. Once tested, assemble the RF sections in U1. Enlargements for these are on page 9. Note, before soldering in the RF section, you may want to mount R1, R4 and the paddy board & socket for U1. Once completed, we will test your Sudden and if needed help with clearing any trouble.

Few building projects are ever complete. We have included a few ideas for modifying you Sudden.

Schematics are found on pages 10 through 11. When you get home, try a few. They may help with better audio, selectivity and frequency coverage.

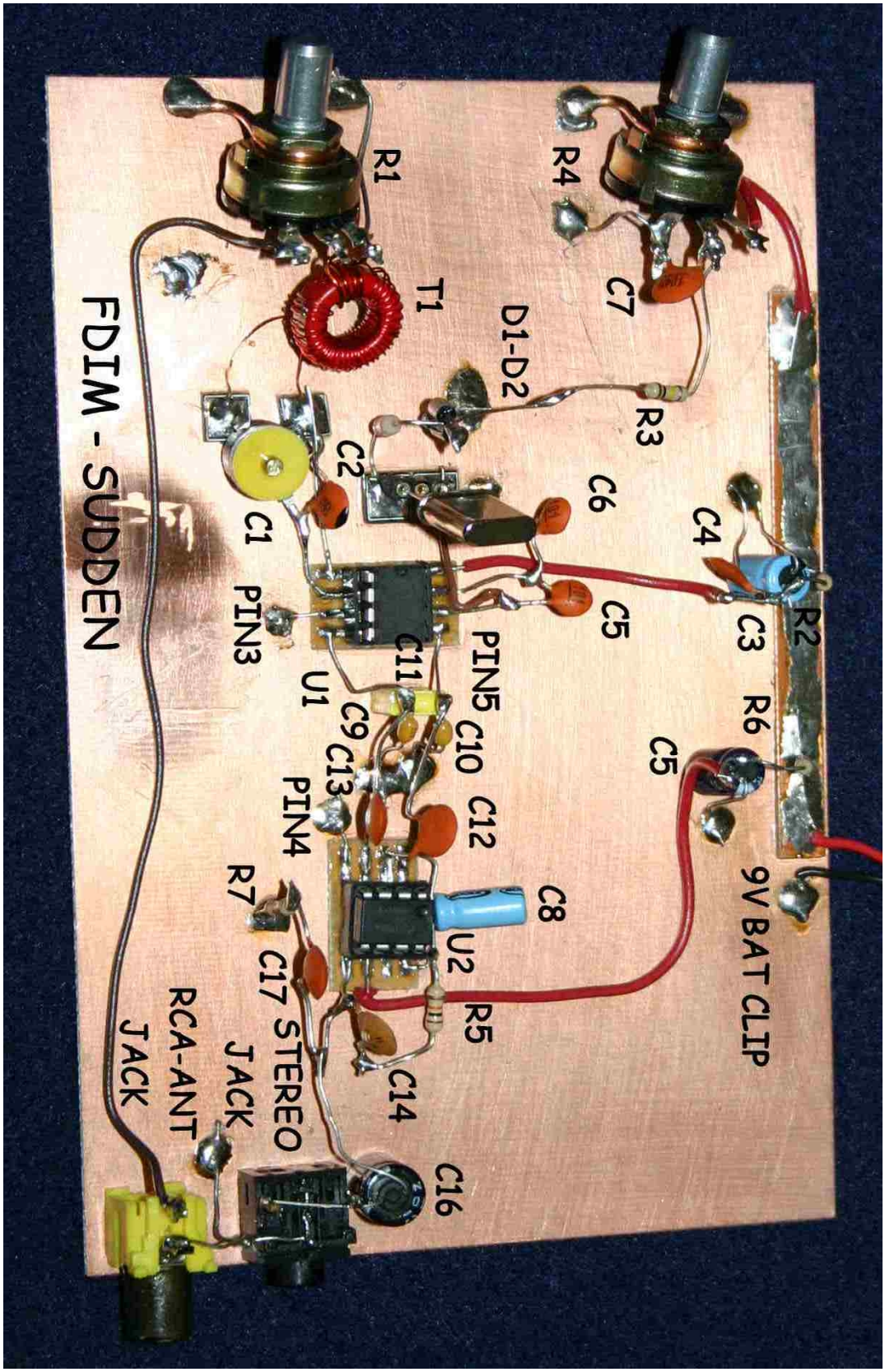

+9v
R2
680R
C3
100µ
100n
C4
100p
C6
7030
C5
100p
L1
15-20uH
R3
100K
C7
100n
R4
10K
+9v
D1
D2
1N4005
100n
C8
10µ
NE602A
U1
10n
C10
330n
C11
10n
C9
100n
C12
C13
100n
C2
68p
60p
C1
T1
ANT
10K
R1
LM386
U2
R5
10K
C14
10n
C15
100µF
+9v
22R
R6
C16
100µF
C17
100n
R7
10R
Stereo Socket
CAPACITORS
10n = 0.01uF marked 103
100n = 0.1uF marked 104
330n = 0.33uf marked 330

FDIM Buildathon SUDDEN RECEIVER PARTS

C1 -	60pf trimmer
C2-	68pf marked 68
C3,C15, C16	100uF electrolytic
C4,C7, C12, C13,C17	100nF=0.1uF marked 104
C5, C6,	100pf marked 101
C8	10 uF electrolytic
C9, C10, C14	10 nf = .01uF marked 103
C11	330 nf marked 330
D1, D2	1N4005 Diode

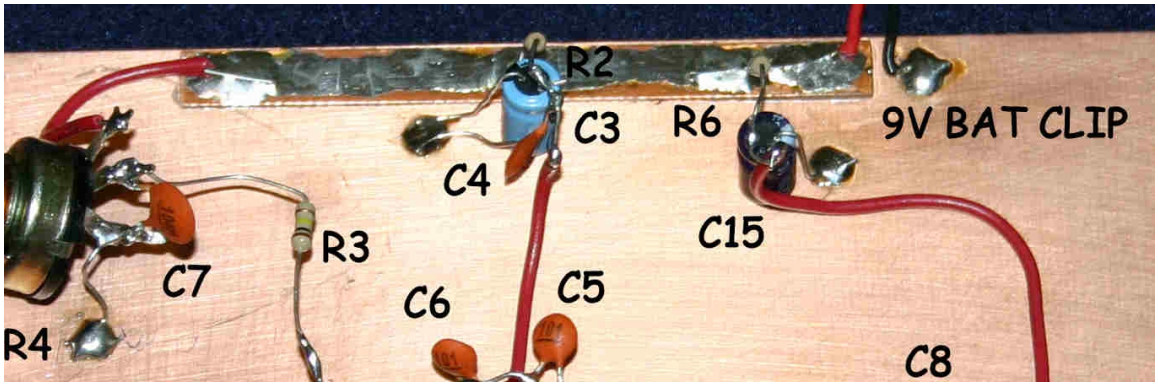
R1, R4 -	10Kohm linear taper potentiometer	
R2 -	680 ohm ¼ watt	Blue-Gray-Brown
R3-	100K ohm ¼ watt	Brown-Black-Yellow
R5-	10Kohm ¼ watt	Brown-Black-Orange
R6-	22 ohm ¼ watt	Red-Red-Black
R7-	10 ohm ¼ watt	Brown-Black-Black

Crystal - 7030kHz & 7040kHz
3 pin SIP xtal socket
L1 - 15 – 20 uH (choice)
T1 – T50-2 Core – 4Turns primary - 33 Turns Secondary
Magnet wire
stereo headphone connector
9 volt battery snap
9 volt battery
U1 – NE602
U2 - LM386
2 8 pin DIP sockets & 2 QRPme MePads
10 QRPme MePad ¼" squares
2 ¼" pcb strips
1 tube Superglue

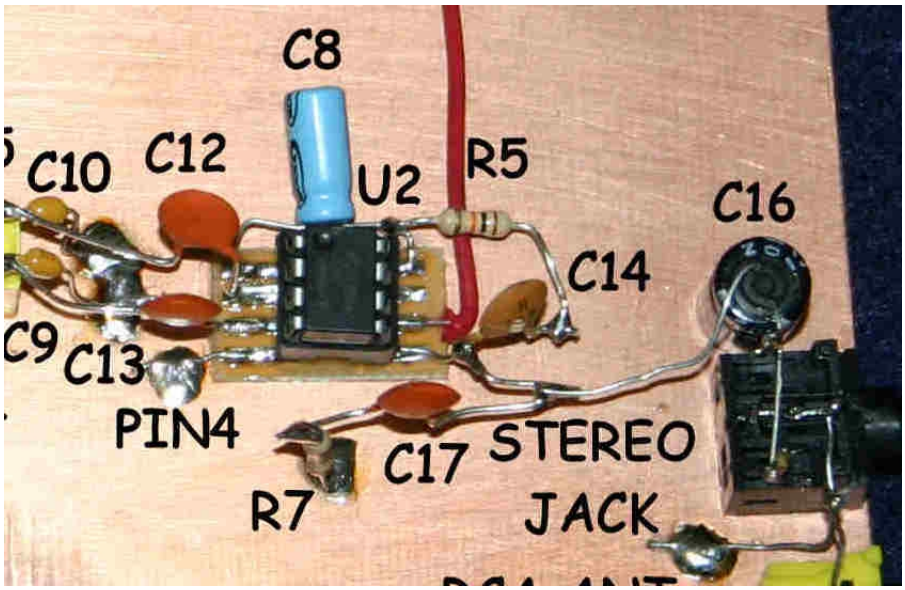


NOTE: the C5, just below R6, is actually C15….

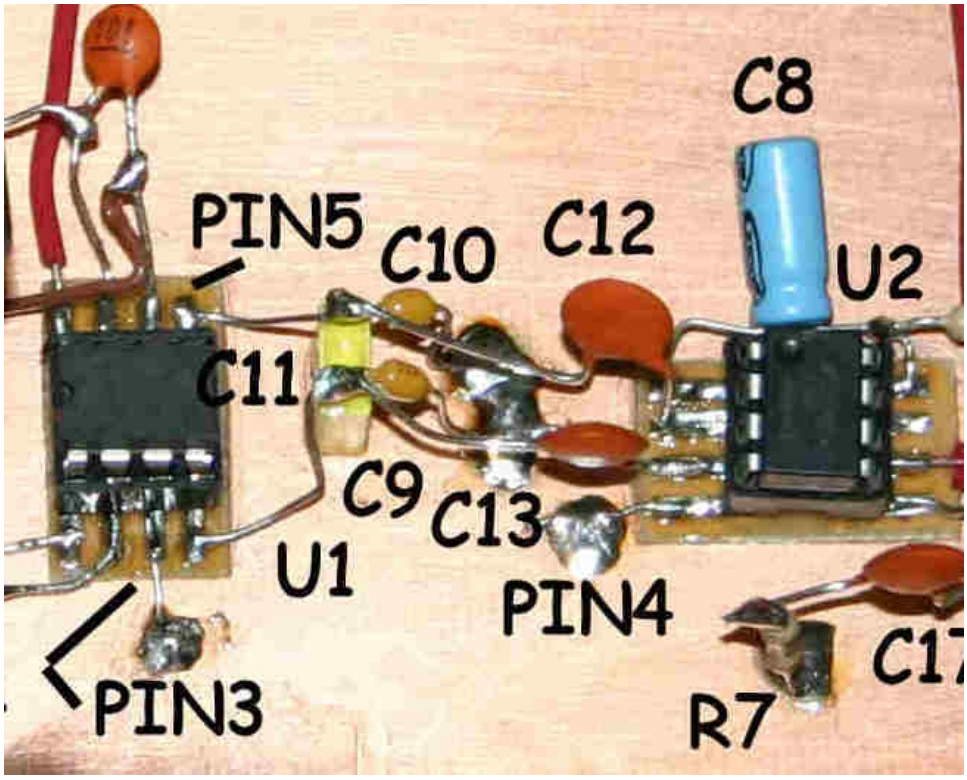
AUDIO AND 9 VOLT BUSS ENLARGEMENTS



9 VOLT BUSS

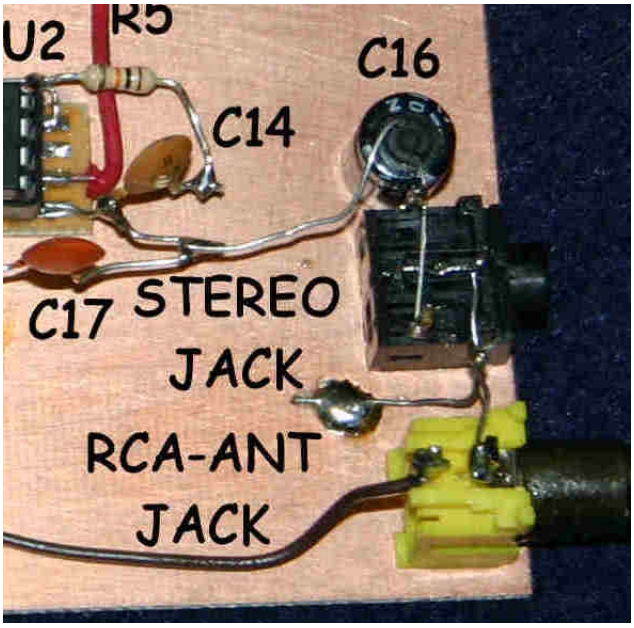


DETAILS OF U2 CONNECTIONS



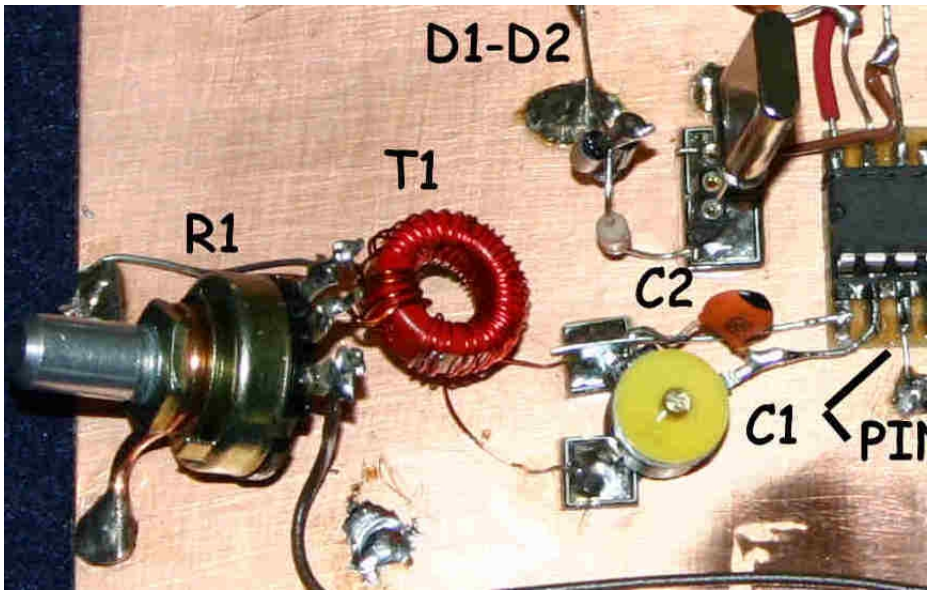
AUDIO ENLARGEMENTS -continued

AUDIO CONNECTIONS U1 TO U2

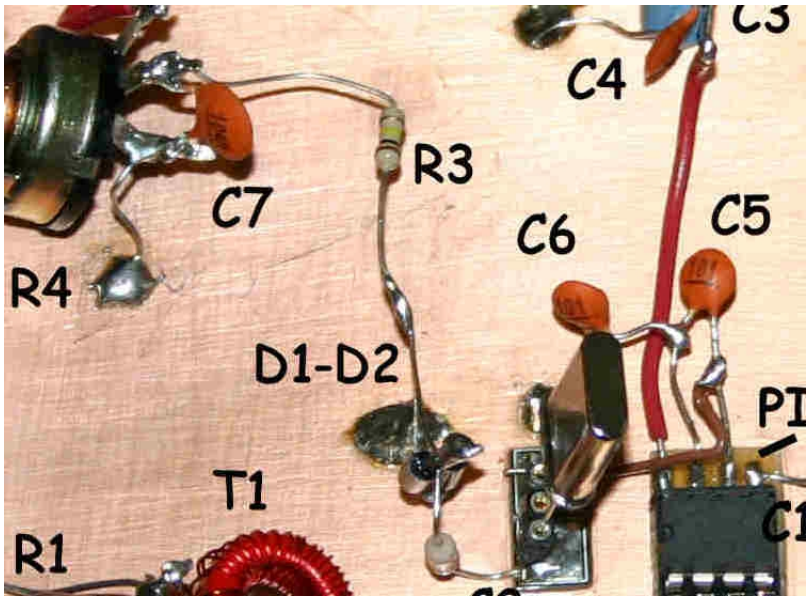


AUDIO OUT TO JACKS

U1 RF SECTION ENLARGEMENTS

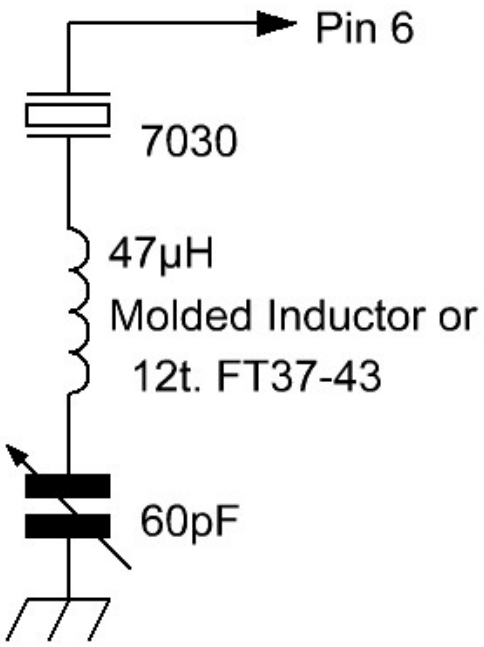


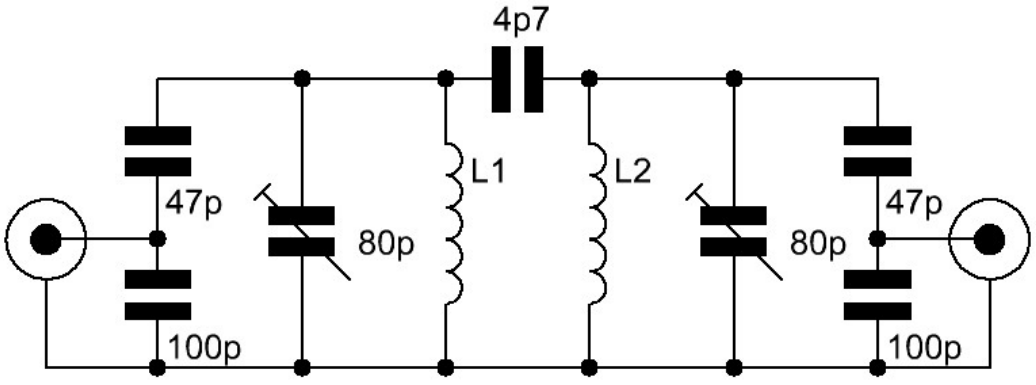
RF INPUT SECTION



VXO CONTROL SECTION

SUDDEN MODIFICATIONS





L1 & L2 = 32t. 26swg on T50-2 Core

40m Band-pass Filter

SUDDEN MODIFICATIONS-continued

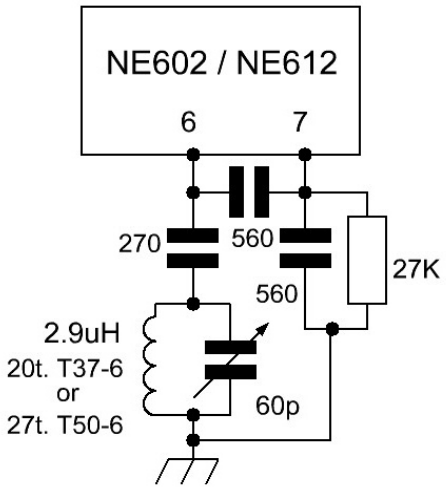
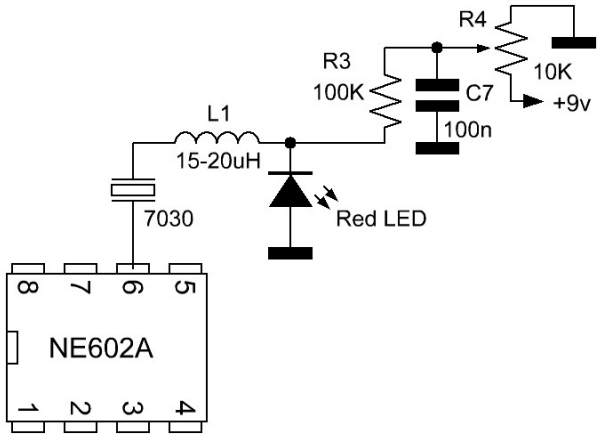


FIG.4. Oscillator Values 40m.

Sudden LED Modification



Try using a red LED in place of the 1N4005 diodes for the varactor tuning.

Red LEDs work better than almost any other colour and the larger LEDs work less well than the small ones … don't ask me why!