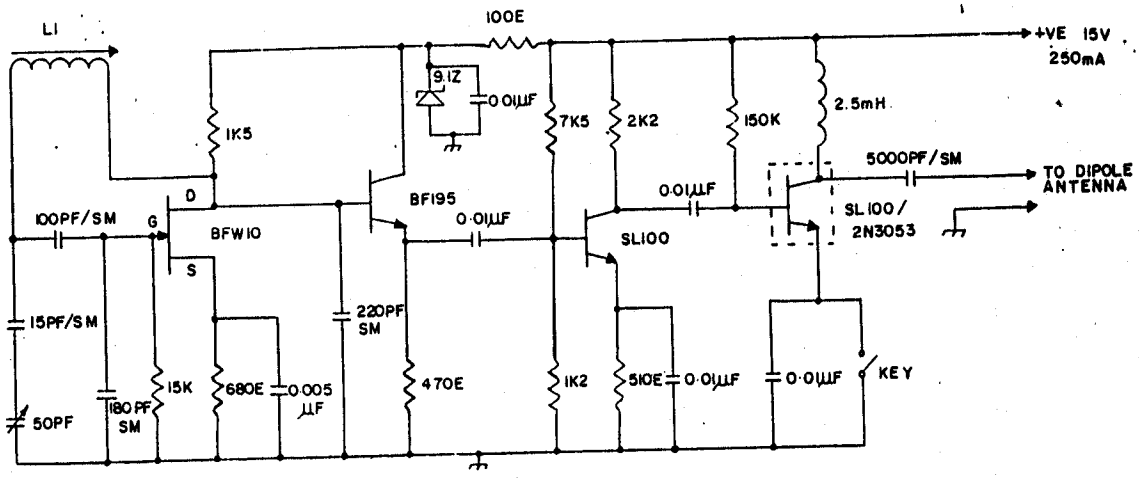
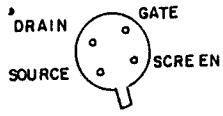
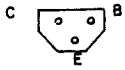
40M VFO CONTROLLED QRPP Tx



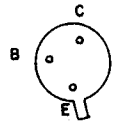
BFW10



BF195



SL100/2N3053

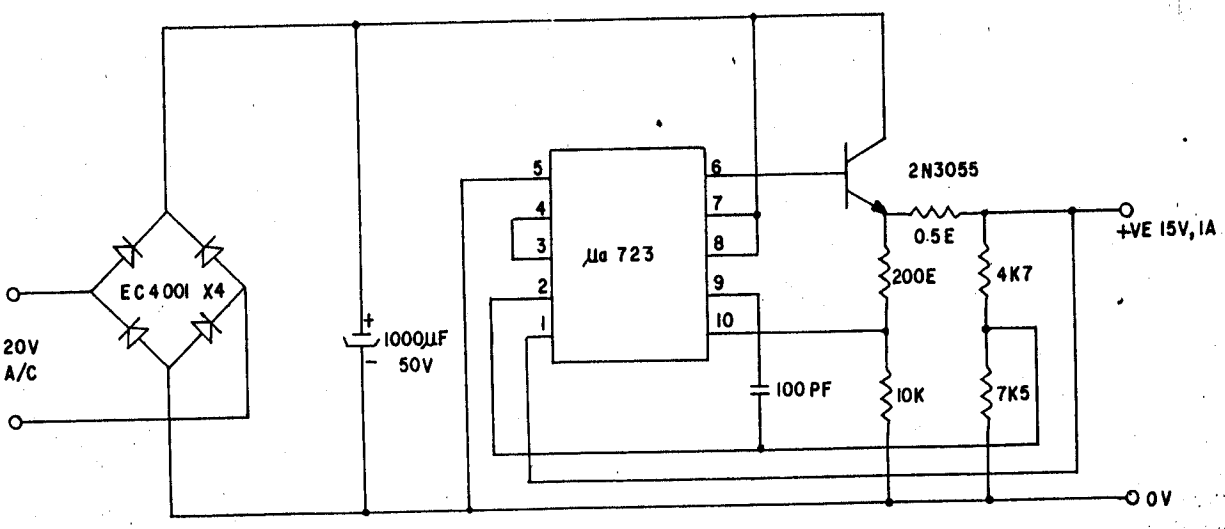


NOTE

SM – SILVER MICA

L1 – 30T 34 SWG CLOSE WIND ON 1CM DIA · BOBBIN WITH CORE

VFO CONTROLLED QRPP Tx

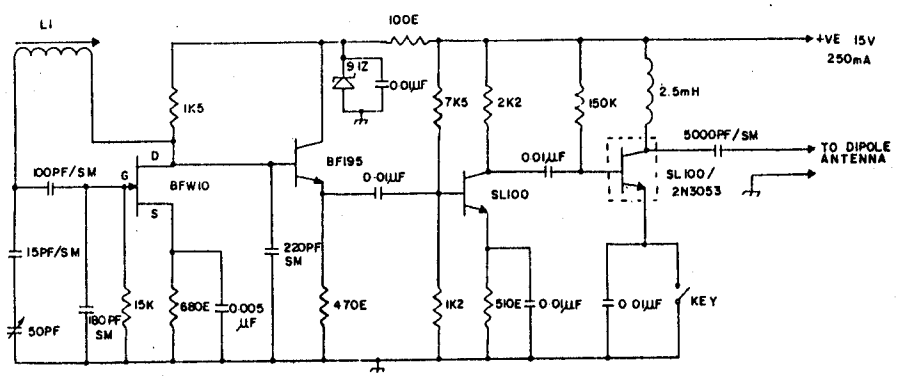


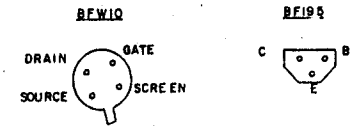
BOTTOM VIEW OF µa 723

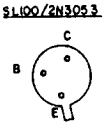
A 15V, 1A REGULATED POWER SUPPLY

BY. GURURAJ
VU2VIZ

40M VFO CONTROLLED QRPP Tx





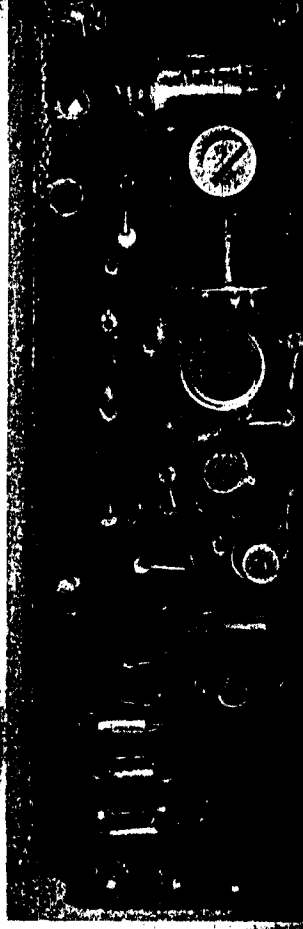


NOTE

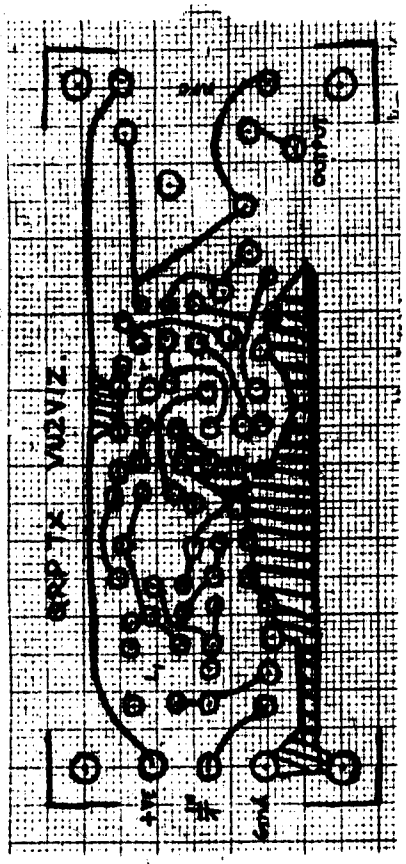
SM – SILVER MICA

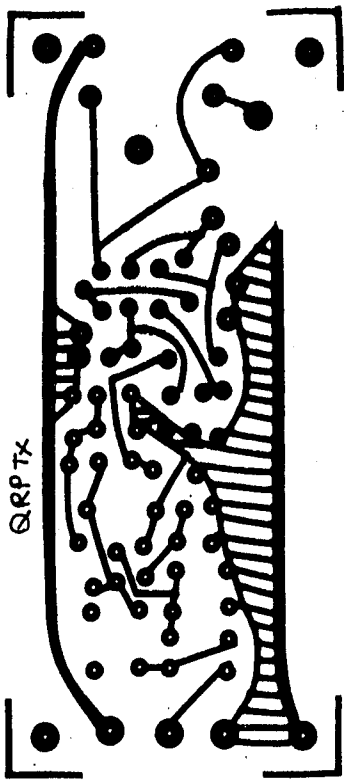
L1 – 30T 34 SWG CLOSE WIND ON 1CM DIA BOBBIN WITH CORE

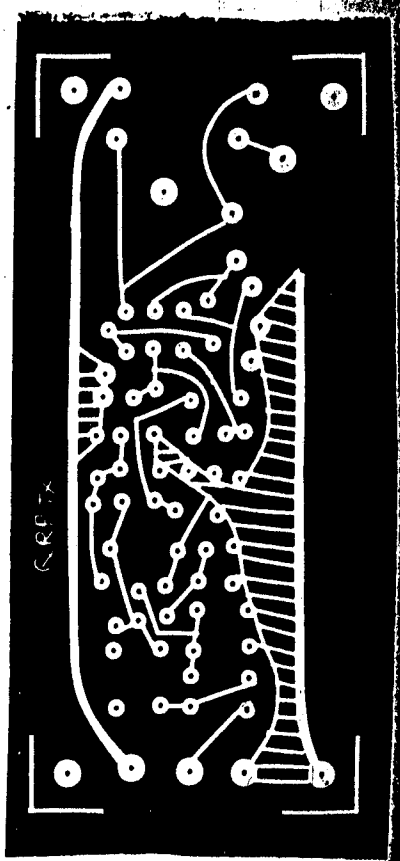
VFO CONTROLLED QRPP Tx



The transformation from circuit diagram to the finished project is shown below. (left to right) (a) layout sketch on graph paper made to actual size; (b) art work pasted onto clear sheet, constituting the master; (c) the negative made from the artwork, from which the sensitised copper clad is exposed and etched to yield the printed circuit board.







QRP Tx-Fun Unlimited

Solid (state) Fun

S. CHANDRA SEKARAN, VU2SCN

It all started like any other project, innocently. 2SCX (Now 2SCN) went to N.A L. to meet 2VIZ & 2DUZ and all of us met 2GZ OM Hari. OM was toying with a xtal controlled SL 100 tx and gave us the circuit. Little he realised at the time that it would blossom into a full fledged VFO controlled solid state 1 Watt QRPP.

At the same at VITM, 2VTM OM Marcus &2RQ JAM were trying to develop a solidstate Rx and the Vacker osc VFO tried for that purpose was very excellent. Just for the fun of it the VFO was connected to a 2N2222 Class C amp and fired. We could not believe our ears when we got a report of 549 from 2NUT Raj from Trivandrum!.

2N2222 was found to be getting objectionably hot when it was giving an output of 300mw and the project was temporarily stopped as our dr OM Marcus & co was busy with their morning QTH work. Later we replaced the 2N2222 with an SL100 & another SL100 as "final". Reports from all over South India were 578 to 598, with the usual complaint that "Tone is not quite T9 OM". Our attempt to improve the tone was not very successful and for a while we continued with the same setup. The culprit was found to be the final tuned coil and replacing it with an RFC cured the problem. Report of the tone now a was "Real T9" and on many occassions it was mistaken to be Xtal controlled QRP! The Tx was exhibited by 2VIZ OM GURU-Joint sec., at the BARC Club meeting and he gave a lively talk on the QRP. The photograph (Blown upto 1·1/2 times) shows the QRPP clearly.

DESCRIPTION ABOUT THE CIRCUIT:

The VFO is a Vacker osc and it has a 9.1 V Zener to stabilise the Vdd. BFW10 Fet is used in the VFO and the output is through an emitter follower (BF 194 is used in the emitter follower). The whole circuit is well shielded and the frequency drift was measured to be less than 10Hz (after 15 mts warmup) for 24 Hrs. The output of the VFO was measured to be 1v p-p.

The VFO is coupled to the next stage a SL100 operating in class mode. 15V DC given to this stage and it has 2200 ohm resistor as collector load. We tried both Inductive load & Tuned coil as load and it was not doing its job properly (That was the reason for the complaint "Tone not quite T9" with Resistive load the output was measured to be 3.5V p-p.

The Final is another SL100 (or 2N3053) mounted with a push-on type heatsink. This stage like the previous stage is supplied with 15V DC. Of the three methods of biasing the base of the final stage, the one shown in the circuit was found to be very stable. The calculated output impedance of the Tx is around 50 ohms and no matching network is used. Measurement also show that the harmonic contents are well below "the objectionable level".

The TX requires 15V DC at 250 MA and we found that it requires a power supply that is really "hot". For this reason 2VIZ OM Guru wired up the stiffly regulated power supply using the regulator IC uA723 and a 2N3055 for higher current regulation. This can also be used as general purpose power supply and it gives out 15V regulation up to 1A.

Many HAMS have copied the circuit and so far the report is very encouraging. It is regularly used now by 2WIZ & 2VIZ. So you can also try this fun unlimited mode.