

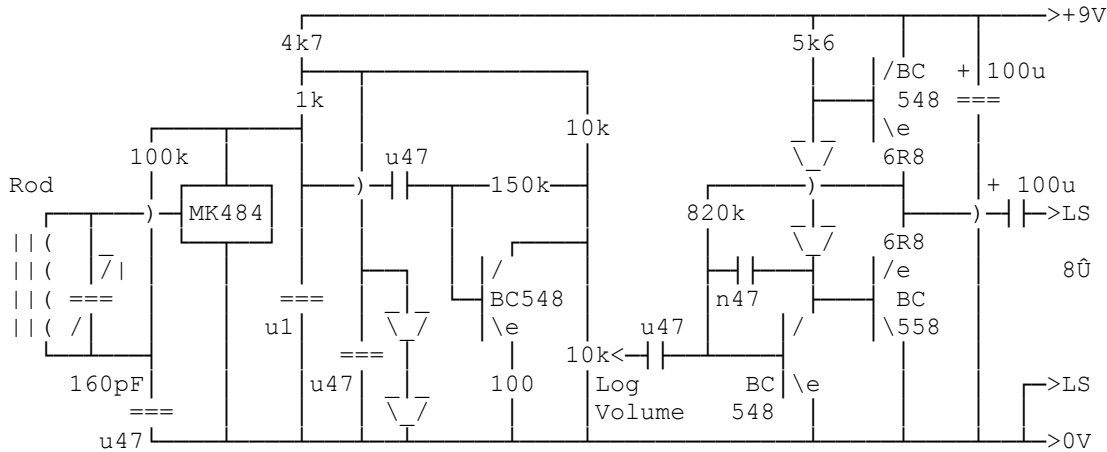
AM TRF Radio

By G8MNY

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(8 Bit ASCII graphics use code page 437 or 850)

In a recent construction contest, we all had to build this QUASAR project kit No 3063 "One Chip AM Radio". Here I have redrawn the circuit in a more logical way.



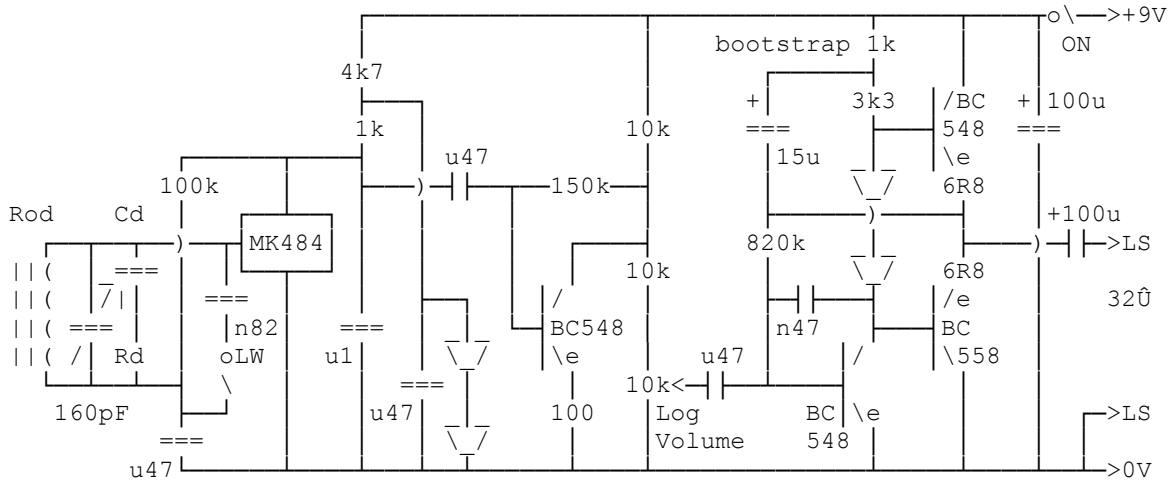
Construction was easy, about 30 min to do a good job. Most kits work OK.

The Tuned Radio Frequency Rx is fairly sensitive, but the high RF gain in this not flat & there is a tendency to get RF oscillation at the high frequency end of the band. Selectivity is surprisingly good. N.B. the IC runs at 1.2V maintained by the 2 diodes. 1.5 of an LED is a bit too high. The 1k load & 100k bias are said to be the optimum values for the IC's detecting & AGC action.

The AF amp is very poor, why they did not use an IC I don't know. The 1st class A stage in run on next to no voltage so it distorts. The following class A driver stage has too little standing current to drive the output NPN BC548 to deliver +ve current swings into the 8 ohm LS.

There is no LW option, Ideally a 2nd coil on the ferrite rod is needed.

MY IMPROVEMENTS



Oscillation at HF end of MW.  
 By adding a light damping CR across the tuned circuit stops the oscillation, the Cd is kept very small, a 10pF, & Rd = 330k did it OK without degrading the performance.

1st AF amp distortion fault.  
 Running this AF amp from +9V gives lots more unclipped gain, but the unregulated DC feed can lead to instability with a high gain output stage, so I cut the track to the pot & added a 10k in series to attenuate the gain a bit.

Bootstrap.  
 I added a bootstrap to the output by changing the 5k6 for a 1k from +9V & a 3k3 to the NPN base, with the centre tap connected to a new cap to the output NPN / PNP. This provides a lot more +ve output drive current, without increasing the standing current & also increased the gain.

LS.  
 Using a higher 32 ohm LS also helps by reducing the needed LS current by 4, but I did not have one & had to make do with the 8Ω, which worked OK once boxed up.

LW.  
 Adding a switched 820 or 910pF gave tuning over 1 LW station @ 198KHz OK. I put it across the unused 60pF tuning cap section & switch both in circuit to gain the max tuning range. It is not very sensitive done this way, switching the coil to a bigger one would me much better!

ON OFF  
 I added an ON-OFF switch too.

Why Don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP