

Pin diode attenuator circuit for ATLAS 210X and variants

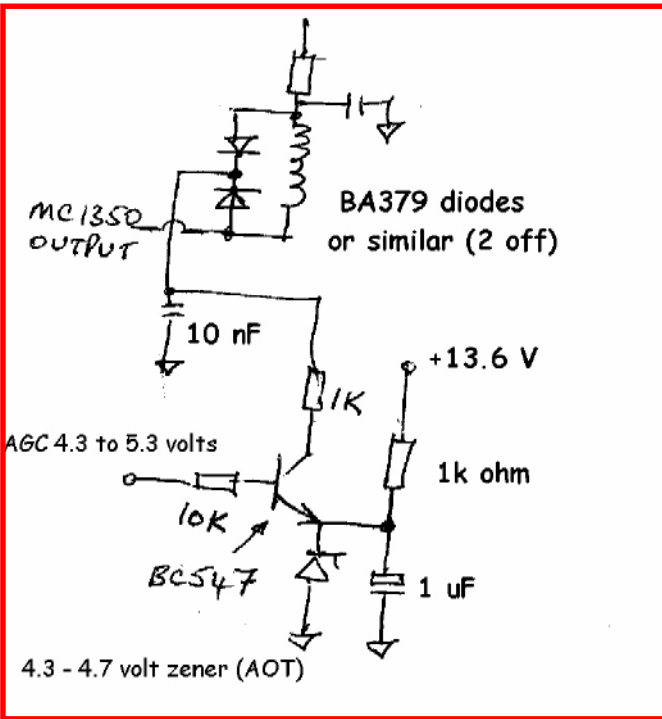
Kevin Murphy, ZL1UJG

I considered that the existing AGC circuit for gain reduction in the 210X had only about 60- 70 dB range, relying only on the MC1350. (this device is also used in the Elecraft K2)

With an unmodified unit the AGC voltage range is 4.3 volts to 5.3 volts. This is somewhat less than the manufacturers voltage range since the device is operating on a 10V supply rather than the 12 volts as seen on manufacturers data.

I have tried PIN diodes across the MC1350 transformer and significant gain reduction was made.

The circuit is untried but works as follows.



The AGC voltage range is ~4.3 to 5.3 volts (unmodified)
As the AGC voltage increases, the transistor eventually turns on. This is due to the emitter voltage being held high by the Zener diode. The zener is partly fed from the supply and also via the current through the transistor.

The current through the transistor turns the PIN diodes on shunting RF away from the transformer.

The PIN diodes and 10 nF capacitor could be mounted on the PCB close to the transformer and the other devices could be on a little piggy back board (eg veroboard)

The S meter will probably need to be adjusted.

Another problem which I have also found is that the AGC detector is driven by a square wave due to overloading in the preceding AF amp (and also because the detector is been driven from a hi-Z amp)

I have redesigned the circuit of the CA3086 in my unit so that the AGC detector is driven from a emitter follower. The AGC detector is now being fed with a Signal with no apparent distortion.

In fact the AF output is now extracted from the same point.

The unmodified circuit may also be a cause of distortion at high signal levels. I will put a circuit on at a later date.

I have done other important mods to my unit and will put them on as time allows.

Kevin Murphy

February 21, 2003