

Transistor PA Biasing

By G8MNY

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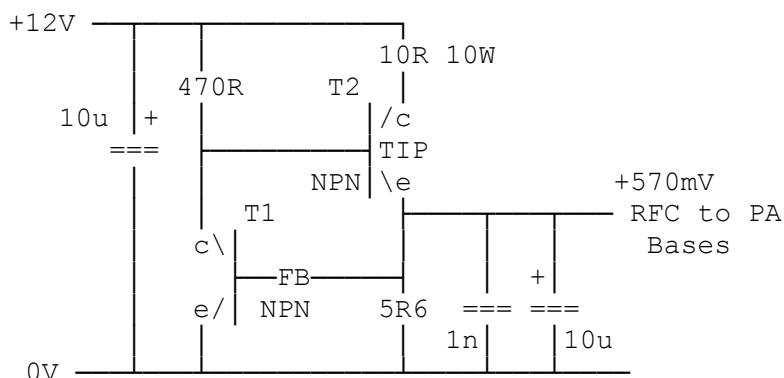
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Here is a simple circuit that can deliver the peak base current needed for linear SSB operation, that works very well. It uses 2 TIP type NPN transistors, 3 Rs, & suitable RF filtering for the band in use. T1 must be bolted close to the PA devices so that it's emitter base voltage can tracks the PA temperature, the base is protected from RF with a ferrite bead. T2 needs heat sinking so it is also convenient to mount it on close to T1.

Bias adjustment can be done by adjusting the 470R but never change it just for a preset without a safe minimum series R!

PTT

Switched



The MAX base current, about 1A is available, this is limited by the 10R & should be enough current for a 50W UHF or 100W VHF or 200W HF PA.

The difference in power is because bipolar transistors have 2 gain figures, the DC gain HFE (also called Beta) & the much smaller AC gain Hfe at the frequency of operation. The bias current needed is Hfe mode, where the gain for most RF transistors drops from a DC HFE of up to a 100, down to below single figures like Hfe of 0.1 to 5 @ RF! Even at 1 there still as lot of power gain, due to the voltage swing difference.

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73 De John, G8MNY @ GB7CIP