Bias supply for r.f. power amplifiers

Many designers resort to the use of a single forward-biased diode voltage source when attempting to operate transistor r.f. power amplifiers in the class AB linear mode. This can require the selection of a suitable diode and thus does not lend itself to reproducible design.

The circuit shown not only offers inproved performance, typically 1Ω output impedance and ±3% output voltage change for ±2½V input change, but also allows adjustment of the quiescent collector current. A p-n-p silicon device is used as an amplified diode variable voltage source. If this is in thermal contact with the r.f. device's heatsink, a significant degree of thermal stabilization is obtained. The emitter follower lowers the supply output impedance. The devices shown can be replaced by similar readily available transistors.

C. P. Bartram,
Dept. of Metallurgy
and Science of Materials,
Oxford.