

Spreading bias over more mosfets in Aleph 5

As usual, Grey nails it down. At 25 watts or so, the transistor "never" fails. At 50 watts, we see some failures.

As a rule, the higher bias figures per device are desirable, and you could optimally look for 1 amp bias per device with supplies at +25 to 30 volts or so. At the same time, paralleling devices at somewhat lower bias can give you greater transconductance, and this was chosen in designs like the Aleph 60 as it gives more bottom end control.

When you parallel devices in an Aleph but want to vary the bias per device, you look to the value of the Source resistances on the current source (the bank on the positive half), and also (referring to the Aleph 60 schematic) resistor R19.

After you get the DC figure you are looking for, you want to adjust the AC gain of the current source so that the current source provides about 50% of the output AC current.

The easiest way to do this is to build the circuit without R21 and operate it at 10 watts or so into a load while measuring the AC voltage across R46-51 which are the Source resistors on the negative half of the amp. Put in a value for R21 which halves the AC voltage across R46-51, and you'll know that the current source is doing half the work.

Another issue that comes up with more devices in parallel is that the capacitance of the circuit goes up, and with it the nonlinearity of this capacitance, which at high frequencies starts showing up in the distortion curve. Somewhere around 12 devices in parallel, you have to start modifying the circuit to deal with this, depending of course on the devices. With IRF250, this would be around 6 devices.

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