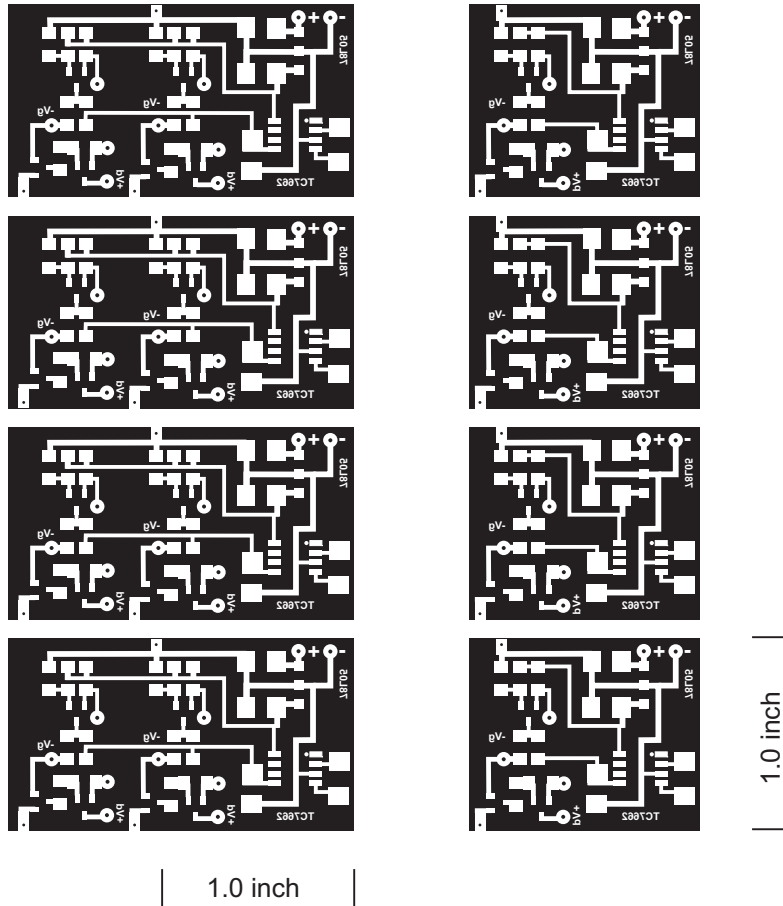


FOIL SIDE VIEWS

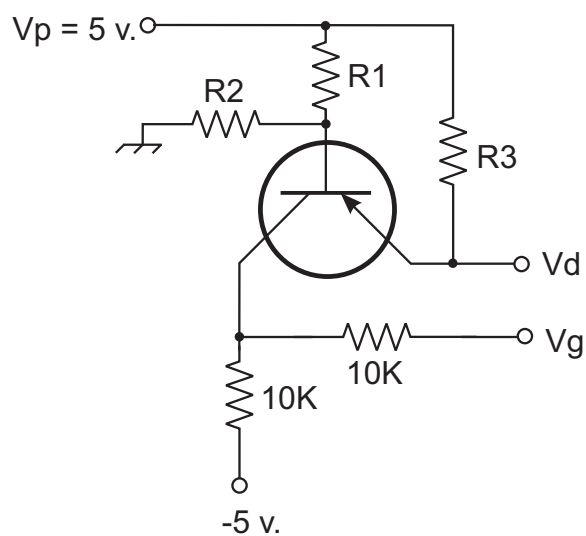
Note the images below are are inverted images for contact printing with transparency printed side in direct contact with pc board.

There are two versions of the board - one is for circuits using two GaAs devices.

8 October 2007 An additional protective circuit was added using two MOSFET's to turn off the drain supply to the GaAsFET if the negative gate voltage is not present. See page 3.



GaAsFET Preamp Biasing Circuit



$$R3 = (Vp - Vd)/Id$$

$$R1 = R2 (Vbe + Vp - Vd)/(Vd - Vbe)$$

Vd = FET drain voltage

Vp = Supply voltage = 5 v.

Vbe = base-emitter voltage (0.65 - 0.7 v.)

Id = drain current

NOTES:

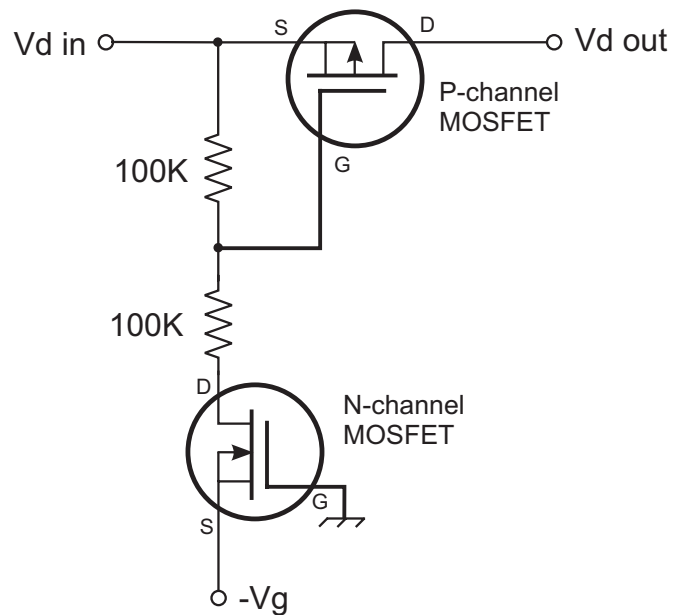
R2 is chosen to start, and the values of R1 and R3 are calculated.
A good starting value for most GaAs preamps is 1500 - 2700 ohms.

Make sure to consider any resistors placed in series with the GaAsFET drain when calculating Vd. For instance, if a 50 ohm resistor is used in series with the drain on the circuit board and Id = 10 mA, then with a drain voltage of 3.0 volts, Vd = 3.0 volts + (50 ohms * 10 mA) = 3.5 volts.

Any PNP SMD transistor should work in the circuit for GaAsFET LNA's. I use MMBT2907's.

Zack W9SZ

Shut-off Circuit



NOTES:

The positive drain voltage will not be present if the negative gate voltage is not present. The drain voltage will be turned on at or slightly after the time the gate voltage is active. This should prevent loss of GaAsFET's due to excessive drain current spikes on start-up.

The devices I use are the NTR4501NT1 N-channel MOSFET and NTR4101PT1 P-channel MOSFET available from Digi-Key.

Zack W9SZ