

Two Stage GaAs FET LNA Bias Supply

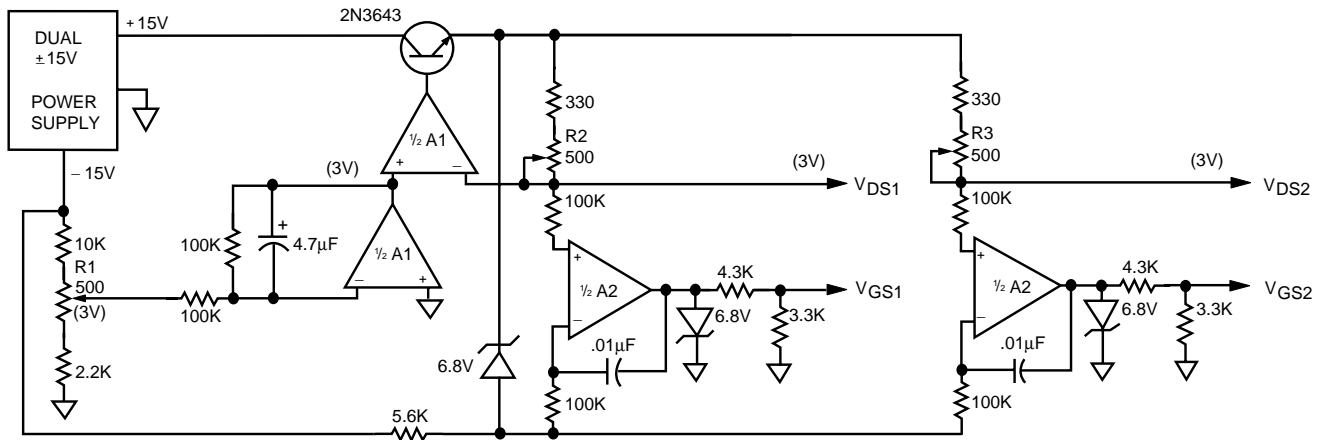
INTRODUCTION

This regulator is recommended to bias a two stage, grounded source GaAs FET LNA with constant drain currents¹. With minor modification, two additional bias stages could be added to this circuit.

SPECIFICATIONS

$V_{DS} = 2.8$ to 3.2 volts, adjustable
 $I_D = 8$ to 20 mA, adjustable

CIRCUIT DIAGRAM

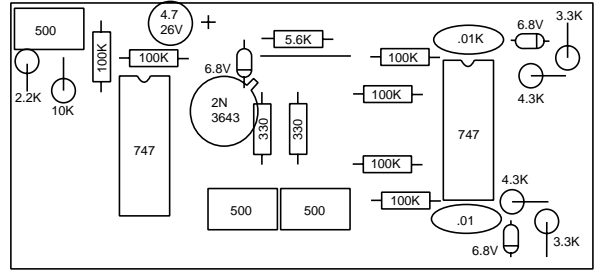
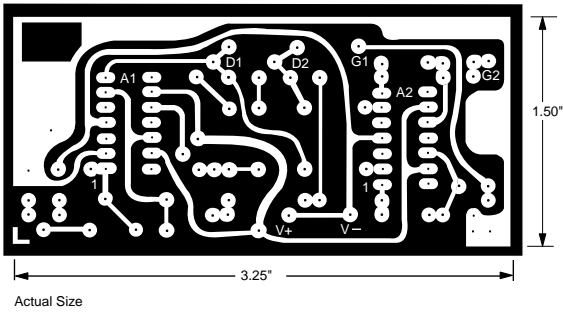


A1 and A2: 747 Dual Op-Amp
 All Resistors: ¼ Watt

CIRCUIT OPERATION

When the ±15 volt power supply is turned on, integrator A1 ramps on which allows V_{DS} and $-V_{GS}$ voltages to also ramp on. The drain to source voltage (V_{DS}) is a constant voltage, which is adjusted by the variable resistor R1. The constant drain current (I_D) is maintained by the comparator A2 and is adjusted by R2 for stage one and R3 for stage two. Nodal voltages are shown in the circuits Of $I_{D1} = 10$ mA and $I_{D2} = 20$ mA. The resistance values for the above conditions are $R2 = 350\Omega$ and $R3 = 10\Omega$.

CIRCUIT BOARD AND LAYOUT



REFERENCE

1. D. Lane, " 'Smart' Bias Supply for Delicate MW Transistors," *Microwave Journal*, June 1978, pp. 126-142.

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