

DEVICE DESCRIPTION

The ZNBG series of devices are designed to meet the bias requirements of GaAs and HEMT FETs commonly used in satellite receiver LNBS, PMR cellular telephones etc. with a minimum of external components.

With the addition of two capacitors and a resistor the devices provide drain voltage and current control for three external grounded source FETs, generating the regulated negative rail required for FET gate biasing whilst operating from a single supply. This negative bias, at -3 volts, can also be used to supply other external circuits.

The ZNBG3113/14 includes bias circuits to drive up to three external FETs. A control input to the device selects either one of two FETs as operational, the third FET is permanently active. This feature is particularly used as an LNB polarisation switch. Also specific to LNB applications is the 22kHz tone detection and logic output feature which is used to enable high and low band frequency switching.

The facility to control the tone switching delay is provided. This allows the rejection of other lower frequency tones that may be present in multiple LNB applications.

Drain current setting of the ZNBG3113/14 is user selectable over the range 0 to 15mA, this is achieved with addition of a single resistor. The series also offers the choice of drain voltage to be set for the FETs, the 3113 gives 2.2 volts drain whilst the 3114 gives 2 volts.

These devices are unconditionally stable over the full working temperature with the FETs in place, subject to the inclusion of the recommended gate and drain capacitors. These ensure RF stability and minimal injected noise.

It is possible to use less than the devices full complement of FET bias controls, unused drain and gate connections can be left open circuit without affecting operation of the remaining bias circuits.

To protect the external FETs the circuits have been designed to ensure that, under any conditions including power up/down transients, the gate drive from the bias circuits cannot exceed the range -3.5V to 1V. Furthermore if the negative rail experiences a fault condition, such as overload or short circuit, the drain supply to the FETs will shut down avoiding excessive current flow.

The ZNBG3113/14 are available in QSOP20 for the minimum in device size. Device operating temperature is -40 to 70°C to suit a wide range of environmental conditions.

FEATURES

- Provides bias for GaAs and HEMT FETs
- Drives up to three FETs
- Dynamic FET protection
- Drain current set by external resistor
- Regulated negative rail generator requires only 2 external capacitors
- Choice in drain voltage
- Wide supply voltage range
- Polarisation switch for LNBS
- 22KHz tone detection for band switching
- Programmable tone delay
- Compliant with ASTRA control specifications
- QSOP surface mount package

APPLICATIONS

- Satellite receiver LNBS
- Private mobile radio (PMR)
- Cellular telephones

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