

### 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 ZNBG3210/11 includes bias circuits to drive up to three external FETs. A control input to the device selects either one of two FETs as operational using 0V gate switching methodology, the third FET is permanently active. This feature is particularly used as an LNB polarisation switch. Also specific to LNB applications is the enhanced 22kHz tone detection and logic output feature which is used to enable high and low band frequency switching. The detector has been specifically designed to reject interference such as low frequency signals and DiSeqC™ tone bursts - without the use of additional external components.

Drain current setting of the ZNBG3210/11 is user selectable over the range 0 to 15mA, this

is achieved with the addition of a single resistor. The series also offers the choice of FET drain voltage, the 3210 gives 2.2 volts drain whilst the 3211 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.

In order 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 ZNBG3210/11 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 - supporting zero volt gate switching topology.
- 22kHz tone detection for band switching
- Compliant with ASTRA control specifications
- QSOP surface mount package

### APPLICATIONS

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