19-XXXX; Rev 0; 6/11

EVALUATION KIT AVAILABLE

Complete Direct-Conversion L-Band Tuner

MAX2121

General Description

The MAX2121 low-cost, direct-conversion tuner IC is designed for satellite set-top and VSAT applications.

The device directly converts the satellite signals from the LNB to baseband using a broadband I/Q downconverter. The operating frequency range extends from 925MHz to 2175MHz.

The device includes an LNA and an RF variable-gain amplifier, I and Q downconverting mixers, and baseband lowpass filters and digitally controlled baseband variable-gain amplifiers. Together, the RF and baseband variable-gain amplifiers provide more than 80dB of gain control range.

The device includes fully monolithic VCOs, as well as a complete fractional-N frequency synthesizer. Additionally, an on-chip crystal oscillator is provided along with a buffered output for driving additional tuners and demodulators. Synthesizer programming and device configuration are accomplished with a 2-wire serial interface. The IC features a VCO autoselect (VAS) function that automatically selects the proper VCO. For multituner applications, the device can be configured to have one of two 2-wire interface addresses. A low-power standby mode is available whereupon the signal path is shut down while leaving the reference oscillator, digital interface, and buffer circuits active, providing a method to reduce power in single and multituner applications.

The device is the most advanced broadband/VSAT DBS tuner available today. The low noise figure eliminates the need for an external LNA. A small number of passive components are needed to form a complete broadband satellite tuner DVB-S2 RF front-end solution. The tuner is available in a very small 28-pin Thin QFN package.

Applications

VSATs

Features

- **925MHz to 2175MHz Frequency Range**
- **Monolithic VCO**
  - **Low Phase Noise: -97dBc/Hz at 10kHz**
  - **No Calibration Required**
- **High Dynamic Range: -75dBm to 0dBm**
- **Integrated LP Filters: 123.75MHz**
- **Single +3.3V ±5% Supply**
- **Low-Power Standby Mode**
- **Address Pin for Multituner Applications**
- **Differential I/Q Interface**
- **I²C 2-Wire Serial Interface**
- **Very Small 28-Pin TQFN Package**

Ordering Information

PART	TEMP RANGE	PIN-PACKAGE
MAX2121ETI+	-40°C to +85°C	28 TQFN-EP*

**EP = Exposed pad.*
+Denotes a lead(Pb)-free/RoHS-compliant package.

Functional Diagram