STV6111

8PSK/QPSK low-power 3.3-V satellite tuner IC

Data brief

Features

- RF-to-baseband direct conversion architecture
- Single 3.3-V DC supply, low consumption
- Outstanding performance in heavily loaded spectrum conditions
- Input frequency range: 950 to 2150 MHz
- Supports 1 to 60 Msymb/s using internal filter
- RF-AGC or channel-AGC support
- Extremely low-phase noise, compliant with DVB-S2 requirements using fractional-N synthesizer
- Low external component count
- Flexible crystal frequency output to drive the demodulator and/or other tuner ICs
- Continuously variable gain
- Programmable 6 to 50 MHz cut-off frequency (Butterworth 5th-order baseband filters)
- Specific operating mode for symbol rates up to 220 Msymb/s
- Compatible with 5-V and 3.3-V I^2C bus

Applications

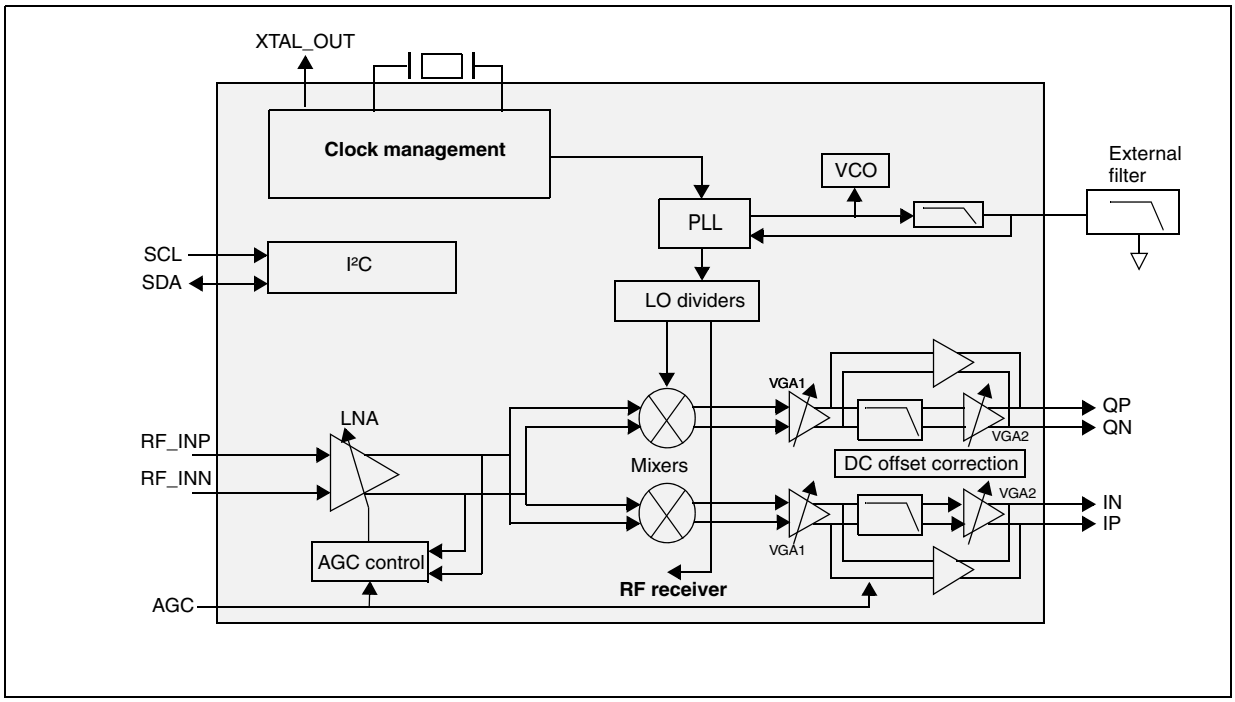
- Direct broadcasting satellite (DBS), satellite modems: BPSK, QPSK, 8PSK, 16/32 APSK modulations
- Set-top boxes, PCTV and iDTV
- Outdoor units

Package

- VFQFPN-32 5 x 5 x 1 mm^3 with exposed pad
- ECOPACK®, RoHS (2002/95/EC) compliant

Description

The STV6111 satellite tuner is a direct-conversion (zero IF) receiver for digital TV broadcasting.



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1 Introduction

In the STV6111 satellite tuner, on the RF input, there is a variable gain, low-noise amplifier (VGLNA). The RF gain is monitored by an automatic gain control (AGC) circuit to ensure an optimal signal level for the two mixers. Each mixer, which down-converts the signal to the baseband, is followed by an AGC-controlled VGA, a low-pass filter and a second VGA.

The local oscillator signals are provided by an integrated fractional-N phase locked loop (PLL), which contains an on-chip voltage-controlled oscillator meeting stringent phase noise requirements. The PLL loop filter is partly integrated. The local oscillator frequencies are programmable between 950 MHz and 2150 MHz.

The comparison frequency for the phase-frequency detector is generated by dividing the crystal oscillator reference frequency. The crystal frequency may be within the range 15 MHz to 31 MHz depending on the application.

Features	Benefits
Variable gain low noise amplifier input structure	Allows flexible compromise between linearity and noise figure allowing the most difficult signals to be extracted in the most congested and noisy conditions
Single flexible Xtal	Wide choice of crystal frequencies with robust clock buffer to drive second tuners and demodulators allowing eBoM savings
Fractional-N PLL	Low phase noise for low packet error rate under extreme conditions (e.g. low symbol rates), fast locking
High symbol rate support	Allows more efficient exploitation of Ku (up to 60 Msps) and Ka band (up to ~220 Msps) satellites

2 Ordering information

Table 1. Device summary

Order code	Temperature range	Package	Packaging
STV6111B	-40 to 85 °C	VFQFPN-32	Tray
STV6111BT	-40 to 85 °C	VFQFPN-32	Tape and Reel

3 Revision history

Table 2. Document revision history

Date	Revision	Changes
29-Nov-2011	1	Initial release.

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