

## 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<sup>2</sup>C bus

### Applications

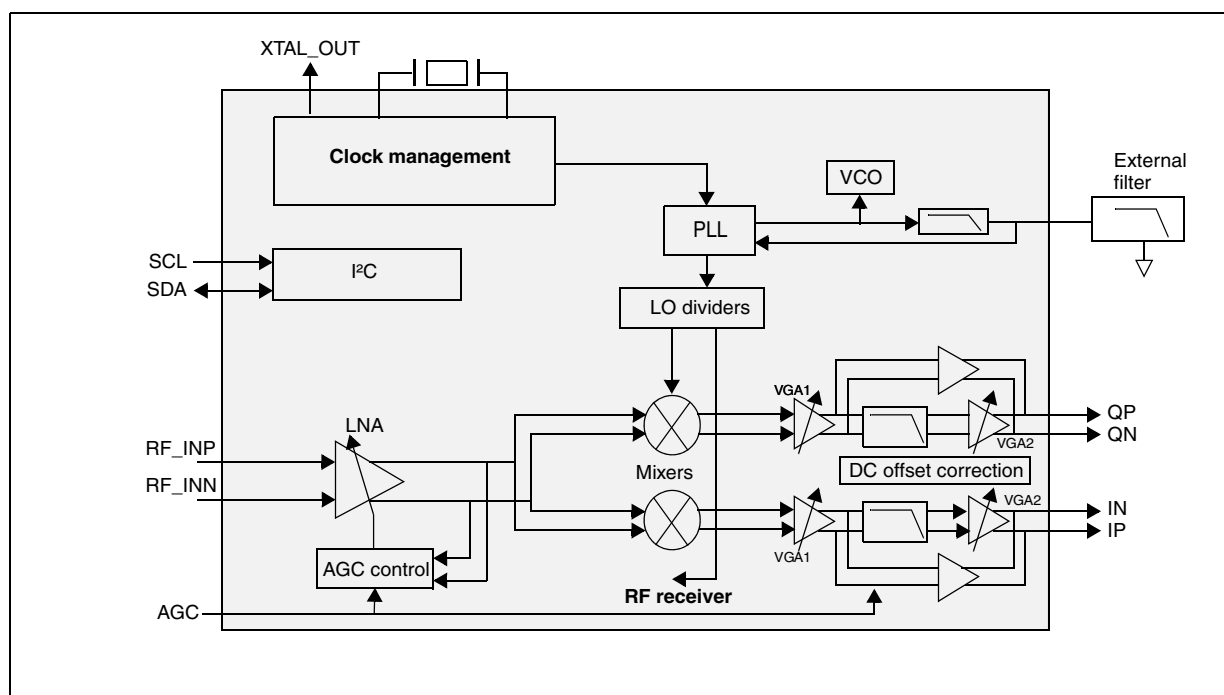
- Direct broadcasting satellite (DBS), satellite modems: BPSK, QPSK, 8PSK, 16/32 APSK modulations
- Set-top boxes, PCTV and iDTV
- Outdoor units

### Package

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

### Description

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



# 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.

**Please Read Carefully:**

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

**UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.**

**UNLESS EXPRESSLY APPROVED IN WRITING BY TWO AUTHORIZED ST REPRESENTATIVES, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.**

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2011 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)