

SiW1200 High Linearity Cable Tuner IC

Product Summary
Preliminary Information



INTRODUCTION

Silicon Wave's SiW1200 is a highly integrated downstream cable tuner IC for mixed analog and digital systems, such as OpenCable™ set-top boxes. The SiW1200 integrates all performance-critical RF elements onto a single, low-power device. The IC includes the variable gain front-end low-noise amplifier (LNA). The integrated frequency synthesizers include VCOs and require no external resonator elements. The PLLs require only simple external loop filters.

DESCRIPTION

The VCO is a two-band design with selectable tuning elements. The VCO consists of a low-band and a high-band VCO with each covering half of the tuning range. Either the low- or high-band VCO is selected by the user based on the programmed frequency.

PLL1 tunes from 1237 MHz to 2101 MHz in 1-MHz steps. Fine-tuning is done with PLL2, which operates from 1132 MHz to 1185 MHz (depending on IF frequencies). PLL2 is set to tune in 62.5-kHz steps and can also be programmed for other step sizes.

The IC is controlled with either a 3.3-V, three-wire serial bus or with an I²C compatible two-wire bus. The control functions include frequency setting, power-down modes, and PLL lock-detect status.

Gain control can be accomplished using an external pin diode or internal gain control blocks or by combination of the two. Provision is made to control the settings of a voltage variable attenuator (PIN) in front of the IC. For maximum dynamic range an external pin diode attenuator is preferred.

FEATURES

- Highly integrated downstream cable tuner IC for mixed analog and digital systems
- Fully integrated VCO with no external tank components
- PLL requires only a simple external loop filter
- Supports sleep modes: each of the four main blocks (up-converter, down-converter, PLL1, and PLL2) can be put into low-power, standby modes independently
- Supports DOCSIS, 256-QAM CATV operation
- 48 MHz to 862 MHz tuning range
- Programmable IF output from 36 MHz to 57 MHz to cover worldwide usage
- 3.3 V and 5 V operation
- Three-wire serial interface with clock, data, and latch enable, or an I²C compatible two-wire interface
- Built-in control for external PIN diode attenuator, coordinated with internal AGC functions

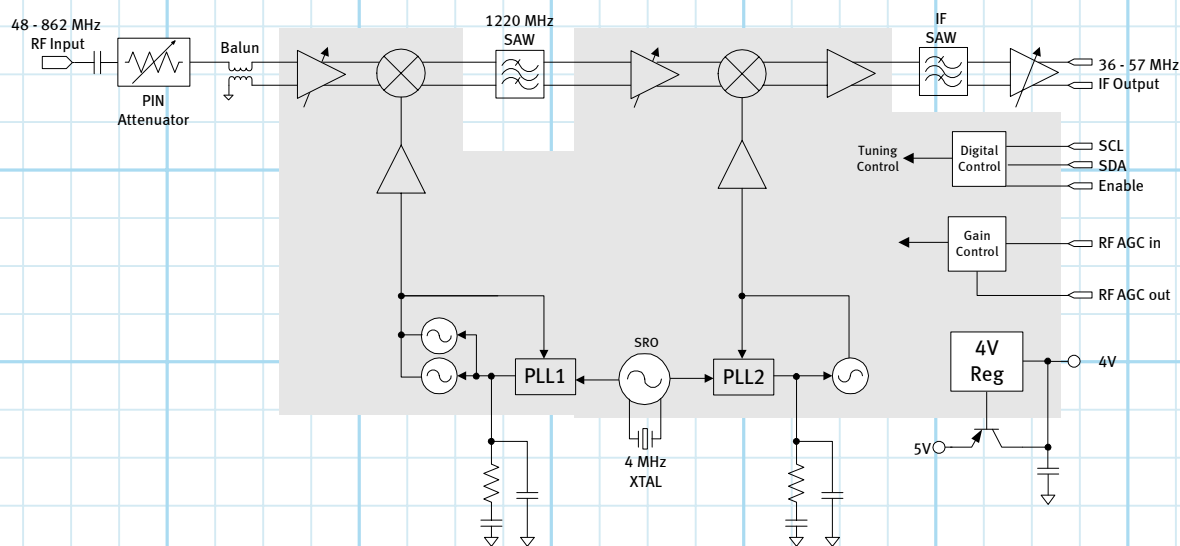
APPLICATIONS

The SiW1200 Cable Tuner IC is designed for high linearity applications including:

- Analog/Digital OpenCable™ compliant set-top boxes.
- Cable Modems
- Analog tuners
- Cable test systems
- Other digital television systems

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Integrated Tuner Block Diagram

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