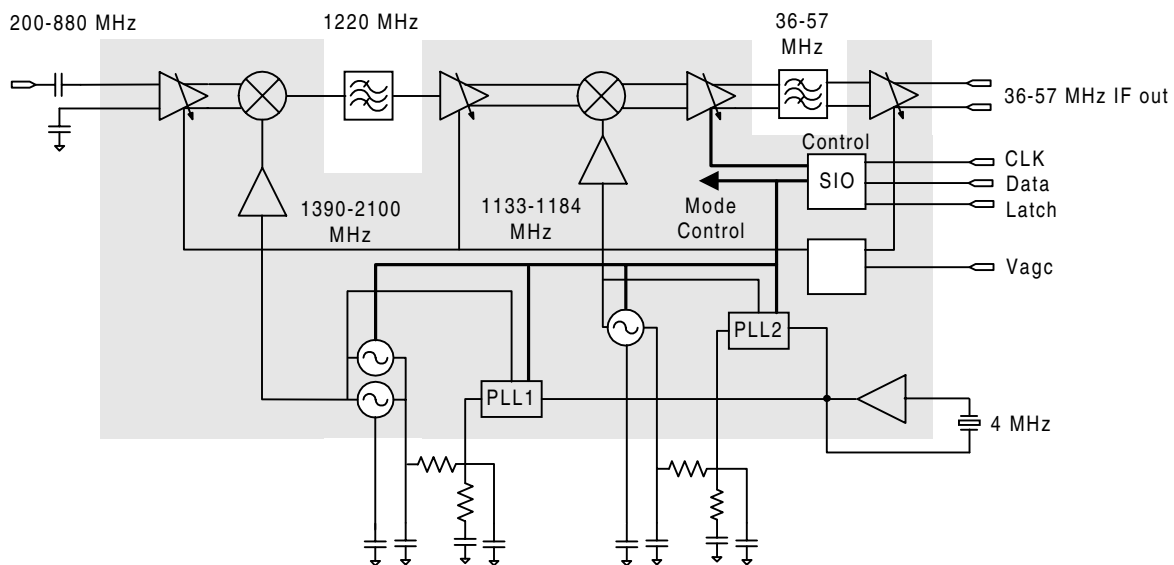


SiW1100™ Cable Tuner Integrated Circuit

INTRODUCTION

Silicon Wave's Sentinel™ SiW1100 is a highly integrated, ultra low-power downstream cable tuner IC designed for broadband cable telephony applications. Silicon Wave's solution offers the lowest known power consumption available for cable front-end receivers, using approximately 550 mW in full operation. The SiW1100 can be used over the full industrial temperature range from -40°C to +85°C and includes both RF and IF gain control. The SiW1100 enables cable service providers to deliver digitally switched circuit telephony service over hybrid fiber-coaxial (HFC) networks. Its minimal power consumption answers the demands of cable service providers that need to directly power cable terminals from the CATV network to compete with existing telephone services.

Silicon Wave has the first tuner to completely integrate all performance-critical RF elements onto a single, low-power device. The integrated frequency synthesizers include VCOs and require no external resonator elements. The PLLs require only simple external loop filters.



SiW1100 Functional Block Diagram

FEATURES

- Highly integrated downstream cable tuner IC designed for switched circuit telephony applications.
- Fully integrated VCOs with no external tank components.
- The PLLs require only simple external loop filters.
- Power consumption of approximately 550 mW in full operation.
- Supports sleep modes: each of the five main blocks (up-converter, down-converter, PLL1, PLL2, and IF amplifier) can be put into low-power and standby modes independently.
- High performance results over the full industrial temperature range (-40°C to 85°C).
- Supports QPSK modulation.
- 200 MHz to 880 MHz tuning range.
- Selectable 36 - 57 MHz IF output.
- 48-pin, 7-by-7-mm leadless plastic package.
- 3.3 V operation.
- Three-wire serial interface with clock, data, and latch enable, or an I²C compatible two-wire interface.

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APPLICATIONS

The SiW1100 Cable Tuner IC is specifically designed for switched circuit telephony applications within devices mounted outside the home.

DESCRIPTION

As shown on the functional block diagram, the input signal is up-converted to an IF of 1220 MHz, where the desired channel is pre-selected using a standard external low-cost ceramic or SAW filter. The signal is then down-converted to an IF of 36-57 MHz.

PLL1 tunes from 1390 to 2100 MHz using a fully integrated VCO with no external tank components or high voltage supply. The VCO consists of a low-band and a high-band VCO each covering half of the tuning range. Either the low or the high band VCO is selected based on the programmed frequency. PLL1 tunes in 1-MHz steps, while fine-tuning is done with PLL2.

PLL2 tunes from 1133 to 1184 MHz using a fully integrated VCO with no external tank components or high voltage supply. This PLL typically tunes in 62.5-kHz steps, but can be programmed for other step sizes.

The IC is controlled with either a 3-wire serial bus or an I²C compatible 2-wire bus. The control functions include frequency setting, power setting, power-down modes, and PLL lock detect status.

Please contact your Silicon Wave representative for details about obtaining reference design circuits and evaluation kits.

Information disclosed in this document is preliminary in nature and subject to change.
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