

ADVANCED DIGITAL AND ANALOG CABLE TUNER

FEATURES

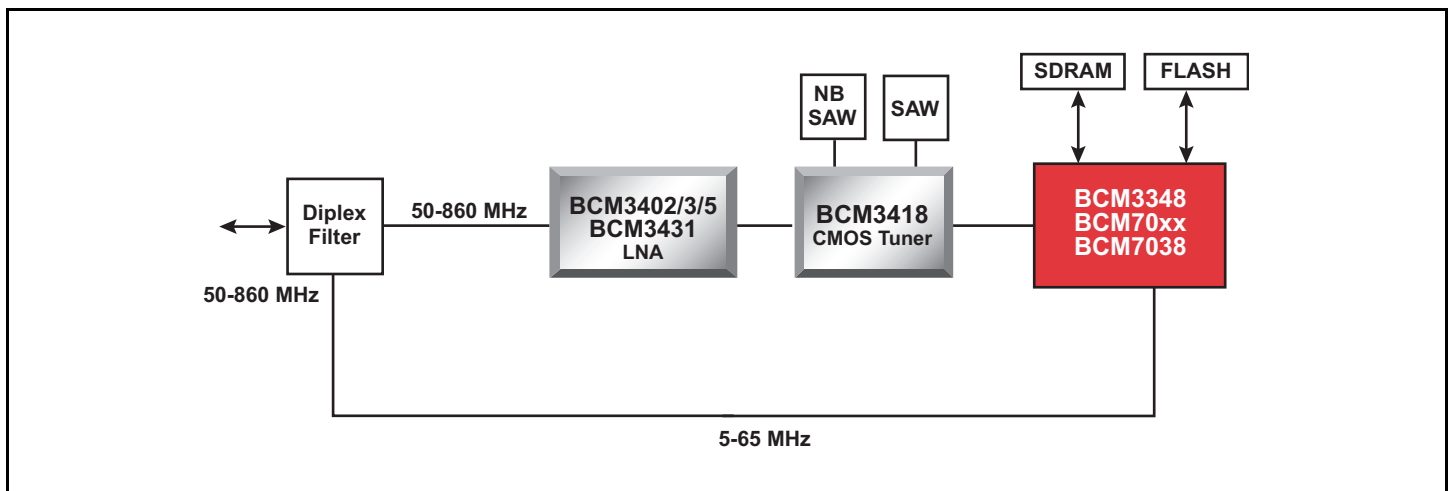
- Supports 64 and 256 QAM
- High linearity to support digital, analog, and terrestrial tuner applications
- Input frequency range of 50 MHz through 860 MHz *
- IF output range of 36 MHz and 44 MHz
- Ultra low-phase noise
- Crystal output (24 MHz): Cascade with other BCM3418
- Build-in Autonomous AGC
- Differential signals for high noise immunity
- Fine-tuning step size (6 kHz minimum)
- Eliminates need for image reject mixer
- Highly integrated and cost-effective
 - Minimal BOM with reference designs available
 - IF AGC and frequency synthesizers included
 - Standard logic CMOS with single 3.3V supply
 - 48-pin TQFP

* = For use only in applications where the input frequency to the diplexer is less than 1000 MHz.

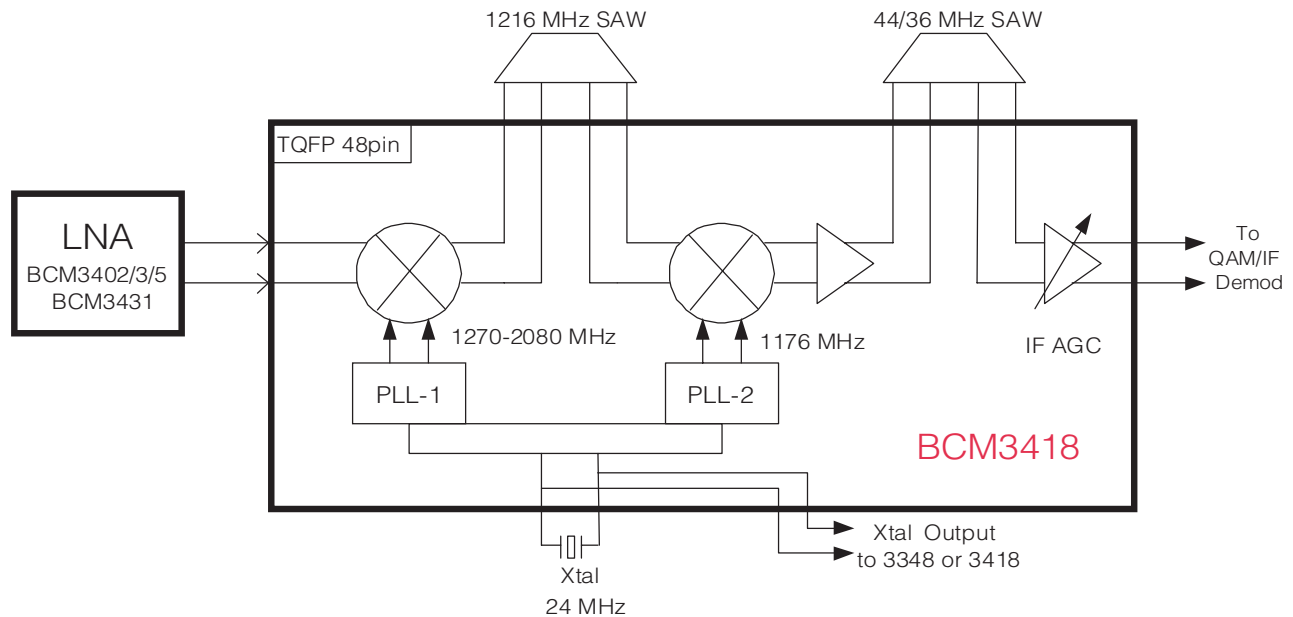
SUMMARY OF BENEFITS

- Narrowband first IF eliminates processing of unnecessary channels
- Supports Docsis 1.1/2.0 power calibration requirement
- Meets OpenCable STB requirement
- Minimal in-house RF expertise required
- Superior alternative to can tuners
 - High quality and reliability (no hand tweaking)
 - Enables lower profile and smaller designs
 - Simplified manufacturing flow
 - Lower BOM cost
- Applications
 - Cable modems
 - Cable set-top boxes
 - Terrestrial

Tuner Application Example (Cable Modem)



OVERVIEW



Overview

The **BCM3418** is a highly-integrated silicon tuner. The BCM3402/3/5 and BCM3431 LNA, with build-in RF AGC, are the companion parts of the **BCM3418**. These two-chip solutions support digital/analog cable and terrestrial tuner applications.

The **BCM3418** and a compatible LNA are specifically designed to work with Broadcom's industry-leading BCM70xx single-chip advance set-top box, BCM7038 highly-integrated single-chip HDTV, and BCM33xx cable modem chip. The **BCM3418** forms an attractive alternative to traditional can tuners.

The **BCM3418** supports 36.125 MHz and 43.75 MHz IF center frequencies for the PAL and NTSC standards. Also, the **BCM3418** and BCM340x LNA are DOCSIS and EuroDOCSIS-based, and meet OpenCable STB requirements.

Great care was taken to develop the proven reference designs, which also minimize the external components required. This system's expertise allows our customers to design with confidence even if they have minimal in-house RF expertise, while lowering their overall BOM cost versus the traditional can tuners.

Technical Brief

The signal is passed from the BCM3402/3/5 and BCM3431 LNA to the up conversion mixer. The up conversion mixer translates the input up to a fixed first IF of 1216 MHz. The narrowband first IF filter eliminates processing of unnecessary channels.

The down conversion mixer brings the signal down to the output IF of 43.75 MHz (or 36.125 MHz for PAL). The IF amplifier buffers the differential output signal that can directly drive an external SAW filter, where the final channel selection filtering occurs.

The IF AGC amplifies the signal returned from the SAW filter over a 30-dB range and buffers the differential output signal. The signal is then appropriately biased to the input of the BCM33xx, BCM70xx, and BCM7038.

A two-wire I²C-compatible serial bus controls the chip.

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