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BCM3422 PRODUCT Brief

1-GHZ LOW POWER DIGITAL CABLE SILICON TUNER

FEATURES

- **Single-chip direct conversion silicon tuner completes system design with Broadcom cable modem or set-top box.**
- **DOCSIS®/ EuroDOCSIS™ 1.0/1.1/2.0/3.0**
- **Supports 64, 256, and 1024 QAM**
- **Input frequency range of 50 MHz to 1002 MHz**
- **IF output range of 4 MHz, 4.5 MHz, and 5 MHz**
- **For use in 6-MHz, 7-MHz, and 8-MHz systems**
- **High linearity across entire frequency range**
- **Differential signals for high noise immunity**
- **Integrated and cost-effective BOM:**
  - True single-chip tuner
  - Single 3.3V supply voltage
  - Fully integrated oscillator
  - Fully integrated channel selectivity
- **Symmetrical IF output for direct connection to channel decoder**
- **Received Signal Strength Indicator (RSSI) information provided through Broadcom Serial Control (BSC) bus**
- **Standby mode**
- **48-pin MLF package**
- **RoHS compliant**

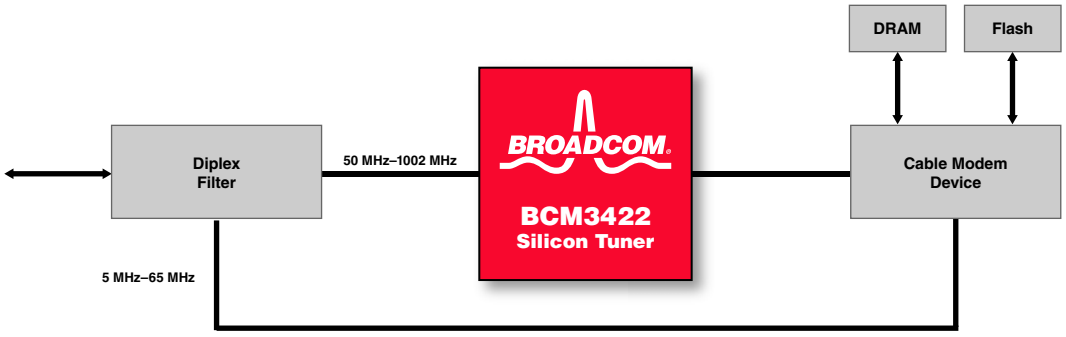
SUMMARY OF BENEFITS

- **Extreme integration level leads to highly cost-effective BOM**
- **Eliminates significant external components**
  - Surface Acoustic Wave (SAW) IF filters
  - RSSI measurement components
  - IF amplifiers
  - Oscillator components
- **Package optimization enables low-cost two-layer system PCB**
- **Minimal in-house RF expertise required**
- **Support for DOCSIS and EuroDOCSIS enables one device solution to be used worldwide**
- **Superior alternative to can tuners**
  - High quality and reliability
  - Enables lower profile and smaller designs
  - Proven reference design for quick time-to-market
  - Simplified manufacturing flow
- **Single supply voltage provides low-cost operation**
- **Low power consumption is ideal for systems that require battery backup operation**

APPLICATIONS

- **Data and voice cable modems**
- **Battery backup voice modems**
- **Digital cable set-top boxes**

Cable Modem Using BCM3422



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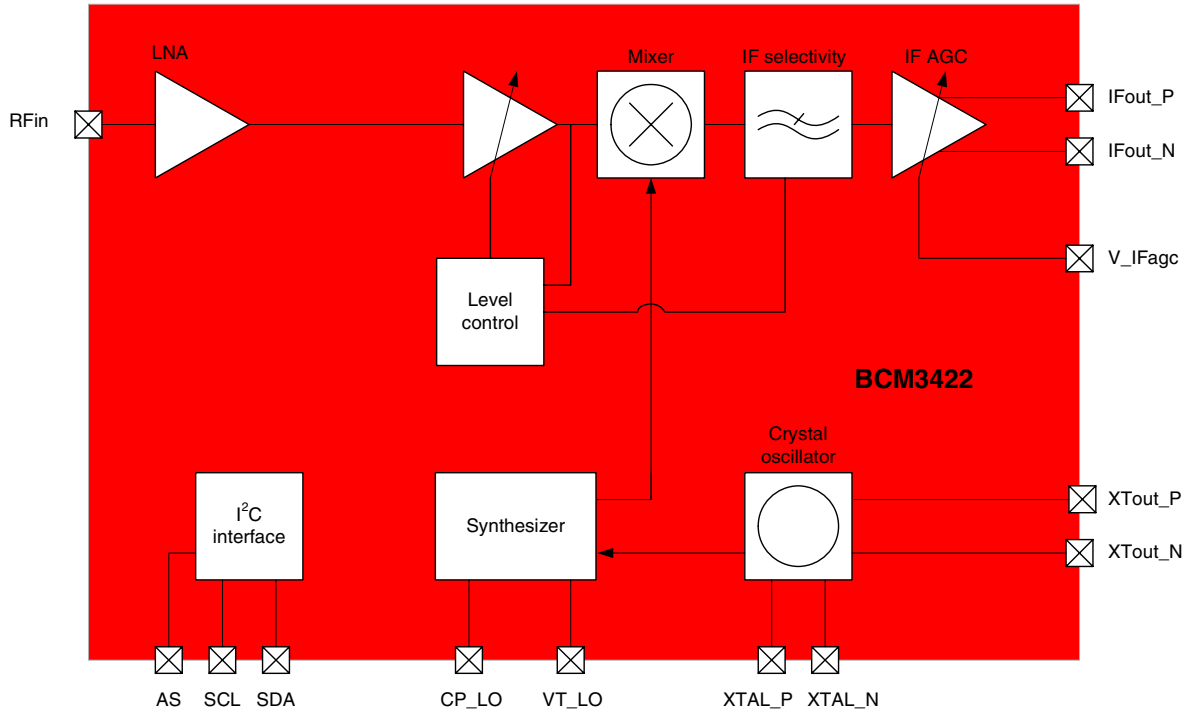
OVERVIEW



BCM3422 Block Diagram

The BCM3422 is a highly integrated, advanced direct conversion, single-chip silicon tuner. It integrates the global tuning function including selectivity and supports 64-QAM, 256-QAM, and 1024-QAM digital cable applications. The input signal is first driven to the LNA with wideband AGC and then filtered and fed to the image rejection mixer. The LO signal feeds the second input of the mixer which down-converts the RF signal to a low 4-MHz IF frequency. The IF signal is then filtered (channel selectivity) and shaped to be connected to fit the channel decoder inputs. There is no need for an external SAW filter. Additionally, the Voltage Controlled Oscillator (VCO) is fully integrated with no external tank component.

The BCM3422 is specifically designed for use with Broadcom's industry-leading single-chip cable modem and set-top box devices. With a low BOM cost and a proven reference design, the BCM3422 provides a better alternative to traditional can tuners. Its low power operation is suited well for applications that require battery backup capability such as VoIP cable modems. The BCM3422's extended bandwidth to 1 GHz makes it ideal for next-generation cable devices.

The BCM3422 supports an IF output frequency range of 4 MHz, 4.5 MHz, and 5 MHz, enabling one device to support both DOCSIS and EuroDOCSIS standards.

Broadcom's proven reference designs both reduce cost and provide a platform that increases the speed of product development. Minimal in-house RF expertise is required to quickly develop and produce low-cost cable modems and cable set-top boxes.

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