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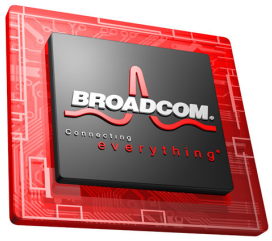
BCM4501 PRODUCT Brief



DUAL ADVANCED MODULATION SATELLITE RECEIVER

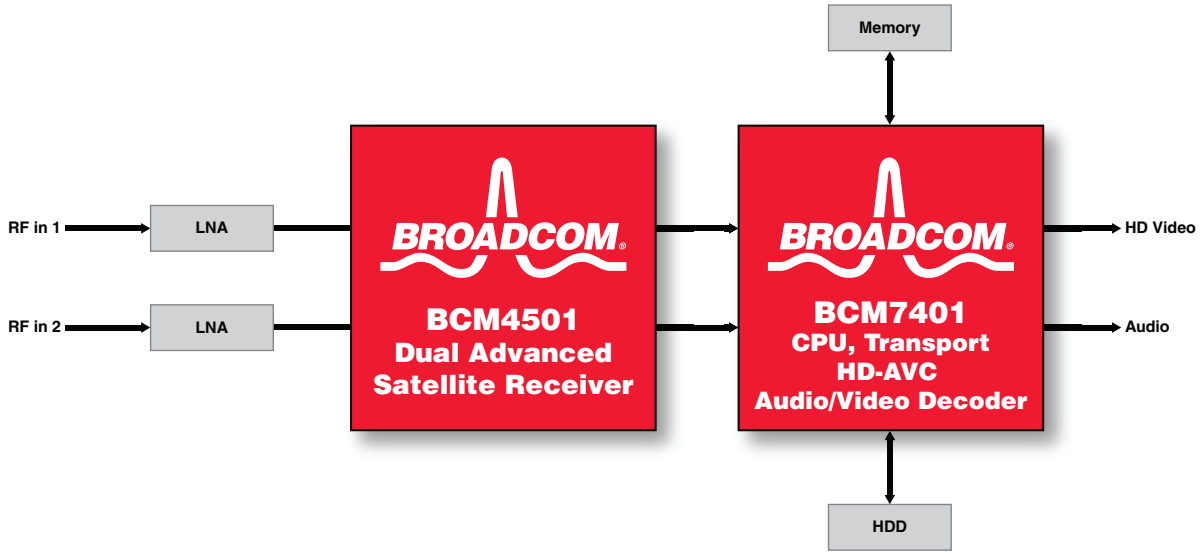
FEATURES

- **Dual direct conversion satellite tuners**
  - Direct conversion architecture in standard CMOS process
  - Supports QPSK and 8PSK demodulation
  - Input frequency range: 950 MHz to 2150 MHz
  - Integrated 8-bit A/D converters
- **Dual advanced demodulation decoders**
  - DVB-S2 Broadcast and DVB-S compliant
- **Data Rates:**
  - DVB-S: 1–45 Msps
  - DVB-S2: 10–30 Msps
- **Code Rates: 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10**
- **Integrated dual DiSEqC 2.x transceivers**
- **On-chip microcontroller for acquisition and tracking**
- **208-pin MQFP package**

SUMMARY OF BENEFITS

- **Highly integrated, cost-effective front-end solution for advanced modulation satellite systems in a single package**
- **Ideal for next-generation PVR satellite systems and Home Media Centers, supporting DVB-S2 Broadcast, while maintaining backward-compatible support for DVB-S legacy transmissions**
- **Advanced design architecture requires no external RAM.**
- **MPEG-2 transport output interfaces provide glueless system integration with Broadcom's integrated audio/video decoders.**
- **Integrated microcontroller for receiver operations, including configuration, acquisition, and performance monitoring**
- **Host interface operates via high-level API to reduce software development time and to simplify system integration.**

BCM4501 System Block Diagram Example



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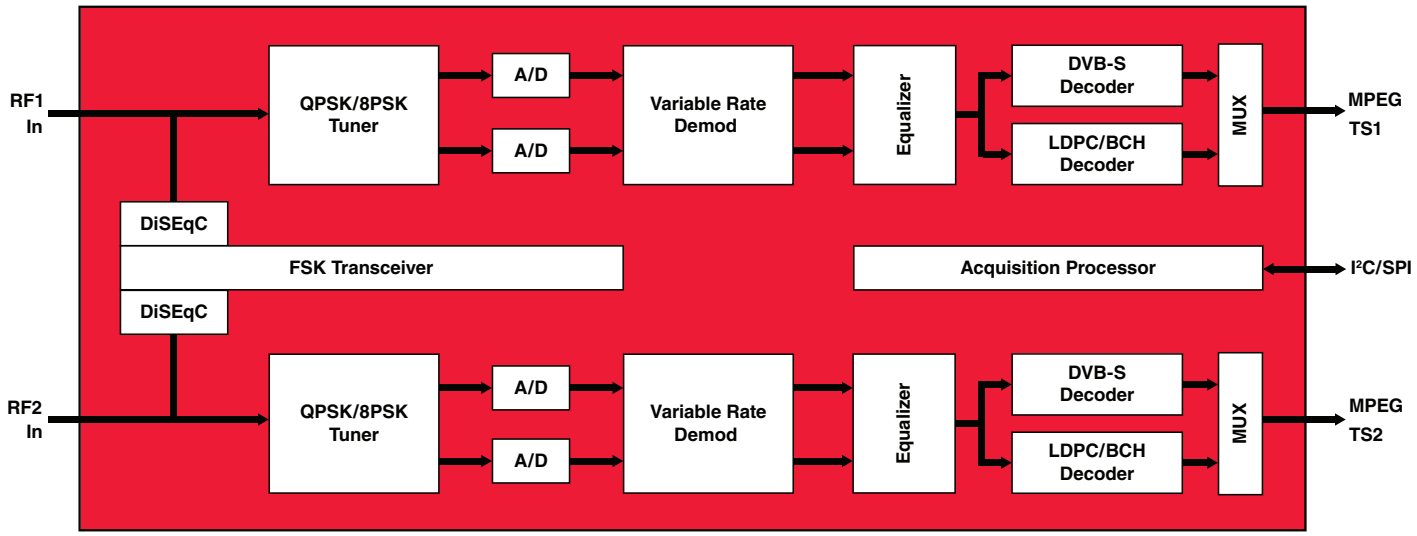
OVERVIEW



BCM4501 Block Diagram

The BCM4501 is a fully integrated dual satellite receiver single-chip solution targeted at multituner advanced modulation satellite receiver systems and ideally suited for new generation PVR-satellite receivers and integrated multifunction Home Media Centers.

The BCM4501 integrates dual CMOS tuners and dual advanced modulation decoders supporting DVB-S2 Broadcast and DVB-S applications.

The highly integrated tuner sections are based on existing volume production technologies in Broadcom and on a direct conversion technology to reduce external components and increase performance.

It is designed to support the full 1–45 Msps DVB operating range with support for 950-MHz to 2150-MHz input frequencies.

The BCM4501 contains four 8-bit A/D converters, all digital variable rate QPSK/8PSK receivers, an advanced modulation LDPC/BCH FEC decoder, and a DVB-S-compliant FEC decoder. All the required RAM is integrated, and the required clocks are generated on-chip from a single reference crystal. The baseband IQ analog waveforms from the tuner sections are sampled by the integrated 8-bit A/D converters, then re-sampled by the integrated interpolative digital filter banks.

Optimized soft decisions are then fed into either a DVB-S-compliant FEC decoder or an advanced modulation DVB-LDPC/BCH decoder. The final error-corrected output is delivered in MPEG-2 transport format. The output clock is generated by an on-chip PLL for low-jitter operation and glueless integration with Broadcom's high definition audio video subsystems, such as the BCM7038 and BCM7401.

The communication link sections include an on-chip microcontroller for all system configuration, acquisition, control, monitoring, and diagnostics functions, plus dual integrated DiSEqC2.x controllers for two-way communication with LNBs.

The BCM94501 reference design is available for easy system design and testing using the BCM4501 device. Schematics, Gerber files, and evaluation software are available.

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