



CX24109 Digital Satellite Tuner and CX24121 QPSK/FEC Demodulator

Highly Integrated, Complete Broadband Satellite Front-End Solution

Conexant’s broadband communications portfolio includes a comprehensive suite of semiconductor solutions that enable the digital home and information network. Combining extensive experience in broadband systems and mixed-signal integrated circuit design, Conexant introduces the CX24109 Digital Satellite Tuner and CX24121 DBS Demodulator/FEC Decoder creating the ideal satellite front-end solution for the world wide pay TV services. Several million Satellite Set-Top Boxes (STBs) are deployed in many different entertainment networks around the world today. This highly integrated combination of demodulator and satellite tuner reduces the BOM costs and simplifies RF layout.

CX24109

The CX24109 is a highly integrated, direct down-conversion satellite tuner intended for high-volume digital video, audio, and data receivers. When combined with Conexant’s existing CX24110 QPSK demodulator/FEC decoder, the chipset provides a complete broadband satellite front-end solution capable of operating from 1 to 45 Msps in the most demanding satellite environments. It is compatible with international standards such as DVB and DSS and supports a BPSK mode as well as DCII. Combined with the CX24121 QPSK demodulator/FEC decoder, the chipset provides a complete broadband satellite front-end solutions capable of operating from 10 to 32 Msps specifically targeting the PayTV segment of the market with a very optimized BOM and cost effective solution.

CX24121

The CX24121 is the ideal solution for a wide variety of applications in DVB/DSS/DCII STB and Personal Computer (PC) receivers and residential gateways. When combined with the CX24109 silicon satellite tuner, the CX24121 provides a complete broadband satellite front-end solution capable of operating from 10 to 32 Msps. The demodulator provides digital derotation, digital filtering, equalization, and Viterbi/Reed-Solomon Forward-Error Correction (FEC). The CX24121 is compliant with the DVB (ETS 300-421) specification for satellite transmission and provides many advanced features that enhance overall system performance. The demodulator automatically corrects for external quadrature gain/phase imbalances and for DC offsets. Input signal level variations (e.g., due to rain fade) are compensated by Automatic Gain Control (AGC). Frequency offsets due to inexpensive consumer Low-Noise Block Converters (LNBs) are corrected by a robust Carrier-Tracking Loop (CTL). A unique feature of the CX24121 is an automatic acquisition algorithm that searches and acquires the carrier during initial acquisition and performs a smart search to reacquire the carrier during fade conditions. The CX24121 has integrated Signal-to-Noise Ratio (SNR) and Bit Error Rate (BER) monitors for channel-performance measurements. The CX24121 also integrate a DiSEqC™ Level 1.2 for controlling the external satellite LNB.



Distinguishing Features

CX24109

- DVB/DSS – compliant
- Single-chip RF-to-baseband satellite receiver
- Zero-IF architecture eliminates the need for image-reject filtering
- Variable baseband filters for optimal interference rejection
- Integrated LNA and LO with onboard VCO and synthesizer
- Single +5V supply
- 48-pin eTQFP

CX24121

- DVB/DSS/DCII - compliant
- Symbol rates: 10 to 32 Msps
- Automatic acquisition
- Internal SNR and BER monitors
- DiSEqC™ Level 1.1 LNB control
- 80-pin PQFP

Part Number CX24109 and CX24121

Description Digital Satellite Tuner and Demodulator



CX24109 Features

- Zero-IF architecture eliminates the need for image reject filtering
- Integrated LNA
- Integrated LO with onboard VCO and synthesizer
- Single +5V supply
- Oscillator output for demodulator

CX24109 Applications

- DBS set-top boxes
- Commercial digital video, audio and data receivers
- Digital VCRs

CX24121 Features

- DVB/DSS/DCII-compliant
- Symbol rates 10 to 32 Msps
- 6-bit Analog-to-Digital Converters (ADCs)
- Internal PLL so that only a single low-frequency crystal or clock is required
- 4-bit soft decision
- Digital matched filtering
- Multirate decimation filter
- Automatic acquisition
- Internal carrier and bit-timing recovery
- Internal SNR and BER monitors
- DiSEqC™ Level 1.2 LNB control
- Power-down mode
- Boundary scan test function
- Carrier tracking: ± 5 MHz
- Quadrature equalization compensation:
 - 3.0 dB gain imbalance with 13-degree phase offset
- Low-power design
- Serial or parallel output data interface

CX24121 Applications

- DVB/DSS/DCII set-top and PC receivers
- Residential gateways

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