

DVB-S FTA Satellite Set-top Box Reference Design

Featuring the CX24138 DVB Decoder and CX24109 Satellite Tuner IC

Conexant's portfolio includes a comprehensive suite of semiconductor solutions for broadband communications, enterprise networks, and the digital home. The DVB-Satellite (DVB-S) set-top box reference design features Conexant's CX24109 RF tuner and CX24138 satellite system-onchip (SoC) to provide a low-cost, high-featured, complete system solution.

The system receives and down-converts quadrature phase-shift keying (QPSK) satellite digital video signals to baseband with the CX24109 RF tuner. The CX24138 includes an integrated ARM920T® main system processor running at 100 MHz, integrated QPSK demodulator, MPEG-2 audio and video decode, and TV encoder functions. The integrated 10-bit video DACs, integrated voltage-controlled crystal oscillator (VCXO), power-on reset circuitry, direct drive of video output connectors and clock generation from a single crystal, coupled with a two-layer PCB and low-cost front panel design, effectively reduce the system bill of material (BOM) cost for STB manufacturers.

Conexant offers a complete reference design package integrating the CX24138 with the CX24109 tuner and an unprecedented level of localized design and sales support to accelerate development time-to-market. The DVB-S free-to-air (FTA) satellite STB reference design kit includes samples, schematics, layout, BOM, STB drivers, scan algorithm, user interface with Chinese and English language support, and complete documentation of the hardware and software system solution.

The company's broad portfolio of semiconductor products also includes client-side digital subscriber line (DSL) and cable modem solutions, home network processors, broadcast video encoders and decoders, digital set-top box components and systems solutions, and dial-up modems. In addition to its IEEE 802.11a/b/g-compliant wireless local area network (WLAN) chipsets, software and reference designs, Conexant offers a suite of networking components that includes solutions for applications based on HomePlug® and HomePNA™. Additional products include a complete line of asymmetric and symmetric DSL central office solutions, which are used by service providers worldwide to deliver broadband data, voice, and video over copper telephone lines



Distinguishing Features

- CX24138 SoC with 100 MHz ARM920T CPU
- CX24109 silicon tuner
- 1.25 V core voltage
- Integrated VCXO
- Integrated 10-bit video DACs
- Dolby® Digital passthrough on Sony/Philips Digital Interchange Format (S/PDIF)
- RS-232 and Joint Test Action Group (JTAG) interfaces

Part Number CX04-GUBEIDQ-IRD

Description

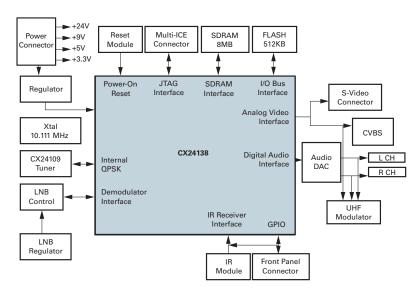
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Reference Design

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Features and Benefits

- High-performance SoC with integrated QPSK demodulator
- Direct down-conversion technology and integrated-noise amplifier/local oscillator (LNA/LO)
- Very low power consumption
- Complete system clock from a single crystal no external circuit or VCXO module required
- Direct connect to infrared (IR) module
- · System control of front panel by software
- CX24138 drives standard 75 W load directly
- Supports software download via over-the-air (OTA) broadcast or RS-2332 port
- Multi In-Circuit Emulation (ICE) debug environment



CX24138 Block Diagram

User Interface

- Satellite antennae input port
- RCA for composite video baseband signal (CVBS) video and audio line receiver (L/R)
- S-Video port
- Dolby® Digital passthrough on S/PDIF
- RS-232 serial port
- Audio/video (A/V) connector for RF modulator
- Power adapter connector
- Front panel connector with IR signal receiver
- I2C-compatible expansion connector
- JTAG debug connector

Characteristics

Main processor CX24138 with 100 MHz ARM920T core

Main memory 8 MB SDRAM Program memory 512 KB Flash

Video decode MPEG-2 MP@ML, MPEG-1 Layer 1 and 2

Tuner CX24109, zero-IF architecture

Video format PAL/NTSC/SECAM
TS Demux data rate 72.5 Mbps maximum
Audio decode MPEG-2 MUSICAM

Audio mode Mono, double channel, stereo

Audio sample rate Supports 16, 22.05, 24, 32, 44.1, 48 kHz
Graphic accelerate Two-dimensional (2D) hardware
graphic accelerator, optimized

memory bandwidth

On-Screen Display (OSD) 8 bpp color mode, flicker filtering

and hardware cursor

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