

NXP DVB-S FTA/CI/CAS set-top box system solution featuring CX24142 and CX24109

Turnkey set-top box solutions for DVB-S broadcasts

The DVB-Satellite (DVB-S) set-top box (STB) reference design features a complete design package, including full software solution, using NXP's CX24142 satellite system-on-chip (SoC) and supports free to air (FTA) set-top boxes worldwide, including options for DVB-Common Interface (DVB-CI) and Smart Card-based conditional access systems (CAS).

Key features

- ▶ Full system solution package
- ▶ Complete STB software solution
- ▶ CX24142 SoC with 150 MIPS ARM920T CPU
- ▶ CX24109 silicon tuner
- ▶ High sensitivity LNA and loop through circuit
- ▶ 1.25 V core voltage
- ▶ Integrated voltage-controlled crystal oscillator (VCXO)
- ▶ Integrated 10 bit video DACs
- ▶ Smart Card interface on chip
- ▶ Integrated high-speed data port
- ▶ RS-232 and Joint Test Action Group (JTAG) interfaces
- ▶ Supports NDS MediaHighway Core middleware
- ▶ Embedded NDS ICAM conditional access
- ▶ Supports DVB-CI or Smart Card-based CAS
- ▶ DiSEqC 2.x

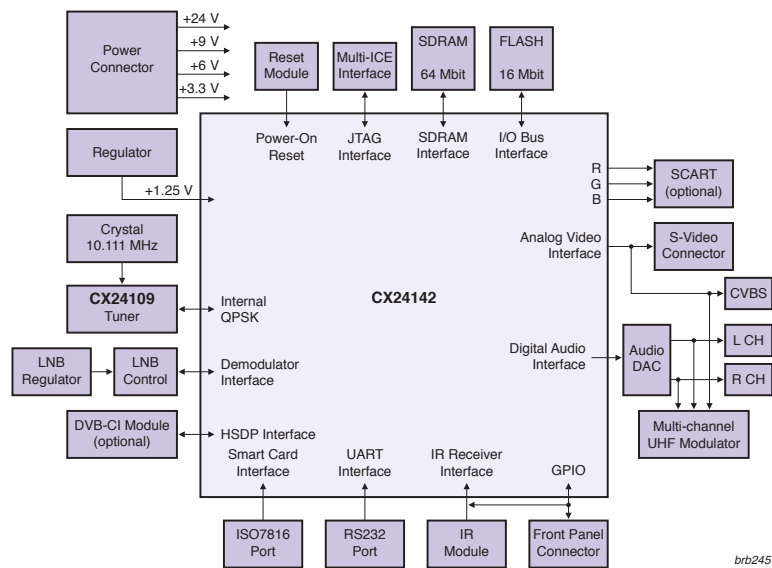
The system receives and down converts QPSK satellite digital video signals to baseband with the CX24109 RF tuner. The CX24142 includes an integrated 150 MIPS ARM920T main system processor and performs the QPSK demodulation, MPEG-2 audio and video decode, and TV encoder functions. The integrated DiSEqC 2.x LNB signal generator, 10-bit video DACs, 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 reduces the system bill of material (BOM) cost for set-top box manufacturers.

NXP offers a complete reference design package and unprecedented level of localized design and sales support to accelerate development time-to-market. The DVB-S FTA/CI/CAS satellite STB reference design kit includes samples, schematics, layout, BOM, STB drivers, user interface (UI) reference software, and complete documentation of the hardware and software system solution. The UI includes support for auto scan, DiSEqC 2.x control, 7-day electronic program guide (EPG), teletext, and multiple languages.

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, NXP 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.

User Interface

- ▶ Satellite antennae input port and a loop-through output port
- ▶ RCA for composite video baseband signal (CVBS) video and audio line receiver (L/R) (Sony/Philips digital interchange format (S/PDIF) port optional)
- ▶ S-Video port (YCbCr port optional), RS-232 serial port
- ▶ Smart Card connector (Smart Card module optional)
- ▶ DVB-CI signal interface (dual DVB-CI module optional)
- ▶ Multi-channel PAL UHF modulator
- ▶ SCART module (optional)
- ▶ Power and I²C expansion connector
- ▶ High-Speed Data Port (HSDP) input/output connector
- ▶ Front panel connector with IR signal receiver
- ▶ JTAG debug connector



Characteristics

Main processor	CX24142 with 133 MHz ARM920T core	Audio decode	MPEG-2 MUSICAM (Dolby® Digital optional)
PCB	2-layer, 13.3 cm x 13.0 cm	Audio mode	Mono, double channel, stereo
Main memory	8 MB SDRAM	Audio sample rate	Supports 16, 22.05, 24, 32, 44.1, 48 kHz
Program memory	2 MB Flash	Dolby Digital (optional)	Supports Dolby Digital AC-3, 2-channel downmix
Video decode	MPEG-2 MP@ML, MPEG-1 Layer 1 and 2		
Tuner	CX24109, zero-IF architecture, integrated LNA and LO	Graphics	Two-dimensional (2D) hardware graphic accelerator, optimized memory bandwidth
Video format	PAL/NTSC/SECAM	OSD	8 bpp color mode, flicker filtering and hardware cursor
TS Demux data rate 72.5 Mbps maximum			

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