



NXP MPEG-2 SD decoder for FTA/hybrid set-top boxes CX2433x /CX2438x

Low-cost, high-quality MPEG-2 SD decoder for FTA/hybrid set-top boxes

These single-chip system solutions, designed for satellite, cable, and terrestrial applications, include all the major subsystems required to implement the core system and decoder electronics for a highly cost-effective FTA/hybrid STB.

Key features

- ▶ MPEG-2/DVB broadcast service decoder for worldwide FTA market
- ▶ Integrated 1-45 Msp/s QPSK Demodulator/FEC (CX24338, CX24388 only)
- ▶ High-performance 32-bit, 250-MIPS ARM946 CPU
- ▶ High-performance 2D graphics rendering acceleration
- ▶ High-performance 16-bit SDRAM memory controller architecture
- ▶ Integrated satellite Blind Scan function
- ▶ Complete reference design package
- ▶ Complete software solution
- ▶ DVR through an integrated USB 2.0 interface
- ▶ USB/Ethernet connection for networking applications
- ▶ Smart Card interface
- ▶ SDRAM memory interface
- ▶ Dual demux for dual-tuner/hybrid applications
- ▶ Dual DVB-CI interface
- ▶ SCART support
- ▶ PIP feature

Optimized for use in Free-To-Air (FTA) and hybrid set-top boxes (STBs), the NXP CX2433x and CX2438x are highly integrated solutions that enable a highly cost-effective STB solution.

Integrated features include an MPEG-2 MP@ML decoder, 1-45 Msp/s quadrature phase-shift keying (QPSK) demodulator (CX24338, CX24388 only), a 32-bit RISC CPU, a 2D graphics accelerator, TV encoder, a video/graphics display compositing controller, integrated video DACs, and a set of peripheral I/O ports for STB front- and back-panel connectors.

The CX24336 and CX25338 are housed in 256-pin LQFP packages. The more highly featured CX24386 and CX24388 are available in 256-pin eLQFP packaging and include a Smart Card interface, dual demux, a dual DVB-CI interface, SCART support, and basic PVR functions via an integrated USB 2.0 interface.

For a complete system hardware design, the only additional components required are a tuner, audio DACs, SDRAM, and flash memory ICs. This high level of integration delivers highly featured MPEG solution with a low-cost system bill-of-materials (BoM). Integrating the CX24338 and CX24388 with the CX24113/CX24133 tuner provides a highly cost-effective solution for satellite systems.

The CX24336/CS24386, with its integrated high-speed data port (HSDP), interfaces easily to a variety of broadband front-ends. It can also serve as a common back-end platform for terrestrial, cable and hybrid applications.

Development platforms

The CX24388 is available in a fully manufacturable reference design package that includes complete schematics, layout, BOM information, and comprehensive software with an electronic program guide (EPG) and drivers.

The CX24388/CX24338 is integrated into a fully engineered STB reference design which also features NXP's award-winning CX24113/CX24133 DVB-S tuner.

This reference design provides a low-cost system bill of materials (BoM), reduces overall development time and cost.

The hardware platform comes equipped with a fully functional NXP software solution, including a license-free operating system, application software, support for third-party middleware, EPG, and all the required drivers.

Reuse of core driver libraries, developed on early generation ICs, minimizes development time and ensures a mature, robust hardware abstraction layer. The STB hardware used in the reference development platform is based on existing design platforms and is ready to manufacture.

Selection Guide for LPC3153/1 Family

"CX" Part	Package	QPSK Demod	VDACs	SDRAM	DVB-CI	Smart Card
CX24336	256QFP	No	4	16-bit	No	Yes
CX24338	256QFP	Yes	4	16-bit	No	Yes
CX24386	256eLQFP	No	6	16-bit	Yes	Yes
CX24388	256eLQFP	Yes	6	16-bit	Yes	Yes

CX2433X / CX2438X technical details

- ▶ MPEG-2 MP@ML video decoder
- ▶ MPEG-1/MPEG-2 audio decoder
- ▶ MPEG-2/DVB, transport stream demultiplexing
- ▶ NTSC/PAL/SECAM TV encoder supporting CVBS, YC, and RGB analog video output signals
- ▶ NTSC/PAL auto conversion
- ▶ 250-DMIPS, 32-bit ARM946 CPU with 8-KB (I&D) caches
- ▶ 16-bit SDRAM support
- ▶ Integrated I-45Mps QPSK Demodulator with Hardware Blind Scan function (CX24338/CX24388 only) and DiSEqC 1.x
- ▶ RS-232 and JTAG interface
- ▶ 4/8/16-bpp on-screen display (OSD) support
- ▶ Sony/Philips Digital Interface Format (S/PDIF) audio output
- ▶ SCART support
- ▶ Programmable Flash memory interface
- ▶ Infrared receiver
- ▶ Basic DVR through an integrated USB 2.0 interface
- ▶ Smart Card interface
- ▶ Dual Demux
- ▶ Dual DVB-CI interface
- ▶ PIP feature

Single tuner application with CX24338

