



# CX2433x / CX2438x MPEG-2 SD Decoder

Low-Cost, High-Quality MPEG-2 SD Decoder for FTA/Hybrid Set-Top Boxes

In February 2010, Trident Microsystems acquired the set-top box and television product lines from NXP Semiconductor's home business unit. This product is now a part of Trident's product offering for the set-top box market.

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

- 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 Trident 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, a 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 CX24338 are housed in 256-pin QFP 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 a 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, 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 Trident's award-winning CX24113/CX24133 DVB-S tuner.

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

The hardware platform comes equipped with a fully functional Trident 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.

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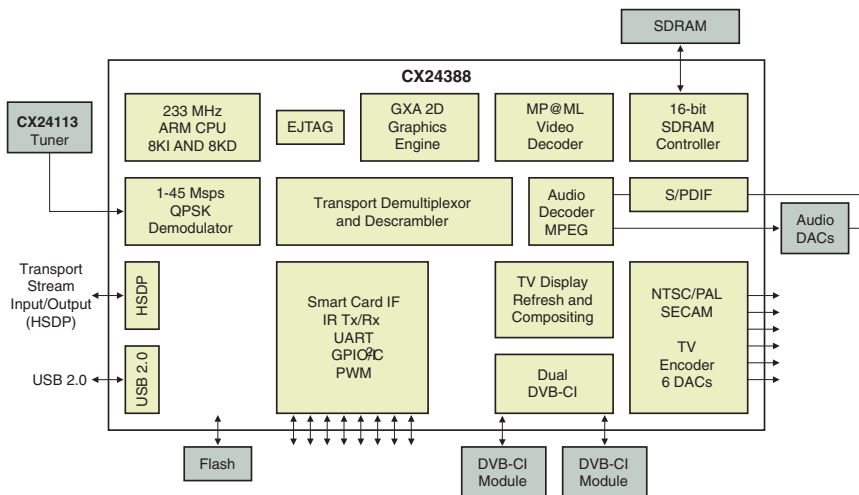
## Selection Guide for LPC3153/1 Family

"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 1-45MSPs 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
- Picture-in-picture (PiP) feature

## Single Tuner Application with CX24338



**TRIDENT MICROSYSTEMS, INC.**

1170 Kifer Road  
 Sunnyvale, CA 94086-5303  
 Main: (408) 962-5000  
 Fax: (408) 991-9310  
[www.tridentmicro.com](http://www.tridentmicro.com)