

Integrated Digital TV Processors

DVD	Digital Camera	Digital TV	Imaging	IP Core
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Product Brief

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Overview

The SupraTV 160 family of highly integrated digital TV processors for Free-To-Air and Pay TV Set-Top Boxes (STBs) and integrated digital TVs supports single or dual tuner Digital Video Recording (DVR).

Combining the key functions required to support digital television systems, the SupraTV processor enables products with enhanced flexibility and performance to be developed at the lowest possible

system cost. The use of programmable DSP-based technology allows for product differentiation, while a high performance MIPS processor provides access to industry standard middleware, including MHEG-5.

With a comprehensive set of software drivers, proven tool kit and reference platforms, the SupraTV family keeps product development times to a minimum.

SupraTV 160 Family

- **ZR39160** — designed for use in entry free-to-air and payTV markets
- **ZR39161** — designed for use in free-to-air and payTV markets containing digital video recording and advanced copy protection
- **ZR39162** — designed for use in entry UK Free-To-Air terrestrial markets, including DTVS MHEG-5 software
- **ZR39163** — designed for use in U.K. terrestrial markets containing digital video recording and advanced copy protection, and including DTVS MHEG-5 software

Differences Between ZR39160, ZR39161, ZR39162 and ZR39163

Chip	Target Markets	Features	Includes MHEG-5 Software
ZR39160	Entry Free-to-Air and PayTV	Entry	No
ZR39161	Digital Video Recording and Advanced PayTV	Premium*	No
ZR39162	Entry U.K. Terrestrial	Entry	Yes
ZR39163	U.K. Terrestrial with Digital Video Recording and Advanced PayTV	Premium*	Yes

SupraTV 16x Features Summary

- **MIPS 32 CPU with MMU**
  - 8K I-cache, 8K D-cache
  - 195 MHz Main CPU & programmable DSP operating speed
  - ≥230 Dhrystone MIPS total performance
- **16 or 32 bit SDRAM controller (64Mbit - 256Mbit)**
- **Transport stream demultiplexer**
  - Programmable multi-stream transport demultiplexer with DVB descrambler
  - Three transport stream interfaces
  - DVB descrambling
  - Dual SmartCard interfaces with integrated protection & control
  - Integrated two-slot DVB-CIM controller
- **MPEG-2 video decoder, ISO/IEC13818-2 (MP@ML)**
  - Support for bitrates up to 15Mbits/sec
- **Graphics and video processing subsystem**
  - Advanced DMA engine to support 2D graphics
  - 4, 8 bit CLUT, 16bit RGB with OSD, antiflicker filtering
  - Flexible down/up-scaling of video
  - 5 graphic planes
- **Digital television interfaces**
  - CCIR-601 digital video input for decoded NTSC/PAL/SECAM
  - CCIR-601 digital video output for external scalers
  - Two-channel audio input for decoded analog TV audio
- **Integrated PAL/NTSC/SECAM Video Encoder**
  - VBI (Teletext, WSS, CC) and VPS reinsertion
  - Simultaneous Component, S-Video and RGB output
  - 6 video DACs
- **Audio support**
  - Programmable audio DSP for MPEG layers 1 & 2, MP3 & WMA
  - Stereo audio DACs integrated
  - Two-channel audio output using I2S or analog
  - SPDIF output
- **Single crystal**
  - Integrated digital timing oscillator replacing external VCXO
- **Set-Top Box interfaces**
  - UARTs, I2C, IR, GPIOs
  - Glueless Guestbus interface to 8 or 16 bit flash memory
  - V.22 bis modem CODEC and DAA interface support
- **Digital Video Recording\***
  - Support for single and dual tuner Digital Video Recording
  - Guestbus based ATAPI interface for hard drive
- **Advanced security\***
  - Local triple DES encrypt/decrypt engine
  - 1KB OTP memory
- **256-pin PQFP package**
- **USB 2.0 Full Speed Host-Type controller and PHY**
  - USB based updates and MP3/JPEG playback



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### Product Brief



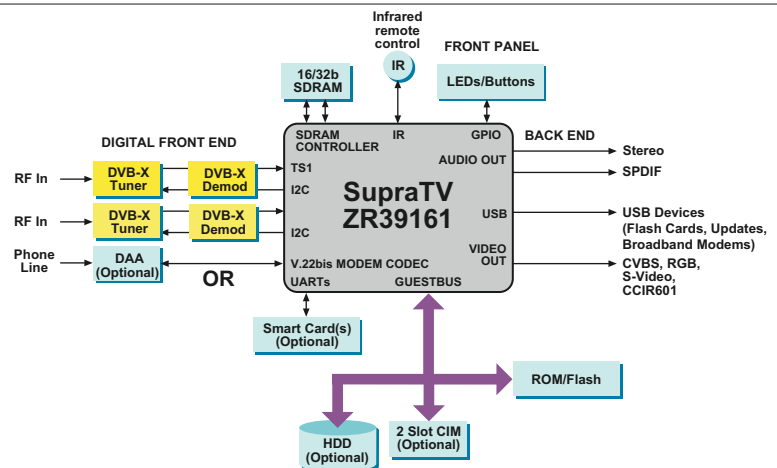
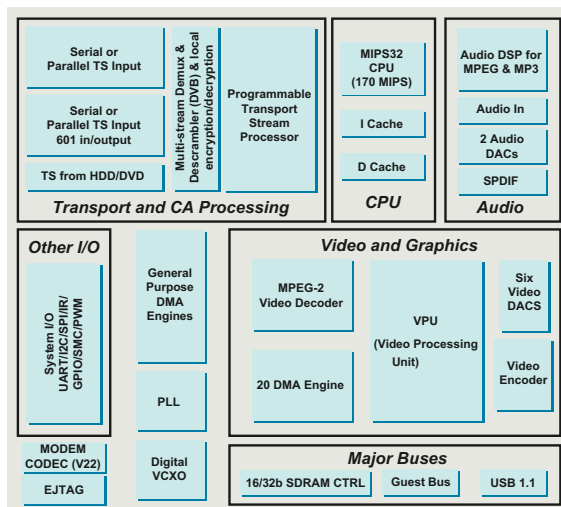
### SupraTV 160 Development Platform

A comprehensive development platform is available for the SupraTV 160 family, including evaluation boards for digital terrestrial, satellite and cable-based products. An Integrated Development Environment includes a proven windows based GNU tool kit, Zoran's SiliconSoftware® registration drivers, and applications that add functions such as flash memory burning, high performance code download, software protection, a sophisticated GUI development tool, (Embedded Wizard), and an automatic code generator.

The SupraTV 160 family platform will significantly reduce the time taken to develop feature rich digital television and Set-Top Box products. The SupraTV 161 based evaluation board supports all needed peripherals and is available with a COFDM, QPSK or QAM front-end.

Single and dual tuner Digital Video Recording capabilities can be achieved by adding a hard drive, Zoran's DVR software, additional memory, and a second front end (for dual tuner DVR).

### SupraTV 161 IC and Set Top Box Block Diagrams



For cable set-top boxes use DVB-C tuner & QAM demodulator  
 For satellite set-top boxes use DVB-S tuner & QPSK demodulator  
 For terrestrial set-top boxes use DVB-T tuner & COFDM demodulator  
 For digital televisions use combined DVB-T/analog terrestrial tuner, COFDM demodulator, and PAL/SECAM/NTSC video decoder

### Zoran SiliconSoftware® API Package

Zoran provides software support for the SupraTV 160 family and a documented Application Programming Interface. Based on the company's extensive DVD and HDTV experience, the API provides a stable base on which users can build their own applications.

The software stack, including the operating system (Nucleus+), is available on a royalty-free basis. Zoran's SiliconSoftware API will be supported on future SupraTV ICs. Software portability from one generation to the next minimizes project design time and effort while enabling the software to be reused.

Other components of the standard software package include an Electronic Programming Guide (EPG) for Free-To-Air services, DVB subtitle and OSD Teletext decoding, and DVB common interface module software. In addition, the SupraTV 162 and 163 integrate MHEG-5 software for the U.K. terrestrial market.

### For more information, contact Zoran's Sunnyvale office or the office nearest you:

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