

Digital Camera Processor

DVD

Digital Camera

Digital TV

Imaging

IP Core

ZR36440/ZR36442

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Product Brief

Description

Zoran's COACH 6 is the sixth Camera On A CHip (COACH) digital camera processor.

The COACH 6 digital camera processor combines excellent image quality & feature set with an extremely aggressive camera bill of materials.

COACH 6 is offered in two versions: COACH 6e (ZR36440), supporting up to 3 Megapixel sensors, and COACH 6p, (ZR36442) supporting up to 16 Megapixel sensors. For the camera developer, both versions have identical interface sets and development kit. The two versions provide cost effectiveness across the entry level and mid-range digital camera market segments.

The COACH 6 includes all required hardware and firmware to support multiple-field interlaced CCD sensors and CMOS sensors. In addition to CompactFlash, Secure Digital and SmartMedia, COACH 6 expands the Flash card support to XD and to Memory Stick.

COACH 6 integrates a speech audio CODEC and a Real Time Clock system. It offers direct interface to View-LCD display, eliminating the need for an LCD controller IC. COACH 6 eliminates the need for an

external microcontroller. Internal A/D converters, PWM engines and additional general-purpose IO pins were added in order to directly control Zoom and Auto Focus lenses. COACH 6 emphasizes image quality with true 12-bit enhanced sensor processing and hardware based image enlargement, which allows for smooth, zero-delay digital zoom across all camera operational modes.

In an effort to ease programming complexity and allow for third party software development, the COACH 6 is powered by a 32bit RISC CPU and a standard operating system. USB 1.1 point-to-point master and an enhanced serial port complement the new software architecture. With these improvements, COACH 6 is optimally positioned to expand digital camera connectivity possibilities beyond the PC.

Camera control software layer (created by COACH customers) is compatible with the COACH 5. This enables an easy migration from the COACH 5 to the COACH 6.

The COACH 6 comes with a complete development package that includes a "manufacture-ready" CamMini™ reference design, a comprehensive set of software development tools, and WHQL approved PC drivers.

Features

- Direct glueless interface to multiple-field & progressive CCD and CMOS sensors
- Supports image resolutions up to 3 Megapixels for COACH 6e and up to 16 Megapixels for COACH 6p
- Enhanced CCD signal processing with
 - 12-bit processing for high dynamic range
 - Color interpolation and conversion
 - HW based Image scalars (zero penalty on click-to-click times)
 - Automatic White Balance (AWB)
 - Automatic Exposure (AE)
 - Edge enhancement
 - Programmable Lens Shading (Patent Pending) compensation
 - Performance enhancement when using Zoran's CMOS sensor
- Programmability for image processing algorithms
- Smooth Digital zoom – complete emulation of optical zoom (view, capture and clip recording)
- Real-time JPEG compression with advanced bit rate control
- Capture of a sequence of still images
- Movie (AVI, with compressed audio) capture and playback to the Flash card, at a rate of up to 30 frames per second (CIF & VGA)
- Video Capture Mode - capture CIF or VGA at 30 frames per second real-time video (MJPEG compressed) to a PC via USB
- Support for flash-strobe, light-control, red-eye reduction & flash-charge control
- Direct interface to resident flash memory and/or removable flash memory cards: CompactFlash (CF); SmartMedia (SSFDC); SD, MMC, Memory Stick, XD and others
- Supports 64Mbit to 256Mbit SDRAM (16-bit width) frame buffer
- Embedded Real Time Clock (RTC)
- On-chip general pattern generator for motor control support with 16 PWM outputs – direct lens motor control
- Internal A/D for monitoring battery status & flash bulb charge, and for sensing camera buttons
- Integrated 8KHz, 12-bits audio speech-codec
- Glue-less" digital video output, including on-chip programmable controller to interface Casio, Epson and Unipac DLCD TFT panels
- On-chip NTSC/PAL encoder provides direct analog output to a TV monitor
- User interface implemented within the COACH eliminates the need for an additional microcontroller
- On-chip 2.0 Full Speed USB master/device interface, including USB line drivers.
- DCF compliant, DPOF support, EXIF 2.1 image and audio file format
- Font-based (32 colors) and graphics based OSD (On Screen Display) engines for displaying user-interface messages, menus and icons on the LCD/TV. Menu of 64k colors.
- 32bit RISC engine, industry standard operating system
- 272-pin 17x17 (COACH 6p) and 217-pin 15x15 (COACH 6e) LPGA packages.
- Mass Storage "Bulk only" mode - no drivers required

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Product Brief

Evaluation and Development Tools

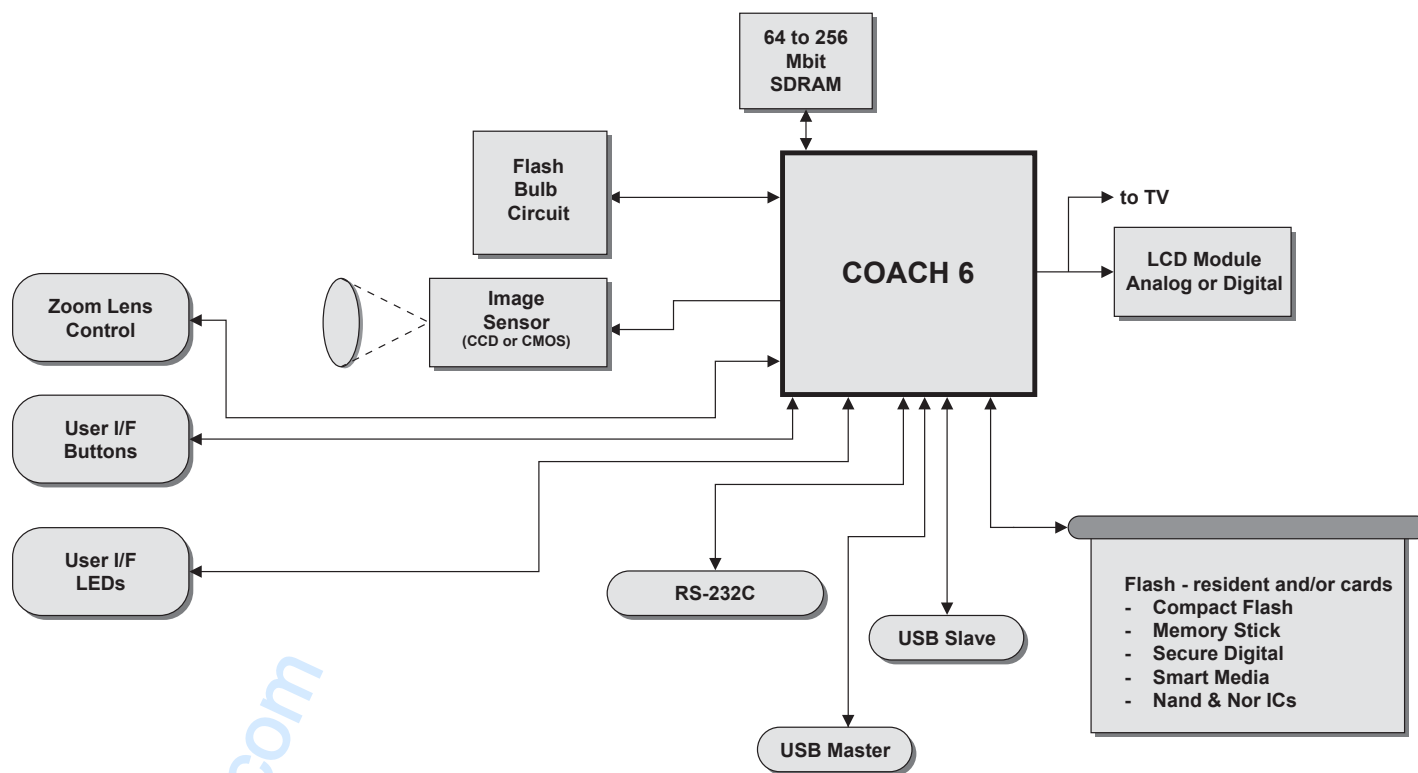
Data Book - complete specifications and description of the COACH

COACHWare™ - high level API for host software implementation of the user-interface. This comes with API specifications.

FontMapMaker - for font map and icon creation

CamMini 6 - manufacturing ready reference design - complete 3 Megapixel camera system (hardware & firmware)

PC connectivity - WHQL approved USB driver kits for image transfer and video capture



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