ZR36470
Product Brief

Zoran Corporation
1390 Kifer Road
Sunnyvale, CA 94086-5305

Tel   408.523.6500
Fax   408.523.6501
www.zoran.com

ZORAN®

Description

COACH 9 is an application specific digital signal processing IC, which constitutes the heart of a digital camera for capturing still images and video. It provides a complete, integrated, low power and low cost solution for digital camera manufacturers. Coach 9 innovative features and integrations offer competitive performance and picture quality for digital cameras. The COACH 9 family enables platforms from entry-level to high end cameras including high quality digital video camcorders.

COACH 9 Family

- **COACH 9m** (part # ZR36470BGCG) - Entry-mid range line, 12-bit image processing pipeline. Pin-to-pin compatible with COACH 7m and COACH 8m
- **COACH 9p** (part # ZR36472BGCG) - Performance line, 16-bit image processing pipeline, embedded timing generator & HDMI interface

- **COACH 9s** (part # ZR36473BGCG) - Digital Still Capture line, with JPEG/Motion JPEG only
- **COACH 9MCM** - Multichip package for space-saving boards for ultra-slim cameras

*All products support up to 16M pixels of image resolution, are firmware compatible, and share a majority of the system configuration allowing for easy migration

Feature List

- Up to 16M Pixels image capture resolution
- Click to click performance of 3 frames/sec at 7MP resolution
- 16-bit image processing for highest quality, includes multiple Zoran proprietary (patent pending) technologies.
- Image enhancement and manipulation effects for better viewing and printing quality
- Capable of WMV MPEG-4, video capture and playback   of VGA resolution at 30 frames/sec including audio and 20 frames/sec at SVGA resolution
- File formats including ASF, DivX, AVI and MOV can be supported
- MPEG-4 encoding uses I, P and B frames for true video quality
- Dual CPU (9m, 9p) for advanced image processing algorithms.
- DIST: Digital Image Stabilizer and anti-blur prevention
- Digital Video Motion Stabilization technology (patent pending) to compensate for unwanted camera movement during video capture
- Capable of several Audio codecs including: WMA; Dolby Digital AAC; ADPCM; MPEG1
- On-chip HDMI transmitter for native HD display support

- Rich color on-screen display (OSD) with transparency levels
- Picture-in-Picture with blending support in hardware
- Direct output to TV monitor, on-chip encoder and video D/A
- Digital video interface to LCD. Includes on-chip programmable controller for multiple LCD vendors
- 32-bit MIPS CPU provides ease of development and porting of SW applications
- Direct interface to resident flash memory (NAND or NOR type) and/or removable memory card support (CompactFlash (CF), SmartMedia (SSFDC), Secure Digital (SD), MultiMediaCard (MMC), High Speed MMC (HSMMC) xD, Memory Stick, Memory Stick Pro (MS-Pro) and SDRAM storage
- Direct interface to ATA-6 (or subset) hard disks.
- 16-bits data DDR-SDRAM interface supporting sizes of 64Mbit, 128Mbit, 256Mbit, 512Mbit and 1Gbit
- On-chip High Speed USB 2.0 OTG interface
- CCIR-601 input port for capturing from an external TV decoder.
- Generic serial port for interfacing with peripheral HW units
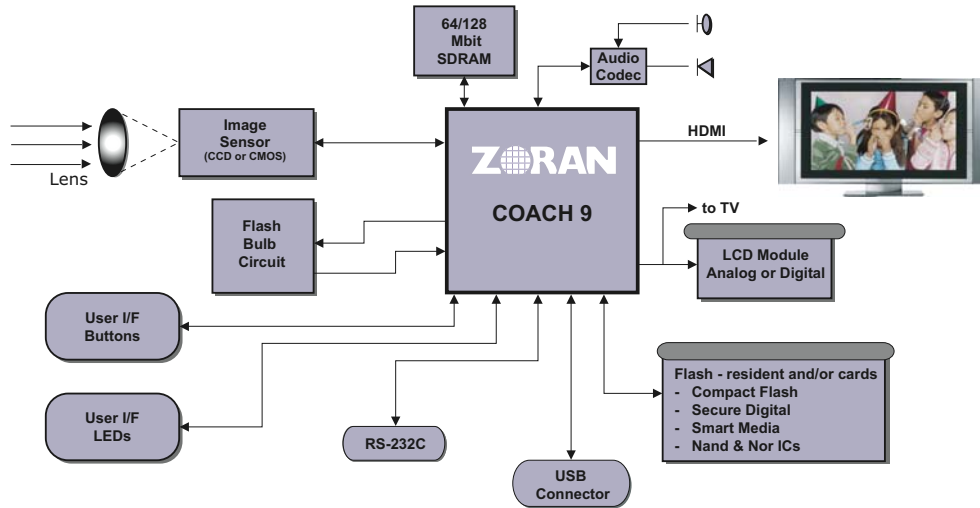
Firmware Highlights

- Embedded host control (HCE) software architecture enables customer creation of DSC applications with minimal effort
- Backward compatibility with previous COACH software API set
- Open firmware architecture for easy customer modification
- All standard camera operation modes
- Image playback allows up to 16x digital zoom, accelerated playback and image rotation
- Advanced GUI support including rich OSD, bitmaps, picture in picture and more
- Resizable, multicolor fonts
- Optional audio annotation of pictures
- Playback and recording of sound in AVI clips

- Sound effects, including shutter effects
- Dictaphone feature
- Variety of protocols for USB interface supported including:
  - PC Video Capture mode, for capturing real time video (MJPEG compressed) to PC
  - WIA, Twain, and Twain 2 protocol for direct retrieving of images and live video
  - Bulk-Only Mass Storage, for representing camera as a PC drive. No drivers required for most operating systems
  - PTP
  - Pictbridge, for direct printing to all printers supporting Pictbridge interface

ZR36470
Product Brief

ZORAN®

Block Diagram

COACH 9 Package

C9m/C9P: 17mm x 17mm
C9s: 13mm x 13mm

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