

H.264 IP-CAM SoC

General Description

The GM8136S/GM8135S video chip with the ARM 32bit CPU core provides a high-performance solution to accelerate the images and video related applications, such as H.264, MPEG4, and JPEG to the end products. Moreover, GM8136S/GM8135S provides a cost-effective and easy development system for the integration and verification of the video application at the early development stage. The GM8136S/GM8135S system platform includes a wide range of basic components, including the H.264 encoder, video capture, Image Signal Processor (ISP), Intelligent Video Surveillance (IVS), display controller, DES/3DES controller, USB 2.0 OTG controller, USB 2.0 PHY, OTG 1.1 device mode, DMA controller, Ethernet 10/100 RMII controller, and AMBA bus framework. To reduce the overall system cost, GM8136S/GM8135S is the best solution for the 720p IP-Cam system or car DVR.

Key Features

Embedded Processor

- ARM based 32bit RISC of up to 600MHz
- 32kB instruction cache and data cache

High-speed I/O Interface

- USB 2.0 OTG
- 10M/100M RMII
- Provides clock output to MAC PHY to save external oscillator

Capture Interface

- ITU BT.656/ ITU BT.1120/SDI 8bit input with max. resolution of up to 1080p

- CCIR601 input with max. resolution of up to 1080p
 - 8bit/10bit/12bit parallel bayer RGB input with max. resolution of up to 1080p
 - Max. 2-lane MIPI/Sub-LVDS combo serial CMOS sensor interface with max. resolution of up to 2Mpixels
- Note: The specification supports the LVDS electrical signals of SONY and OV sensor
- Supports size-down feature
 - Supports eight private region masks in each channel
 - Supports font-based OSD in recording channel
 - Provides clock output to video decoder or CMOS sensor to save external oscillator

Display Interface

- ITU BT.1120 and ITU BT.656 digital outputs
- Integrates 27MHz DAC for composite output (NTSC/PAL)
- Parallel RGB565 output for LCD panel

Memory Interface

- Integrate DDR
 - GM8136S: SiP DDR 1Gb
 - GM8135S: SiP DDR 512Mb
- Supports SPI NOR/NAND Flash booting
- SDIO/SDXC compatible interface

Image Processing

- 3D-deinterlace
- 3D-denoise
- Intelligent Video Surveillance (IVS) engine
- Image Signal Processor (ISP) to support max. of 2Mpixels resolution

Video Codec

- Supports JPEG codec of up to 64Kx64K
- Supports MPEG4/MJPEG codec up to 720p at 15fps
- H.264 BP/MP/HP encoding of up to 2Mpixels
 - GM8136S: 720p at 60fps
 - GM8135S: 720p at 45fps

Peripheral Components

- DMA controller
- USB 2.0 OTG controller
- OTG 1.1 controller device mode
- AES/DES/3DES
- 10/100 Ethernet MAC controller
- Timer
- Watch Dog timer
- Real time clock
- Interrupt controller
- PWM x8
- I²C
- SPI/I²S x2
- UART x3

Embedded Analog Device

- USB 2.0 OTG PHY

- OTG 1.1 I/O
- Audio codec
- SAR ADC with two channels
- 1-channel video DAC

Clock/PLL

- External 32.768kHz/30MHz crystal
- Programmable frequency for PLL
- Programmable clock output x2

Power Management

- Frequency change control
- Clock gating control for individual component

Operating Voltage

- 1.1V $\pm 5\%$ for core
- 3.3V $\pm 5\%$ for input/output
- 1.5V $\pm 5\%$ for GM8136S DDR DRAM I/O
- 1.8V $\pm 5\%$ for GM8135S DDR DRAM I/O

Package

- EPADLQFP (Body size: 14x14mm)

Power Consumption in Typical Condition

- 0.7W for 720p at 30fps

GM8136S/GM8135S

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Applications

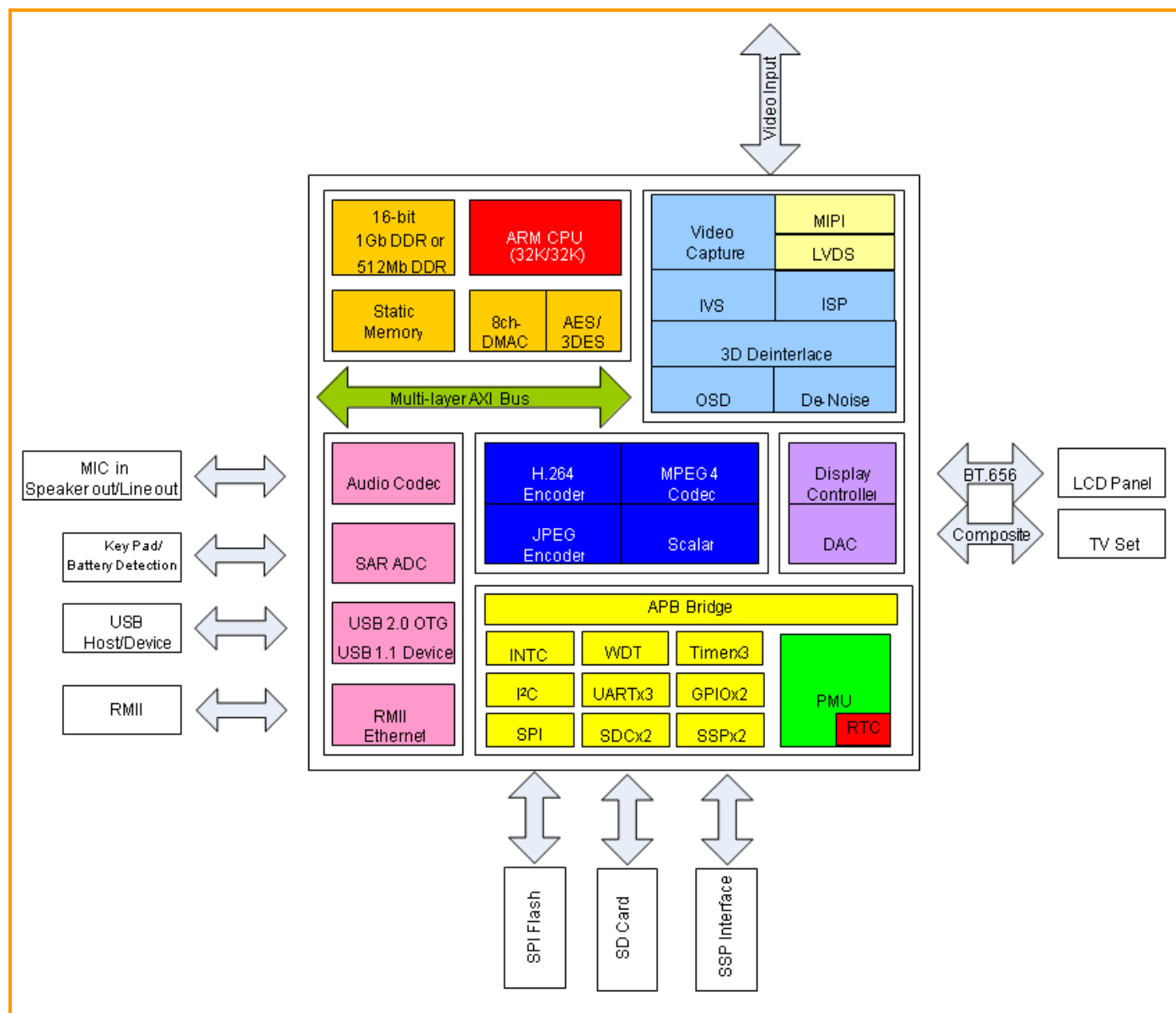
- IP camera
- Baby monitor
- Car DVR

GM8136 Family Selection Table

Part #	DDR Density	DDR Data Width	Ethernet	Sensor I/F	PWM	Package
GM8136S	1Gb	16bit	RMII	Bayer and BT.656	8	EPADLQFP128
GM8135S	512Mb	16bit	RMII	Bayer and BT.656	8	EPADLQFP128



Functional Block Diagram





HEADQUARTERS

Hsinchu, Taiwan,
Tel: 886-3-564-5533
Fax: 886-3-564-6633
tw-sales@grain-media.com

CHINA OFFICE

ShenZhen, China
Tel: 86-755-8839-2187
Fax: 86-755-8839-2173
cn-sales@grain-media.com