

Grain Media® GM8128/GM8126

H.264/MPEG-4/JPEG SoC Solution Targeting Mega-Pixel IP Camera and Multi-Channel Video Streaming Devices

VIDEO SOLUTION

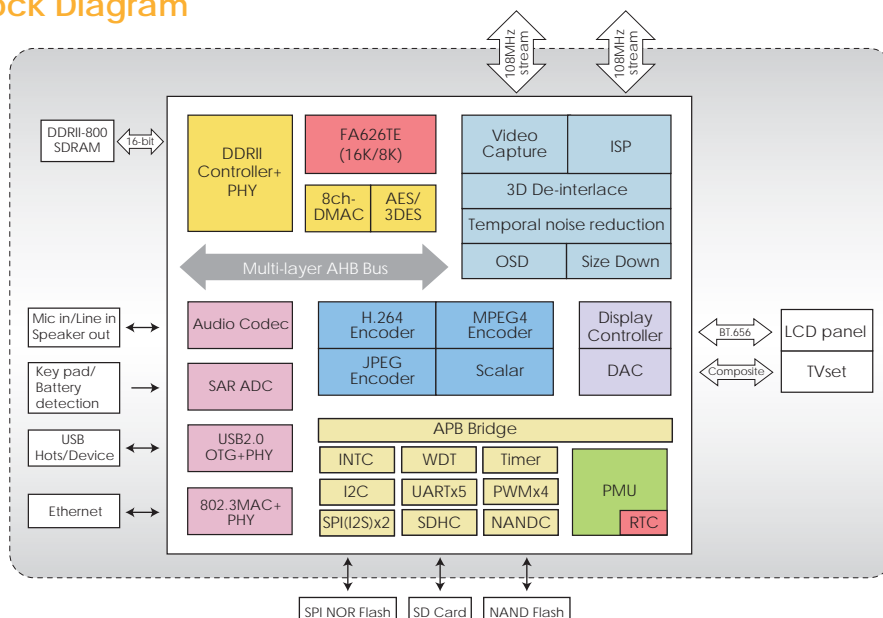
Overview

GM8128/8126 (GM812x) SoC, embedded with FA626TE ARM9 V5TE CPU, kinds of pure hardwired video encoders and peripheral controllers, provides a high performance and low BOM cost solution for IP camera and DVS application. The H.264 encoder supports real-time 1920*1080 pixels@30fps (GM8128), 1280 x 720 pixels @ 45 fps (GM8126) bitstream. To support the convergence of intranet, internet and mobile phone network, GM812x is designed to support 4 varied real-time bitstreams with different video formats, H.264/MPEG-4/JPEG, and different resolutions to fit the bandwidth and display resolution of monitor devices. 540 MHz CPU can be used for image analysis in intelligent surveillance applications, such as object or face detection. To improve the compression quality, a temporal noise reduction filter and 3D de-interlace are implemented in the SoC.

GM812x has 8-/16-bit video input and 12-bit parallel Bayer RGB interface to support mega-pixel CCD/CMOS sensors. The embedded ISP enables a seamless tailoring to 3A and video quality calibration requirement. Moreover, the kinds of operation modes save the heat and power consumption.

GM812x provides the cost-effective and easy development system for the integration and verification of the video application at the early development stage. GM812x system platform includes a wide range of basic components to reduce the overall system cost, including the H.264/MPEG4/JPEG encoder, video capture, display controller, DES/3DES controller, USB 2.0 OTG controller and PHY, DMA controller, Ethernet 10/100 MAC and PHY, Audio codec, Build-in ISP and AMBA bus framework.

Block Diagram



GM812x Linux SDK

- Linux 2.6.28
- Tool chain
 - GCC 4.4.0, Glibc 2.9, and Binutil 2.19
- Peripheral device drivers
- Protocol stacks
 - FTP, TFTP, NFS, DHCP...

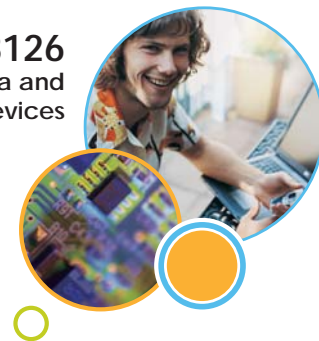
GM812x ISP Tool Kit

- Windows based tool
- GUI based for ISP tuning



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Feature List

CPU	FA626 ARM® v5TE ISA CPU, up to 540 MHz, 16K I-cache/8K D-cache
Memory Interface	- 16-bit DDRII SDRAM controller up to 800MHz - SPI NOR-type flash and NAND-type flash with 24-bit ECC
H.264 Encoder	- Encoder supporting baseline profile, from level 1 ~ 4.1 up to 720P@45 fps (GM8126) or 1080P@30 fps (GM8128) - Support VBR and CBR
MPEG-4/JPEG Encoder	- MPEG-4 supporting simple profile level 0 ~ 3.1, encoder up to 720P@30 fps - JPEG is compliant with ISO/IEC 10918-1 baseline standard.
Video Capture	- Support 2 ITU 656 interfaces - YUV 4:2:2 and 16-bit YUV interface - Resolution: Up to 1920 x 1080 - Support color OSD and input fractional scalar
ISP	- Support 12 bit parallel Bayer RGB - Still mode supports up to 5M (2592x1944) resolution, video mode supports 1080P@30fps
Display Interface	- ITU-1120 16-bit video output, up to 1024x768 - OSD with 256 programmable 12 x 16 fonts
Video DAC	Support 1 channel composite TV out
ADC	2 channels SAR ADC for battery detection, light detection or key pad
Audio Codec	- Support 8 kHz ~ 48 kHz sampling rate for both ADC and DAC - 90 dBFS SNR for ADC line-input and line-output
AES/DES/3DES Cipher Controller	Hardware implementation of AES/DES/3DES algorithm with DMA function
AHB Peripherals	802.3 MAC+PHY, USB 2.0 OTG+PHY
APB Peripherals	SDIO/SDHC controller, Timer, WDT, RTC, INTC, GPIO, I ² C, PMU, SPI(I ² S), UART, PWM
Operating Voltage	1.0 V, 1.8 V, and 3.3 V
Package	176 EPAD-TQFP (20 x 20 mm ²) 256 TFBGA (12 x 12 mm ²)

GM812x Product Selection

Product Alias	Package Type	Max Encodeing Performance	ISP	NAND Flash I/F	BT1120 Out	CVBS Out	NAND Boot	MII/RMII I/F	UART
GM8128	EPAD-TQFP176 20x20	1080P@30fps	V	NA	NA	V	NA	NA	2
GM8128	TFBGA256 12x12	1080P@30fps	V	V	V	V	V	V	5
GM8126	EPAD-TQFP176 20x20	720P@45fps	V	NA	NA	V	NA	NA	2
GM8126	TFBGA256 12x12	720P@45fps	V	V	V	V	V	V	5



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