STV0984

2 MegaPixel SMIA Profile 2 Mobile Imaging Processor

DATA BRIEF

Features

- Supports 2 SMIA profile 2 compliant sensors mutually exclusive up to 2 Megapixel (1600x1200) resolution.(1)
- Enhanced video processor
  - Noise/defect filtering, color reconstruction, sharpness enhancement and radial corrections
  - Statistic processor for exposure and white balance and autofocus control
  - GPIOs and ADC to control external actuators
- 2 video pipes for full frame rate concurrent viewfinder and video/still capture. Single shot (e.g. flashgun) thumbnail generation
  - Gamma correction programmable for both CRT and LCD displays. Color correction matrix
  - Digital zoom: Smooth downscale capability (independent X/Y characteristics) and up-scale capability to 4x
- SMIA output formats: JPEG, YUV4:2:2, YUV420, RGB888, RGB565, RGB444
- 4:2:0 JPEG compression with programmable quantization matrix and target file size
- JPEG operations up to 30 fps at UXGA resolution
- Interleaved video modes (concurrent still/video + ViewFinder)
  - 'Alternate CCP frame' mode up to 15 fps
  - 'Single CCP frame' mode up to 30 fps
- CCP transmitter derating capabilities (by 2,3,4,5 and 6) of sensor high speed clock
- Interfaces
  - Sensor interface: 2x CCP2.0(2) serial receivers (csi class 2 receivers)
  - Host interface: CCP1.01. serial transmitter (csi class 0 transmitter), ITU, PI
  - Control interface: I²C
- Flash gun control (high power LED mode and white LED mode)

Description

The STV0984 is a new generation, ultra low power Megapixel digital image processor designed to fit into mobile applications. STV0984 comes with support for 2 SMIA sensor heads and programmable intelligent General Purpose IOs engine to control, through dedicated firmware, external actuators such as flashgun, white led and autofocus solution. STV0984 provides internal buffering capability along with a versatile clock manager to accommodate different data rates between input sensors and host interface.

Applications

- Mobile phone
- PDA
- Wireless security camera

Ordering information

Table 1. Order codes

Part number	Description
STV0984/TR (Tape and Reel)	Rohs compliant (Leadfree) TFBGA 84 balls, tape and reel packing

1. SMIA 1.0 functional specification version 1.0. SMIA horizontal/vertical scaling not supported.
http://www.smia-forum.org/

2. SMIA 1.0 CCP2 Specification version 1.0

For further information contact your local STMicroelectronics sales office. www.st.com

Figure 1. Application diagram

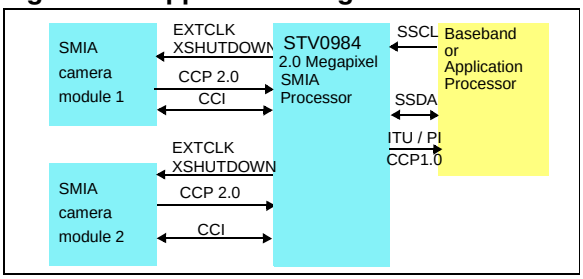

Figure 2. Block Diagram

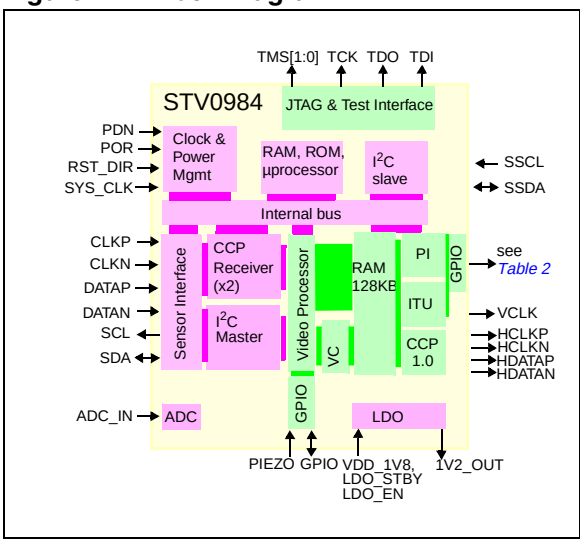

Table 2. Interface signals

ITU signal	PI
GPIO[13]	WR_N
GPIO[14]	RS_N
GPIO[15]	DREQ
ITU[7:0]	PI[7:0]
HSTYNC	RD_N
VSYNC	CS_N

Table 3. Technical specifications

Technology	0.13 µm HCMOS 9
Sensor	SMIA compliant CMOS sensors up to 2 MegaPixels
Frame rate	up to 30fps @ 2MP JPEG + QQVGA RGB888I @ VGA YUV422 @ QCIF YUV422+QVGA RGB888
Still digital zoom	x4 2MP (x4 upscale)
Video/Viewfinder digital zoom	if single video mode: x10 VGA; x20 QVGA; (x4 upscale) If interleaved video mode: x8 QVGA RGB565+QCIF YUV422
Power supply	2.8V, 1.8V (I/O ring), 1.2V core logic, +/- 0.1V (Optional 1.2V Internal regulator from 1.8V)
Power requirements	2MP JPEG + QQVGA @ 15fps: 120 mA @1.2V ; 15 mA @ 1.8V (+5 mA if internal regulator ON) Standby < 50µW
Package	Rohs compliant (Leadfree) TFBGA 84 balls 6 x 6 x 1.2 mm

Table 4. Temperature ranges

Storage	-40 to +150 °C
Operating	-25 to +70 °C

Revision history

Date	Revision	Changes
5-Sept-2005	1	Initial release.

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