

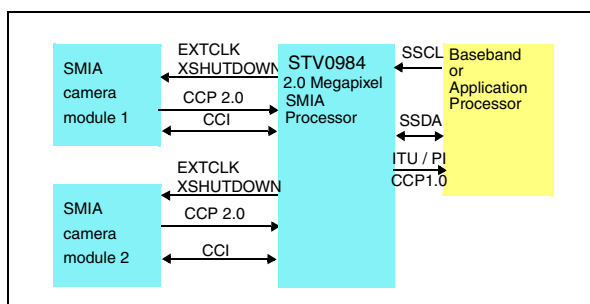
## 2 Megapixel SMIA profile 2 mobile imaging processor

Data Brief

### Features

- Supports 2 SMIA profile 2<sup>(a)</sup> compliant sensors mutually exclusive up to 2 Megapixel (1600x1200) resolution
- 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
- 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<sup>(b)</sup> serial receivers (csi class 2 receivers)

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



- Host interface: CCP1.0<sup>(a)</sup> serial transmitter (csi class 0 transmitter), ITU, PI
- Control interface: I<sup>2</sup>C
- Flash gun control (high power LED mode and white LED mode)

### Applications

- Mobile phone
- PDA
- Wireless security camera

### 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.

b. SMIA 1.0 CCP2 Specification version 1.0

# 1 Application diagram

Figure 1. Application diagram

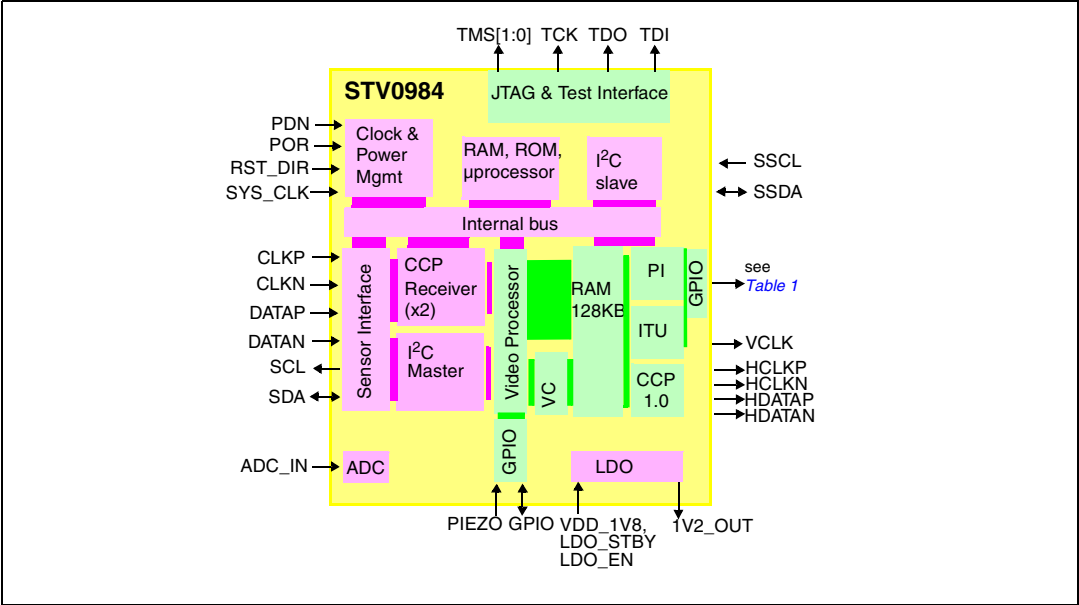


Table 1. Interface signals

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

## 2 Technical specifications

**Table 2. Technical specifications**

Parameter	Description
Technology	0.13 $\mu\text{m}$ HCMOS 9
Sensor	SMIA compliant CMOS sensors up to 2 Megapixels
Frame rate	Up to 25 fps @ 2MP JPEG + QQVGA RGB888 @ 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 < 50 $\mu\text{W}$
Package	Rohs compliant (Leadfree) TFBGA 84 balls 6 x 6 x 1.2 mm <sup>3</sup>

**Table 3. Temperature ranges**

Temperature	Range (°C)
Storage	-40 to +150
Operating	-25 to +70

### 3 Ordering information

**Table 4. Order codes**

Order code	Description
STV0984/TR	RoHS compliant (Leadfree) TFBGA 84 balls, tape and reel packing

### 4 Revision history

**Table 5. Document revision history**

Date	Revision	Changes
04-Dec-2007	1	Initial release.

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