

# STV0986

## 5 Megapixel mobile imaging processor

Data Brief

## Features

- Supports 2 mutually exclusive SMIA profile 2 compliant sensors of up to 5 Megapixel resolution<sup>(a)</sup>
- Interfaces
  - Sensor interface: 2 x SMIA CCP Class 2<sup>(b)</sup> receivers (640Mbit/s)
  - Host interface: SMIA CCP Class 1<sup>(b)</sup> transmitter (416Mbit/s) or ITU (8-bit CCIR interface, up to 80MHz)
  - Control interface: I<sup>2</sup>C (400kHz)
- Enhanced video processor
  - Noise and defect filtering, color reconstruction, sharpness enhancement, 4-channel lens shading correction and barrel distortion correction
  - Statistic processor for automatic exposure, automatic white balance and auto-focus control
  - General purpose input/outputs (GPIOs) for controlling 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 16X downscale capability with up-scale capability to 4X
- Output formats: JPEG, YUV4:2:2, YUV4:2:0, Planar YUV4:2:0 (up to CIF), RGB888, RGB565, RGB444
- 4:2:0 JPEG compression with programmable quantization matrix and target file size
- a. SMIA 1.0 functional specification version 1.0 http://www.smia-forum.org/
- b. SMIA 1.0 CCP2 Specification version 1.0

- JPEG operations up to 30 fps at 2 Megapixel resolution, up to 20 fps at 3 Megapixel resolution, and up to 12.5 fps at 5 Megapixel resolution
- Interleaved video modes (concurrent viewfinder and video/still capture)
  - 'Alternate frame' mode up to 15 fps
  - 'Single frame' mode up to 30 fps
- Image rotation/mirroring/flip support for viewfinder (up to CIF)
- Independent host interface transmitter clock, generated by an embedded PLL - frequency selectable by host
- Synchronised flash gun control with red-eye reduction (pre-flash and main-flash strobes for high-power LED or Xenon strobe control)
- Enhanced multi-zone auto-focus (supporting up to 9 zones with programmable weighting)

## Description

The STV0986 is an ultra low power megapixel digital image processor designed to fit into mobile applications. The STV0986 contains advanced image correction, noise reduction techniques and a smooth digital zoom facility, resulting in exceptional image quality in today's multi-megapixel images. The STV0986 supports 2 SMIA sensors, flashgun (LED or Xenon), auto-focus and programmable general purpose IOs for additional external actuators. The internal buffer and versatile clock manager within the STV0986 accommodates a wide range of data-rates between the sensors, the STV0986 and the host.

### Applications

- Mobile phone
- PDA
- Wireless security camera

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For further information contact your local STMicroelectronics sales office.

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## **Technical specifications**

Technology	90nm CMOS
Sensor	SMIA compliant sensors up to 5 Megapixels.
Frame rate	Up to 30fps: – @ 2MP JPEG + CIF RGB565 – @ VGA YUV422 – @ CIF RGB888 + QCIF YUV422 Up to 20fps @ 3MP JPEG + CIF RGB565 Up to 12.5fps – @ 5MP JPEG + CIF RGB565I
Still digital zoom	16X downscale from full input resolution and up to 4X upscale
Video/Viewfinder digital zoom	16X downscale from full input resolution and up to 4X upscale, with smooth zoom effect in x0.001 steps
Power supplies	<ul> <li>2.8V or 1.8V +/- 5% (I/O ring)</li> <li>1.8V +/- 5% (CCP interfaces and PLL)</li> <li>1.2V +/- 5% (core logic), or</li> <li>1.2V generated by the internal regulator from the 1.8V supply</li> </ul>
Power requirements (typical)	<ul> <li>3MP JPEG + QVGA RGB565 @ 20fps:</li> <li>165 mA @ 1.2V and 15 mA @ 1.8V for external 1.2V supply</li> <li>185mA @ 1.8V if using internal regulator</li> <li>Viewfinder QVGA RGB565 @ 20fps:</li> <li>45 mA @ 1.2V and 15 mA @ 1.8V for external 1.2V supply</li> <li>65mA @ 1.8V if using internal regulator</li> <li>Standby &lt; 100μW</li> </ul>
Package	Rohs compliant (Leadfree) – TFBGA 84 balls 6 x 6 x 1.2 mm, pin compatible with STV0984

Table 1. Techni	ical specifications
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#### Table 2.Temperature ranges

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







## **Ordering information**

Table 3.	Order	codes
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Part number	Description
STV0986/TR (Tape and Reel)	Rohs compliant (Leadfree) TFBGA 84 balls

## **Revision history**

Table 4.	Document revision history
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Date	Revision	Changes
08-Jan-2007	1	Initial release.



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