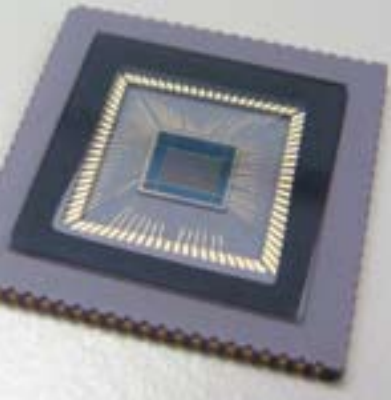




# Samsung S5K4AW CMOS Image Sensor

## 1.2 Megapixel Imager Optimized for High-Definition Video Applications



The Samsung S5K4AW CMOS image sensor was designed from the ground up to offer excellent performance in high-definition video applications.

### Excellent Pixel Technology Increases Image Quality for PCs Performing Real-Time Video Capture

The new Samsung S5K4AW CMOS image sensor takes imaging technology to new levels through its capabilities in real-time high-definition video capture. This highly integrated 1/4-inch system-on-chip imager for notebook and desktop computers includes innovative technology that improves the performance and resolution of currently available PC video solutions. Rather than the usual 1.3-megapixel resolution—better suited to still image capture—the Samsung imager’s 1.2-megapixel performance is optimized for high-quality video. It has broad applications in business video conferencing, Internet video sharing, direct-to-web scanning, biometrics and security.

The S5K4AW camera chip includes the CMOS image sensor, an image processor and an 8-bit ITU-R 656/601 parallel interface. It is fabricated using Samsung’s 0.13µm CMOS image sensor process, which was developed for high efficiency and low power. The chip’s design drastically reduces fixed-pattern noise and random pixel noise.

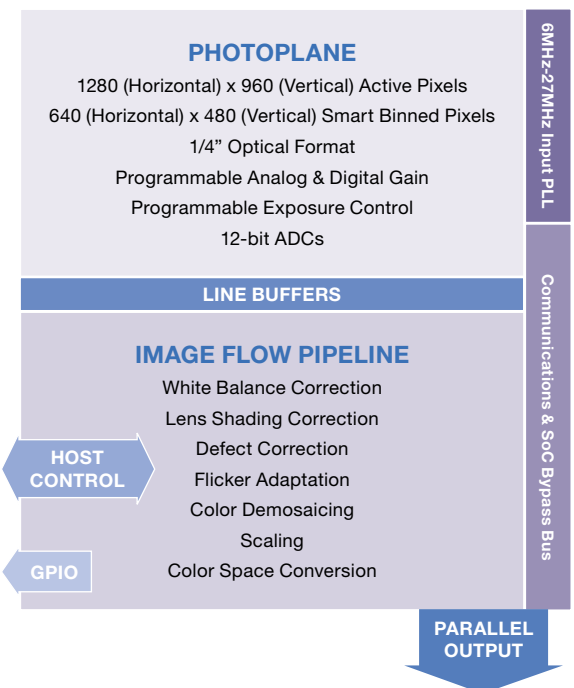
### Advanced Binning Technology

With its focus on high-definition video for the S5K4AW, Samsung developed a technique in which binning is performed in 2x2 pixel groups, enabling the imager to display standard VGA formats without the need for cropping. As a result, no longer will the top or bottom of a scene be lost

during video conferencing or file sharing on social networks like YouTube.

Low light sensitivity is an ongoing challenge in advanced video conferencing applications. However, Samsung’s binning technology also significantly improves the imager’s sensitivity to light. For example, the industry’s standard binning approach improves light sensitivity by approximately 1.2 times but Samsung’s technology boosts sensitivity by nearly three times. This is critical when the only illumination in a scene might come from the computer screen.

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## Increasing Demand for Embedded Video on PC

The market has been shifting toward high-definition technology, while at the same time, the use of video on the PC is exploding. By 2010, approximately 75 percent of laptops and 35 percent of LCD monitors will be shipped with an embedded camera. Tapping into these trends is Samsung's new imager. With its best-in-class HD resolution and image quality, the Samsung S5K4AW gives designers an excellent solution for handling wide-

format displays and high-quality, real-time video embedded in a display.

The new imager builds on Samsung's leadership in CMOS image sensors. Leveraging its longtime semiconductor expertise, skill in low-light sensitivity and track record in producing small-footprint devices, the company designed the S5K4AW imager to offer better performance than what is widely available. The new chip supports 720p HD video at 30 frames per second and captures VGA video at up to 60 frames per second.

Packaged as a 1/4-inch SoC, the Samsung S5K4AW imager supports both full resolution and 720p HD video at 30 frames per second and captures VGA video at up to 60 frames per second.

## SAMSUNG S5K4AW KEY FEATURES

- SoC imager
- 1.2M (1280 x 960) effective resolution
  - VGA, 720p supported
- 1/4-inch optical format
- 2.8µm pixel size
- Maximum frame rate of 30 fps@ full resolution and 60 fps @ VGA
- Maximum pixel clock frequency: 96MHz
- 12-bit ADC accuracy
- Dynamic range of >60dB
- Image processor functions: color correction, denoising, despeckle, lens shading correction, programmable gamma correction, image down scaling, auto dark level compensation, auto flicker correction (50/60Hz), auto exposure (AE), auto white balance (AWB)
- Vertical flip and horizontal mirror mode
- SNR:
  - >23 dB @ 50-Lux
  - >26 dB @ 100-Lux
- Binning mode: 2x2 for VGA emulation
  - >28.3 dB @ 50-Lux
- Output formats (8 bit parallel):
  - YUV/YCbCr (4:2:2)
  - RBG (5:6:5)
  - Raw RGB data
- Voltage: 2.8V for analog, 1.5V for digital core, 2.8V or 1.8V for I/O
- Package: TPLCC, CSP

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