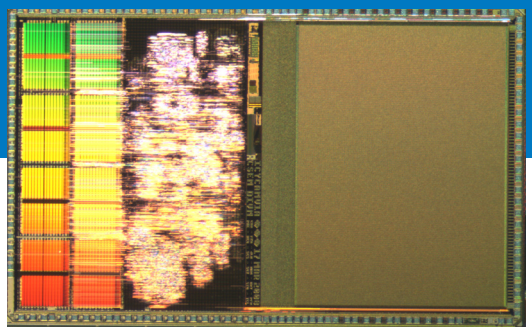
IcyCAM™

A QVGA system-on-chip for vision applications



IcyCAM™ chip

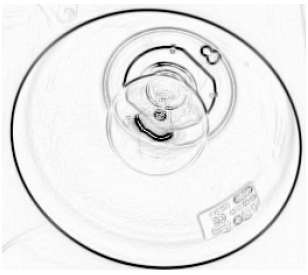
This system-on-chip combines a high dynamic range QVGA pixel array, a 32-bit icyflex® processor with a 64-bit data path and 128 Kbytes of SRAM on a single chip. The pixel array uses a time-domain logarithmic encoding to yield an extremely high intra-scene dynamic range with very high image quality.

In addition to the traditional luminance information, the pixel array also delivers contrast magnitude and direction to facilitate visual scene analysis. A dedicated graphical processing unit discharges the 32-bit DSP/MCU processor from repetitive tasks (i.e. difference between 2 images). The system-on-chip can be connected to an external SDRAM.

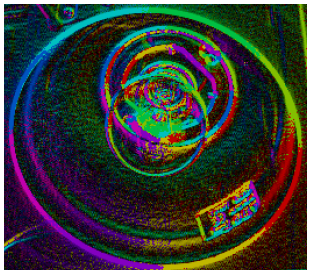
Features

- 100MHz SDRAM interface
- 12-bit Parallel Peripheral Interface (PPI)
- 2 Serial Peripheral Interfaces (SPI)
- 16-bit General Purpose I/O Interface (GPIO)
- UART interface
- JTAG interface
- Programmable in C (GNU tool suite)

Luminance



Contrast magnitude



Contrast direction encoded by colors

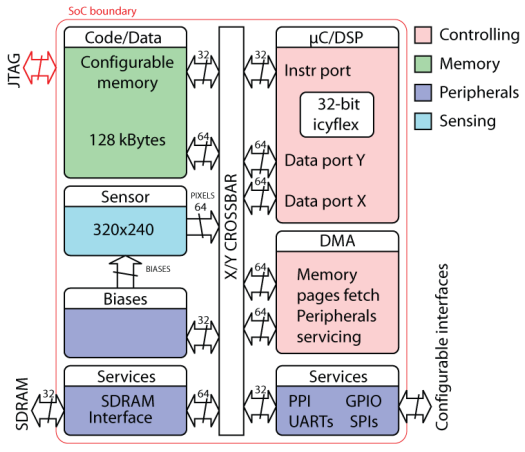
Specifications

Resolution	320x240 pixels (QVGA)
Pixel size/fill factor	14x14µm²/20%
Chip size	44mm²
Sensitivity	6V/lux/s
Dark current	44mV/s at 25°C
Fixed pattern noise	0.51LSB
Dynamic range	132dB
Steps per decade	149
Supply voltage	1.8V (digital) and 3.3V (analog)
Power consumption (at 30 fps)	80mW
DSP clock frequency	50MHz
On-chip SRAM	128Kbytes
Temperature range	- 40°C to + 105°C

Application

This sensor is ideally suited for applications where illumination is not controlled, or changing rapidly:

- Security and surveillance
- Home automation applications
- Automotive passive and active security
- Industrial and robotic applications



Block diagram

IcyCAM™ optical front-end is covered under patent EP2093996

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