Product Document

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The technical content of this CMOSIS / AWAIBA document is still valid.

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CMV2000

2MP high speed global shutter image sensor

SENSOR DESCRIPTION

The CMV2000 is a global shutter CMOS image sensor with 2048 by 1088 pixels in a 2/3″ optical format supporting full HD imaging (1080p). The image array consists of 5.5 um by 5.5 um pipelined global shutter pixels, which allow exposure during read out while performing CDS operation reducing fixed pattern and dark noise significantly. The CMV2000 has 16 12-bit digital LVDS outputs (serial) each running at 480 Mbps. The image sensor also integrates a programmable gain amplifier and offset regulation. Each channel runs at 480 Mbps maximum, which results in 340 fps frame rate at full resolution in 10-bit mode. Higher frame rates can be achieved in row-windowing mode or row-subsampling mode. All operation modes are all programmable using a SPI interface. A programmable on-board sequencer generates all internal exposure and read out timings. External triggering and exposure programming is also possible. Extended optical dynamic range can be achieved by multiple integrated high dynamic range modes. A 12-bit per pixel mode is available at reduced frame rates.

APPLICATION FIELDS

- Machine vision
- Motion control
- Traffic monitoring
- High speed inspection
- Security
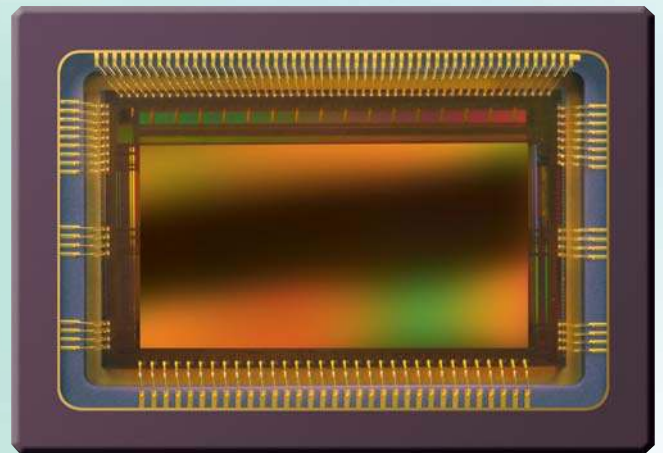
SENSOR FEATURES

- Pipelined global shutter with CDS
- 2048 (H) x 1088 (V) active pixels on a 5.5 µm pitch
- Optical format of 2/3"
- 340 frames/s at full resolution in 10 bit mode
- 70 frames/s at full resolution in 12 bit mode
- ROI windowing capability
  (up to 8 separate ROIs - row based only)
- X-Y mirroring function
- 16 LVDS-outputs @ 480 Mbps multiplexable
  to 8, 4 and 2 at reduced frame rate
- Multiple High Dynamic Range (HDR) modes up to 90 dB
- On chip temperature sensor
- On chip timing generation
- SPI-control
- 3.3 V and 1.8 V signaling
- Monochrome and Bayer (RGB) configuration
- Ceramic 95-pins µPGA/LGA or 92-pins LCC package

CMV2000

2MP high speed global shutter image sensor

SENSOR SPECIFICATIONS

Specification	Value
Resolution	2MP - 2048 (H) x 1088 (V)
Pixel size	5.5 x 5.5 µm^2
Optical Format	2/3''
Shutter Type	Pipelined global shutter with true CDS
Frame Rate	340 fps (10 bit)
	70 fps (12 bit)
Output Interface	16 LVDS outputs @ 480 Mbps
Sensitivity	5.56 V/lux.s
Conversion gain	0.075 LSB/e-
Full well charge	13500 e-
Dark noise	13 e- (RMS)
Dynamic range	60 dB
SNR max	41.3 dB
Parasitic light sensitivity	1/50000
Extended dynamic range	Yes, up to 90 dB
Dark current	125 e-/s (25°C)
Fixed pattern noise	< 1 LSB (<0.1 % of full swing)
Chroma	Mono and RGB
Supply voltage	1.8 V / 3.3 V
Power	600 mW
Operating temperature range	-30°C to +70°C
RoHS compliance	Yes
Package	Ceramic 95-pins µPGA/LGA or 92-pins LCC
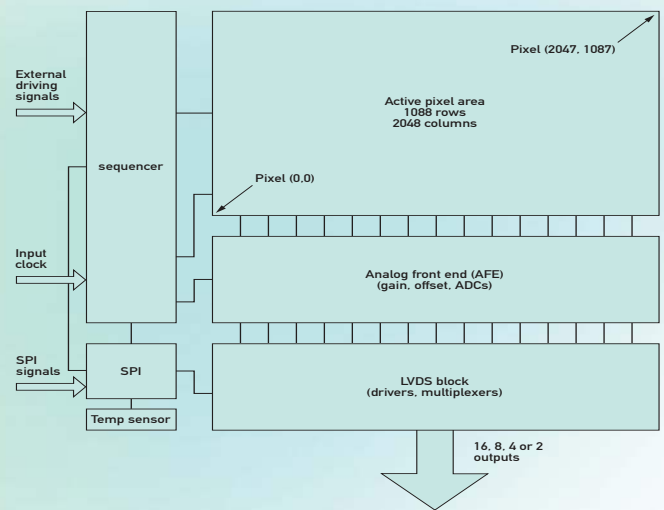
ORDERING INFORMATION

CMV2000	Description
CMV2000-3E5M1PP	Monochrome version µPGA package
CMV2000-3E5M1PN	Monochrome version µPGA package with removeable glass lid
CMV2000-3E12M1PP	Monochrome version µPGA package NIR enhanced
CMV2000-3E5C1PP	RGB Bayer Color version µPGA package
CMV2000-3E5M1LP	Monochrome version LGA package
CMV2000-3E12M1LP	Monochrome version LGA package NIR enhanced
CMV2000-3E5C1LP	RGB Bayer Color version LGA package
CMV2000-3E5M1CA	Monochrome version LCC package
CMV2000-3E12M1CA	Monochrome version LCC package NIR enhanced
CMV2000-3E5C1CA	RGB Bayer Color version LCC package