



## CMV2000

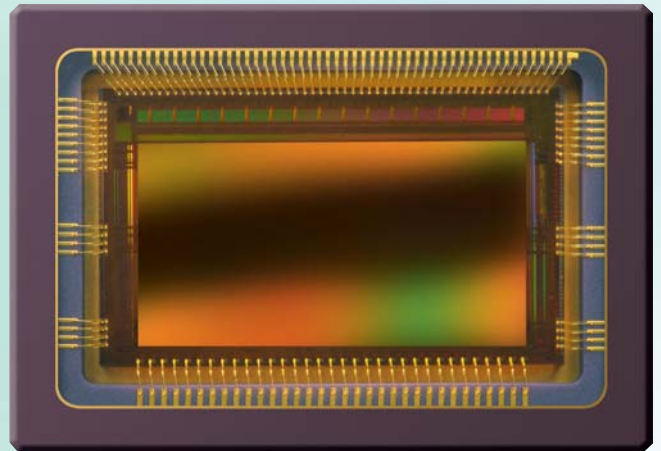
# 2MP high speed global shutter image sensor

### 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  $\mu\text{m}$  by 5.5  $\mu\text{m}$  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) \* 1088 (V) active pixels on a 5.5  $\mu\text{m}$  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 pin  $\mu\text{PGA}$  package (18.6 mm x 13.5 mm)

Please address all product inquiries and ordering information to:

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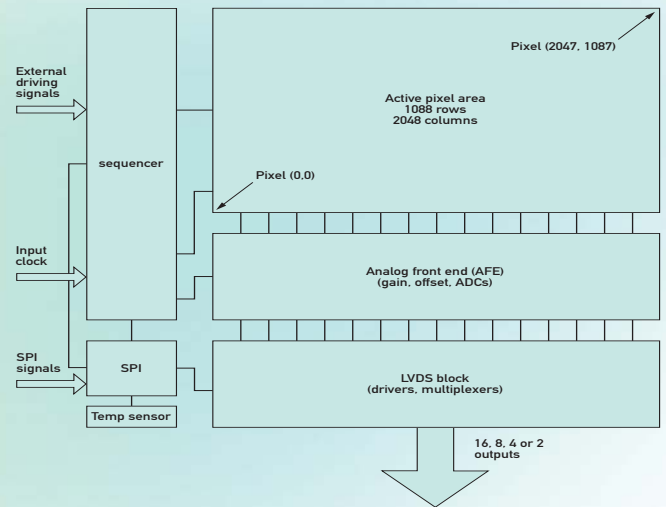


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### SENSOR SPECIFICATIONS

| Specification               | Value                                  |
|-----------------------------|--|
| Resolution                  | 2MP - 2048 (H) x 1088 (V)              |
| Pixel size                  | 5.5 x 5.5 $\mu\text{m}^2$              |
| Optical Format              | 2/3"                                   |
| Shutter Type                | Pipelined global shutter with true CDS |
| Frame Rate                  | 340 fps (10 bit)<br>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 to +70 degC                        |
| RoHS compliance             | Yes                                    |
| Package                     | 95 pins $\mu$ PGA                      |



### ORDERING INFORMATION

| CMV2000          | Description  |
|------------------|--|
| CMV2000-3E5M1PP  | Monochrome version $\mu$ PGA package                           |
| CMV2000-3E5M1PN  | Monochrome version $\mu$ PGA package with removeable glass lid |
| CMV2000-3E12M1PP | Monochrome version $\mu$ PGA package NIR enhanced              |
| CMV2000-3E5C1PP  | RGB Bayer Color version $\mu$ PGA 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                            |

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