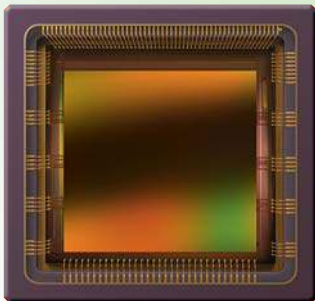




CMV4000

High speed global shutter machine vision sensor

SENSOR DESCRIPTION



The CMV4000 is a high sensitivity, pipelined global shutter CMOS image sensor with 2048 x 2048 pixel resolution capable of HD format. Pipelining allows exposure during read out.

The state-of-the-art pixel architecture offers true correlated double sampling (CDS) in global shutter mode, reducing the fixed pattern noise and dark noise significantly. The imager integrates 16 LVDS channels each running at 480 Mbps resulting in a 180 fps frame rate at full resolution at 10 bit per pixel. Driving and read-out are programmed over a serial peripheral interface. An internal timing generator produces the signals needed for read-out and exposure control of the image sensor. External exposure triggering remains possible. A 12 bit per pixel mode is available at reduced frame rate.

SENSOR FEATURES

- Pipelined global shutter with CDS
- Optical format of 1"
- 2048 * 2048 active pixels on a 5.5 μm pitch
- 180 Frames/s in 10 bit mode
- 37 Frames/s in 12 bit mode
- Row windowing capable of up to 8 separate ROIs
- X-Y mirroring function
- 16 LVDS-outputs @ 480 MHz 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
- Ceramic 95 pin μPGA package (18.6 mm x 18.6 mm)

APPLICATION FIELDS

- Machine vision
- Motion control
- Traffic monitoring
- High speed inspection
- Security
- HD camcorders
- Automotive
- Barcode reading



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SENSOR SPECIFICATIONS

| Specification | Value |
|-----------------------------|----------------------------------|
| Resolution | 2048 (h) x 2048 (v) |
| Pixel size | 5.5 x 5.5 μm^2 |
| Full well charge | 13.5 Ke- |
| Conversion gain | 0.075 LSB/e- (10 bit mode) |
| Sensitivity | 4.64 V/lux.s (with micro lenses) |
| Temporal noise | 13 e- (RMS) |
| Dynamic range | 60 dB |
| Optical format | 1" |
| Parasitic light sensitivity | <1/50 000 |
| Dark current | 125 LSB/s (25C die temperature) |
| Operating temperature range | -30 °C to +70 °C |
| Power consumption | 600 mW |
| Fixed pattern noise | <1 LSB (<0.1% of full swing) |

ORDERING INFORMATION

| Product number | Description |
|-----------------|---|
| CMV4000-2E5M0PP | Monochrome version without micro lenses |
| CMV4000-2E5M1PP | Monochrome version with micro lenses |
| CMV4000-2E5C1PP | RGB Bayer color version with micro lenses |

