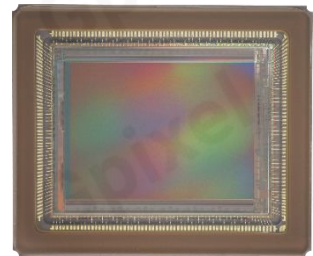


# GMAX3412 Product Flyer



## 12MP GLOBAL SHUTTER CMOS IMAGE SENSOR

**GMAX3412** is a 1.1" optical format CMOS image sensor with 4096 x 3072 effective pixels with frame rates up to 128/60 fps in 10/12-bit mode with sub LVDS interface and 30 fps over the alternative 4 MIPI D-PHY channels. Based on a high-performance 3.4  $\mu\text{m}$  charge domain global shutter pixel, **GMAX3412** achieves a max full well capacity of 9 ke- and min dark noise of 1.8 e-, delivering max 67.9 dB linear dynamic range. Red Fox technology delivers QE of 75% @ 540 nm, and a NIR QE of 33% @850 nm. **GMAX3412** is housed in 176 pin ceramic LGA package, 22.93 mm x 19.39 mm outer dimensions, and pin-compatible to **GMAX3405**.



**GMAX3412** is configurable through I2C or SPI, and supports features such as multislope HDR and short exposure time modes making it an ideal solution for an easy integration into cost-sensitive applications in machine vision, industrial bar code reading, logistics, and traffic.

### Key Features

- 12MP resolution
- Charge domain electronic global shutter
- High speed and good PLS and angular response
- NIR enhance
- Multi-slope HDR
- One Time Programmable(OTP) Memory

### Applications

- Machine Vision
- Logistics Bar Code Readers
- Intelligent Traffic System (ITS)

# Sensor Specifications

Resolution	12 MP - 4096 (H) x 3072 (V)	Optical format	1.1"
Pixel size	3.4 $\mu\text{m}$ $\times$ 3.4 $\mu\text{m}$	Photosensitive area	14.0 mm x 10.5 mm
Shutter type	Global shutter	Parasitic Light Sensitivity	< - 88 dB (angular dependence)
Peak QE	75% @ 540 nm	Angular response	> 15° (80% response)
Full well capacity	9.0k e <sup>-</sup> @ 12-bit, PGA gain x1.0 8.0k e <sup>-</sup> @ 10-bit, PGA gain x1.0	Temporal noise	1.8 e <sup>-</sup> @ 12-bit, PGA gain x12.19 3.3 e <sup>-</sup> @ 10-bit, PGA gain x2
Max. SNR	39.5 dB @ 12-bit, PGA gain x1.0 39.0 dB @ 10-bit, PGA gain x1.0	Dynamic Range	67.9 dB @ 12-bit, PGA gain x1.0 61.9 dB @ 10-bit, PGA gain x1.0
Dark Current	6.5 e <sup>-</sup> /pixel/s @ 35 °C	ADC	10/12 bit
Maximum frame rate	128 fps @ 1.2G Sub-LVDS, 10bit 60 fps @ 1.2G Sub-LVDS, 12bit 30 fps @ 1.2G MIPI, 12 bit	Output format	16 pairs of Sub-LVDS 4 lanes of MIPI
Power consumption	< 1.5 W	Max. Data rate	19.2 Gbps @Sub-LVDS 4.8 Gbps @MIPI
Supply voltage	3.6 V for pixel 3.3 V for analog 1.8 V – 3.3 V for IO 1.2 V for digital	Channel multiplexing	16/14/12/10/8/6/4/2/1 @ Sub-LVDS 4 @ MIPI
Chroma	Bayer RGB, Mono	Package	176 pins LGA 22.93 mm x 19.39 mm

## Ordering Information

Sensor Part No.	Description
GMAX3412-AVM-NLV-BUD	Monochrome, Normal speed, 128 fps @ 10bit 16 x Sub-LVDS, 60 fps @ 12bit 16 x Sub-LVDS, 30 fps @ 12bit 4 x MIPI, Demo grade
GMAX3412-AVC-NLV-BUD	Bayer RGB, Normal speed, 128 fps @ 10bit 16 x Sub-LVDS, 60 fps @ 12bit 16 x Sub-LVDS, 30 fps @ 12bit 4 x MIPI, Demo grade