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GP-PR261029-WYY-V1.0

Gpixel



Advanced CMOS Image Sensors

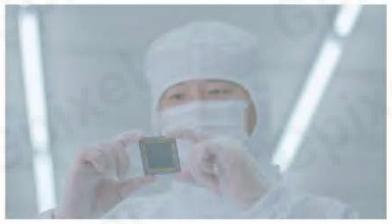
Empowering vision with sensor excellence

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+ COMPANY







Gpixel (HKEX: 3277) delivers off-the-shelf and semi– or fully-customized CMOS image sensors that meet the demands of scientific, industrial, professional and medical imaging markets. At Gpixel our seasoned, multidisciplinary team of experts are passionate about pushing the boundaries of image sensing technologies. As a proven designer and supplier of advanced CMOS image sensors, we develop solutions that meet the exacting demands of our target markets with the added benefits of volume production.

2012
Founding

Products
Advanced CMOS image sensors

Vision
Focus on technology
Insist on innovation

Founded in 2012 by experienced CMOS image sensor designers and semiconductor physicists, Gpixel works in close cooperation with our customers and business partners to produce advanced CMOS image sensors for use all over the world. From our offices in Changchun (headquarters), Hangzhou and Dalian ,China, Antwerp, Belgium (European design center) and Tokyo, Japan (Japanese design center). We are committed to delivering innovative and specialized high-end CMOS image sensor solutions to our global customer base.

Gpixel has created a broad portfolio of products covering automation & inspection, scientific imaging, medical imaging, video & photography, and traffic & transportation.





An international R&D team with deep technical expertise

Global R&D Center, the team maintains close communication and efficient collaboration.

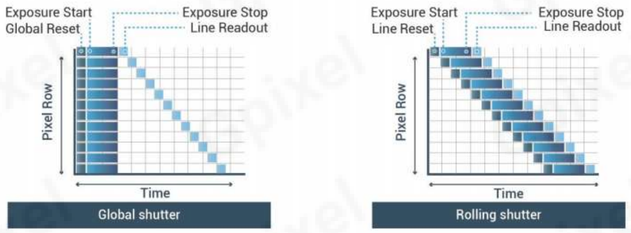


Gpixel

Technology

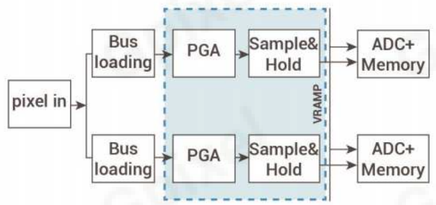
Global Shutter Pixels

- The entire pixel array can start and end exposure at the same time.
- Advanced charge-domain global shutter pixels can realize single-electron level readout noise.
- Dual microlens array design effectively optimizes shutter efficiency.



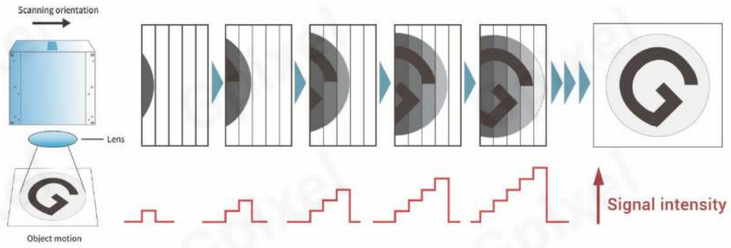
Low Noise, High Speed, High Dynamic Range

- Correlated multiple sampling technology can achieve read noise less than a single electron.
- Using interleaved time-sharing high-speed circuit design, data rates up to 1Tbps are possible.
- Dual-gain circuit designs achieve >100 dB dynamic range in a single exposure.



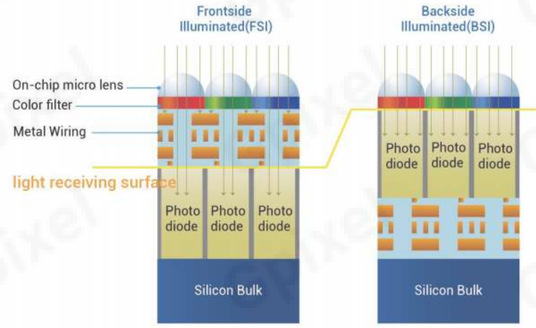
Time Delay and Integration

- In low-light environments, TDI can provide both fast scanning and high image quality while optimizing detection efficiency.
- For the same scanning speed, compared with ordinary line array sensors, less illumination is required and the system's energy consumption is lower.
- TDI is ideal for the inspection of wafers, PCBs, and displays, as well as for high throughput gene sequencing.



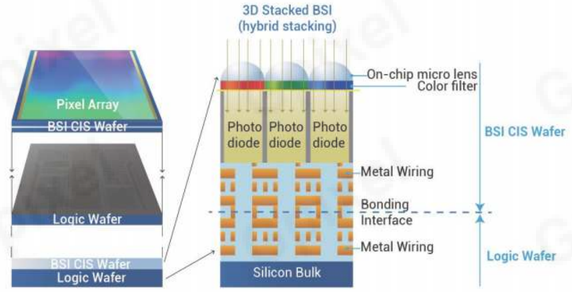
Backside-illumination

- Gpixel's self-developed backside-illumination technology achieves peak quantum efficiency over 95%.
- The spectral range can be extended from the ultraviolet to the near infrared.
- The addition of Gpixel's Pulsar technology extends the range into the soft xray region.



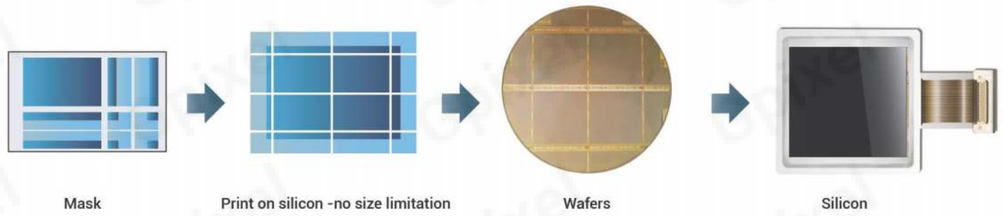
Advanced Wafer Stacking

- Pixels and supporting circuits are independently designed and the separate wafers are bonded together through copper interconnections.
- Stacked chip architectures provide small size, fast read-out rate and high integration.



Large-Area and High-Resolution Chip Design

- Breaks through the lithography limit of 24 mm x 32 mm in a single pass.
- Related design expertise allows for stitching of even dense pixel designs with minimization of boundary artifacts.



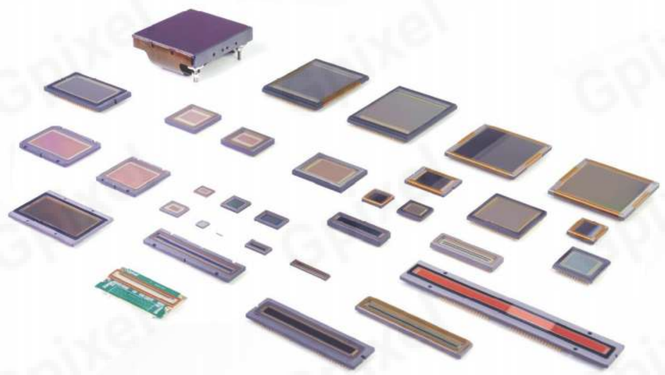
Applications







Advanced CMOS Image Sensors

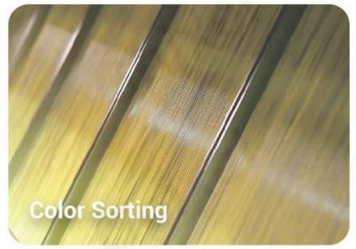


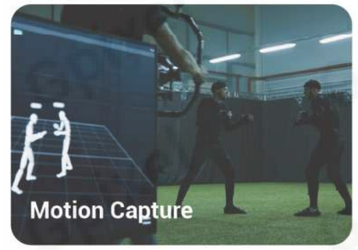






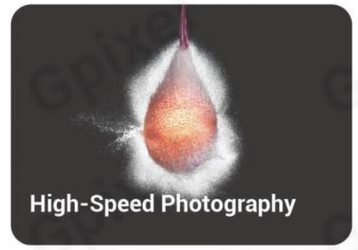


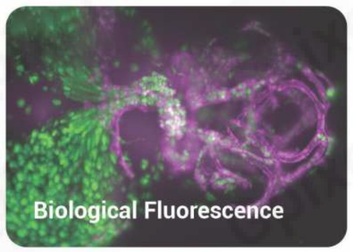




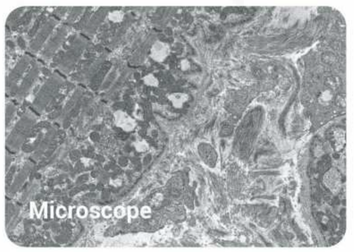






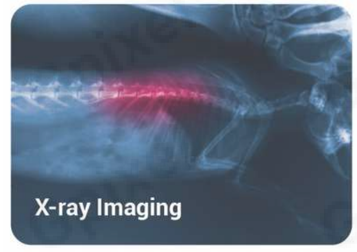






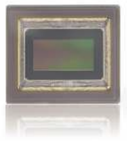






Product Contents

9 families of standard products, meeting the needs of multiple industries



GMAX

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GMAX4651 GMAX3265
GMAX32103 GMAX64104
GMAX32152 GMAX15271BSI

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GSENSE400BSI GSENSE4040BSI
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GSENSE3243BSI GSENSE6510BSI
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GSENSE1081BSI GSENSE64105BSI

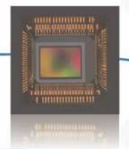
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GLUX

GLUX9701BSI

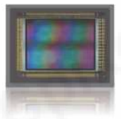
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GTOF

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Gpixel

GMAX | GSPRINT | GSENSE | GLUX | GTOF | GCINE | GL | GXS | GIR

Area Scan CMOS Image Sensor

GMAX is Gpixel's global shutter sensor family, designed to take full advantage of high-speed industrial camera interfaces while providing the performance and features required for imaging-as-measurement applications like factory inspection, automation, traffic monitoring and aerial mapping. In the GMAX portfolio, Gpixel offers global shutter pixel sizes ranging from 1.5 μm to 6.4 μm and resolutions from 2.4 MP to 271 MP. Four C-Mount compatible sensors utilizing a 2.5 μm pixel are pin and footprint compatible for easy integration.

GMAX4002	GMAX3405	GMAX2505	GMAX2509	GMAX3809
GMAX3412	GMAX4416	GMAX2518	GMAX2424BSI	GMAX0505
GMAX4651	GMAX3265	GMAX32103	GMAX32152	GMAX64104
GMAX15271BSI				

Product Family Features

- Global Shutter
- 2.4 MP-271 MP
- 1/1.7"-Medium
- High Speed

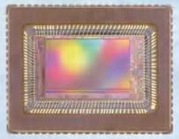
Applications

- Automation & Inspection
- Video Broadcasting
- Traffic & Transportation
- Medical Imaging



GMAX4002

2.4MP GLOBAL SHUTTER CMOS IMAGE SENSOR



GMAX4002 is a 1/1.7" optical format image sensor with 2048 x 1200 effective pixels. Featuring an advanced charge domain global shutter pixel, GMAX4002 operates with true CDS for low noise and high dynamic range. Gpixel's Red Fox technology is employed to deliver enhanced QE for NIR applications. GMAX4002 is configurable through I²C. It integrates both sub-LVDS and MIPI interfaces, for frame rates of 344 fps and 166 fps respectively. GMAX4002 supports 2×2 on-chip binning to achieve higher sensitivity and faster frame rate. It includes an on-chip sequencer and OTP functions. Assembled with a 74 pins CLCC package, GMAX4002 enables a cost-effective camera solution, easy integration and high-reliability mass production.

Key Features and Benefits

- NIR Enhanced
- Low Noise Global Shutter
- On-chip Sequencer
- MIPI and Sub-LVDS Data Interfaces
- One Time Programmable (OTP) Memory

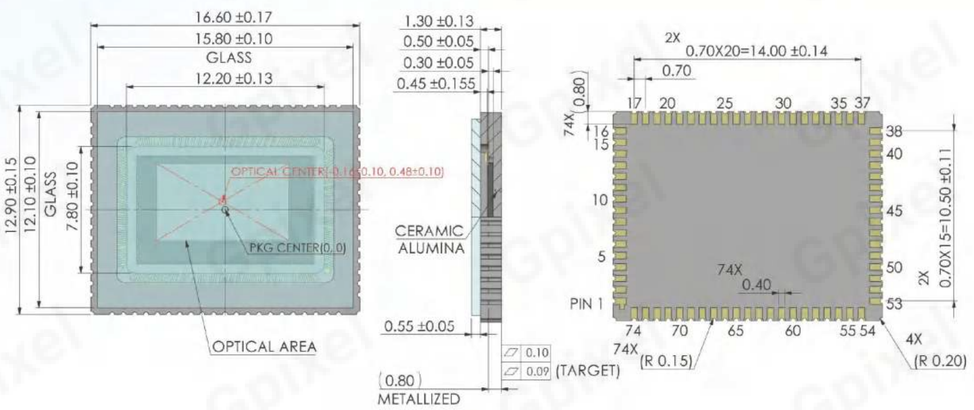
Application

·Automation & Inspection ·Logistic & Positioning ·Metrology ·Motion Capture

Specifications

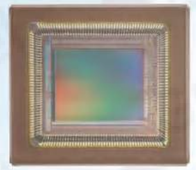
Nr of Active Pixels	2048(H) x 1200(V)	Optical Format	1/1.7"
Pixel Size	4 μm x 4 μm	Photosensitive Area	8.2 mm x 4.8 mm
Shutter Type	Global shutter	Parasitic Light Sensitivity	<-92 dB
Full Well Capacity	11.6 ke⁻ (12 bit,PGA gain 1.0x),11.0 ke⁻ (12 bit,PGA gain 1.0x)	Peak QE	73.7% (550 nm)
Temporal Noise	2.6 e⁻ (12 bit,PGA gain 3.8x),2.9 e⁻ (10 bit,PGA gain 3.8x)	Angular Response	>15° (80% Response)
Dark Current	8.3 e⁻/pixel/s (37°C)	Max. SNR	40.6 dB (PGA gain 1.0x)
Max Frame Rate	344 fps (10 bit,1.2G Sub-LVDS),229 fps (10 bit,800M Sub-LVDS) 195 fps (12 bit,800M Sub-LVDS),166 fps (12 bit,1.2G MIPI)	Dynamic Range	68.0 dB (12 bit,PGA 1.0x) 64.4 dB (10 bit,PGA 1.0x)
Output Format	8 ch Sub-LVDS、4 ch MIPI	Channel Multiplexing	8/4/2/1 (Sub-LVDS),4/2/1 (MIPI)
ADC	10/12 bit	Max. Data Rate	9.60 Gbps (Sub-LVDS),4.8 Gbps (MIPI)
Chroma	Mono,Mono (NIR enhanced),RGB Color	Power Consumption	<0.5 W
Supply Voltage	3.3 V (analog),1.8 V – 3.3 V (IO),1.2 V (digital)	Package	74 pins CLCC (16.6 mm x 12.9 mm)

Package Drawing



GMAX3405

5MP GLOBAL SHUTTER CMOS IMAGE SENSOR



GMAX3405 is a 2/3" optical format CMOS image sensor with 2448 x 2048 effective pixels and frame rates up to 164/100 fps in 10/12 bit mode with sub-LVDS interface and 73 fps over the 4 alternative MIPI DPHY channels. Based on a high-performance 3.4 μm charge-domain global shutter pixel, GMAX3405 achieves a maximum full well capacity of 8.5 ke⁻ and minimum dark noise of 1.6 e⁻, delivering 66.9 dB linear dynamic range. Red Fox technology delivers QE of 75% (540 nm), and a NIR QE of 33% (850 nm). GMAX3405 is housed in 176 pins ceramic LGA package, 17.6 mm x 15.8 mm outer dimensions, and pin-compatible to GMAX3412. GMAX3405 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 and Benefits

- 5 MP Resolution
- Charge Domain Electronic Global Shutter
- NIR Enhance
- Multi-Slope HDR
- One Time Programmable(OTP) Memory
- Ultra-Short Exposure Time (1us)
- High Speed and Good PLS and Angular Response

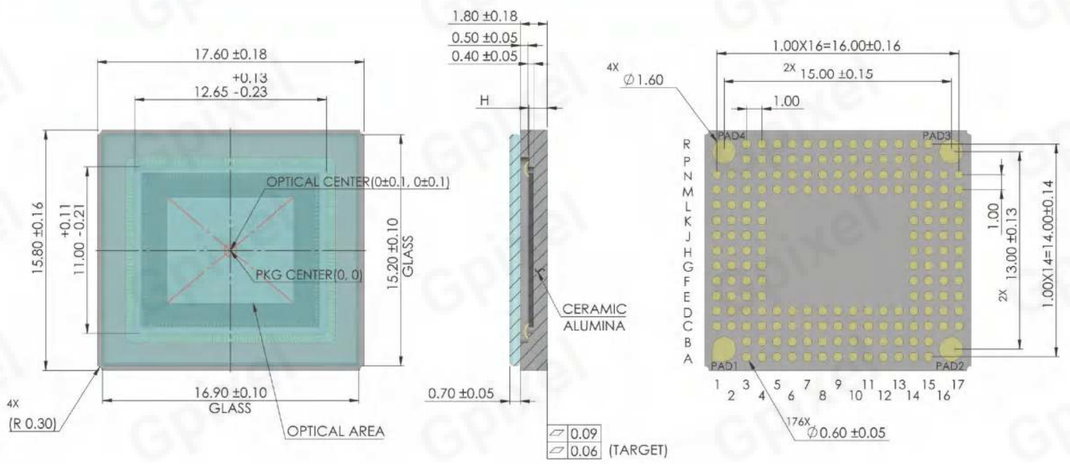
Application

·Automation & Inspection ·Intelligent Transport Systems

Specifications

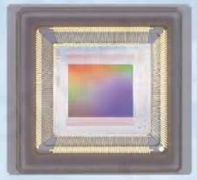
Nr of Active Pixels	2448(H) x 2048(V)	Optical Format	2/3"
Pixel Size	3.4 μm x 3.4 μm	Photosensitive Area	8.3 mm x 7.0 mm
Shutter Type	Global shutter	Parasitic Light Sensitivity	-88 dB
Full Well Capacity	8.7 ke⁻ (12 bit, PGA gain 1.0x) 8.4 ke⁻ (10 bit, PGA gain 1.0x)	Temporal Noise	1.6 e⁻ (12 bit, PGA gain 16.8x) 3.0 e⁻ (10 bit, PGA gain 2.0x)
Peak QE	75% (540 nm)	Angular Response	>15° (80% Response)
Dark Current	4.4 e⁻/pixel/s (33.9 °C)	Max. SNR	39.3 dB
Dynamic Range	66.9 dB	Max Frame Rate	264 fps
Output Format	12 pairs of Sub-LVDS,4 lanes of MIPI	Channel Multiplexing	12/10/8/6/4/2/1 (Sub-LVDS),4/2/1 (MIPI)
ADC	10/12 bit	Max. Data Rate	14.4 Gbps
Chroma	Mono (NIR enhanced), RGB Color	Power Consumption	<1.0 W
Supply Voltage	3.6 V (pixel), 3.3 V (analog), 1.8 V – 3.3 V (IO), 1.2 V (digital)	Package	CLCC 74 pins (16.6 mm x 12.9 mm)

Package Drawing



GMAX2505

5MP GLOBAL SHUTTER CMOS IMAGE SENSOR



Featured with world smallest charge domain global shutter pixel, GMAX2505 is the new member of GMAX series C-mount line up after GMAX2505. It offers 5 MP (2600 x 2160) resolution in 1/2" optical format, operates with true CDS for low noise and high dynamic range. In addition, it has excellent PLS and angular response thanks to the light pipe technology.

GMAX2505 supports 10 bit and 12 bit output and is offered in two speed variances matching industrial standard camera interface speeds. The full speed version consists of 20 sub-LVDS data output channels each running at maximum 960 MHz, offering full resolution frame rate of 290 fps at 10 bit output and a total data throughput of 19.2 Gbps. The high frame rate increases system throughput for industrial inline inspections and enables precise operation at high speed.

Key Features and Benefits

· 2.5 µm Global Shutter Pixel
· High Data Throughput up to 19.2 Gbps
· Good PLS and CRA
· High Resolution GS in 1/2" Optical Format
· Low Noise Global Shutter

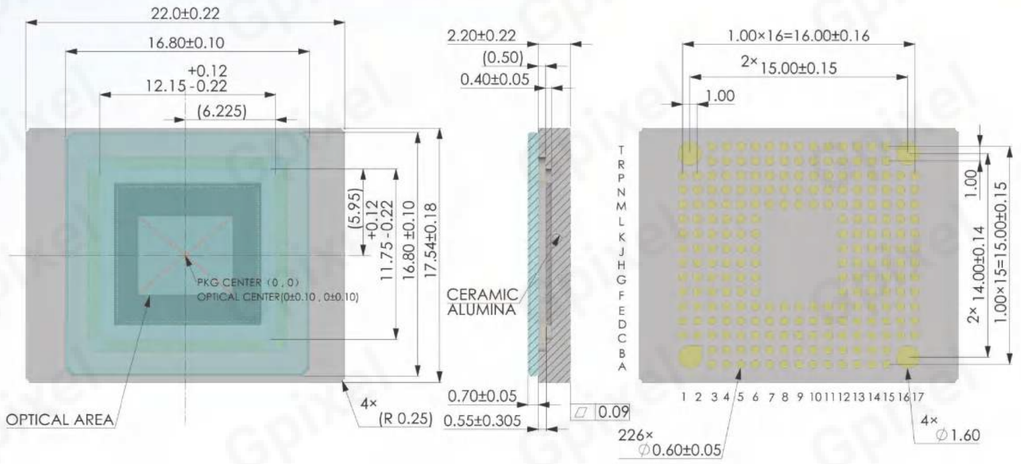
Application

·Automation & Inspection ·Logistic & Positioning ·Metrology ·Motion Capture

Specifications

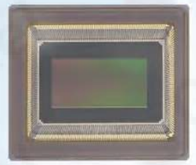
Nr of Active Pixels	2600(H) x 2160(V)	Optical Format	1/2"
Pixel Size	2.5 µm x 2.5 µm	Photosensitive Area	6.5 mm x 5.4 mm
Shutter Type	Global shutter	Parasitic Light Sensitivity	65.5% (500 nm)
Full Well Capacity	6.7 ke⁻ (PGA gain 1.0x)	Temporal Noise	<-80.0 dB
Temporal Noise	1.8 e⁻ (12 bit,PGA gain 4x),3.9 e⁻ (10 bit,PGA gain 2x)	Angular Response	>13° (80% Response)
Dark Current	1.2 e⁻/pixel/s (30°C)	Max. SNR	38.2 dB (PGA gain 1.0x)
Dynamic Range	65.5 dB (12 bit,PGA gain 2x),62.1 dB (10 bit,PGA gain 2x)	Max Frame Rate	290 fps (10 bit),121 fps (12 bit)
Output Format	20 ch Sub-LVDS	Channel Multiplexing	20/10/8/6/4/2
ADC	10/12 bit	Max. Data Rate	19.20 Gbps
Chroma	Mono & RGB Color	Power Consumption	<0.6 W (12 bit),<0.9 W (10 bit)
Supply Voltage	3.3 V/1.3 V (analog),1.8 V-3.3 V (IO),1.3V (digital)	Package	226 pins LGA (19.0 mm x 17.5 mm)

Package Drawing



GMAX2509

9MP GLOBAL SHUTTER CMOS IMAGE SENSOR



Featured with world smallest charge domain global shutter pixel, GMAX2509 is the new member of GMAX series C-mount line up after GMAX0505. It offers 4K (4200 x 2160) resolution in 2/3" optical format, operates with true CDS for low noise and high dynamic range. In addition, it has excellent PLS and angular response thanks to the light pipe technology.

GMAX2509 supports 10 bit and 12 bit output and is offered in two speed variances matching industrial standard camera interface speeds. The full speed version consists of 32 sub-LVDS data output channels and each runs at maximum 960 MHz, offering frame rate of 290 fps at 10 bit. The global shutter and high frame rate limits image blur for 4K video applications and intelligent traffic system and increases throughput for industrial inline inspections.

Key Features and Benefits

· High Resolution GS in 2/3" Optical Format
· Low Noise Global Shutter
· Good PLS and CRA
· High Data Throughput > 26 Gbps
· 2.5 µm Global Shutter Pixel

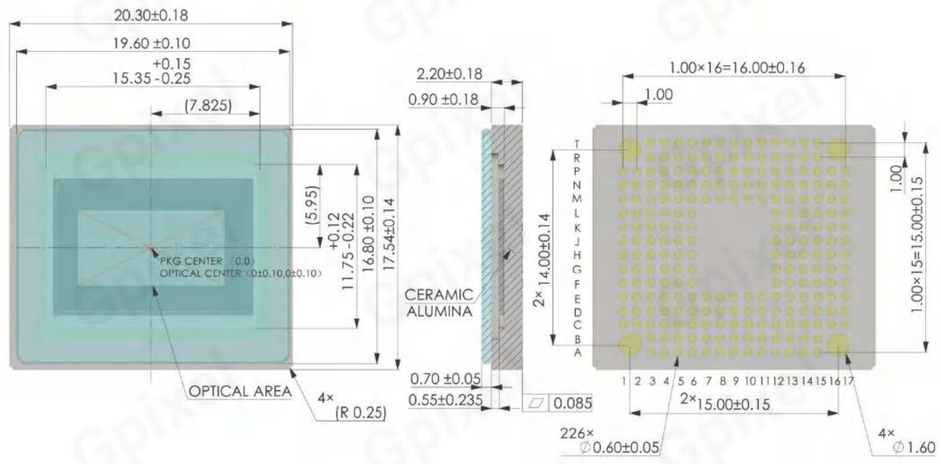
Application

·Automation & Inspection ·Logistic & Positioning ·Metrology ·Motion Capture

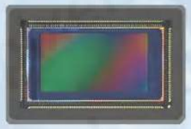
Specifications

Nr of Active Pixels	4200(H) x 2160(V)	Optical Format	2/3"
Pixel Size	2.5 µm x 2.5 µm	Photosensitive Area	10.5 mm x 5.4 mm
Shutter Type	Global Shutter	Parasitic Light Sensitivity	65.5% (500 nm)
Full Well Capacity	6.7 ke⁻ (PGA gain 1.0x)	Temporal Noise	<-80.0 dB
Temporal Noise	1.8 e⁻ (12 bit,PGA gain 4x),3.9 e⁻ (10 bit,PGA gain 2x)	Angular Response	>13° (80% Response)
Dark Current	1.2 e⁻/pixel/s (30°C)	Max. SNR	38.2 dB (PGA gain 1.0x)
Dynamic Range	65.5 dB (12 bit,PGA gain 2x),62.1 dB (10 bit,PGA gain 2x)	Max Frame Rate	290 fps (10 bit),121 fps (12 bit)
Output Format	32 ch Sub-LVDS	Channel Multiplexing	32/16/12/8/4/2
ADC	10/12 bit	Max. Data Rate	30.72 Gbps
Chroma	Mono & RGB Color	Power Consumption	<0.9 W (12 bit),<1.2 W (10 bit)
Supply Voltage	3.3 V/1.3 V (analog),1.8 V-3.3 V (IO),1.3 V (digital)	Package	226 pins LGA (20.3 mm x 17.5 mm)

Package Drawing



GMAX3809



9MP GLOBAL SHUTTER CMOS IMAGE SENSOR

GMAX3809 fits 4096(H) x 2160(V) (9 MP) resolution into a 1.1" image format with low noise, charge domain Global Shutter pixels running at 65 fps (12 bit) ADC resolution per pixel. GMAX3809's 3.8 µm pixel achieves a full well capacity of 11.5 ke$^-$ and noise of 3.6 e$^-$, delivering over 70 dB linear dynamic range. Similar to other GMAX products, the advanced pixel technology brings a Parasitic Light Sensitivity of -92 dB and excellent angular response >15° (80% response). Gpixel's Red Fox technology is employed to deliver a NIR-enhanced QE of 30% (850 nm) for excellent performance in intelligent traffic systems.

GMAX3809 is configurable through SPI or I²C and supports on-chip color offset calibration, LED flicker mitigation, multiple region HDR and OTP functions. GMAX3809 is housed in a 163-pins ceramic LGA package with outer dimensions of 27.1 mm x 17.9 mm and an LGA pad pattern optimized for reliable solder connections. The sensor assembly includes a double side AR coated cover glass lid.

Key Features and Benefits

· Low Noise Global Shutter
· Excellent PLS and Angular Response
· On-chip Color Offset Calibration

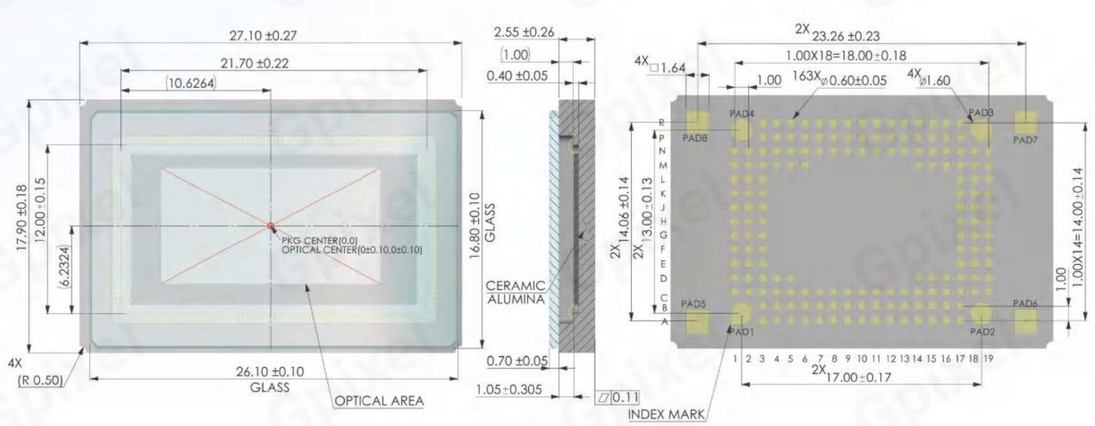
Application

·Automation & Inspection
·Intelligent Transport Systems

Specifications

Nr of Active Pixels	4096(H) x 2160(V)	Optical Format	1.1"
Pixel Size	3.8 µm x 3.8 µm	Photosensitive Area	15.6 mm x 8.2 mm
Shutter Type	Global Shutter	Peak QE	61.7% (540 nm)
Full Well Capacity	11.2 ke$^-$	Parasitic Light Sensitivity	-92 dB
Temporal Noise	3.3 e$^-$(Analog gain 1.0x)	Angular Response	>15° (80% Response)
Dark Current	31.5 e$^-$/pixel/s (41°C)	Max. SNR	40.5 dB
Dynamic Range	70.7 dB	Max Frame Rate	54 fps
Output Format	8 ch Sub-LVDS	Channel Multiplexing	8/4
ADC	12 bit	Max. Data Rate	7.68 Gbps
Chroma	Mono (NIR enhanced),RGB Color	Power Consumption	<1.0 W
Supply Voltage	3.3 V/3.6 V (analog) ,1.8 V-3.3 V (IO) ,1.2 V (digital)	Package	163 pins LGA (27.1 mm x 17.9 mm)

Package Drawing



GMAX3412



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 150/60 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 µm 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 pins 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 and Benefits

· 12 MP Resolution
· Charge Domain Electronic Global Shutter
· NIR Enhance
· One Time Programmable(OTP) Memory
· High Speed and Good PLS and Angular Response
· Multi-Slope HDR

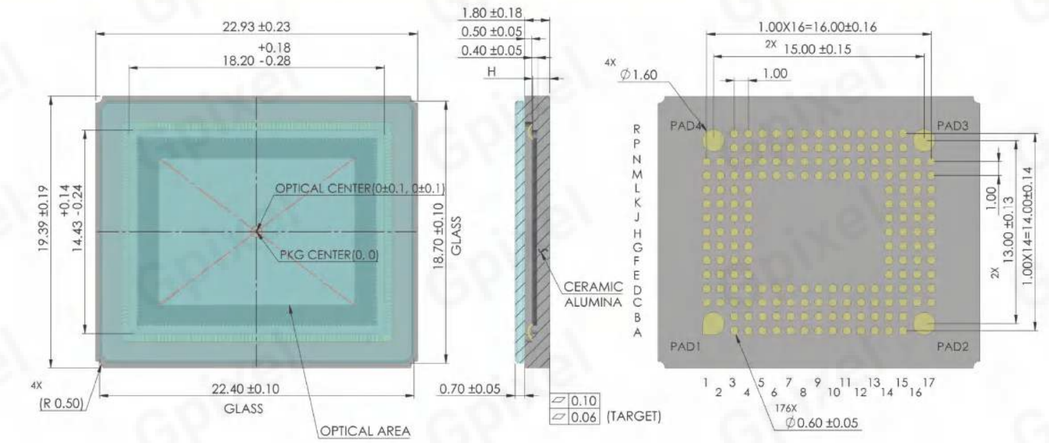
Application

·Automation & Inspection
·Intelligent Transport Systems

Specifications

Nr of Active Pixels	4096(H) x 3072(V)	Optical Format	1.1"
Pixel Size	3.4 µm x 3.4 µm	Photosensitive Area	14.0 mm x 10.5 mm
Shutter Type	Global Shutter	Peak QE	-88 dB
Full Well Capacity	9.0 ke$^-$(12 bit, PGA gain 1.0x),7.6 ke$^-$(10 bit, PGA gain 1.0x)	Parasitic Light Sensitivity	75% (540 nm)
Temporal Noise	1.8 e$^-$(12 bit, PGA gain 12.19x),7.8 e$^-$(10 bit, PGA gain 1.0x)	Angular Response	>15° (80% Response)
Dark Current	81.6 e$^-$/pixel/s (58.6°C)	Max. SNR	39.5 dB
Dynamic Range	67.9 dB	Max Frame Rate	150 fps
Channel Multiplexing	16/14/12/10/8/6/4/2/1 (Sub-LVDS),4 (MIPI)	Output Format	16 ch Sub-LVDS,4 lanes MIPI
ADC	10/12 bit	Max. Data Rate	20.48 Gbps
Chroma	Mono (NIR enhanced), RGB Color	Power Consumption	1.7 W
Supply Voltage	3.6 V (pixel),3.3 V (analog),1.8 V - 3.3V (IO),1.2 V (digital)	Package	176 pins LGA (22.93 mm x 19.39 mm)

Package Drawing



GMAX4416

16MP GLOBAL SHUTTER CMOS IMAGE SENSOR



GMAX4416 is a 1.6" (25.5 mm) optical format CMOS image sensor with 4096 x 4096 (16.7 MP) effective pixels. Using advanced processing technology, the 4.4 µm global shutter pixel achieves a max full well capacity of 14.5 ke$^-$ and min dark noise of 2.6 e$^-$, delivering max 74.9 dB linear dynamic range and 41.8 dB SNR. On-chip analog binning increases the sensor full well capacity to 60.7 ke$^-$ and 47.8 dB SNR. Peak quantum efficiency is 71.1% (530 nm) and 30% (850 nm) due to its optimized NIR process.GMAX4416 can reach 80 fps frame rate in 12 bit standard high-speed mode with 32 pairs 600 Mbps sub-LVDS. It also supports 2 x 2 binning mode and a 2 x 2 binning HDR mode with frame rates of 42 fps and 80 fps respectively.
GMAX4416 is housed in 152 pins ceramic µPGA package, 31.70 mm x 30.40 mm outer dimensions.

Key Features and Benefits

- 4.4 µm Charge Domain Global Shutter Pixel
- 16 MP Resolution
- 1:1 Aspect Ratio
- Binning HDR Mode
- Near Infrared Enhancement
- Max Frame Rate: 80 fps

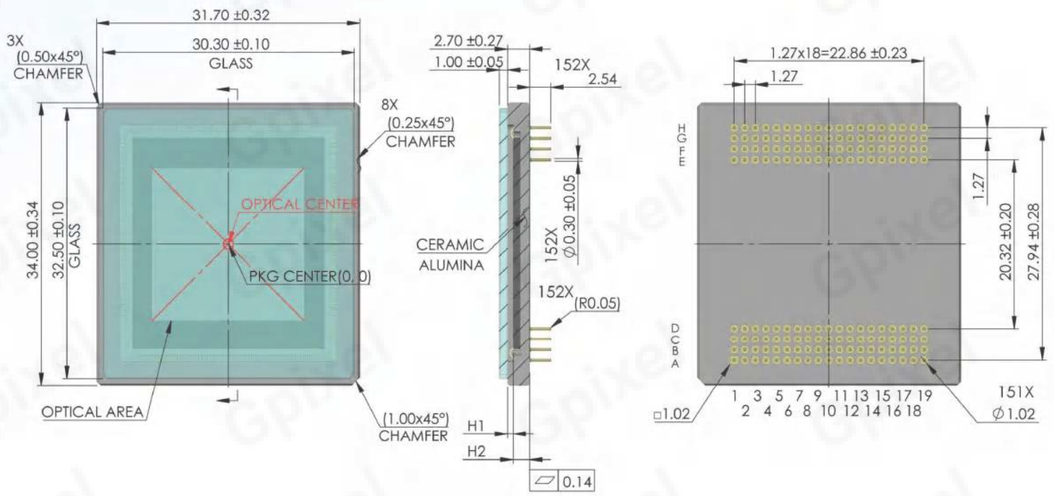
Application

·Automation & Inspection ·Life Sciences ·Microscopy ·Motion Capture

Specifications

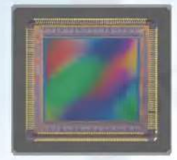
Nr of Active Pixels	4096(H) x 4096(V)	Optical Format	1.6"
Pixel Size	4.4 µm x 4.4 µm	Photosensitive Area	18 mm x 18 mm
Shutter Type	Global Shutter	Peak QE	71.1% (530 nm)
Full Well Capacity	15 ke$^-$	Parasitic Light Sensitivity	<-91 dB
Temporal Noise	<3.0 e$^-$	Angular Response	>15° (80% Response)
Dark Current	< 5 e-/pixel/s (28°C)	Max. SNR	41.6 dB
Dynamic Range	68.1 dB (STD),74.9 dB (HDR),79.9 dB (Binning HDR)	Max Frame Rate	80 fps (STD) ,42 fps (HDR) 80 fps (Binning HDR)
Output Format	32 pairs of Sub-LVDS	Channel Multiplexing	32/16/14/12/10/8/6/4/2/1
ADC	12 bit	Max. Data Rate	19.2 Gbps
Chroma	Mono, RGB Color	Power Consumption	<1.5 W
Supply Voltage	3.3 V (analog),1.8 V – 3.3 V (IO),1.2 V (digital)	Package	152 pins µPGA (31.70 mm x 34.00 mm)

Package Drawing



GMAX2518

18MP GLOBAL SHUTTER CMOS IMAGE SENSOR



GMAX2518 has an optical format of 1" and features 18 Mega Pixel (4508 × 4096) Global Shutter pixels based on the proven GMAX 2.5 µm architecture, operating with true correlated double sampling (CDS) for low read noise and high dynamic range. In addition, the dual light pipe technology provides excellent PLS and angular response, with 32 pairs of sub-LVDS each run at 960 MHz, the sensor output with maximum 30.72 Gbps data, achieving maximum frame rate of 150 fps in 10 bit output and 64 fps in 12 bit output. The sensor integrates an on-chip sequencer, programmable through SPI, and is designed to be fully pin compatible with GMAX0505, GMAX2509 and GMAX2505 to significantly shorten time to market for camera manufactures. GMAX2518 will be assembled in a 19.5 x 20.8 mm 226-pins LGA ceramic package, which is mechanically compatible to fit into an industry standard 29 mm x 29 mm camera housing.

Key Features and Benefits

- 2.5 µm Global Shutter Pixel
- > 64% Peak QE, < -80 dB Shutter Efficiency
- High Speed and Good PLS
- High Data Throughput up to 30.72 Gbps
- Max Frame Rate: 139 fps
- Mechanically Compatible with Industry Standard Camera

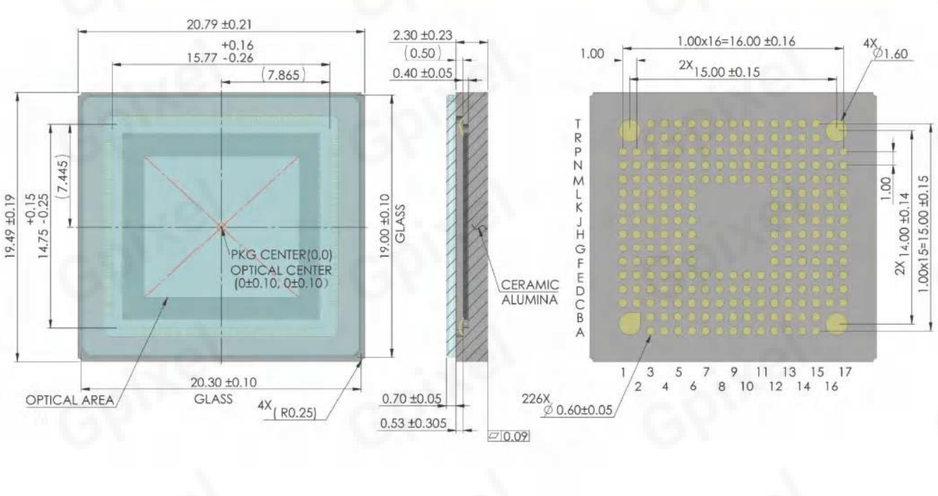
Application

·Automation & Inspection ·Logistic & Positioning ·Metrology

Specifications

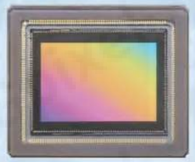
Nr of Active Pixels	4508(H) x 4096(V)	Optical Format	1"
Pixel Size	2.5 µm x 2.5 µm	Photosensitive Area	11.3 mm x 10.2 mm
Shutter Type	Global Shutter	Peak QE	64.0% (520 nm)
Full Well Capacity	8.0 ke$^-$ (PGA gain 1.0x)	Parasitic Light Sensitivity	<-80 dB
Temporal Noise	1.7 e$^-$ (12 bit,PGA gain 4x),4.7 e$^-$ (10 bit,PGA gain 1.75x)	Angular Response	>12° (80% Response)
Dark Current	6.5 e$^-$/pixel/s (45°C)	Max. SNR	39.0 dB (PGA gain 1.0x)
Dynamic Range	66.9 dB (12 bit,PGA gain 1.75x),61.9 dB (10 bit,PGA gain 1.75x)	Max Frame Rate	139 fps (10 bit),64 fps (12 bit)
Output Format	32 ch Sub-LVDS	Channel Multiplexing	32/16/12/8/4/2
ADC	10/12 bit	Max. Data Rate	30.72 Gbps
Chroma	Mono & RGB Color	Power Consumption	<1.2 W
Supply Voltage	3.3 V/1.3 V (analog) ,1.8 V-3.3 V (IO),1.3 V (digital)	Package	226 pins LGA (20.8 mm x 19.5 mm)

Package Drawing



GMAX2424BSI

24MP ROLLING SHUTTER IMAGE SENSOR



The GMAX2424BSI is a back-illuminated rolling shutter CMOS image sensor featuring a diagonal size of 17.47 mm and an effective resolution of 24.64 MP. It has a pixel size of 2.403 µm and offers high sensitivity, low noise, and high dynamic range. Combined with features such as global reset and low-power mode, the GMAX2424BSI presents an ideal choice for industrial inspection applications.

This sensor incorporates sub-LVDS and MIPI interfaces, supporting a high data rate of up to 1.2 Gbps per lane, and delivers a maximum frame rate of 60 fps in 10-bit sub-LVDS mode and 17 fps in 10-bit MIPI mode, providing an efficient and stable solution for high-speed industrial inspection and similar applications. The GMAX2424BSI is housed in a 176 pins ceramic LGA package. Its pinout is compatible with the GMAX3412 and GMAX3405 products, facilitating development efficiency.

Key Features and Benefits

- 2.4 µm Rolling Shutter Pixel
- Footprint-Compatible with GMAX3405 and GMAX3412
- High Dynamic Range and Sensitivity
- MIPI & sLVDS Data Interface

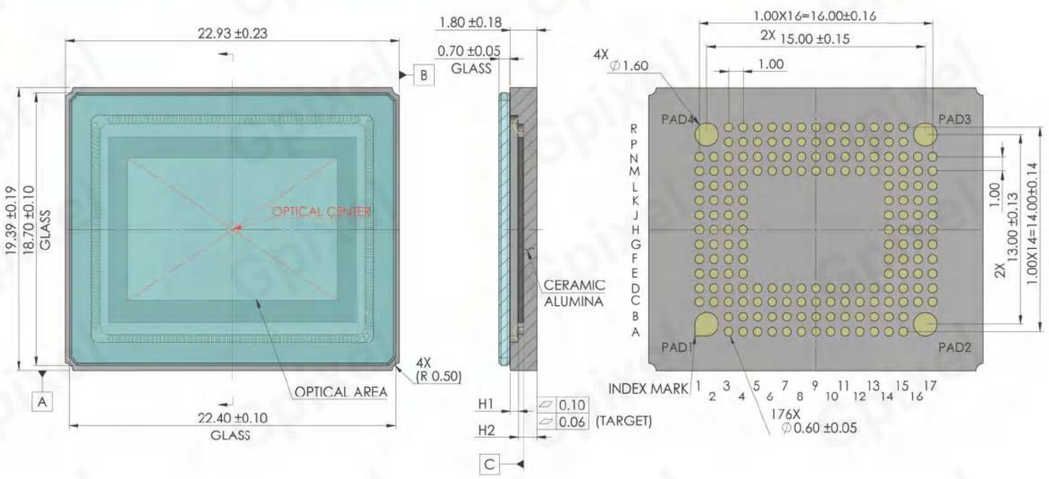
Application

·Automation & Inspection ·Metrology ·Life Sciences ·Logistics and Barcode Reading

Specifications

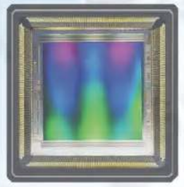
Nr of Active Pixels	6016 (H) x 4096 (V)	Optical Format	1.1"
Pixel Size	2.4 µm x 2.4 µm	Photosensitive Area	14.4 mm x 9.8 mm
Shutter Type	Rolling Shutter	Peak QE	91.9% (510 nm)
Full Well Capacity	12.1 ke⁻ (12 bit & 10 bit)	Angular Response	>20° (90% Response)
Temporal Noise	1.3 e⁻ (12 bit, Analog gain 16.0x),2.4 e⁻ (10 bit, Analog gain 8.0x)	Max. SNR	40.8 dB
Dynamic Range	73 dB (12 bit, Analog gain 1.0x),67 dB (10 bit, Analog gain 1.0x)	Max Frame Rate	60 fps (STD, Sub-LVDS, 10 bit) 30 fps (STD, Sub-LVDS, 12 bit) 17 fps (STD, MIPI, 10 bit)
Output Format	14 pairs of Sub-LVDS,4 lanes of MIPI	Channel Multiplexing	14/12/10/8/6/4 (Sub-LVDS),4/2 (MIPI)
ADC	10/12 bit	Max. Data Rate	16.8 Gbps
Chroma	Bayer RGB or Mono	Power Consumption	< 0.63 W
Supply Voltage	2.9 V and 3.3 V (pixel),2.9 V (analog),1.8 V – 3.3 V (IO),1.2 V (digital)	Package	176 pins LGA,(22.93 mm x 19.39 mm)

Package Drawing



GMAX0505

26MP GLOBAL SHUTTER CMOS IMAGE SENSOR



Designed with small 2.5 µm charge domain global shutter pixel, GMAX0505 offers the high resolution of 25 Megapixels within 1.1" optical format. Despite its small pixel pitch, GMAX0505 achieves more than 65% peak QE and excellent angular response thanks to the latest light pipe technology. In addition, with optimized tungsten shielding structure on top of the pixel's memory node, the sensor's shutter efficiency is more than 80 dB. GMAX0505 supports 10 bit and 12 bit output, and the frame rate is up to 150 fps. The sensor is assembled in a ceramic Land Grid Array (LGA) package, allowing easy integration and mass production. The superior performance and the cost-effective packaging of GMAX0505 offer camera manufactures great advantage over various applications.

Key Features and Benefits

- 2.5 µm Global Shutter Pixel
- Optimized Tungsten Shielding Structure
- High Speed and Good PLS
- High Resolution GS in 1.1" Optical Format
- NIR Enhanced – Red Fox
- Pin-Compatible with GMAX2505, GMAX2509 and GMAX2518

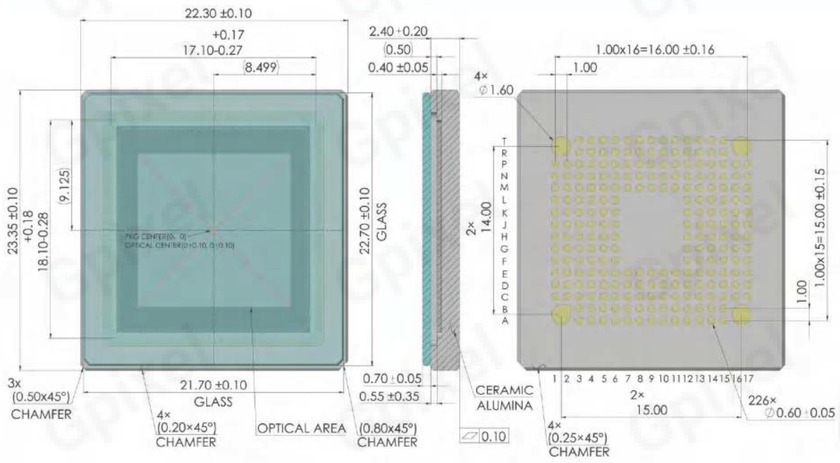
Application

·Automation & Inspection ·Logistic & Positioning ·Metrology

Specifications

Nr of Active Pixels	5120(H) x 5120(V)	Optical Format	1.1"
Pixel Size	2.5 µm x 2.5 µm	Photosensitive Area	12.8 mm x 12.8 mm
Shutter Type	Global Shutter	Peak QE	65.5% (500 nm)
Full Well Capacity	6.5 ke⁻ (PGA gain 1.0x)	Parasitic Light Sensitivity	<-80 dB
Temporal Noise	1.6 e⁻(12 bit,PGA gain 5x),3.4 e⁻(10 bit,PGA gain 2.5x)	Angular Response	>13° (80% Response)
Dark Current	1.0 e⁻/pixel/s (30°C)	Max. SNR	38.1 dB (PGA gain 1.0x)
Dynamic Range	65.8 dB (12 bit,PGA gain 2.5x),61.4 dB (10 bit PGA gain 2.5x)	Max Frame Rate	150 fps (10 bit),42 fps (12 bit)
Output Format	48 ch Sub-LVDS	Channel Multiplexing	48/24/16/12/8/6/4/2
ADC	10/12 bit	Max. Data Rate	46.08 Gbps
Chroma	Mono,Mono (NIR enhanced), RGB Color	Power Consumption	<1.1 W (12 bit),<1.5 W (10 bit)
Supply Voltage	3.3 V/1.3 V (analog),1.8 V-3.3 V (IO),1.3 V (digital)	Package	226 pins LGA (22.3 mm x 23.4 mm)

Package Drawing



GMAX4651

51MP GLOBAL SHUTTER CMOS IMAGE SENSOR



GMAX4651 is a 51 Megapixel (8424 x 6032) full frame (35 mm) global shutter image sensor designed using the latest 4.6 µm charge domain global shutter pixel. Using the advanced 65 nm CIS process, it provides 18 ke^- FWC, 7.6 e^- median dark noise and more than 65.5 dB intra-scene dynamic range. With the light pipe technology, sensor achieves > 67% QE (510 nm) and 1/40,000 shutter efficiency.

GMAX4651 delivers 30 fps in single gain operation mode running at 864 Mbps. GMAX4651 is assembled with 238 pins PGA ceramic package and the optical center is fully aligned with the package mechanical center. The unique features make it an ideal solution for demanding imaging applications like machine vision, 8K broadcasting and high-end industrial inspections.

Key Features and Benefits

· 4.6 µm Global Shutter Pixel
· 35 mm Full Frame of Optical Format
· High Data Throughput up to 21 Gbps
· High Speed and Good PLS
· Optical Center = Package Mechanical Center

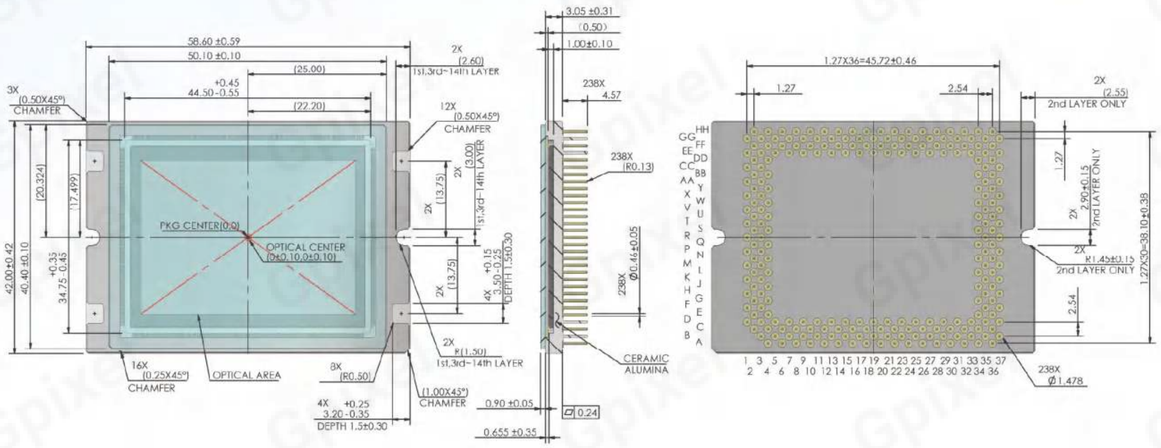
Application

·Automation & Inspection

Specifications

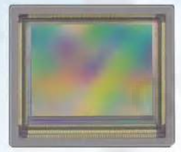
Nr of Active Pixels	8424(H) x 6032(V)	Optical Format	35 mm Full Frame
Pixel Size	4.6 µm x 4.6 µm	Photosensitive Area	38.8 mm x 27.8 mm
Shutter Type	Global shutter	Peak QE	67.1% (510 nm)
Full Well Capacity	18 ke^-(PGA gain 3.5x)	Parasitic Light Sensitivity	<-92 dB
Temporal Noise	7.6 e^-(PGA gain 5x)	Angular Response	>15° (80% Response)
Dark Current	6 e^-/pixel/s (45°C)	Max. SNR	42.5 dB (PGA gain 3.5x)
Dynamic Range	65.5 dB (PGA gain 3.5x)	Max Frame Rate	30 fps
Output Format	24 ch Sub-LVDS	Channel Multiplexing	24/14/8/6/4
ADC	12 bit	Max. Data Rate	20.74 Gbps
Chroma	Mono, RGB Color	Power Consumption	<2.8 W
Supply Voltage	3.3 V/1.3 V (analog) ,1.8 V - 3.3 V(IO) ,1.3 V (digital)	Package	238 pins PGA (58.6 mm x 42.0 mm)

Package Drawing



GMAX3265

65MP GLOBAL SHUTTER CMOS IMAGE SENSOR



Featured with the latest generation 3.2 µm charge-domain global shutter pixel and 65 MP (9344 x 7000) resolution, GMAX3265 is the leading-edge image sensor with 37.4 mm diagonal for high resolution machine vision and industrial inspection applications. This new generation pixel operates with true correlated double sampling (CDS), allowing low read noise and high dynamic range. In addition, the dual light pipe technology provides excellent PLS and angular response.

GMAX3265 is offered in high speed version and normal speed version. High speed version delivers 71 fps at 10 bit output, normal speed version delivers 31 fps at 12 bit output. The superior resolution and frame rate significantly increases the system throughput for industrial inspection applications, such as semiconductor, PCB, AOI or display inspection. The sensor integrates an on-chip sequencer, programmable through SPI, shortening time-to-market for camera manufactures. GMAX3265 is assembled with 239-pins micro-PGA ceramic package for reliability and good heat dissipation and a double-sided ARC D263 glass lid.

Key Features and Benefits

· 3.2 µm Global Shutter Pixel
· Image Diagonal: 37.4 mm
· High Speed and Good PLS
· On-chip Sequencer and SPI Control
· Excellent Resolution and Significant Frame Rate

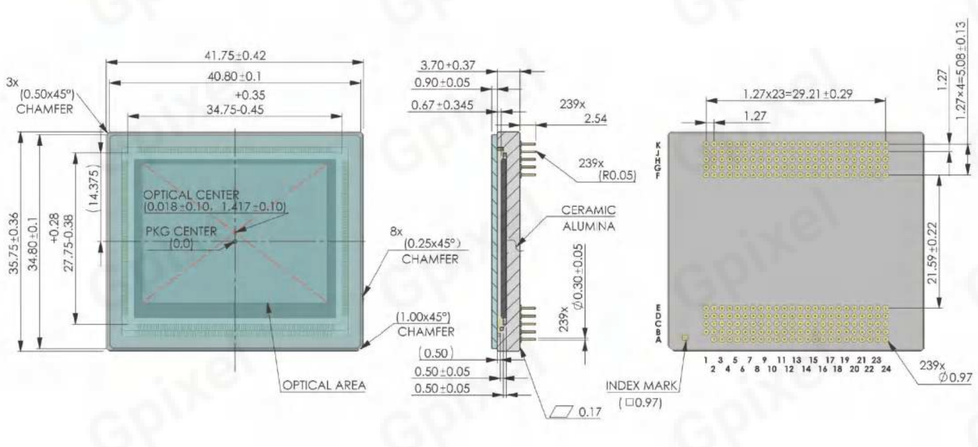
Application

·Automation & Inspection

Specifications

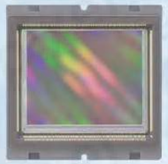
Nr of Active Pixels	9344(H) x 7000(V)	Optical Format	2.3"
Pixel Size	3.2 µm x 3.2 µm	Photosensitive Area	29.9 mm x 22.4 mm
Shutter Type	Global shutter	Peak QE	65.3% (500 nm)
Full Well Capacity	10.6 ke^-(PGA gain 0.75x)	Parasitic Light Sensitivity	<-83.5 dB
Temporal Noise	1.9 e^-(12 bit,PGA gain 6x),7.5 e^-(10 bit,PGA gain 1.25x)	Angular Response	>15° (80% Response)
Dark Current	5.3 e^-/pixel/s (40°C)	Max. SNR	40.2 dB (PGA gain 1.0x)
Dynamic Range	66.0 dB (12 bit,PGA gain 1.25x),62.3 dB (10 bit,PGA gain 1.25x)	Max Frame Rate	71 fps (10 bit),31 fps (12 bit)
Output Format	56 ch Sub-LVDS	Channel Multiplexing	56/28/14/8/7/4/2/1
ADC	10/12 bit	Max. Data Rate	50.40 Gbps
Chroma	Mono, RGB Color	Power Consumption	<2.1 W (12 bit),<2.3 W (10 bit)
Supply Voltage	3.3 V/1.3 V (analog),1.8 V - 3.3 V (IO) ,1.3 V (digital)	Package	239 pins µPGA (41.8 mm x 35.8 mm)

Package Drawing



GMAX32103

103MP GLOBAL SHUTTER CMOS IMAGE SENSOR



GMAX32103 is a 103 Megapixel (11276 x 9200) medium-sized (46.6 mm) ultra-high resolution, global shutter image sensor designed with the latest 3.2 µm charge domain global shutter pixel. It achieves more than 9k e^- FWC at low gain and 2.8 e^- read noise at high gain separately with 66.4 dB intra-scene dynamic range. Using advanced 65 nm CIS process and light pipe technology, sensor achieves 66.9% peak QE (500 nm) and more than 1/15,000 shutter efficiency.

The full speed version sensor consists of 52 pairs sub-LVDS channels running at 960 Mbps which delivers a 24 fps in 12 bit operation at full resolution. The unique features make it an ideal solution for demanding imaging high end applications such as high-resolution inspection, aerial imaging and many more.

Key Features and Benefits

· 3.2 µm Global Shutter Pixel
· High Resolution up to 103 MP
· High Speed and Good PLS
· High Data Throughput up to 960 Mbps
· On Chip Sequencer and SPI Control

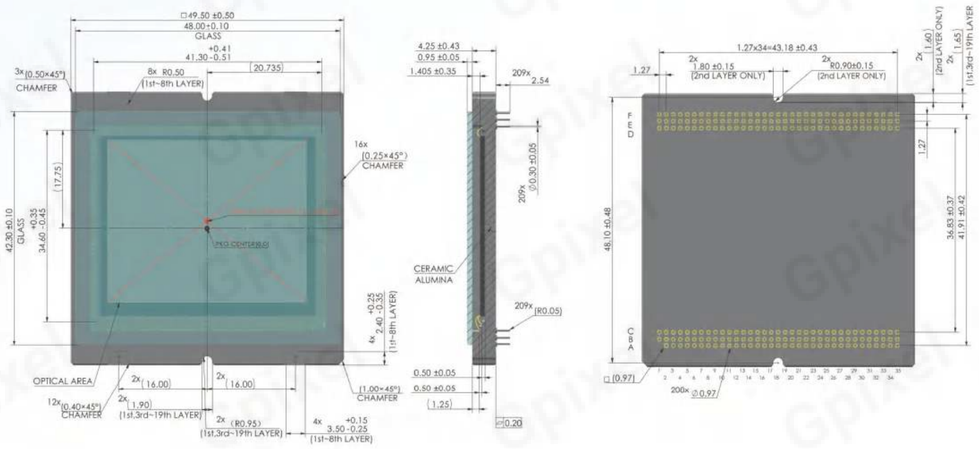
Application

·Automation & Inspection
·Aerial Imaging

Specifications

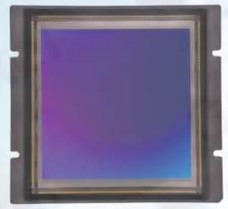
Nr of Active Pixels	11276(H) x 9200(V)	Optical Format	2.9"
Pixel Size	3.2 µm x 3.2 µm	Photosensitive Area	36.1 mm x 29.4 mm
Shutter Type	Global shutter	Peak QE	66.9% (500 nm)
Full Well Capacity	9 ke^-(PGA gain 1.4x)	Parasitic Light Sensitivity	<-83.5 dB
Temporal Noise	4.3 e^-(PGA gain 1.4x)	Angular Response	>15° (80% Response)
Dark Current	1.4 e^-/pixel/s (30°C)	Max. SNR	39.5 dB (PGA gain 1.4x)
Dynamic Range	66.4 dB (PGA gain 1.4x)	Max Frame Rate	24 fps
Output Format	52 ch Sub-LVDS	Channel Multiplexing	52/26/18/14/10/8/6
ADC	12 bit	Max. Data Rate	49.92 Gbps
Chroma	Mono, RGB Color	Power Consumption	<2.5 W
Supply Voltage	3.3 V/1.3 V (analog) ,1.8 V - 3.3 V (IO),1.2 V (digital)	Package	209 pins µPGA (49.5 mm x 42.3 mm)

Package Drawing



GMAX64104

104MP GLOBAL SHUTTER CMOS IMAGE SENSOR



GMAX64104 adopts a 6.4 µm global shutter pixel design, with a pixel resolution of 10240 x 10240, and a large sensitivity area of 65.536 mm x 65.536 mm, which can satisfy the needs of large-field-of-view and high-precision applications such as aerial imaging and astronomical observation. The GMAX64104 is compatible with both shutter shutter and global shutter.The GMAX64104 is compatible with both shutter shutter and global shutter, and under global shutter, the chip supports both low-noise CDS and high-full-well DDS modes of operation.The GMAX64104 is packaged in a 327 pins PGA ceramic package measuring 93 mm x 87 mm, with a large blank space on the back of the package to facilitate the camera's heat dissipation design.

Key Features and Benefits

· Global Shutter & Rolling Shutter
· Large Target Surface, 100 Million Ultra-High Resolution
· High Sensitivity, High Dynamic Range
· Maximum Frame rate: 13.5 fps

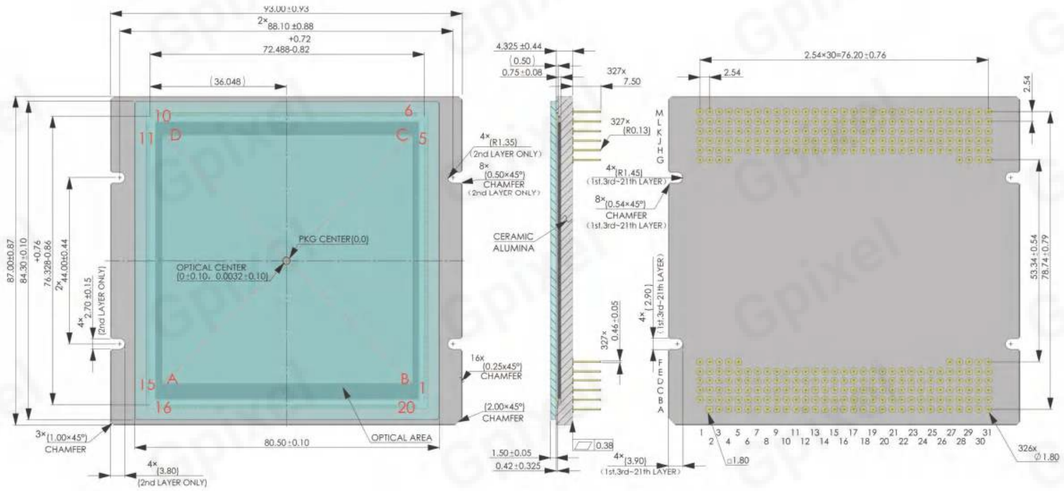
Application

·Aerial Imaging
·astronomical observation
·microscopic imaging
· life sciences

Specifications

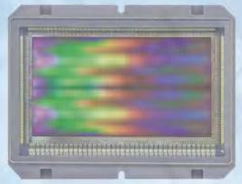
Nr of Active Pixels	10240(H) x 10240(V)	Photosensitive Area	65.536 mm x 65.536 mm
Pixel Size	6.4 µm x 6.4 µm	Peak QE	≥65%
Shutter Type	Global Shutter & Rolling Shutter	Parasitic Light Sensitivity	<1:50000
Full Well Capacity	20 ke^-(RS HDR & GS CDS),65 ke^-(GS DDS)	Angular Response	>20° (80% Response)
Temporal Noise	2.7 e^-(RS HDR),12.2 e^-(GS CDS),47 e^-(GS DDS)	Max. SNR	48.1 dB
Max Frame Rate	12 fps (GS),12 fps (GS DDS),4.8 fps (RS HDR)	Dark Current	≤10 e^-/pixel/s (25°C,GS)
Dynamic Range	77.3 dB (RS HDR),63 dB (GS)	Max. Data Rate	22.14 Gbps (GS),44.28 Gbps (RS HDR)
Output Format	41 ch LVDS (GS),82 ch LVDS (RS HDR)	Power Consumption	≤5 W
ADC	12 bit	Chroma	Mono
Supply Voltage	3.6 V (analog)/1.2 V (digital)/1.2 V-3.3 V (I/O)	Package	327 pins PGA (93.0 mm x 87.0 mm)

Package Drawing



GMAX32152

152MP GLOBAL SHUTTER CMOS IMAGE SENSOR



GMAX32152 is an ultra-high resolution global shutter CMOS image sensor in medium format. Using a state-of-the-art charge domain pixel architecture, this sensor delivers an attractive combination of high frame rate and high dynamic range. A native 12 bit performance pixel achieves 67.3 dB dynamic range, combined with a high speed sub-LVDS delivering 16 fps. Pixel data is read out over serial differential pairs, with source synchronous clock and control channel.

Its medium format image area and wide aspect ratio make it well suited for aerial mapping and surveying applications and cultural heritage digitization.

Key Features and Benefits

· 3.2 μm Global Shutter Pixel
· large Image Plane of 60.6 mm Diagonal
· Low Noise Global Shutter
· High Data Throughput up to 960 Mbps
· High Speed and Good PLS

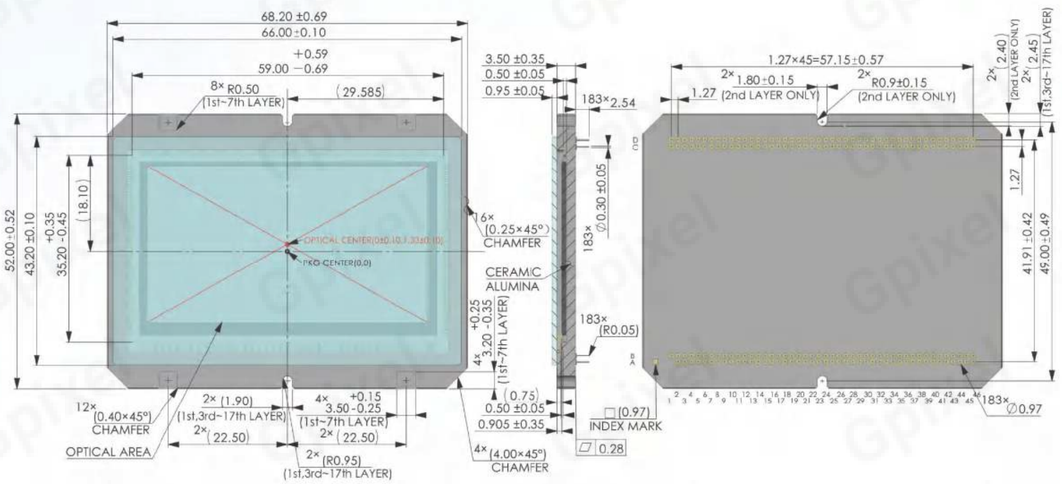
Application

·Automation & Inspection ·Aerial Imaging ·Document Imaging

Specifications

Nr of Active Pixels	16556(H) x 9200(V)	Optical Format	3.7"
Pixel Size	3.2 μm x 3.2 μm	Photosensitive Area	53.0 mm x 29.4 mm
Shutter Type	Global shutter	Peak QE	66.9% (500 nm)
Full Well Capacity	9.3 ke⁻(PGA gain 1.4x)	Parasitic Light Sensitivity	<-83.5 dB
Temporal Noise	4.0 e⁻(PGA gain 1.4x)	Angular Response	>15° (80% Response)
Dark Current	1.4 e-/pixel/s (30°C)	Max. SNR	39.6 dB (PGA gain 1.4x)
Dynamic Range	67.3 dB (PGA gain 1.4x)	Max Frame Rate	16 fps
Output Format	38 ch Sub-LVDS	Channel Multiplexing	38/20/14/11/8/5
ADC	12 bit	Max. Data Rate	36.48 Gbps
Chroma	Mono, RGB Color	Power Consumption	<2.8 W
Supply Voltage	3.3 V/1.3 V (analog),2.5 V - 3.3 V (IO) ,1.2 V (digital)	Package	183 pins μPGA (68.2 mm x 52.0 mm)

Package Drawing



GMAX15271BSI

271MP 1.5 μm 2.24" ROLLING SHUTTER IMAGE SENSOR



GMAX15271BSI is a state-of-the-art rolling shutter CMOS image sensor engineered for ultra-high-resolution imaging, delivering 19,376 (H) × 14,000 (V) pixel resolution on a compact 35.9 mm diagonal image format.Leveraging advanced 1.5 μm Back-Side Illuminated (BSI) pixel technology, GMAX15271BSI maximizes light sensitivity and spatial efficiency while maintaining exceptional image quality. It supports dual ADC modes for versatile operation.Designed for high-end industrial and scientific applications does GMAX15271BSI excel in tasks requiring extreme detail and dynamic range, including flat panel display (FPD) inspection, semiconductor and PCB defect detection, precision manufacturing quality control, document scanning and cultural heritage archiving, aerial mapping, pathology, and genomics.

Key Features and Benefits

· 1.5 μm BSI Rolling Shutter Pixel
· 271 MP Resolution of 35.9 mm Image Format Diagonal
· Rolling Readout with Global Reset
· Frame Rate up to 8.5 fps

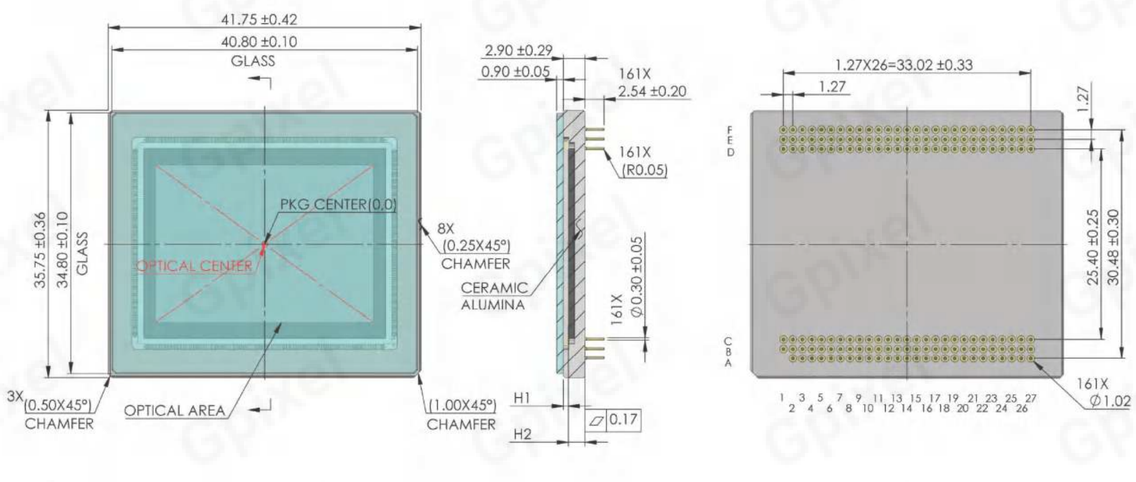
Application

·High-end industrial inspection ·Display screen inspection ·Biological microscopy ·Gene sequencing

Specifications

Nr of Active Pixels	19376(H) x 14000(V)	Optical Format	2.24"
Pixel Size	1.5 μm x 1.5 μm	Photosensitive Area	29.1 mm x 21.0 mm
Shutter Type	Rolling Shutter	Peak QE	76.7% (520 nm)
Full Well Capacity	5.4k e⁻(14 bit,PGA gain 1.0x),5.1 ke⁻(12 bit,PGA gain 1.0x)	Parasitic Light Sensitivity	-
Temporal Noise	1.1 e⁻(14 bit,PGA gain 4.1x),1.7 e⁻(12 bit,PGA gain 4.1x)	Angular Response	>17° (80% Response)
Max. SNR	37.3 dB (14 bit,PGA gain 1.0x),37.0 dB (12 bit,PGA gain 1.0x)	Dark Current	2.5 e⁻/pixel/s (42 °C)
Dynamic Range	73.8 dB (14 bit,PGA gain 1.0x),69.5 dB (12 bit,PGA gain 1.0x)	ADC	12/14 bit
Output Format	32 ch Sub-LVDS data output,2 ch Sub-LVDS clock output	Channel Multiplexing	32/16/8/4 (Sub-LVDS)
Max Frame Rate	4.8 fps (14 bit,1.2G Sub-LVDS),8.5 fps (12 bit,1.2G Sub-LVDS)	Chroma	Mono, RGB Color
Max. Data Rate	19.2 Gbps (14 bit,Sub-LVDS),38.4 Gbps (12 bit,Sub-LVDS)	Power Consumption	< 2.6 W (14 bit),< 3.0 W (12 bit)
Supply Voltage	4.5 V and -2.0 V (pixel),3.3 V (analog) 1.8 V – 3.3 V (IO),1.2 V (digital)	Package	161 pins μPGA (41.75 mm x 35.75 mm)

Package Drawing



GMAX | GSPRINT | GSENSE | GLUX | GTOF | GCINE | GL | GXS | GIR

Area Scan CMOS Image Sensor

The GSPRINT series is Gpixel's high-speed global shutter product family, including the 21 MP GSPRINT4521. The GSPRINT technology will be used to expand the sizes and resolutions available in the family over the next year.

GSPRINT2001BSI
GSPRINT6502BSI
GSPRINT4502
GSPRINT4510
GSPRINT5514BSI
GSPRINT4521

Product Family Features

- Global Shutter
- High speed
- 1.3MP-21MP resolution
- Low noise

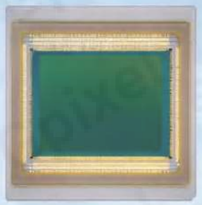
Applications

- Automation & Inspection
- High-throughput scientific imaging
- Slow motion video
- 3D Laser Profiling



GSPRINT2001BSI

1.3MP GLOBAL SHUTTER HIGH SPEED IMAGE SENSOR



GSPRINT2001BSI is 1.3 Megapixel (1280 x 1024) CMOS image sensor featuring backside-illuminated (BSI) global shutter pixels and a large 20 µm pixel size for outstanding sensitivity under low-light conditions. Engineered for high-speed imaging, it achieves up to 6,400 frames per second at 10 bit resolution, output over 64 pairs of Sub-LVDS channels running at 1.4 Gbps. With Quantum Efficiency (QE) reaching 87% at 440 nm and a significant UV response with 69% at 230 nm, GSPRINT2001BSI excels in capturing even the faintest signals under challenging lighting conditions. The sensor supports both monochrome and RGB Bayer color options, and offers advanced features such as Dual PIV mode with a minimum inter-frame time of 250 ns, making it ideal for demanding applications in scientific, PIV, metrology and various other high-speed imaging applications.

Key Features and Benefits

- Back Side Illumination (BSI) Global Shutter pixels
- Ultra High Speed: Up to 6400 fps (10 bit)
- 20 µm Pixel Size delivers exceptional sensitivity
- UV sensitivity with 42 %(260 nm)① and 87%(450 nm)②

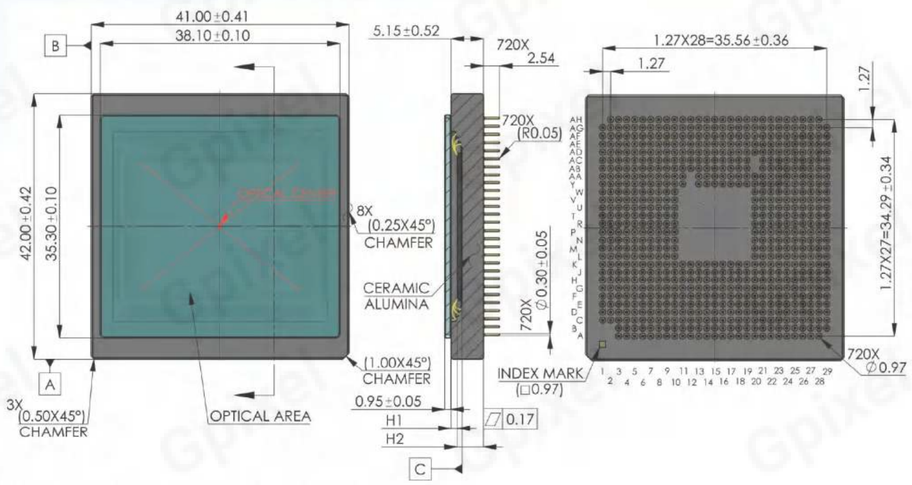
Application

·High Speed Imaging ·Particle Image Velocimetry (PIV) Imaging ·Metrology ·Scientifc and Life Science

Specifications

Nr of Active Pixels	1280 (H) x 1024 (V)	**Optical Format**	2.05"
Pixel Size	20 µm x 20 µm	**Photosensive Area**	25.60 mm x 20.48 mm
Shutter Type	Global Shutter	**Peak QE**	87% (440 nm)
Full Well Capacity	12 ke⁻	**Parasitic Light Sensitivity**	-120 dB
Temporal Noise	19 e⁻	**Max. SNR**	40.8 dB
Dynamic Range	56 dB	**Output Format**	Sub-LVDS
Max Frame Rate	6400 fps	**Channel Multiplexing**	64/32/16
ADC	10 bit	**Max. Data Rate**	89.6 Gbps
Chroma	Monochrome & CFA	**Power Consumption**	7.5 W
Supply Voltage	3.3 V (Analog),1.8 V (I/O),1.25 V (Digital)	**Package**	720 pins LGA (41 mm x 42 mm)

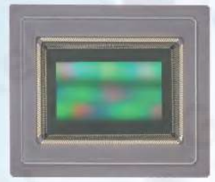
Package Drawing



Note: ① Quartz glass version ② D 263® T glass version

GSPRINT6502BSI

2MP GLOBAL SHUTTER CMOS IMAGE SENSOR



The sensor features 2048 (H) x 1152 (V) pixels, each 6.5 µm square, providing a wide format ideal for 3D laser profilers, and compatibility with 1" optics. With 10 bit output and 32 pairs of Sub-LVDS outputs each operating at 1.2 Gbps, the GSPRINT6502BSI achieves 1498 frames per second. Up to 8 vertically oriented regions of interest can be defined to operate the sensor at increased frame rates. For applications in which the maximum frame rate is not required, multiplexing modes are available to reduce the number out output channels by any multiple of 2. Backside illumination technology ensures that the image sensor is sensitive to light across a wide range. At 1x PGA gain, the sensor's full well capacity is 10.1 ke⁻ and the dynamic range is 53.4 dB. The analog gain can be adjusted from 1x up to 4x. On-chip 2x vertical binning can be used to increase the full well capacity, dynamic range, and frame rate. A vertical sub-sampling mode is also available for increased frame rate while maintaining the full field of view.

Key Features and Benefits

· BSI · Multi-Slope HDR · High Frame Rate · Broad AR

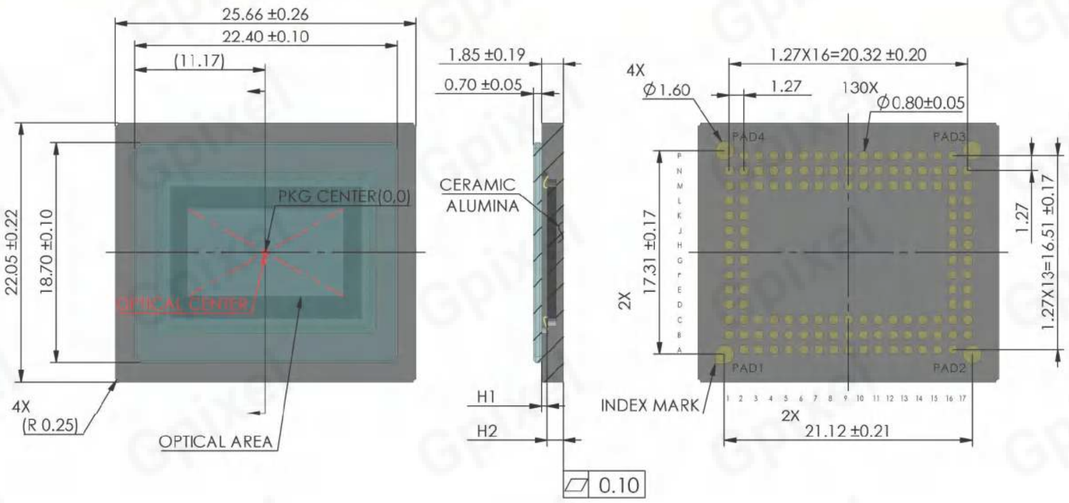
Application

·Automation & Inspection ·Spectroscopy ·Life Sciences ·Microscopy ·High Speed Imaging

Specifications

Nr of Active Pixels	2048 (H) x 1152 (V)	**Optical Format**	1"
Pixel Size	6.5 µm x 6.5 µm	**Photosensive Area**	13.3 mm x 7.5 mm
Shutter Type	Global Shutter	**Peak QE**	86% (440 nm)
Full Well Capacity	10.1 ke⁻(10 bit, PGA gain x1.0)	**Angular Response**	35 ° (80% Response)
Temporal Noise	21.4 e⁻ (10 bit,PGA gain 1.0x)	**Max. SNR**	40.0 dB
Dynamic Range	53.4 dB (10 bit, PGA gain x1.0)	**Output Format**	32 ch Sub-LVDS
Max Frame Rate	1498 fps (10 bit),2941 fps (10 bit,1x2 Binning)	**Channel Multiplexing**	Yes (any multiple of 2)
ADC	10 bit	**Max. Data Rate**	38.4 Gbps
Chroma	Mono	**Power Consumption**	1.5 W
Supply Voltage	3.6 V/3.3 V (analog),1.8 V/3.3 V(IO),1.5 V (digital)	**Package**	130 pins LGA (25.66 mm x 22.05 mm)

Package Drawing



GSPRINT4502

2.4MP GLOBAL SHUTTER HIGH SPEED IMAGE SENSOR



GSPRINT4502 is a 2 MP (2048 x 1216) 2/3 sized (10.7 mm) high speed, global shutter image sensor designed with the latest 4.5 µm charge domain global shutter pixel. It achieves more than 30k e^- FWC, less than 4 e^- rms read noise and > 68 dB dynamic range, optionally to be increased with multi-slope HDR mode. Using an advanced 65 nm CIS process and light pipe technology, the sensor achieves > 65% QE and more than 1/40,000 shutter efficiency. With on-chip charge binning, FWC can be further increased to > 120 ke^- and frame rate is quadrupled. GSPRINT4502 consists of 64 pairs Sub-LVDS channels running (1.2 Gbps) which delivers a stunning 3300 fps (8 bit) per pixel and full resolution and over 10000 fps with binning mode. These unique features make it an ideal solution for demanding imaging in applications such as 3D laser profiling, industrial inspection, motion analysis and high speed imaging.

Key Features and Benefits

- High Frame Rate
- External Triggering
- Low Noise Global Shutter
- Programmable Analog and Digital Gain
- Vertical ROIs with Speed Boosting

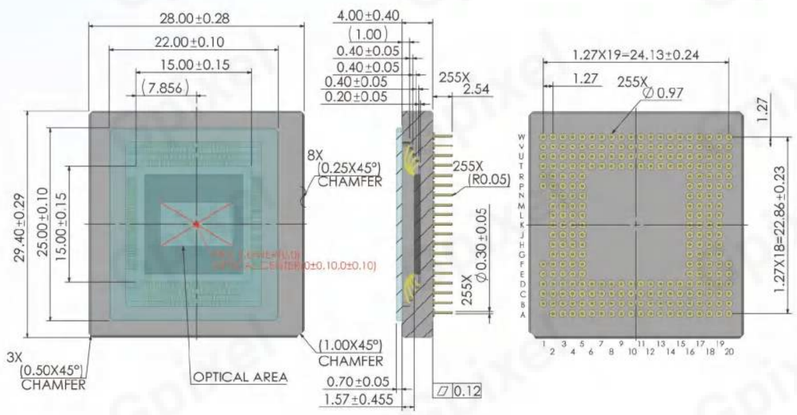
Application

- Automation & Inspection
- Cinematography
- High Speed Imaging

Specifications

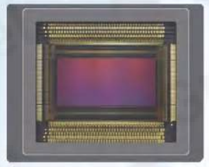
Nr of Active Pixels	2048(H) x 1216(V)	**Optical Format**	2/3"
Pixel Size	4.5 µm x 4.5 µm	**Photosensitive Area**	9.21 mm x 5.47 mm
Shutter Type	Global Shutter	**Peak QE**	65.7% (515 nm)
Full Well Capacity	>30 ke^-	**Parasitic Light Sensitivity**	-84.6 dB
Temporal Noise	3.8 e^-	**Angular Response**	20° (80% Response)
Dark Current	21 e-/pixel/s (60°C)	**Max. SNR**	44.8 dB
Max Frame Rate	3462 fps (8 bit),1782 fps (10 bit),852 fps (12 bit)	**Dynamic Range**	68.2 dB (12 bit)
Output Format	64 ch Sub-LVDS	**Channel Multiplexing**	160/156/152/.../4 (any multiple of 4)
ADC	8/10/12 bit	**Max. Data Rate**	76.8 Gbps
Chroma	Mono,RGB Color	**Power Consumption**	2.5 W
Supply Voltage	3.3 V (analog),1.8 V (IO) ,1.2 V (digital)	**Package**	255 pins µPGA (28 mm x 29.4 mm)

Package Drawing



GSPRINT4510

10MP GLOBAL SHUTTER HIGH SPEED IMAGE SENSOR



GSPRINT4510 is a 10 MP (4608 x 2176) 4/3" (22.9 mm) high speed image sensor designed with the latest 4.5 µm charge domain global shutter pixel. It achieves more than 30 ke^- charge capacity and less than 3 e^- rms read noise. Using an advanced 65 nm CIS process with light pipe technology, the sensor achieves >67% QE and more than 1/40,000 shutter efficiency. With on-chip charge binning, full well capacity can be further increased and frame rate is almost quadrupled. Incorporating unique, tailored features such as a thinner glass lid to reduce stray light reflection, the option to have no micro lenses, and either a sealed or removable glass lid makes GSPRINT4510 the ideal solution for 3D laser scanning applications.With on-chip charge binning, full well capacity can be further increased and frame rate is almost quadrupled. Incorporating unique, tailored features such as a thinner glass lid to reduce stray light reflection, the option to have no micro lenses, and either a sealed or removable glass lid makes GSPRINT4510 the ideal solution for 3D laser scanning applications.

Key Features and Benefits

- High Frame Rate
- External Triggering
- Low Noise Global Shutter
- Programmable Analog and Digital Gain
- Vertical ROIs with Speed Boosting

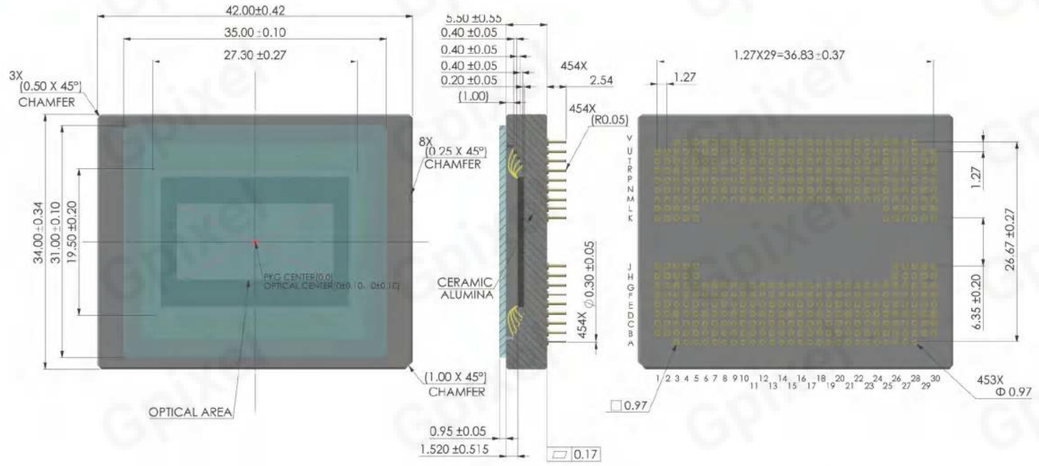
Application

- Automation & Inspection
- Cinematography
- High Speed Imaging

Specifications

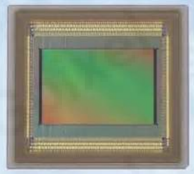
Nr of Active Pixels	4608(H) x 2176(V)	**Optical Format**	4/3"
Pixel Size	4.5 µm x 4.5 µm	**Photosensitive Area**	20.74 mm x 9.79 mm
Shutter Type	Global Shutter	**Peak QE**	> 67% (550 nm)
Full Well Capacity	>30 ke^-	**Parasitic Light Sensitivity**	<-86 dB
Temporal Noise	<4 e^-	**Angular Response**	20° (80% Response)
Dark Current	11.4 e^-/pixel/s (50°C)	**Max. SNR**	44.7 dB
Max Frame Rate	1920 fps (8 bit),1000 fps (10 bit),480 fps (12 bit)	**Dynamic Range**	68 dB (12 bit)
Output Format	144 ch Sub-LVDS	**Channel Multiplexing**	160/156/152/.../4 (any multiple of 4)
ADC	8/10/12 bit	**Max. Data Rate**	172.8 Gbps
Chroma	Mono,RGB Color	**Power Consumption**	2.5 W
Supply Voltage	3.3 V(analog) ,1.8 V(IO),1.2 V(digital)	**Package**	454 pins µPGA (42 mm x 34 mm)

Package Drawing



GSPRINT5514BSI

14MP HIGH SPEED CMOS IMAGE SENSOR



GSPRINT5514BSI features 4608 x 3072 pixels, each 5.5 µm square – a 4/3 aspect ratio 4k sensor compatible with APS-C optics. With 10 bit output GSPRINT5514BSI achieves 670 frames per secondfull well capacity with a minimum 2.0 e^- noise to achieve an outstanding 77.5 dB of dynamic range. Analog 1 x 2 binning increases the full well capacity to 30 ke^-. Up to 8 vertically oriented regions of interest can be defined to operate the sensor at increased frame rates. The image data is output via 96 Sub-LVDS channels (1.2 Gbps). For applications in whi. In 12 bit mode the sensor outputs 350 fps.

Using backside illumination technology, the sensor achieves 83% quantum efficiency (510 nm) and 17% (200 nm) for UV applications. The sensor offers dual gain HDR readout, maximizing 15 ke^- ch the maximum frame rate is not required, multiplexing modes are available to reduce the number out output channels by any multiple of two.

Key Features and Benefits

· Back Side Illuminated (BSI) Global Shutter Pixels
· High Speed: Up to 670 fps (10 bit)
· High Sensitivity
· 86% QE (510nm)

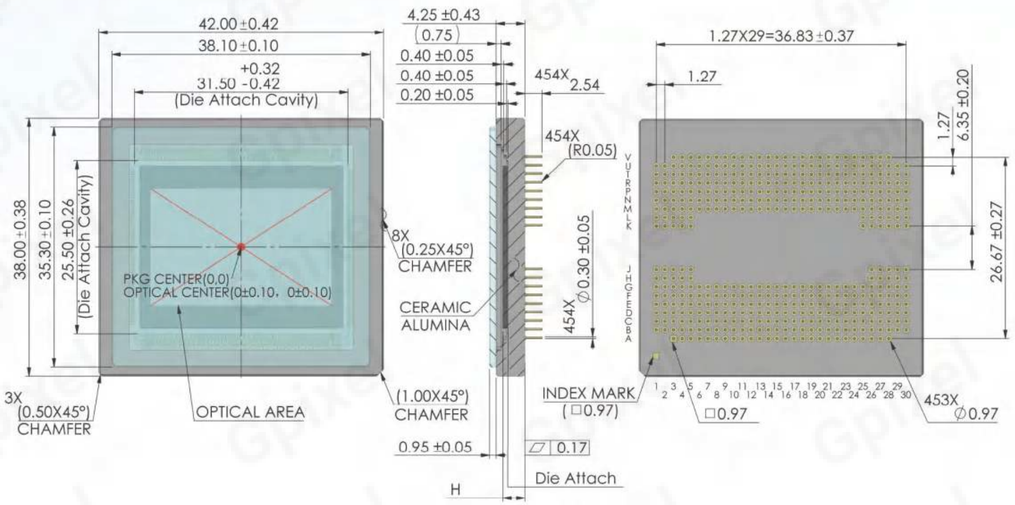
Application

·Automation & Inspection ·Cinematography ·High Speed Imaging

Specifications

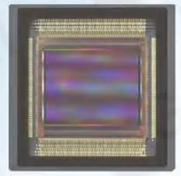
Nr of Active Pixels	4608(H) x 3072(V)	**Optical Format**	APS
Pixel Size	5.5 µm x 5.5 µm	**Photosensitive Area**	25.34 mm x 16.90 mm
Shutter Type	Global Shutter	**Peak QE**	83%
Full Well Capacity	15 ke^-	**Parasitic Light Sensitivity**	<-80 dB
Temporal Noise	<1.84 e^- (Dual 12 bit HDR & 12 bit, gain 4)	**Angular Response**	30° (80% Response)
Dynamic Range	78.2 dB (Dual 12 bit),66.4 dB (12 bit),61.9 dB (10 bit)	**Max. SNR**	41.79 dB (12 bit, gain 0)
Max Frame Rate	670 fps (10 bit),350 fps (12 bit),80 fps (Dual 12 bit)	**Dark Current**	54.2 e^-/pixel/s (60°C)
Output Format	84 ch Sub-LVDS	**Channel Multiplexing**	Yes (any multiple of 4)
ADC	10/12 bit	**Max. Data Rate**	94.84 Gbps
Chroma	Mono & RGB Color	**Power Consumption**	Max. 3.4 W (idle),Max. 4.94 W (streaming)
Supply Voltage	3.3 V (analog) ,1.8 V (IO) ,1.2 V (digital)	**Package**	454 pins µPGA (42 mm x 38 mm)

Package Drawing



GSPRINT4521

21MP GLOBAL SHUTTER HIGH SPEED IMAGE SENSOR



GSPRINT4521 is a 21 MP (5120 x 4096) APS sized (29.5 mm diameter) high speed, global shutter image sensor designed with the latest 4.5 µm charge domain global shutter pixel. It achieves 32 ke^-, less than 3 e^- rms read noise and > 69 dB dynamic range, optionally increased to 81 dB with a dual gain HDR mode. Its state-of-the-art 65 nm CIS process allows the sensor to use on-chip charge binning, further increasing FWC and almost quadrupling frame rate.

GSPRINT4521 will be offered in two speed variants. The full speed variant consists of 160 pairs sub-LVDS channels running at 1.2 Gbps which delivers a stunning 1000 fps in single gain operation at 8 bit per pixel and full resolution, and more than 3500 fps with a ROI of 1024 rows in a dedicated 3D laser profiling mode. These unique features make it an ideal solution for demanding imaging in high-end applications such as high speed 4K video, industrial inspection, motion analysis and life science imaging.

Key Features and Benefits

· High Frame Rate
· Low Noise Global Shutter
· Dual Gain HDR Mode

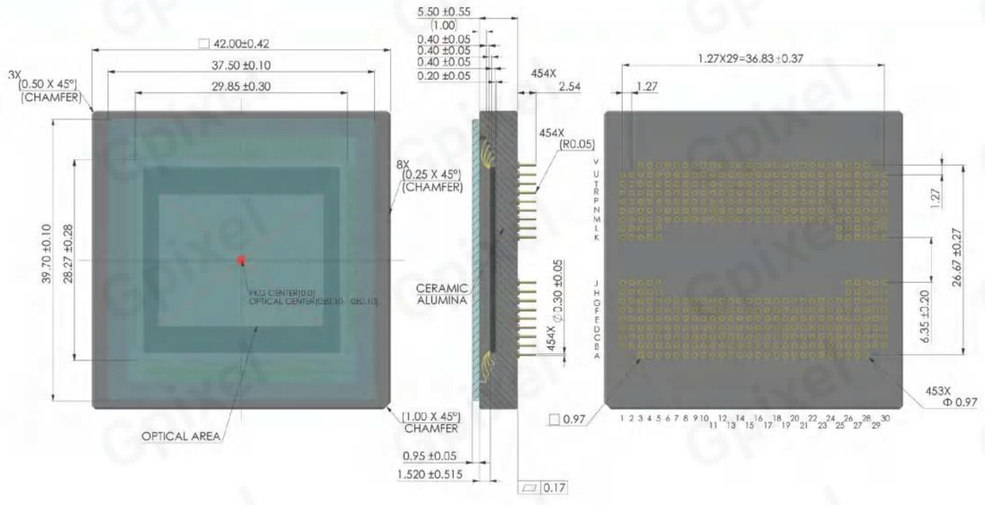
Application

·Automation & Inspection ·Cinematography ·High Speed Imaging

Specifications

Nr of Active Pixels	5120(H) x 4096(V)	**Optical Format**	1.84" (APS-C)
Pixel Size	4.5 µm x 4.5 µm	**Photosensitive Area**	23.04 mm x 18.43 mm
Shutter Type	Global Shutter	**Peak QE**	>63 % (500 nm)
Full Well Capacity	32 ke^-	**Parasitic Light Sensitivity**	<-86 dB
Temporal Noise	3.5 e^-	**Angular Response**	17° (80% Response)
Dark Current	11.4 e^-/pixel/s (50°C)	**Max. SNR**	45 dB
Max Frame Rate	1000 fps (8 bit),500 fps (10 bit),250 fps (12 bit)	**Dynamic Range**	68 dB (12 bit)
Output Format	160 ch Sub-LVDS	**Channel Multiplexing**	160/156/152/.../4 (any multiple of 4)
ADC	8/10/12 bit	**Max. Data Rate**	192 Gbps
Chroma	Mono,RGB Color	**Power Consumption**	6 W
Supply Voltage	3.3 V (analog),1.8 V (IO),1.2 V (digital)	**Package**	454 pins µPGA、42 mm x 42 mm

Package Drawing



Gpixel

GMAX | GSPRINT | GSENSE | GLUX | GTOF | GCINE | GL | GXS | GIR

Area Scan CMOS Image Sensor

The GSENSE series is a world leading scientific CMOS image sensor family, designed with correlated multiple sampling for extreme low noise, true HDR for high dynamic range and optional backside illumination technology for quantum efficiency of up to 97%. Primary applications include scientific imaging, medical imaging, spectroscopy, fluorescence imaging, astronomy, high energy physics, and high-end surveillance.

GSENSE2020BSI	GSENSE6504BSI	GSENSE400BSI	GSENSE4040BSI
GSENSE6060	GSENSE6060BSI	GSENSE3243BSI	GSENSE6510BSI
GSENSE9016BSI	GSENSE1517BSI	GSENSE1081BSI	GSENSE64105BSI

Product Family Features

- Large Format
- BSI
- High Dynamic
- Low Noise

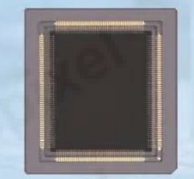
Applications

- Life Sciences
- Astronomy
- Microscopy
- X-Ray
- Spectroscopy



GSENSE2020BSI

4MP SCIENTIFIC BSI CMOS IMAGE SENSOR



GSENSE2020BSI is a backside illuminated (BSI) scientific CMOS image sensor, with 4 MP resolution and 6.5 μm pixel size. With six-transistor (6T) pixel architecture, GSENSE2020BSI features readout noise of 1.6 e^-, full well of 55 ke^-, as well as peak QE of 95%. In addition, the sensor supports correlated multiple sampling (CMS), the read noise can be further reduced to 1.2 e^- with 2-CMS operation.

GSENSE2020BSI's max. frame rate is 74 fps with 11bit HDR mode. The frame rate, as well as the global reset function, make GSENSE2020BSI the best solution for industrial inspection requiring superior UV sensitivity. In addition, GSENSE2020BSI is pin-compatible with GSENSE2020 and GSENSE2011, allowing easy hardware integration with minimized development, and fast time-to-market.

Key Features and Benefits

- Scientific BSI CMOS
- Peak QE of 95%
- Low Noise, Low Power for Long Exposure Modes

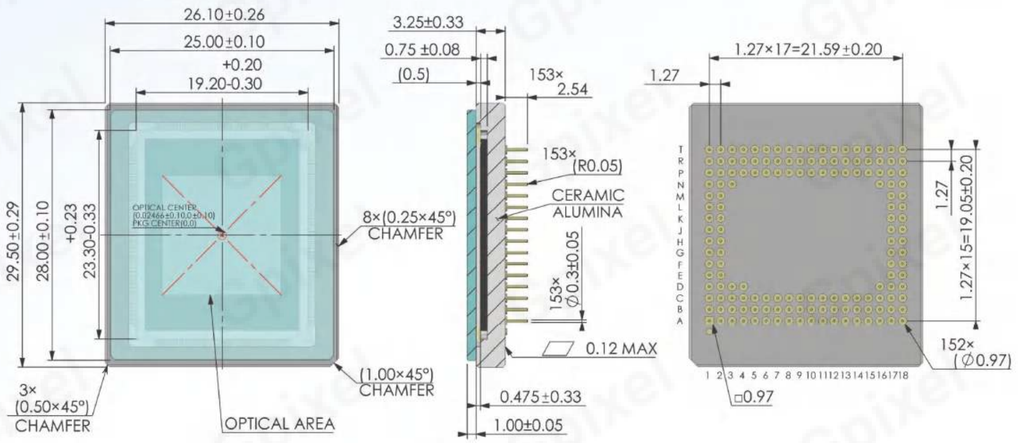
Application

- Spectroscopy
- Life Sciences
- Astronomy
- Microscopy
- X-Ray

Specifications

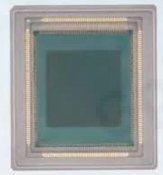
Nr of Active Pixels	2048(H) x 2048(V)	**Optical Format**	1.2"
Pixel Size	6.5 μm x 6.5 μm	**Photosensitive Area**	13.3 mm x 13.3 mm
Shutter Type	Rolling Shutter	**Peak QE**	95% (560 nm)
Full Well Capacity	55 ke^- (HDR LG)	**Temporal Noise**	1.2 e^-(CMS),1.6 e^-(HDR,LG)
Dark Current	0.07 e^-/pixel/s (-30°C)	**Dynamic Range**	90.5 dB
Max Frame Rate	43 fps (12 bit),74 fps (11 bit)	**Output Format**	8 ch LVDS (12 bit),16 ch LVDS (11 bit)
Max. Data Rate	9.6 Gbps (11 bit)	**ADC**	11/12 bit
Chroma	Mono	**Power Consumption**	<1.2 W
Supply Voltage	3.5 V (analog),2.0 V (digital)	**Package**	153 pins μPGA (26.1 mm x 29.5 mm)

Package Drawing



GSENSE6504BSI

4MP SCIENTIFIC BSI CMOS IMAGE SENSOR



GSENSE6504BSI is a 2048 x 2048 (4.2 MP) resolution backside-illuminated scientific CMOS image sensor with industry-standard 6.5 μm x 6.5 μm rolling shutter pixels, 18.8 mm diagonal, and peak QE of 95%. In low-noise mode at -20°C, the sensor achieves a read noise floor of 0.43 e^- rms at 98 fps while delivering 98.7 dB of dynamic range using the on-chip dual-gain output. With a noise histogram peak of 0.28 e^-, the sensor enables single photon detection in the low-noise mode. In high-speed mode, the sensor delivers its maximum frame rate of 291 fps. Under -42°C die temperature, sensor dark current is only 0.009 e^-/s/p. The sensor package is mechanically identical to GSENSE2020BSI for easy integration into existing camera platforms.

Key Features and Benefits

- BSI
- Extra Low Noise 0.43 e^- rms (-20°C)
- High speed 291 fps
- Peak QE 95%

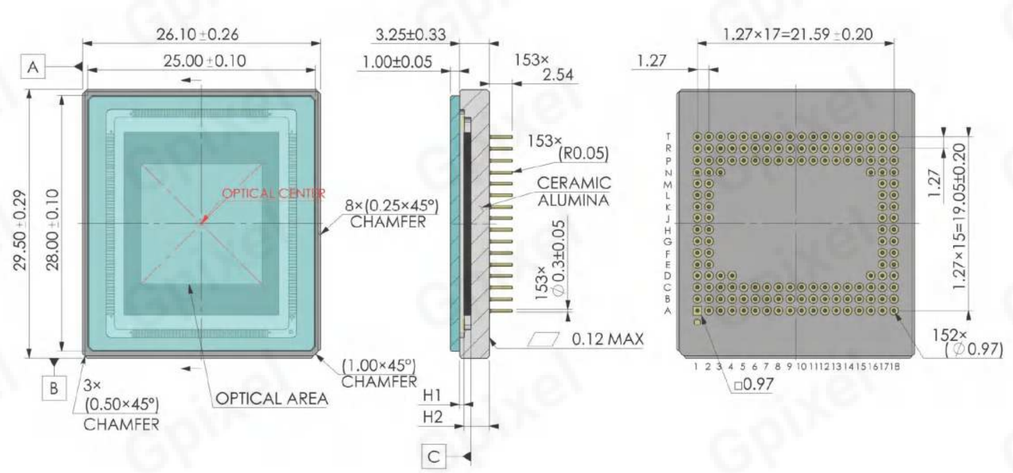
Application

- Spectroscopy
- Life Sciences
- Astronomy
- Microscopy
- X-Ray

Specifications

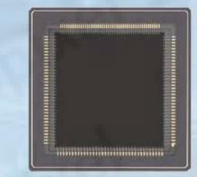
Nr of Active Pixels	2048(H) x 2048(V)	**Optical Format**	1.2"
Pixel Size	6.5 μm x 6.5 μm	**Photosensitive Area**	13.3 mm x 13.3 mm
Shutter Type	Rolling Shutter	**Peak QE**	95% (450 nm)
Full Well Capacity	53 ke^-	**Temporal Noise**	0.5 e^- (rms) (Low Noise),0.9 e^- (rms) (HDR)
Dark Current	0.009 e^-/pixel/s (-42°C)	**Dynamic Range**	98.7 dB (Low Noise),95.4 dB (HDR)
Max Frame Rate	98 (Low Noise), 169 fps (HDR), 291 fps (STD)	**Output Format**	16 x Sub-LVDS
Max. Data Rate	19.2 Gbps	**ADC**	12 bit
Chroma	Mono	**Power Consumption**	2 W
Supply Voltage	3.3 V (analog),1.5 V (digital),1.8 V – 3.3 V (IO)	**Package**	153 pins μPGA (26.1 mm x 29.5 mm)

Package Drawing



GSENSE400BSI

4MP SCIENTIFIC BSI CMOS IMAGE SENSOR



The GSENSE400BSI sensor is a 4 Megapixels resolution BSI CMOS image sensor with 11 μm pixel size. As the first backside illuminated scientific CMOS image sensor in the world, GSENSE400BSI features low readout noise of 1.6 e^-, high dynamic range of 94 dB, and low dark current of 0.27 e^-/s/pix at deep cooling of -40°C. With special ARC, the sensor provides peak of 95% (570 nm). This image sensor has two operation modes, STD mode in 48 fps or HDR mode which is optimized for high dynamic range (HDR) applications with half frame rate. In HDR mode, the sensor achieves a linear dynamic range of 95 dB. These features make GSENSE400BSI ideal for high-end scientific imaging, corona detection, astronomy, spectroscopic, and forensic imaging applications.

Key Features and Benefits

· Backside Illumination Scientific CMOS
· Peak QE of 95%
· Low Noise, Low Power for Long Exposure Modes

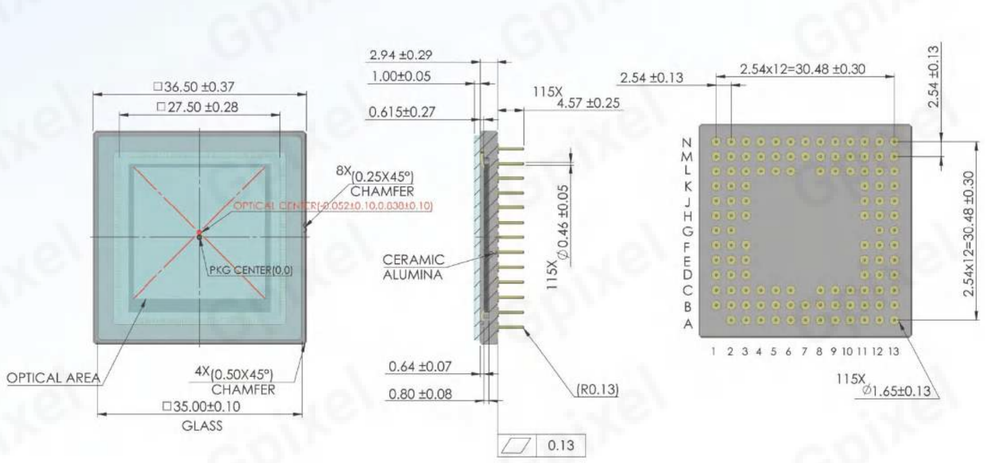
Application

· Spectroscopy · Life Sciences · Astronomy · Microscopy · X-Ray

Specifications

Nr of Active Pixels	2048(H) x 2048(V)	**Optical Format**	2.0"
Pixel Size	11 μm x 11 μm	**Photosensitive Area**	22.52 mm x 22.52 mm
Shutter Type	Rolling Shutter	**Peak QE**	95% (570 nm)
Full Well Capacity	91 ke^-	**Temporal Noise**	1.6 e^-
Dark Current	0.27 e^-/pixel/s (-40°C)	**Dynamic Range**	95 dB (HDR)
Max Frame Rate	48 fps (STD)	**Output Format**	8 ch LVDS
Max. Data Rate	2.4 Gbps	**ADC**	12 bit
Chroma	Mono	**Power Consumption**	<650 mW
Supply Voltage	3.3 V (analog),1.8 V (digital)	**Package**	115 pins PGA (36.5 mm x 36.5 mm)

Package Drawing



GSENSE4040BSI

16.8MP SCIENTIFIC BSI CMOS IMAGE SENSOR



GSENSE4040BSI is a BSI CMOS image sensor of 16.8MP (4096 x 4096) resolution with 9 μm × 9 μm pixel size, and a photosensitive area of 36.8 mm x 36.8 mm (52 mm diagonal).
Using dual gain HDR operation mode, 84.6 dB is achieved with 39.2k e^- full well capacity and 2.3 e^- readout noise. 18 pairs of LVDS channels running at 600 MHz per channel support full-resolution imaging at a frame rate of 24 fps.
GSENSE4040BSI is assembled in 140 pins PGA ceramic package with a removable glass lid. This sensor is pin compatible with GSENSE4040FSI for fast and easy integration.

Key Features and Benefits

· Large Format BSI Scientific CMOS
· Low Readout Noise

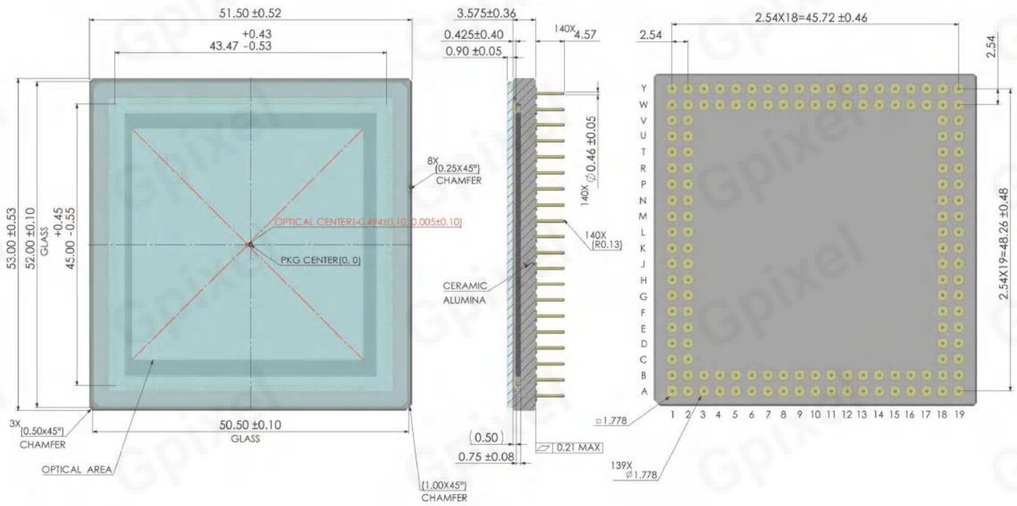
Application

· Spectroscopy · Life Sciences · Astronomy · Microscopy · X-Ray

Specifications

Nr of Active Pixels	4096(H) x 4096(V)	**Optical Format**	3.3"
Pixel Size	9 μm x 9 μm	**Photosensitive Area**	36.864 mm x 36.864 mm
Shutter Type	Rolling Shutter	**Peak QE**	90% (600 nm)
Full Well Capacity	39.2 ke^-	**Temporal Noise**	2.3 e^-
Dark Current	0.04 e^-/pixel/s (-40°C)	**Dynamic Range**	84.6 dB
Max Frame Rate	24 fps	**Output Format**	18 ch LVDS
Max. Data Rate	10.8 Gbps	**ADC**	12 bit
Chroma	Mono	**Power Consumption**	<1.4 W
Supply Voltage	3.3 V (analog),1.8 V (digital)	**Package**	140 pins PGA (51.5 mm x 53 mm)

Package Drawing



GSENSE6060

37MP SCIENTIFIC CMOS IMAGE SENSOR



GSENSE6060 and its pin-compatible back-thinned version GSENSE6060BSI, are designed with a large imaging area for demanding astronomical and scientific imaging applications. With its top and bottom readout chains consisting of 2 × 25 LVDS pairs running up to 630 MHz, GSENSE6060's frame rate is up to 44 fps with 12 bit ADC, allowing scientists to observe with the never-achieved temporal resolution of large format imagers. The two readout chains also provide the possibility for HDR combination up to 89 dB.
GSENSE6060 supports up to 4 times correlated multiple sampling (CMS). In CMS mode, both the reset and signal levels of pixel output are sampled for multiple times and summed up for pixel-related noise suppression.
The Aluminum Nitride package of GSENSE6060 provides 10x thermal conductivity than the traditional Alumina package, as well as excellent flatness both at the room temperature and deep-cooled temperatures.

Key Features and Benefits

· Large Format Scientific CMOS
· Peak QE of 71.5%
· 14 bit with CMS

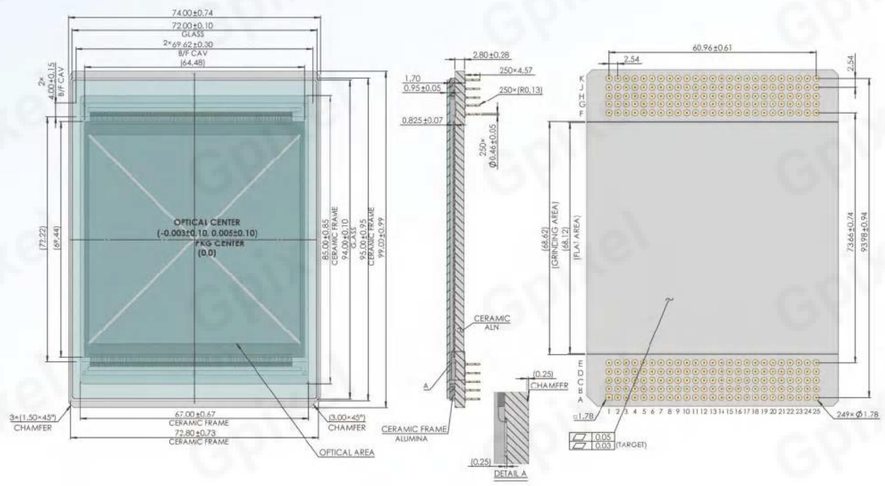
Application

· Spectroscopy · Life Sciences · Astronomy · Microscopy · X-Ray

Specifications

Nr of Active Pixels	6144(H) x 6144(V)	**Optical Format**	5.4"
Pixel Size	10 µm x 10 µm	**Photosensitive Area**	61.44 mm x 61.44 mm
Shutter Type	Rolling Shutter	**Peak QE**	71.5% (550 nm)
Full Well Capacity	133 ke$^-$	**Temporal Noise**	4.1 e$^-$
Dark Current	0.01 e$^-$/pixel/s (-70°C)	**Dynamic Range**	89 dB (12 bit,HDR)
Max Frame Rate	44 fps (12 bit,STD)	**Output Format**	50 ch LVDS
Max. Data Rate	31.5 Gbps	**ADC**	12/14 bit
Chroma	Mono	**Power Consumption**	5 W
Supply Voltage	5 V (analog),1.85 V (digital)	**Package**	250 pins PGA (74 mm x 99 mm)

Package Drawing



GSENSE6060BSI

37MP SCIENTIFIC BSI CMOS IMAGE SENSOR



GSENSE6060BSI is designed with a large imaging area for demanding astronomical and scientific imaging applications. With its top and bottom readout chains consisting of 2 × 25 LVDS pairs running up to 420 MHz, GSENSE6060BSI's frame rate is up to 26 fps with 12 bit ADC, allowing scientists to observe with the never-achieved temporal resolution of large format imagers.
The two readout chains also provide the possibility for HDR combination up to 90 dB. GSENSE6060BSI supports up to 4 times correlated multiple sampling (CMS). In CMS mode, the reset and pixel output are sampled for multiple times and summed up for pixel-related noise suppression. The Aluminum Nitride package of GSENSE6060BSI provides 10x thermal conductivity than the traditional Alumina package, as well as excellent flatness both at the room temperature and deep-cooled temperatures. GSENSE6060BSI is equipped with removable glass lids.

Key Features and Benefits

· Large Format BSI Scientific CMOS
· Peak QE of 95%
· 14 bit with CMS

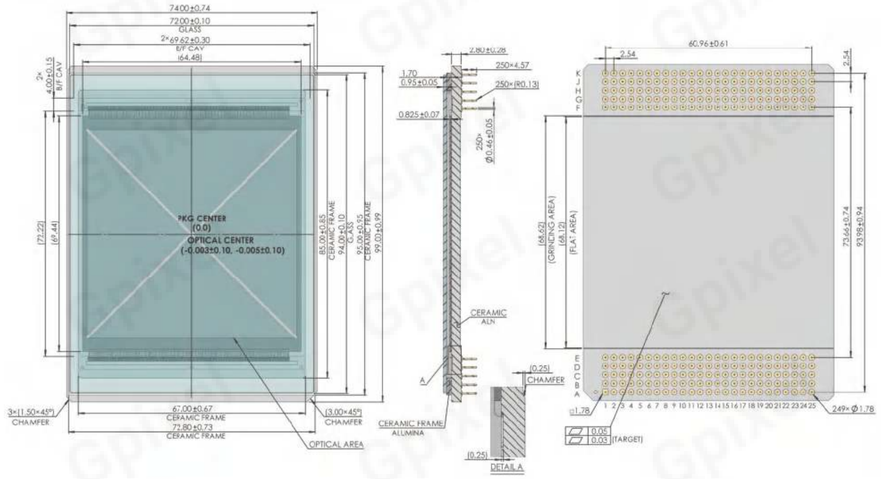
Application

· Spectroscopy · Life Sciences · Astronomy · Microscopy · X-Ray

Specifications

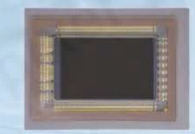
Nr of Active Pixels	6144(H) x 6144(V)	**Optical Format**	5.4"
Pixel Size	10 µm x 10 µm	**Photosensitive Area**	61.44 mm x 61.44 mm
Shutter Type	Rolling Shutter	**Peak QE**	95% (580 nm)
Full Well Capacity	95 ke$^-$	**Temporal Noise**	3 e$^-$ (HG)
Dark Current	0.04 e$^-$/pixel/s (-40°C)	**Dynamic Range**	90 dB (12 bit,HDR)
Max Frame Rate	26 fps (12 bit,STD)	**Output Format**	50 ch LVDS
Max. Data Rate	21 Gbps	**ADC**	12/14 bit
Chroma	Mono	**Power Consumption**	< 4 W
Supply Voltage	5 V (analog),1.85 V (digital)	**Package**	250 pins PGA (74 mm x 99 mm)

Package Drawing



GSENSE3243BSI

43MP SCIENTIFIC CMOS IMAGE SENSOR



GSENSE3243BSI is a APS-C stacked BSI image sensor designed with 3.2 µm pixels. The full resolution of the sensor can be read out at a bit depth of 14 bit and a maximum frame rate of 100 fps using an on-chip high speed serial interface or at 50 fps over 32 Sub LVDS channels operating at 1.05 Gbps/channel. The image sensor has a peak quantum efficiency over 80%, a wide angle response of 37°, read noise of 2.0 e^- at full speed, and a dark current less than 1 e^-/pixel/second at 0 degree.

The sensor incorporates multiple features to enhance dynamic range including the dual-gain output, on-chip compression HDR function and digitally programmable piecewise linear HDR feature. The sensor achieves a dynamic range of 77.2 dB in dual gain mode and up to 83 dB using the more advanced HDR features.

Key Features and Benefits

- Stacked BSI
- High Sensitivity
- Low Noise
- High Dynamic Range
- Multi-Slope HDR
- Dual Gain HDR

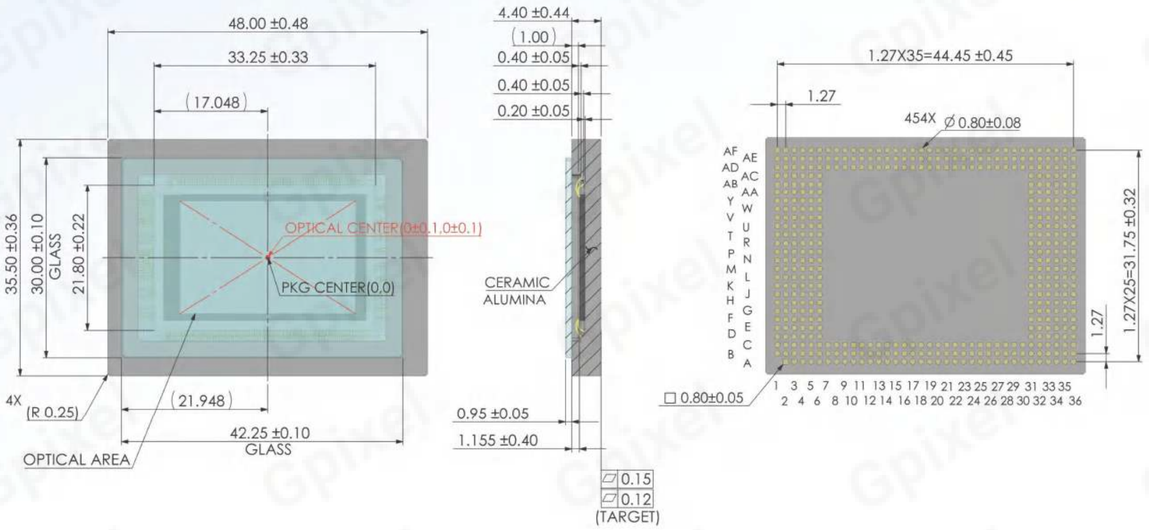
Application

- Spectroscopy
- Life Sciences
- Astronomy
- Microscopy

Specifications

Nr of Active Pixels	8192 (H) x 5232(V)	**Optical Format**	1.2"
Pixel Size	3.2 µm x 3.2 µm	**Photosensitive Area**	26.2 mm x 16.7 mm
Shutter Type	Rolling Shutter	**Peak QE**	80% (550 nm,Mono)
Full Well Capacity	85 ke^- (HDR multi-exp)	**Temporal Noise**	2.0 e^- (Standard HG),2.7 e^- (HDR)
Dark Current	7.8 e^-/pixel/s (40°C)	**Dynamic Range**	83 dB (HDR multi-exp)
Max Frame Rate	100 fps	**Output Format**	32 pairs sLVDS / 16 pairs GSI
Max. Data Rate	84 Gbps	**ADC**	14 bit
Chroma	Mono	**Power Consumption**	4 W
Supply Voltage	3.3 V,1.8 V,1.25 V,2.2 V,4.5 V	**Package**	455 pins LGA (48.0 mm x 35.5 mm)

Package Drawing



GSENSE6510BSI

10.2MP SCIENTIFIC CMOS IMAGE SENSOR



GSENSE6510BSI is a 3200 x 3200 (10.2 MP) resolution image sensor with industry-standard 6.5 µm x 6.5 µm pixel and large 29.4 mm diagonal for increased throughput in microscopy applications compared to 19 mm sCMOS devices. With a peak QE of 95% and read noise of 0.7 e^- median, the sensor achieves exceptional signal-to-noise in extreme low light applications.

The sensor offers five imaging modes. In 12 bit mode, the sensor delivers 62.3 dB of dynamic range with a read noise floor or 1.3 e^- (88 fps). In 11 bit HDR mode, the sensor uses dual-gain readout to achieve 78.8 dB of dynamic range with a read noise of 1.8 e^- at the same 83 fps. Additionally, the sensor offers two high-speedmodes, an 8 bit mode reaching 500 fps and an 11 bit mode reaching 166 fps. A 12 bit low noise mode achieves 0.7 e^- read noise.

Key Features and Benefits

- BSI
- High Sensitivity
- Low Noise
- Dual Gain HDR
- High Frame Rate

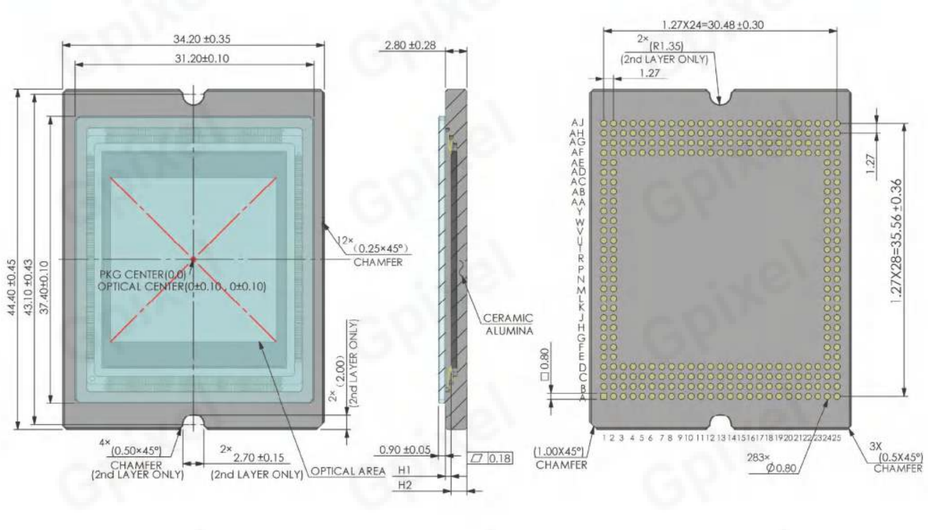
Application

- Life Sciences
- Microscopy

Specifications

Nr of Active Pixels	3200 (H) x 3200 (V)	**Optical Format**	1.9"
Pixel Size	6.5 µm x 6.5 µm	**Photosensitive Area**	20.8 mm x 20.8 mm
Shutter Type	Rolling Shutter	**Peak QE**	95% (610 nm)
Full Well Capacity	21 ke^-	**Temporal Noise**	0.7 e^- (12 bit, 16 x CMS)
Dark Current	0.2 e^-/pixel/s (-10°C)	**Dynamic Range**	78.8 dB (11 bit HDR)
Max Frame Rate	500 fps (8 bit)	**Output Format**	72 ch LVDS
Max. Data Rate	69.12 Gbps (8 bit)	**ADC**	8/11/12 bit
Chroma	Mono	**Power Consumption**	<5 W (8 bit),<2.7 W (12 bit)
Supply Voltage	3.6 V (analog),2.0 V (digital)	**Package**	284 pins LGA (44.4 mm x 34.2 mm)

Package Drawing



GSENSE9016BSI

16.7MP BSI sCMOS Image Sensor



GSENSE9016BSI is a backside-illuminated scientific CMOS image sensor with a resolution of 4096 × 4096 (16.7 MP), an optical format of 3.3 inches, and a pixel size of 9 μm × 9 μm, featuring a rolling shutter architecture. Fabricated using a backside illumination process, it delivers a peak quantum efficiency of 95%. In dual-gain HDR mode, the sensor supports a maximum frame rate of 26 fps, read noise of 0.7 e^-, and a dynamic range of 104 dB. At a chip temperature of -30 °C, the dark current is as low as 0.04 e^-/s/p, offering a new solution for applications such as astronomical observation and life science. The GSENSE9016BSI shares mechanical package compatibility with the GSENSE4040BSI, enabling seamless integration into existing camera platforms.

Key Features and Benefits

· BSI
· Low Noise 0.7 e^-
· High Speed 44 fps
· 14/12 bit ADC
· Peak QE 95%

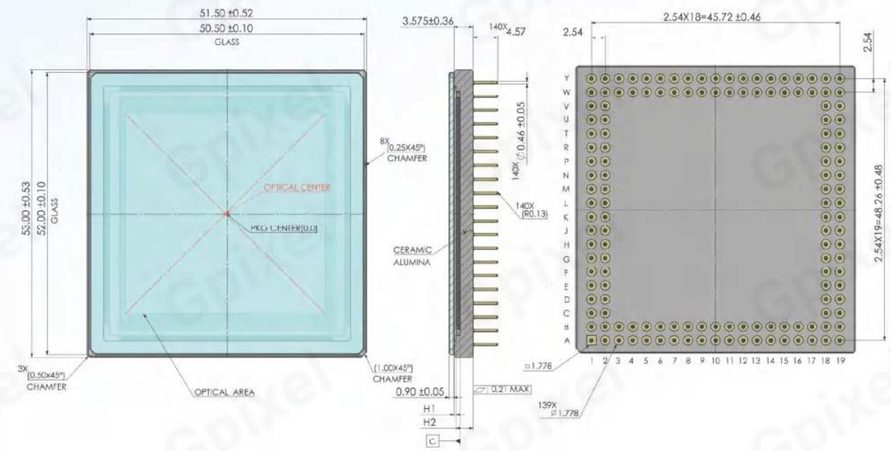
Application

· Astronomy
· Life Sciences
· X-Ray

Specifications

Nr of Active Pixels	4096 (H) x 4096 (V)	**Power Consumption**	3.3"
Pixel Size	9 μm x 9 μm	**Photosensitive Area**	36.8 mm x 36.8 mm
Shutter Type	Rolling Shutter	**Dark Current**	0.04 e^-/pixel/s (-30°C)
Dynamic Range	104 dB (12 bit HDR)	**Peak QE**	95% (450 nm)
Full Well Capacity	118 ke^-	**Temporal Noise**	0.7 e^-
Max Frame Rate	13 fps (14 bit STD), 26 fps (12 bit HDR), 44 fps (12 bit STD)	**ADC**	14/12 bit
Max. Data Rate	0.96 Gbps	**Output Format**	18 x sub-LVDS
Chroma	Mono	**Optical Format**	< 2 W
Supply Voltage	3.3 V (Analog), 1.5 V (Digital), 1.8-3.3 V (IO)	**Package**	140 pins PGA (51.5 mm x 53 mm)

Package Drawing



GSENSE1517BSI

16.8MP 15 μm SCIENTIFIC CMOS IMAGE SENSOR



GSENSE1517BSI is a 4116 x 4100 (16.8 MP) resolution scientific image sensor with high-performance 15 μm x 15 μm pixels, a large 61.74 mm x 61.50 mm imaging area, peak QE of 92% and minimum read noise 1.2 e^-. The sensor utilizes 12 bit dual-gain HDR, and both 12 bit and 14 bit single gain and 16 bit single gain ADCs to achieve a variety of imaging modes. Both 12 bit HDR and 14 bit STD are supported at up to 4 fps utilizing 10 pairs of LVDS working at 420 Mbps each. For 16 bit STD mode, only 3 pairs of LVDS is utilized. In 12 bit dual-gain HDR mode, an intra-scene dynamic range over 95.3 dB is achieved with 70 ke^- full well capacity and 1.2 e^- readout noise. In 14 bit STD mode, either the LG or HG signal can be utilized. Using the HG signal, read noise is 1.5 e^- and a dynamic range of 79.6 dB is achieved. Using the LG signal, the maximum full well capacity of 70 ke^-. In 16 bit STD mode, with the maximum full well capacity of 70 ke^- and the readout noise of 5.8 e^-, it can achieve a dynamic range of 81.5 dB.

GSENSE1517BSI is assembled in a high-end SiC package designed such that the dead space at 3x package sides is minimized for mosaic tiling.

The thermal expansion of SiC is close to that of the silicon die, providing mechanical stability over the sensor's full operating range. The sensor's 144 pins Al O IPGA ceramic package is offered with removable cover glass for easy assembly into cooled camera systems.

Key Features and Benefits

· 92% Peak QE (450 nm)
· Low Noise with 1.2 e^-
· Anti-Glowing
· On-chip 16 bit Column-Parallel ADC
· Low Dark Current: < 0.008 e^-/s/pix (-70 °C)
· 3-Side Buttable with SiC Package
· 61 mm SQ. Large Format Sensor with Frame Rate up to 4 fps

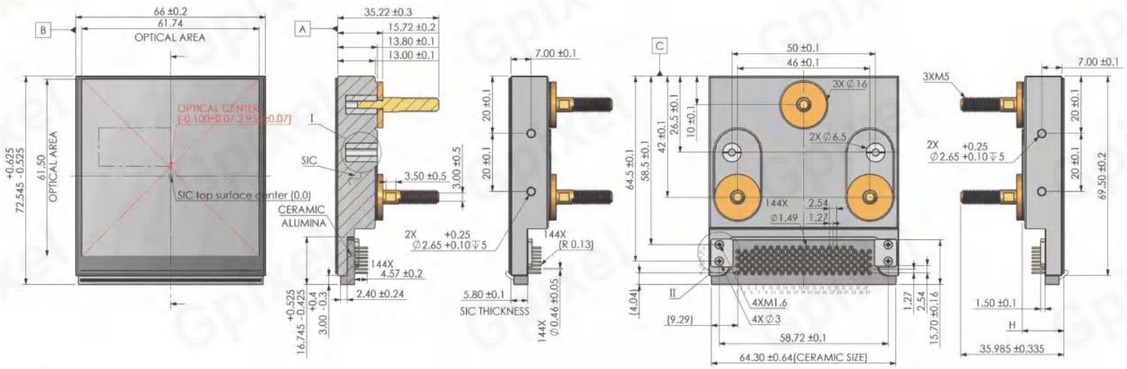
Application

· Astronomy

Specifications

Nr of Active Pixels	4116 (H) x 4100 (V)	**Photosensitive Area**	61.74 mm x 61.50 mm
Pixel Size	15 μm x 15 μm	**Dark Current**	< 0.008 e^-/pixel/s (-70°C)
Shutter Type	Rolling Shutter	**Peak QE**	92% (450 nm)
Dynamic Range	95.3 dB (12 bit, HDR),76.1 dB (14 bit, LG) 79.6 dB (14 bit, HG),81.5 dB (16 bit, LG)	**Temporal Noise**	1.2 e^-(12 bit, HDR),10.9 e^-(14 bit, LG) 1.5 e^-(14 bit, HG),5.8 e^-(16 bit LG)
Full Well Capacity	70 ke^-(12 bit HDR,14 bit & 16 bit LG),14.4 ke^-(14 bit, HG)	**ADC**	16 bit
Max Frame Rate	4 fps (12 bit,HDR &14 bit),1.1 fps (16 bit)	**Output Format**	10 pairs LVDS
Max. Data Rate	4.2 Gbps	**Power Consumption**	<1 W
Chroma	Mono	**Operation Temperature**	-70°C ~ 50°C
Supply Voltage	3.3 V (Analog),1.55 V (Digital),1.8 V (IO)	**Package**	SiC with 144 pins Al O IPGA ceramic package (66.2 mm x 72.545 mm)

Package Drawing



GSENSE1081BSI

81MP SCIENTIFIC BSI CMOS IMAGE SENSOR



GSENSE1081BSI is designed with large imaging area for demanding scientific imaging applications. Sensor provides active resolution of 8900(H) x 9120(V) with 10 μm x 10 μm pixel size. An inter-scene dynamic range is 84.5 dB combined from maximum full well capacity of 90.68 ke⁻ and readout noise of 5.35 e⁻.

Sensor supports on-chip 16 bit ADC, with LVDS channel running up to 250 MHz, providing frame rate up to 0.34 fps. GSENSE1081BSI is assembled in high-end SiC package with one flexi-cable, by this design, the dead space at 3x package sides is minimized and makes sensor well fit for applications require a mosaic sensor array. The thermal expansion of SiC is close to silicon die which is suitable for deep cooling applications.

Key Features and Benefits

- 97% Peak QE (610 nm)
- On-chip 16 bit Column-Parallel ADC
- Dark Current: 0.00373 e⁻/pixel/s (-70 °C)
- Anti-Glowing
- Silicon Carbide with one Flexi-Cable

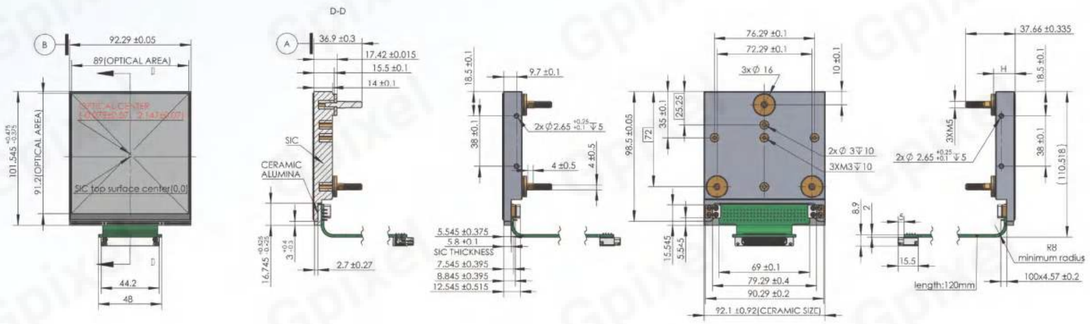
Application

- Astronomy

Specifications

Nr of Active Pixels	8900(H) x 9120(V)	**Optical Format**	7.96"
Pixel Size	10 μm x 10 μm	**Photosensitive Area**	89.00 mm x 91.20 mm
Shutter Type	Rolling Shutter	**Peak QE**	97.11% (610 nm)
Full Well Capacity	90.68 ke⁻	**Temporal Noise**	5.35 e⁻
Dark Current	0.00373 e⁻/pixel/s (-70°C)	**Dynamic Range**	84.5 dB
Max Frame Rate	0.34 fps (16 bit),0.94 fps (15 bit)	**Output Format**	5 ch LVDS
Max. Data Rate	500 Mbps (16 bit),1.6 Gbps (15 bit)	**ADC**	15/16 bit
Chroma	Mono	**Power Consumption**	1.4 W
Supply Voltage	5 V (analog),1.8 V (digital)	**Package**	100 pins SiC package(92.3 mm x 98.4 mm)

Package Drawing



GSENSE64105BSI

105 MP SCIENTIFIC BSI CMOS IMAGE SENSOR



GSENSE64105BSI is a 104.8-megapixel large-format scientific CMOS image sensor featuring a 6.4 μm pixel pitch and a 65.5 mm × 65.5 mm square photosensitive area, enabling exceptionally wide field capture. Designed for the most demanding scientific applications, GSENSE64105BSI offers ultra-low read noise of 1.25 e⁻, high intra-scene dynamic range of 98.8 dB, and a peak quantum efficiency of 75% (550 nm), providing excellent sensitivity for faint-signal detection. Its dual-gain HDR architecture delivers stable linearity across bright and dim regions, while the sensor's super-high resolution enables enhanced reconstruction of fine spatial. With a dark current of just 6.28 e⁻/s/pix(20°C), 24-lane high-speed LVDS output, and a power-efficient <1.6 W design, GSENSE64105BSI is ideally suited for wide-field astronomy, precision photometry, large-area spectroscopy, and advanced scientific instrumentation that requires both extreme sensitivity and large-format fidelity.

Key Features and Benefits

- High Resolution of 104.8M with 6.4 μm Rolling Shutter Pixel
- Low noise with 1.25 e⁻
- FWC up to 110 ke⁻
- 75% Peak QE (550 nm)
- Support HDR Mode

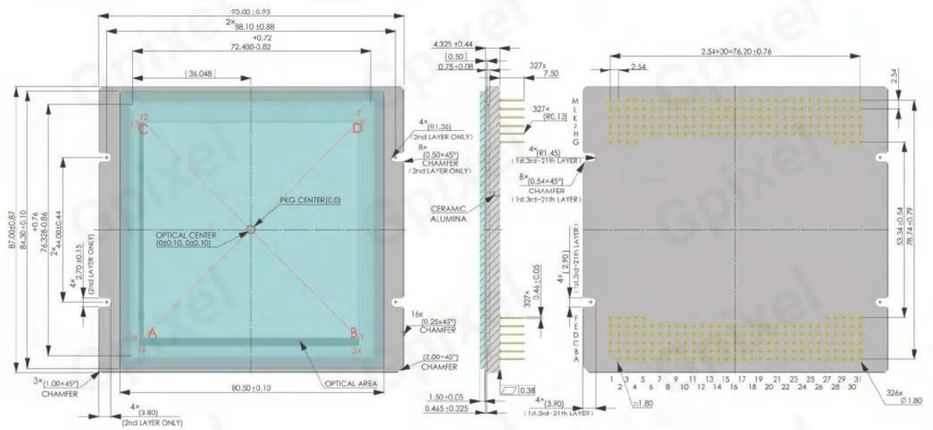
Application

- Life Sciences
- Astronomy

Specifications

Nr of Active Pixels	10240 (H) × 10240 (V)	**Resolution**	105 MP
Pixel Size	6.4 μm x 6.4 μm	**Photosensitive Area**	65.536 mm x 65.536 mm
Shutter Type	Rolling Shutter	**Peak QE**	75% (550 nm)
Full Well Capacity	110 ke⁻ (12 bit HDR,13 bit LG),11.5 ke⁻ (13 bit HG)	**Dark Current**	6.28 e⁻/pixel/s (20°C)
Temporal Noise	1.25 e⁻ (12 bit HDR),16 e⁻ (13 bit LG),1.7 e⁻ (13 bit HG)	**Max Frame Rate**	1.25 fps
Dynamic Range	98.8 dB (12 bit HDR),76.9 dB (13 bit LG),76.6 dB (13 bit HG)	**Output Format**	24 pairs of LVDS
Max. Data Rate	6.72 Gbps	**ADC**	12/13 bit
Chroma	Mono	**Power Consumption**	<1.6 W
Supply Voltage	3.3 V (analog),1.5 V (digital),3.3 V (IO)	**Package**	327 pins PGA (93.0 mm x 87.0 mm)

Package Drawing



GMAX | GSPRINT | GSENSE | GLUX | GTOF | GCINE | GL | GXS | GIR

Area Scan CMOS Image Sensor

The GLUX series is a backside illuminated, scientific grade CMOS image sensor product family combining sub-electron noise performance with high frame rates for ultra-low light imaging in scientific and surveillance applications.

GLUX9701BSI

Product Family Features

- High Sensitivity
- HDR
- Low Noise
- BSI

Applications

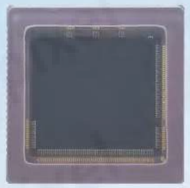
- Scientific imaging
- Low-light Monitoring
- Ultraviolet industrial inspection



Gpixel

GLUX9701BSI

1.3MP BSI CMOS IMAGE SENSOR



GLUX9701BSI a 1" sized, high sensitivity BSI sCMOS image sensor with a resolution of 1.3 MP (1280 x 1024) and large 9.76 µm x 9.76 µm pixels. Sensor supports a dual-gain HDR mode, achieving dynamic range of 89.5 dB by combining 1.6 e^- readout noise. A dedicated low noise mode further optimizes imaging performance with read noise of 0.85 e^- and power consumption of only 122 mW.

Key Features and Benefits

- High Sensitivity
- < 1 e^- Readout Noise
- High Dynamic Range

Application

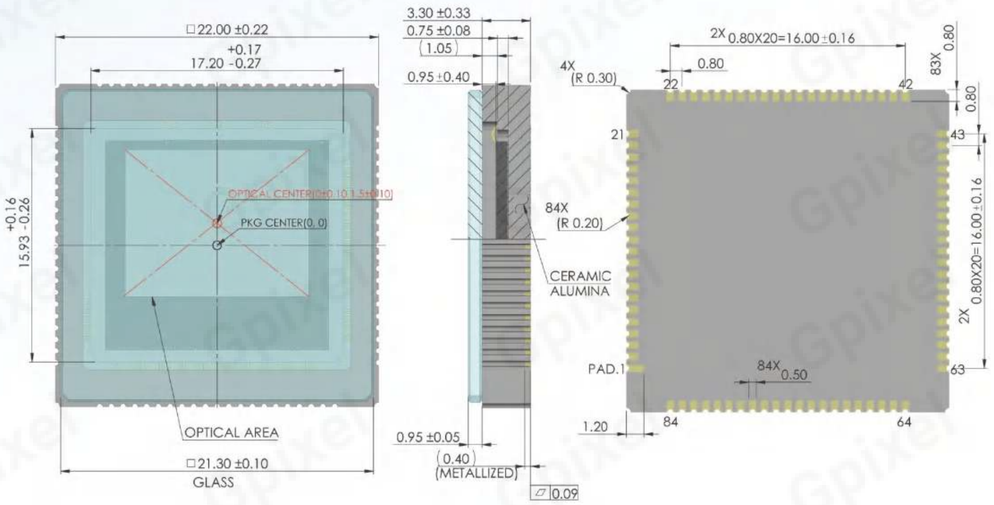
Biosciences

Surveillance

Specifications

Nr of Active Pixels	1280(H) x 1024(V)	**Optical Format**	1"
Pixel Size	9.76 µm x 9.76 µm	**Photosensitive Area**	12.493 mm x 9.994 mm
Shutter Type	Rolling Shutter	**Peak QE**	89% (610 nm)
Full Well Capacity	48 ke^-	**Dark Current**	0.08 e^-/pixel/s (-28°C)
Temporal Noise	1.6 e^-(HDR HG),0.85 e^-(Low Noise)	**Max Frame Rate**	30 fps
Dynamic Range	89.5 dB (HDR)	**Max. Data Rate**	1.782 Gbps
Output Format	4 ch Sub-LVDS,4 lanes MIPI	**ADC**	12 bit
Chroma	Mono	**Power Consumption**	250 mW (HDR),122 mW (Low Noise)
Supply Voltage	3.3 V(analog),1.8 V(digital)	**Package**	84 pins CLCC (22 mm x 22 mm)

Package Drawing



Gpixel

GMAX | GSPRINT | GSENSE | GLUX | GTOF | GCINE | GL | GXS | GIR

Area Scan CMOS Image Sensor

The GTOF family is a new Gpixel iToF image sensor product range featuring pixel-level stacked BSI technology, targeting high accuracy depth sensing and distance measurement applications.

GTOF0503

Product Family Features

- Stacked BSI
- High Sensitivity
- High Measuring Accuracy
- Dual Frequency Mode

Applications

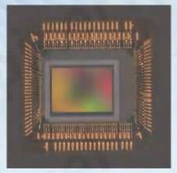
- Vision-guided Robots
- Industrial Automation
- Security monitoring
- Disorderly Grasping
- Logistics
- 3D measurement



Gpixel

GTOF0503

VGA ITOF CMOS IMAGE SENSOR



GTOF0503 is a VGA sensor featuring a 5 μm 3-tap state-of-the-art iTof pixel incorporating a pixel array with a resolution of 640 x 480 pixels. The BSI technology provides excellent sensitivity at NIR wavelengths. In addition, the wafer stacking enables very high modulation frequencies of up to up to 3 ns pulse width and 30 depth frames per second which results in industry-leading depth accuracy at short, mid and long-range distances even in challenging ambient light conditions by using pulse modulation iToF technique. Advanced features such as multiple acquisition modes, depth with single and dual-frequency, low-power standby modes and an industry standard MIPI CSI-2 interface, allow very versatile and flexible operation.

Key Features and Benefits

- 3-tap iToF Global Shutter pixel
- High NIR response
- Up to 85% demodulation contrast
- Stacked sensor with backside Illumination
- MIPI CSI-2 interface

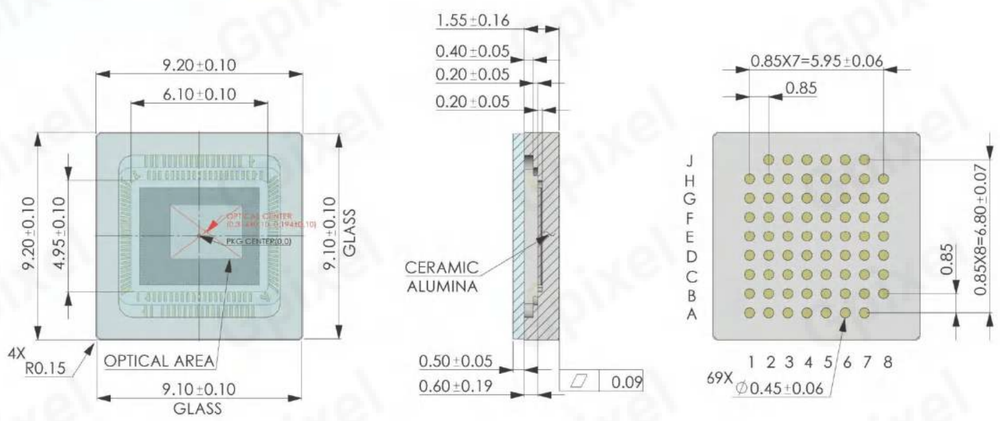
Application

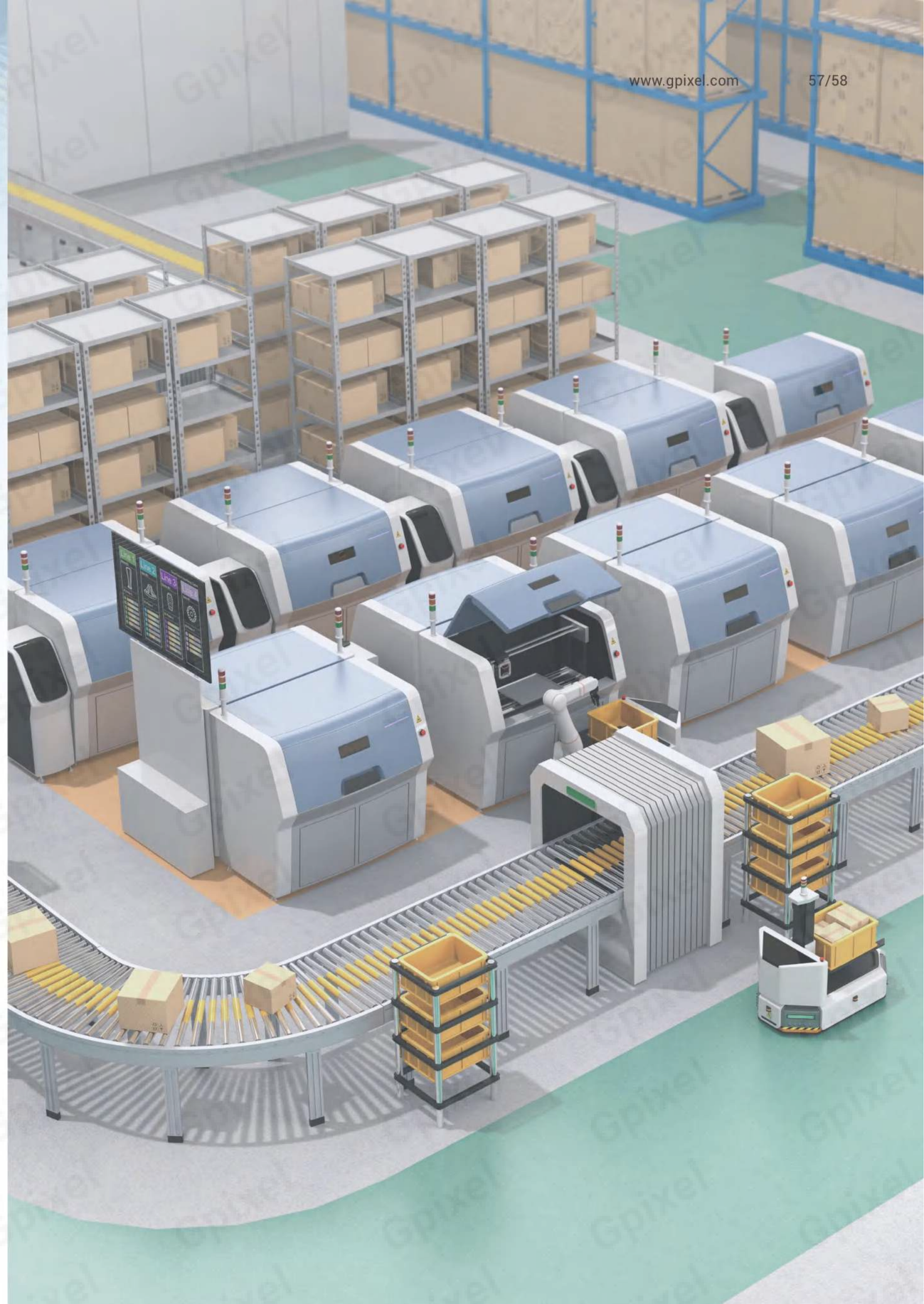
- Automation & Inspection
- Logistics
- ADAS & Intelligent Driving
- Robotics
- Consumer Electronics

Specifications

Nr of Active Pixels	640(H) x 480(V)	**Optical Format**	1/4"
Pixel Size	5 μm x 5 μm	**Photosensitive Area**	3.2 mm x 2.4 mm
Shutter Type	Global Shutter	**Peak QE**	31.5% (850 nm),13.8% (940 nm)
Full Well Capacity	9 ke^-	**ADC**	11 bit
Temporal Noise	8.2 e^-	**Cmod**	>80% (3 ns)
Dynamic Range	60.8 dB	**Max Frame Rate**	60 fps
Output Format	4 lanes CSI-2 MIPI	**Region of Interest Readout**	Vertical (up to 4 windows), horizontal(up to 1 window)
Chroma	Mono	**Power Consumption**	<1.2 W
Supply Voltage	2.8 V,1.8 V,1.2 V,1.3 V	**Package**	139 pads (Die),69 pins LGA (9.2 mm x 9.2 mm)

Package drawing





GMAX | GSPRINT | GSENSE | GLUX | GTOF | GCINE | GL | GXS | GIR

Area Scan CMOS Image Sensor

The GCINE family is Gpixel's newest flagship product family of truly innovative products for cinematography, drones, production imaging and other video applications, utilizing backside illumination to achieve high sensitivity and exceptional dynamic range.

GCINE3243 GCINE4349

Product Family Features

- Stacked BSI
- Low Noise
- High Sensitivity
- HDR

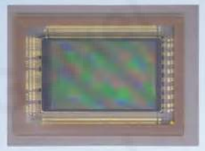
Applications

- Professional imaging



GCINE3243

8K APS-sized CMOS Image Sensor



GCINE3243 is a 43 MP 26.2 x 16.7 mm² sized APS-style image sensor with a 3.2 µm² BSI pixel size designed specifically for the demands of high-end video imaging. With a resolution of 8192 x 5232 pixels and highly configurable read out, 8K video at 60 fps or binned 4K video at 120 fps is supported, all at an impressive bit depth of up to 14 bits per pixel. Readout of the image data occurs over 32 Sub LVDS channels (1.05 Gbps/channel).

The stacking technology used in the GCINE3243 sensor enables excellent optical performance and readout speeds. Sensor also support a variety of operation modes tailored for specific applications. A dedicated Digital Still Camera (DSC) mode is supported, improving the readout noise and offering global reset shutter control. Additional HDR features, like dual gain readout, on-chip digital compression and multi-slope pixel response are all available.

Key Features and Benefits

- Stacked BSI Architecture
- High Full Well Charge
- High Dynamic Range
- Low Noise
- Multi-Slope HDR
- Dual Gain HDR

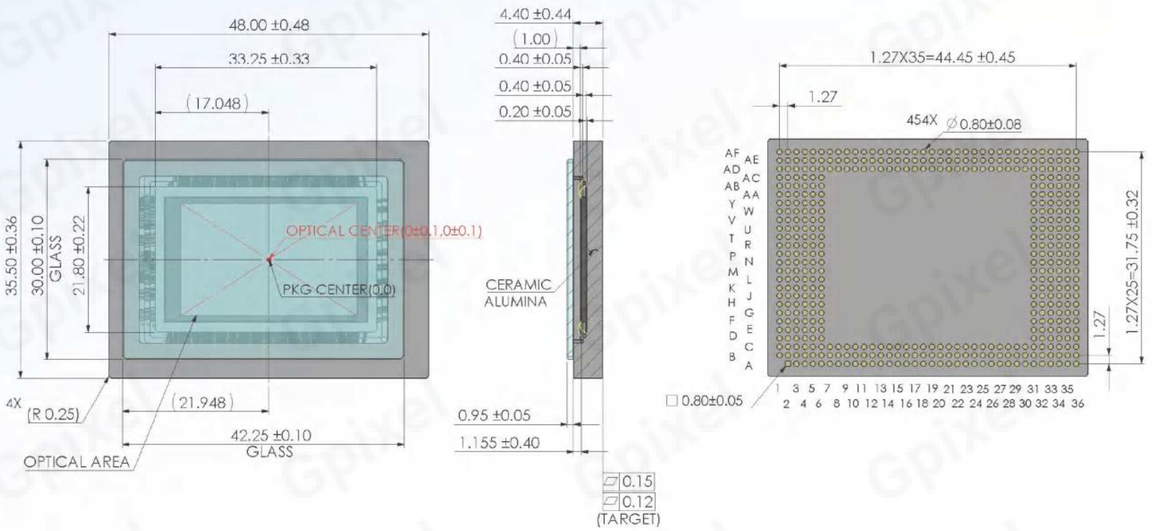
Application

- Cinematography
- Unmanned Aerial Vehicles (UAV)

Specifications

Nr of Active Pixels	8192(H) x 5232(V)	**Optical Format**	APS-C
Pixel Size	3.2 µm x 3.2 µm	**Photosensitive Area**	26.2 mm x 16.7 mm
Shutter Type	Roling Shutter & DSC	**Peak QE**	80% (550 nm,Mono)
Full Well Capacity	96 ke⁻ (Multi-Exposure Mode)	**Temporal Noise**	2.5 e⁻ (DSC,HG)
Max. SNR	50 dB	**Dynamic Range**	81 dB (8K HDR mode)
Max Frame Rate	60 fps (8K),120 fps (4K)	**Output Format**	32 ch Sub-LVDS
Max. Data Rate	33.6 Gbps	**ADC**	14 bit
Chroma	RGB,Mono	**Power Consumption**	2 W–4 W
Supply Voltage	3.3 V,1.8 V,1.25 V,-2.2 V,4.5 V	**Package**	LGA (48 mm x 35.5 mm)

Package Drawing



GCINE4349

8K Full Frame-sized CMOS Image Sensor



GCINE4349 is a 49 MP (35.2 x 25.8 mm) full frame image sensor with a 4.3 µm BSI pixels designed specifically for the demands and performance of high-end video imaging. With a maximum resolution of 8192 x 6000 pixels, several readout modes are supported to readout 8K or binned 4K video with maximum frame rates of up to 120 fps at 8K resolution and up to 240 fps at binned 4K resolutions, all with a pixel bit depth of up to 16 bit/pixel interfaced over 64 Sub LVDS channels (1.2 Gbps/channel).

GCINE4349 architecture also supports two additional HDR modes. Firstly, a proprietary Variable Slope High Dynamic Range method achieving an exceptionally high 110 dB of Dynamic Range. Secondly, a classic dual gain readout achieving up to 87 dB of Dynamic Range. An additional Digital Still Camera (DSC) mode can be enabled for low noise readout down to 1.7 e⁻ and dedicated shutter control for DSC operation. GCINE4349 is packaged in a 431 pins LGA ceramic package and comes with a double side AR coated glass lid.

Key Features and Benefits

- Stacked BSI
- High Sensitivity
- High Dynamic Range
- Low Noise
- Multi-Slope HDR
- Dual Gain HDR

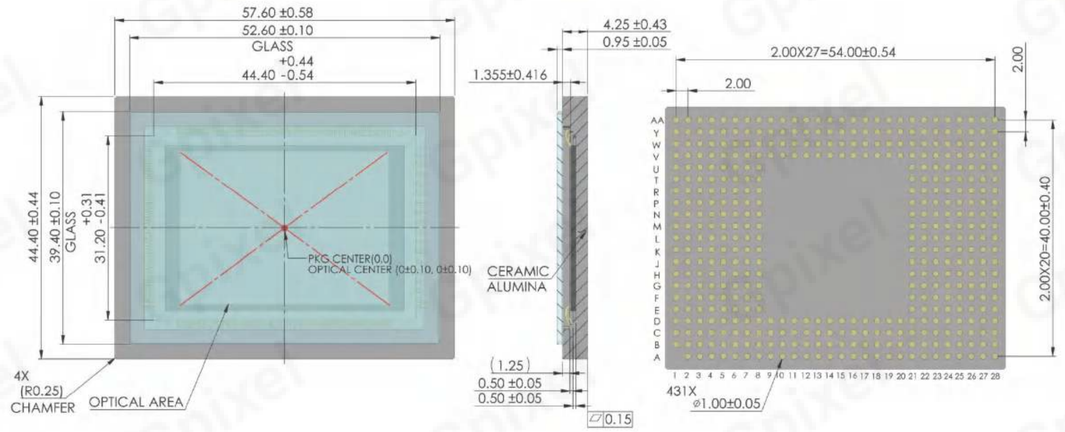
Application

- Cinematography
- Unmanned Aerial Vehicles (UAV)

Specifications

Nr of Active Pixels	8192(H) x 6000(V)	**Optical Format**	35 mm (Full Frame)
Pixel Size	4.3 µm x 4.3 µm	**Photosensitive Area**	35.2 mm x 25.8 mm
Shutter Type	Roling Shutter & DSC	**Peak QE**	85% (500 nm)
Full Well Capacity	152 ke⁻	**Angular Response**	35° (80%)
Temporal Noise	1.9 e⁻	**Max. SNR**	52 dB
Dynamic Range	86.4 dB (8K HDR mode)	**Max Frame Rate**	120 fps (8K),240 fps (4K)
Output Format	64 ch Sub-LVDS	**Max. Data Rate**	76.8 Gbps
Chroma	RGB Color	**Power Consumption**	7.6 W (8K HDR)
Supply Voltage	3.3 V,3.1V,1.8 V,1.25 V,-2.2 V	**Package**	431 pins LGA (57.6 mm x 44.4 mm)

Package Drawing



GMAX | GSPRINT | GSENSE | GLUX | GTOF | GCINE | GL | GXS | GIR

Line Scan CMOS Image Sensor

The GL sensor family from Gpixel comprises a wide range of horizontal resolutions, ranging from 2k to 16k, with line rates of up to 200 kHz. These sensors feature pixel sizes of 3.5 μm, 5 μm, 7 μm, and 14 μm, providing a comprehensive selection to suit diverse line scan applications.

GLR1205BSI-S	GLR1202BSI-L	GLR1402BSI-M
GL1402	GLR1002BSI-S	GL3504
GL0402	GL7004	GL0816
GLT5009BSI	GLT5008BSI	GLT5016BSI
GL7008	GL3516	

Product Family Features

- Global Shutter
- High Speed
- TDI
- High Resolution

Applications

- Lithium Battery Inspection
- Screen Inspection
- Printing Inspection
- Automatic Sorting
- Track Inspection
- Semiconductor Testing
- PCB Testing
- Displacement Metering



GLR1205BSI-S

250 µm LINE SCAN CMOS IMAGE SENSOR



GLR1205BSI-S is a single-line linear image sensor with rectangular pixels and analog output designed for use in displacement sensors.The sensor's 512 pixels are each 12.5 µm (H) x 250 µm (V) and provide a full well capacity of 2.8 million electrons and a maximum signal-to-noise ratio of 71.1 dB. The large pixel also increases the photosensitive area and facilitates easy alignment of the laser spot. Backside thinning technology enables a peak quantum efficiency of 95%, and almost 50% at 650 nm. A charge transfer time of only 2.5 µs ensures excellent lag performance. The single analog output allows image processing using an MCU module, and the small CSP package enables the design of a compact displacement sensor.

The GLR1205BSI-S image sensor is designed for the accurate detection of surfaces and precise distance measurement under a variety of lighting conditions.

Key Features and Benefits

- BSI Linear Sensor
- Rectangular Pixel
- High Sensitivity
- CSP Package
- Large FWC

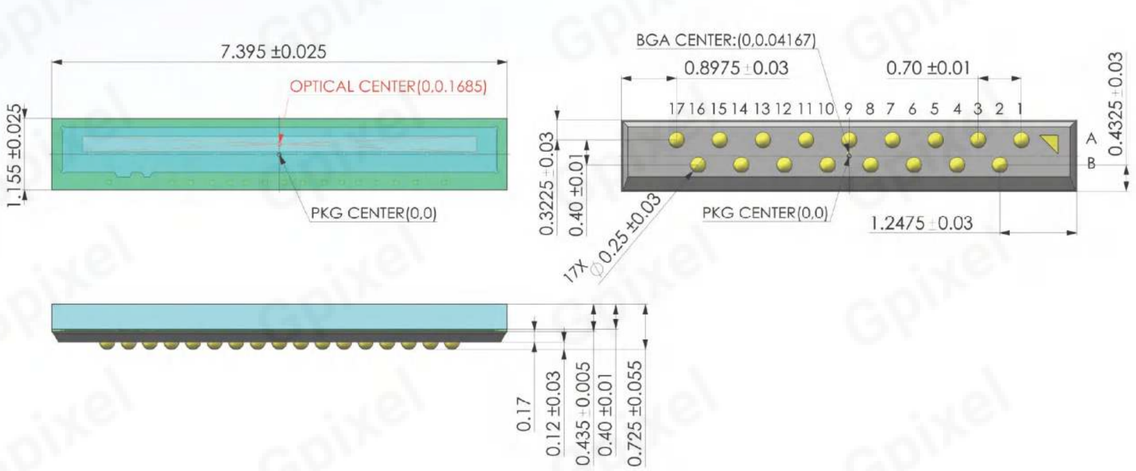
Application

- Automation & Inspection
- Logistic & Positioning

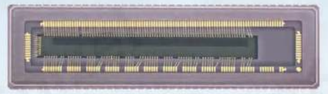
Specifications

Nr of Active Pixels	512(H) x 1(V)	**Optical Format**	6.4 mm
Pixel Size	12.5 µm x 250 µm	**Shutter Type**	Global Shutter
Peak QE	95%	**Temporal Noise**	0.58 mV rms
Saturation Output Voltage	2.45 V	**Max Line Rate**	9.43 kHZ
Dynamic Range	4224: 1	**Input clock rate**	5 MHz
Output Format	Analog Output	**Max. Data Rate**	5 MHz
Chroma	Mono	**Power Consumption**	90 mW
Supply Voltage	3.3 V	**Package**	17 pins CSP (7.39 mm x 1.15 mm)

Package Drawing



GLR1202BSI-L



2K HIGH SPEED BSI LINE SCAN CMOS IMAGE SENSOR

GLR1202BSI-L features a large rectangular pixel size of 12.5 µm (H) × 1000 µm (V) and a resolution of 2000 × 1 pixels. Manufactured using advanced BSI wafer processing, it achieves a quantum efficiency of nearly 90% at 650 nm. Sensor offers high FWC of 2 Me^- with high dynamic range of 69 dB. User can also switch to High Gain mode to achieve lower noise based on application demand. In addition, sensor supports on-chip 1 × 2 binning, doubling the sensitivity with higher line rate of 350 kHz.

GLR1202BSI-L is packaged in a CLCC housing with double-sided anti-reflection coated glass.

Key Features and Benefits

- Pixel Size:12.5 µm x 1000 µm
- High QE
- Fast Line Rate: 240 kHz
- 1x2 Binning

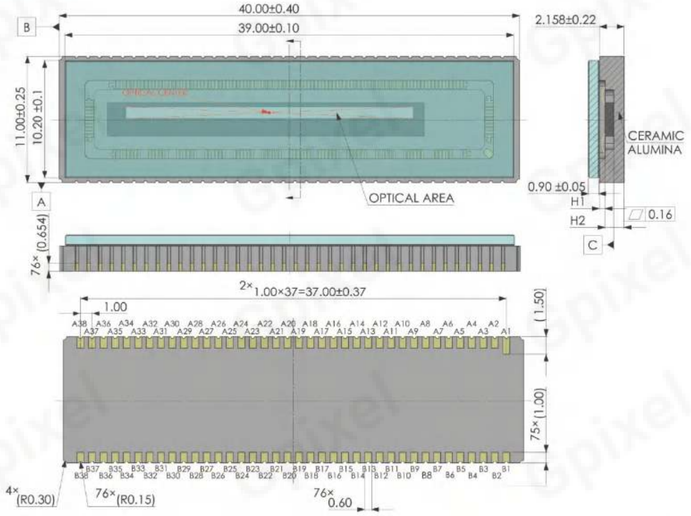
Application

- Automation & Inspection
- Spectroscopy
- Metrology

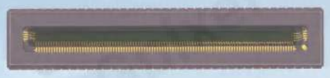
Specifications

Nr of Active Pixels	2000 (H) x 1 (V)	**Optical Format**	25 mm
Pixel Size	12.5 µm x 1000 µm	**Shutter Type**	Global Shutter
Peak QE	91 % (440 nm)	**Temporal Noise**	675 e^-(LG), 215 e^-(HG)
Full Well Capacity	2 Me^-(LG), 0.18 Me^-(HG)	**Max Line Rate**	240 kHz, 350 kHz (1x2 binning)
Dynamic Range	69 dB (LG), 58 dB (HG)	**Max. Data Rate**	6 Gbps
Output Format	5xSub-LVDS	**ADC**	12 bit
Chroma	Mono	**Power Consumption**	< 500 mW
Power Consumption	3.3 V (Analog),1.8 V (IO),1.5 V (Digital)	**Package**	76 pins CLCC (40 mm x 11 mm)

Package Drawing



GLR1402BSI-M



2K BSI LINE SCAN CMOS IMAGE SENSOR

GLR1402BSI-M is a single-line linear sensor image sensor with rectangular pixels designed for spectroscopy, OCT, encoder and various other image reading applications.

GLR1402BSI-M has 2048 pixels in 1 row, with a pixel size of 14 μm x 350 μm, yielding an impressive max. 176 ke⁻ full well capacity and boasting a mere 3.1 e⁻ of noise.

Data is read out at 14 bits per pixel with 80 dB of dynamic range, or by combining two 12 bit pixel reads, high and low gain, to achieve a maximum dynamic range of 95.1 dB. GLR1402BSI-M supports both sLVDS and CMOS data outputs, customer can switch different data channels with 12 bit / 14 bit based on demand.

Key Features and Benefits

- Back Side Illuminated (BSI) Pixels
- Dual Gain HDR
- High Sensitivity
- UV Version QE 70.4% (280 nm)
- High Speed: up to 29 kHz
- 12/14 bit ADC

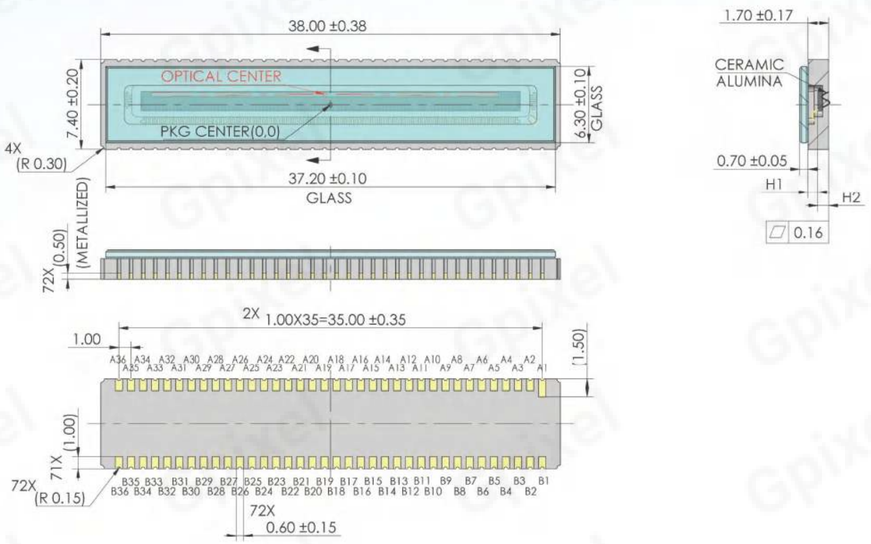
Application

- Spectroscopy

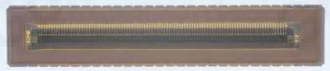
Specifications

Nr of Active Pixels	2048(H) x 1(V)	**Optical Format**	28.672 mm
Pixel Size	14 μm x 350 μm	**Shutter Type**	Global Shutter
Peak QE	90.7% (420 nm)	**Temporal Noise**	3.1 e⁻(HDR HG),44.7 e⁻(STD HG)
Full Well Capacity	176 ke⁻	**Max. SNR**	52 dB
Dynamic Range	95.1 dB	**Max Line Rate**	29 kHz
Output Format	4 ch Sub-LVDS,CMOS parallel output	**Channel Multiplexing**	Sub-LVDS 4/2/1
ADC	12/14 bit	**Max. Data Rate**	2.4 Gbps (Sub-LVDS),600 Mbps (CMOS)
Chroma	Mono	**Power Consumption**	< 350 mW
Power Consumption	3.6 V (Analog),1.8 V-3.3 V (IO),1.5 V (Digital)	**Package**	CLCC 72 pins with quartz glass lid (38.0 mm x 7.4 mm)

Package Drawing



GL1402



2K LINE SCAN CMOS IMAGE SENSOR

GL1402 is available in color and mono variants. GL1402 color features red, green, and blue rows with 14 μm gaps between each row to minimize color crosstalk. Readout speed is 27 kHz. GL1402 mono features a three row monochrome option with a readout speed of 27 kHz, or a one row monochrome option with a readout speed of 81 kHz.

GL1402 has a 28.7 ke⁻ full well capacity and a dynamic range of 70 dB. The sensor has a 12 bit ADC and 4 sLVDS channels, with the option to run slower at 2 or 1 sLVDS channel.

GL1402 power consumption is less than 420 mW at maximum readout speed. The sensor is assembled into a 54 pins CLCC package with outer dimensions 38 x 7.4 mm.

Key Features and Benefits

- Cost Efficient
- Low Power Consumption
- High Frame Rate
- High Dynamic Range

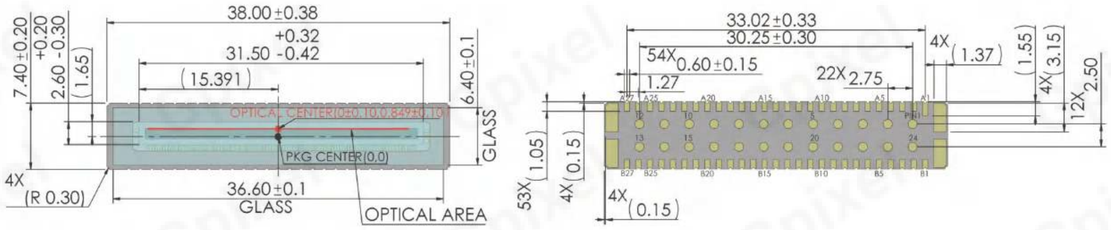
Application

- Grain Sorting
- Tomography (OCT)

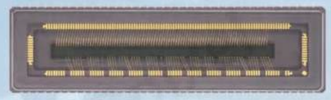
Specifications

Nr of Active Pixels	2048(H) x 1(V)、2048(H) x 3(V)	**Optical Format**	28.896 mm
Pixel Size	14 μm x 14 μm	**Shutter Type**	Global Shutter
Peak QE	69.3% (560 nm)	**Temporal Noise**	9.1 e⁻
Full Well Capacity	28.7 ke⁻	**Angular Response**	20°(85% Response)
Dynamic Range	69.9 dB	**Max Line Rate**	81 kHz ((single line)
Output Format	4 ch Sub-LVDS	**Channel Multiplexing**	4/2/1
ADC	12 bit	**Max. Data Rate**	2.08 Gbps
Chroma	Mono, RGB color	**Power Consumption**	<0.42 W
Supply Voltage	3.6 V (analog),1.8 V-3.3 V (IO),1.5 V (digital)	**Package**	54 pins CLCC (38.0 mm x 7.4 mm)

Package Drawing



GLR1002BSI-S



2K HIGH SPEED BSI LINE SCAN CMOS IMAGE SENSOR

GLR1002BSI-S is a next generation 2K back side illuminated (BSI) CMOS line scan sensor designed to elevate performance in OCT and spectroscopy applications, combining high speed readout up to 250 kHz with a rectangular 10 × 200 µm pixel optimized for precise optical alignment. Its advanced BSI global shutter architecture delivers peak QE of 91% at 630 nm and 58% QE at 850 nm, a 164 ke^- full well capacity, low read noise, and true 12 /14 bit output, enabling wide dynamic range and high contrast fringe reconstruction. High line rates are supported through 1.2 GHz Sub LVDS outputs with <570 mW power consumption, providing an efficient balance of speed and system integration. Engineered for both high throughput imaging and demanding diagnostic workflows, the GLR1002BSI-S is housed in a robust ceramic CLCC package with a double sided AR coated glass lid and a compact 40 mm × 11 mm footprint, ensuring stable mechanical integration and excellent alignment in OCT optical paths.

Key Features and Benefits

- Pixel Size:10 µm x 200 µm
- High NIR QE
- Fast Line Rate:250 kHz
- 12 bit / 14 bit ADC

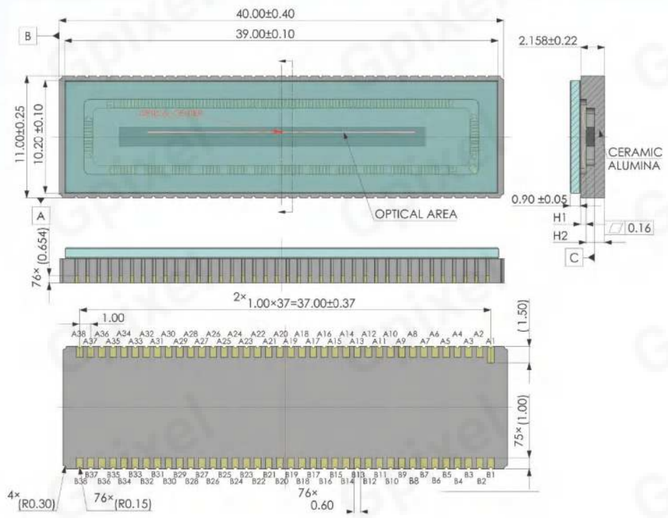
Application

- Optical Coherence Tomography (OCT)
- In-Vivo Medical Endoscopy
- Non-Destructive Industrial Inspection
- Spectroscopy

Specifications

Nr of Active Pixels	2411(H) x 1(V)	**Optical Format**	24.11 mm
Pixel Size	10 µm x 200 µm	**Shutter Type**	Global Shutter
Peak QE	91.2 % (630 nm), 58 % (850 nm)	**Temporal Noise**	30.8 e^- (12 bit), 20.1 e^- (14 bit)
Full Well Capacity	164.2 ke^-	**Max Line Rate**	250/130 kHz (12 bit), 100 kHz (14 bit)
Dynamic Range	74.5 dB (12 bit), 77.4 dB (14 bit)	**Max. Data Rate**	8.4 Gbps
Output Format	7x Sub-LVDS	**ADC**	12/14 bit
Chroma	Mono	**Power Consumption**	< 570 mW
Power Consumption	3.6 V (Analog), 3.3 V (IO), 1.5 V (Digital)	**Package**	76 x lead CLCC (40 mm x 11 mm)

Package Drawing



GL3504



2K/4K LINE SCAN CMOS IMAGE SENSOR

GL3504 is a line scan image sensor suitable for small format camera integration with C mount lens, the sensor contains two lines with 3.5 µm pixel and four lines with 7 µm pixel. GL3504 could run up to 172 kHz with 7 µm pixel line and 84 kHz with 3.5 µm pixel line at 12 bit output with single line readout.

GL3504 uses on-chip PLL and all required timing is generated by the on-chip sequencer, reducing the amount of external components needed. Output channel multiplexing enables flexibility in FPGA selection. GL3504 enables a cost effective camera solution for demanding inspection applications.

GL3504 is assembled with a compact 58 pins CLCC package for fast heat dissipation and high robustness. Both mono and color variances are offered. For color variance, 7 µm lines are with RGB true color coating and 3.5 µm lines are with Bayer pattern.

Key Features and Benefits

- High Speed
- Low Consumption
- High Dynamic Range

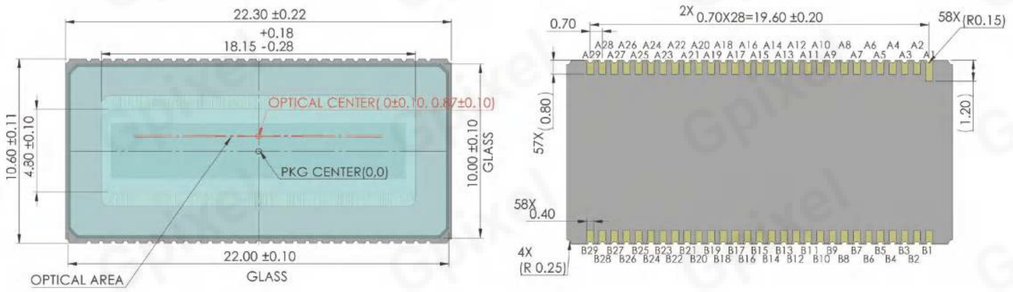
Application

- Automation & Inspection

Specifications

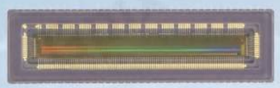
Nr of Active Pixels	4096(H) x 2(V) (3.5 µm)、2048(H) x 4(V) (7 µm)	**Optical Format**	14.336 mm
Pixel Size	3.5 µm x 3.5 µm,7 µm x 7 µm	**Shutter Type**	Global Shutter
Peak QE	71.9% (570 nm)	**Temporal Noise**	4.9 e^- (3.5 µm,12 bit)
Full Well Capacity	9.4 ke^- (3.5 µm,12 bit)	**Angular Response**	20°(87% Response)
Dynamic Range	65.8 dB (3.5 µm,12 bit)	**Max Line Rate**	172.7 kHz (7 µm,12 bit, single line)
Output Format	6 ch Sub-LVDS	**Channel Multiplexing**	6/3/2/1
ADC	8/12 bit	**Max. Data Rate**	5.472 Gbps
Chroma	Mono, RGB Color	**Power Consumption**	<1.0 W
Supply Voltage	3.3 V (analog),2.5 V-3.3 V (IO),2.1 V (digital)	**Package**	CLCC 58 pins (22.3 mm x 10.6 mm)

Package Drawing



GL0402

4K LINE SCAN CMOS IMAGE SENSOR



GL0402 is a 4096 x 2 resolution, 7 μm square pixel, global shutter linear image sensor that supports maximum 200 kHz line rate in single line mode and 100 kHz line rate in dual line mode. GL0402 offers low read noise of less than 5.2 e^- and 10 ke^- FWC, leads to 65.6 dB intra-scene dynamic range.

GL0402 uses external clock and all required timing are generated by on chip sequencer, reducing the amount of external component needed; output channel multiplexing function enables flexibility on FPGA choice, suitable for cost-effective camera solution for demanding on line inspection applications. GL0402 is assembled with compact 76 pins CLCC package for fast heat dissipation and high robustness.

Key Features and Benefits

· High Speed
· Low Noise
· High Dynamic Range

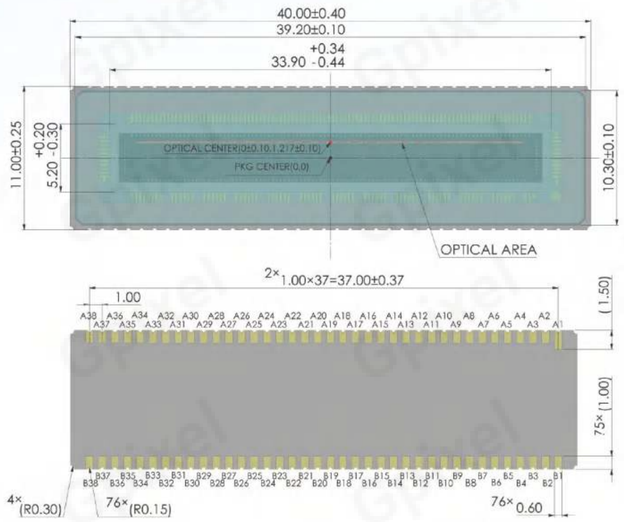
Application

· Automation & Inspection

Specifications

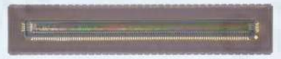
Nr of Active Pixels	4096(H) x 2(V)	**Optical Format**	28.67 mm
Pixel Size	7 μm x 7 μm	**Shutter Type**	Global Shutter
Peak QE	75.57% (570 nm)	**Temporal Noise**	5.2 e^- (single line,HG)
Full Well Capacity	25 ke^-(LG),10 ke^-(HG)	**Angular Response**	20°(85% Response)
Dynamic Range	65.6 dB (HG)	**Max Line Rate**	100 kHz (dual line),200 kHz (single line)
Output Format	12 ch Sub-LVDS	**Channel Multiplexing**	12/6
ADC	12 bit	**Max. Data Rate**	10.944 Gbps
Chroma	Mono, RGB Color	**Power Consumption**	<2.25 W
Supply Voltage	3.3 V (analog),1.8 V-3.3 V (IO),2 V (digital)	**Package**	CLCC 76 pins (40.0 mm x 11.0 mm)

Package Drawing



GL7004

4K LINE SCAN CMOS IMAGE SENSOR



GL7004 is a 4096 (H) x 4 (V) resolution global shutter linear array CMOS image sensor, featuring 7 μm high-sensitivity pixels. Offered in two basic flavors: a multi color 4 row R+G+B+Mono and 4 row mono variants, the sensor allows each row to have a unique exposure time, with line rates up to 250 kHz in single line mode and 76.9 kHz in quad line mode. The sensor's high line rate is a perfect fit for high-throughput various industrial inspection applications including sorting various inspection applications like solar panel, printing and railway monitoring at a cost-effective price offering.

The GL7004 is available in a compact LCC ceramic package, requiring only 3 external power supplies and consuming only 1.05W, making it easier for customers to design and integrate their systems.

Key Features and Benefits

· Individual Exposure Control for Each Color Line
· External Trigger
· High Frame Rate
· Low Power Consumption
· Cost Efficient

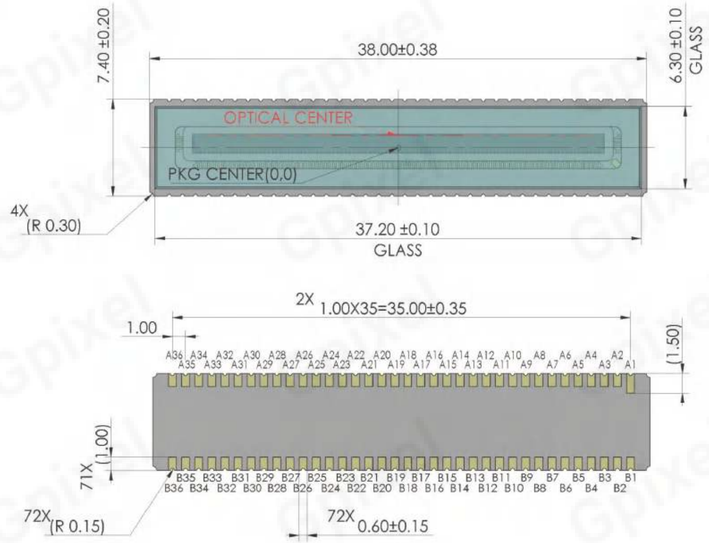
Application

· Automation & Inspection
· Logistic & Positioning

Specifications

Nr of Active Pixels	4096(H) x 4(V)	**Optical Format**	28.67 mm
Pixel Size	7 μm x 7 μm	**Shutter Type**	Global Shutter
Peak QE	74.5% (560 nm)	**Temporal Noise**	4.3 e^- (10 bit, analog gain 4x)
Full Well Capacity	10.5 ke^-(10 bit, analog gain 1x)	**Dynamic Range**	61.5 dB
Output Format	12 ch Sub-LVDS	**Max Line Rate**	250 kHz (single line)
ADC	10 bit	**Max. Data Rate**	14.4 Gbps
Chroma	Mono, RGB color	**Power Consumption**	1.05 W
Supply Voltage	3.6 V (analog),1.8 V-3.3 V (IO),1.5 V (digital)	**Package**	72 pins CLCC (38.0 mm x 7.4 mm)

Package Drawing



GL0816

8322x16 LINE SCAN CMOS IMAGE SENSOR



Designed for high speed industrial inspection, GL0816 is a line scan CMOS image sensor which consists of 16 lines of 8322 pixels with 5 µm pixel size and 5 µm inter-line space. It supports dual line, 4-line readout and max 8-line with 2-stage on-chip TDI.
The maximum line rate of GL0816 is 200 kHz (11 bit, dual-line mode) and 100 kHz (10 bit, 4-line mode). GL0816 is manufactured with Mono or RGBW 4-band CFA which is customized with extremely low color crosstalk to enable accurate image reproduction.

Key Features and Benefits

· High Speed
· TDI
· High Resolution

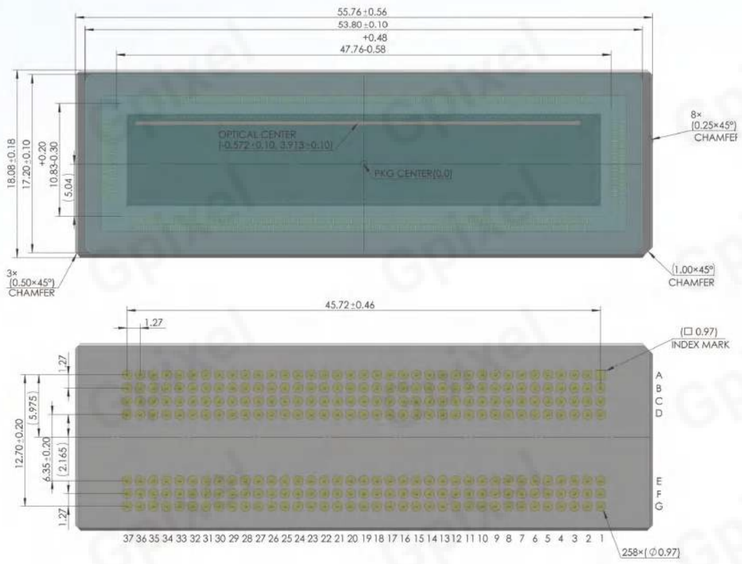
Application

· Automation & Inspection

Specifications

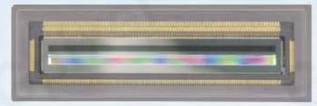
Nr of Active Pixels	8322(H) x 16(V)	**Optical Format**	41.61 mm
Pixel Size	5 µm x 5 µm	**Shutter Type**	Global Shutter
Peak QE	>70% (600 nm)	**Temporal Noise**	13 e^- (11 bit,dual line)
Full Well Capacity	17 ke^- (11 bit,dual line),15 ke^- (10 bit,quad line)	**Angular Response**	>15°(85% Response)
Dynamic Range	62 dB (11 bit,dual line)	**Max Line Rate**	200 kHz (11 bit,dual line),100kHz (10 bit,quad line)
Output Format	66 ch Sub-LVDS	**ADC**	10/11 bit
Chroma	Mono, RGB Color	**Power Consumption**	<4 W
Supply Voltage	3.3 V (analog),2.2 V (ADC),2 V (digital/LVDS)	**Package**	258 pins µPGA (55.8 mm x 18.1 mm)

Package Drawing



GLT5009BSI

9K BSI TDI CMOS IMAGE SENSOR



GLT5009BSI is a Backside illuminated (BSI), Time delay integration (TDI), charge domain CMOS image sensor with 5 µm pixels and 9k resolutions. The sensor has two photosensitive bands, 256 stages and 32 stages respectively, enabling a high dynamic range (HDR) imaging mode.
GLT5009BSI is designed to meet the needs of high speed and low light applications by maximizing sensitivity from the ultraviolet to the near infrared with state-of-art BSI scientific CMOS technology and up to 256 true TDI stages. It supports line rates up to 608 kHz using 10-bit single band mode and 300 kHz using 12 bit single band mode. The sensor also supports 10 bit dual band HDR mode, employing both 256 stages and 32 stages for HDR image construction.
The sensor integrates several features to ease camera integration including an internal sequencer, channel multiplexing, and selectable 2 scan directions. GLT5009BSI is assembled in a 269 pins µPGA ceramic package.
GLT5009BSI comes in 2 spectrum variants: a standard variant with a broad spectral response and a dedicated DUV version.

Key Features and Benefits

· True Charge Domain Time Delay Integration
· Back Side Illuminated (BSI) Pixels
· High Sensitivity
· High Speed: up to 608 kHz
· HDR Read Out
· QE (266 nm) ≥ 50%

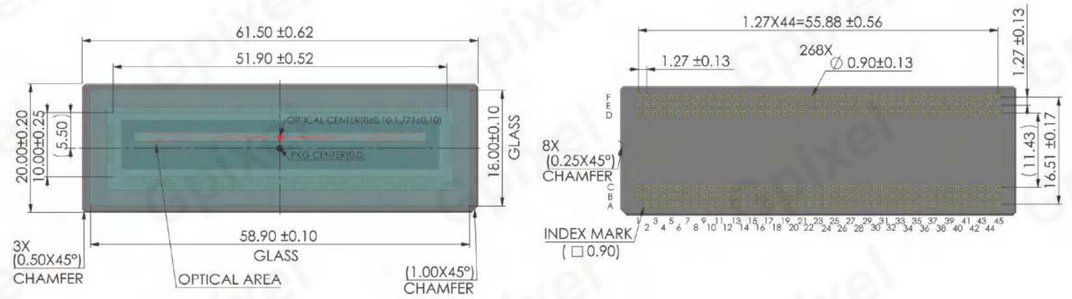
Application

· Automation & Inspection
· Life Sciences
· Microscopy
· Semiconductor Inspection

Specifications

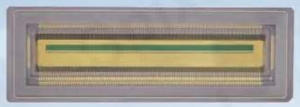
Nr of Active Pixels	P1:9072(H) pixels x 256(V) stages P2:9072(H) pixels x 32(V) stages	**Optical Format**	45.36 mm
Pixel Size	5 µm x 5 µm	**Full Well Capacity**	16.3 ke^-(10 bit,single band) 19.2 ke^-(12 bit,single band)
Temporal Noise	10.6 e^-(10 bit,single band) 7.0 e^-(12 bit,single band)	**Dynamic Range**	63.7 dB (10 bit,single band) 68.7 dB (12 bit,single band)
Dark Current	~4 ke^-/s/pixel (30°C)	**Peak QE**	82.4% (550 nm)
ADC	10/12 bit	**Max Line Rate**	608 kHz (10 bit,single band) 300 kHz (12 bit,single band)
Output Format	84 ch Sub-LVDS	**Charge transfer efficiency (CTE)**	≥ 0.99993
Channel Multiplexing	84/42/21/12/6/3	**Max. Data Rate**	74.304 Gbps
Chroma	Mono	**Power Consumption**	<5.8 W (300 kHz line rate)
Supply Voltage	5 V (analog),1.8 V (ADC),1.8 V (digital)	**Package**	µPGA 269 pins (61.5 mm x 20.0 mm)

Package Drawing



GLT5008BSI

8K BSI TDI LINE SCAN IMAGE SENSOR



GLT5008BSI is a Backside illuminated (BSI), Time delay integration (TDI), charge domain CMOS image sensor with 5 µm pixels and 8208 effective resolutions. The sensor has two photosensitive bands, 256 stages and 32 stages respectively enabling a high dynamic range (HDR) imaging mode, which is designed to meet the needs of high speed and low light applications by maximizing sensitivity with state-of-art BSI scientific CMOS technology.

GLT5008BSI Sensor integrates an on-chip sequencer, supports channel multiplexing and selectable 2 scan directions (Forward and Reverse). It is assembled in a 231 pins µPGA ceramic package for reliability and good heat dissipation.

Key Features and Benefits

- True Charge Domain Time Delay Integration
- High Sensitivity with QE of 65.8% (266 nm) and 94.2% (460 nm)
- HDR Read Out
- Back Side Illuminated (BSI) Pixels
- High Speed: up to 1 MHz
- On-chip Binning

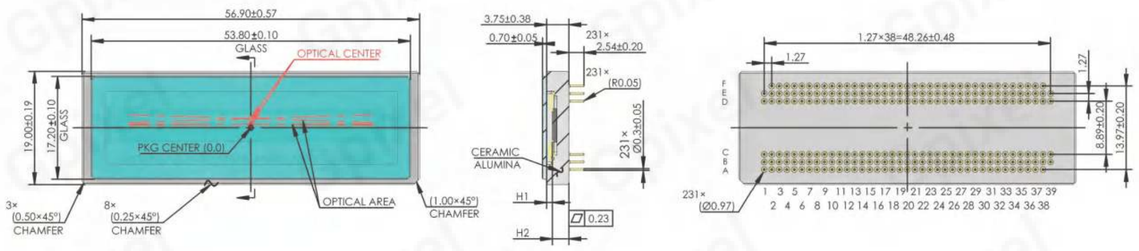
Application

- Automation & Inspection
- Life Sciences
- Microscopy
- Microluminescence Imaging

Specifications

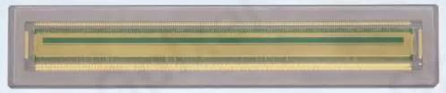
Nr of Active Pixels	P1: 8208(H) pixels x 256(V) stages P2: 8208(H) pixels x 32(V) stages	**Optical Format**	41.04 mm
Pixel Size	5 µm x 5 µm	**Full Well Capacity**	16.8 ke⁻(P1,10 bit,single band) 17.8 ke⁻(P1,12 bit,single band)
Temporal Noise	12.1 e⁻(P1,10 bit,single band) 7.4 e⁻(P1,12 bit,single band)	**Dynamic Range**	62.8 dB (P1,10 bit,single band) 67.6 dB (P1,12 bit,single band)
Dark Current	1 ke⁻/pixel/s (P1 10/12 bit,single band,15 ℃)	**Peak QE**	65.8% (266 nm),94.2% (460 nm)
ADC	10/12 bit	**Optional TDI Levels**	P1: 256/252/224/192/128/64/32/4 P2: 32/30/28/24/16/8/4/2
Max Line Rate	1M Hz (10 bit),500k Hz (12 bit)	**Anti-blooming**	x50
Output Format	72 ch Sub-LVDS	**Charge Transfer Efficiency (CTE)**	≥ 0.99993
Channel Multiplexing	72/54/48/36/24/18/12/6 (10 bit)	**Max. Data Rate**	86.4 Gbps (10 bit)
Chroma	Mono	**Power Consumption**	≤ 4.1 W (P1,10 bit,1 MHz line rate) ≤ 3.2 W (P1,12 bit,500 kHz line rate)
Supply Voltage	3.3 V (analog),1.6 V (ADC),1.6 V (digital)	**Package**	µPGA 231 pins、56.90 mm x 19.00 mm

Package Drawing



GLT5016BSI

16k BSI TDI LINE SCAN IMAGE SENSOR



GLT5016BSI is a Backside illuminated (BSI), Time delay integration (TDI), charge domain CMOS image sensor with 5 µm pixels and 16416 effective resolutions. The sensor has two photosensitive bands, 256 stages and 32 stages respectively enabling a high dynamic range (HDR) imaging mode, which is designed to meet the needs of high speed and low light applications by maximizing sensitivity with state-of-art BSI scientific CMOS technology.

GLT5016BSI Sensor integrates an on-chip sequencer, supports channel multiplexing and selectable 2 scan directions (Forward and Reverse). It is assembled in a 415 pins µPGA ceramic package for reliability and good heat dissipation.

GLT5016BSI comes in 2 spectrum variants: an UV-optimized with high QE below 300 nm and a visible and NIR range optimized version.

Key features and Benefits

- True charge domain Time Delay Integration
- Back Side Illuminated (BSI) pixels
- HDR read out
- High Sensitivity with QE of 70.7% (266 nm) (UV Version) and up to 92.4 % (440 nm) (VIS version)
- High Speed: up to 500 kHz
- On-chip binning

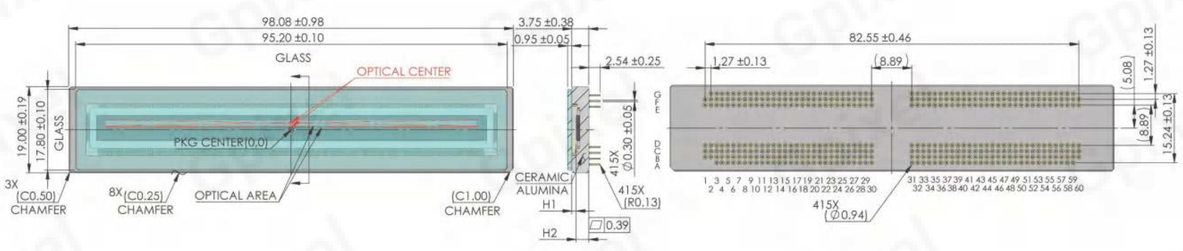
Application

- Automation & Inspection

Specifications

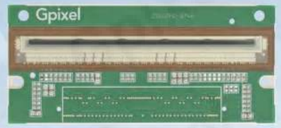
Nr of Active Pixels	P1: 16416(H) pixels x 256(V) stages P2: 16416(H) pixels x 32(V) stages	**Optical Format**	82.08 mm
Pixel Size	5 µm x 5 µm	**Full Well Capacity**	16.3 ke⁻(P1,10 bit,single band) 15.2 ke⁻(P1,12 bit,single band)
Temporal Noise	7.5 e⁻(P1,12 bit,single band) 15.3 e⁻(P1,10 bit,single band)	**Dynamic Range**	60.5 dB (P1,10 bit,single band) 66.1 dB (P1,12 bit,single band)
Dark Current	0.97 ke⁻/pixel/s (P1 10/12 bit,single band,15°C)	**ADC**	12 bit
Peak QE	UV 70.7% (266 nm) ,87.8% (420 nm) VIS 92.4% (436 nm) ,87.0% (590 nm)	**Optional TDI Levels**	P1: 256/252/224/192/128/64/32/4 P2: 32/30/28/24/16/8/4/2
Max Line Rate	500 kHz	**Anti-blooming**	x50
Output Format	108 ch Sub-LVDS	**Charge Transfer Efficiency (CTE)**	≥ 0.99996
Channel Multiplexing	108/96/72/48/36/24/12	**Max. Data Rate**	103.68 Gbps
Chroma	Mono	**Power Consumption**	≤ 6.3 W (P1,10 bit,500 kHz line rate) ≤ 6.6 W (P1,12 bit,500 kHz line rate)
Supply Voltage	3.3 V (analog),1.65 V (ADC),1.6 V (digital)	**Package**	µPGA 415 pins (98.08 mm x 19.00 mm)

Package Drawing



GL7008

8K LINE SCAN CMOS IMAGE SENSOR



GL7008 is a global shutter line scan image sensor with 7 μm square pixel and 8192 horizontal pixels resolutions. The sensor's 12 bit ADC transmits data over 25 pairs of Sub-LVDS at line rate up to 200 kHz. GL7008 is offered in both color and monochrome versions. The monochrome sensor supports single/dual/triple/quad line modes with optimal sensitivity.

The color sensor supports 3-line true color and 4-line RGBW multispectral output. The exposure time of each line can be individually adjusted by an external trigger. The line spacing of the sensor is equivalent to the pixel size to satisfy the requirements of line frequency matching.

At full speed, the power consumption of GL7008 is around 4.4 W. The sensor adopts a COB package with Invar heat sink for optimal heat dissipation during high-speed scanning.

Key Features and Benefits

- Electronic Global Shutter
- External Trigger
- Resolution:8192(H) x 4(V)
- GL7008 mono single/dual/triple/quad line mode
- Individual exposure control for each line
- GL7008 color triple/quad line mode

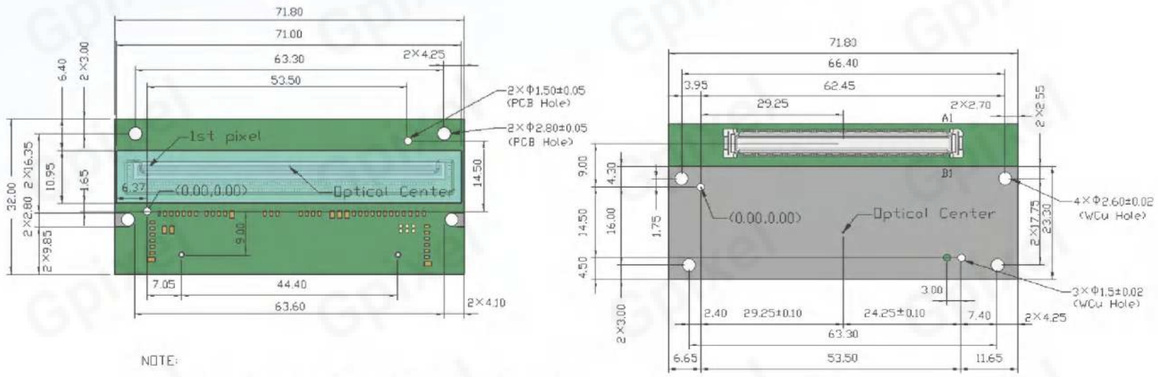
Application

- Automation & Inspection
- Logistic & Positioning

Specifications

Nr of Active Pixels	8192(H) x 4(V)	**Optical Format**	57.344 mm
Pixel Size	7 μm × 7 μm	**Shutter Type**	Global Shutter
Peak QE	73.2% (530 nm)	**Temporal Noise**	6.8 e^-
Full Well Capacity	10 ke^-	**Angular Response**	20° (85% Response)
Dynamic Range	63.3 dB	**Max Line Rate**	200 kHz (single line),100 kHz (dual line)
Output Format	25 ch Sub-LVDS	**Channel Multiplexing**	25/13/7/4
ADC	12 bit	**Max. Data Rate**	24 Gbps
Chroma	Mono, RGB Color	**Power Consumption**	4.4 W
Supply Voltage	3.3 V (analog),1.8 V-3.3 V (IO),1.8 V (digital)	**Package**	168 Pins COB (71.8 mm x 33.0 mm)

Package Drawing

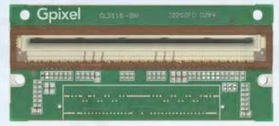


NOTE:

1. GL7008 COLOR 4 lines, Optical Center1(29.25±0.10,9.333±0
   GL7008 MONO 2 lines, Optical Center2(29.25±0.10,9.305±0.1
2. All tolerances +/-0.1mm unless otherwise noticed

GL3516

16K LINE SCAN CMOS IMAGE SENSOR



GL3516 is a 16384 x 2 resolution, 3.5 μm square pixel, line scan CMOS image sensor that supports maximum 120 kHz line rate in single line mode and 60 kHz line rate in dual line mode.

GL3516 is pin and footprint compatible with Gpixel's existing GL7008 8K line scan sensor its features makes is an ideal solution for industrial inspection applications benefitting from high-speed scanning and 16K resolution, including high end inspection production inspections for lithium battery testing, flat panel displays, PCBs, labels, and railway inspection.

GL3516 is offered in both color and monochrome versions. The monochrome sensor support single and dual line modes. The color sensor support dual line mode.GL3516 is assembled in a COB package with Invar heat sink for optimal heat dissipation and with connector for easy integration.

Key Features and Benefits

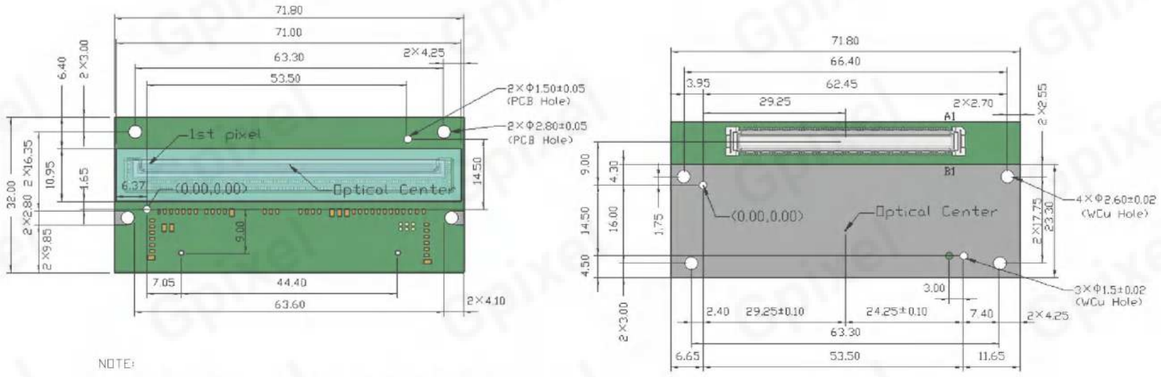
- Electronic Global Shutter
- External Trigger
- Resolution:16384(H) x 2(V)
- GL3516 mono single/dual line mode
- Individual exposure control for each color pixel
- GL3516 color dual line mode

Application

- Automation & Inspection

Specifications

Nr of Active Pixels	16384(H) x 2(V)	**Optical Format**	57.344 mm
Pixel Size	3.5 μm × 3.5 μm	**Shutter Type**	Global Shutter
Peak QE	56.7% (560 nm)	**Temporal Noise**	10.6 e^-
Full Well Capacity	8.4 ke^-	**Angular Response**	20° (85% Response)
Dynamic Range	58.0 dB	**Max Line Rate**	120 kHz (single line)
Output Format	25 ch Sub-LVDS	**Channel Multiplexing**	25/13/7/4
ADC	10 bit	**Max. Data Rate**	24 Gbps
Chroma	Mono, RGB Color	**Power Consumption**	3.2 W
Supply Voltage	3.3 V (analog),1.8 V (digital),1.8 V-3.3 V(IO)	**Package**	168 Pins COB (71.8 mm x 33.0 mm)



NOTE:

1. GL3516 COLOR 2 lines, Optical Center1(29.25±0.10,9.246±0.10)
   GL3516 MONO 2 lines, Optical Center2(29.25±0.10,9.204±0.10)
2. All tolerances +/-0.1mm unless otherwise noticed

Gpixel

GMAX | GSPRINT | GSENSE | GLUX | GTOF | GCINE | GL | GXS | GIR

Area Scan CMOS Image Sensor

The GXS series is a family of CMOS image sensors and modules specifically designed for medical endoscopy devices. Utilizing advanced wafer-level chip packaging technology, these sensors offer extreme compactness, a critical feature for the space-constrained environments of endoscopic applications. This innovative design allows for the development of smaller, more maneuverable endoscopes, ultimately enhancing diagnostic and therapeutic procedures.

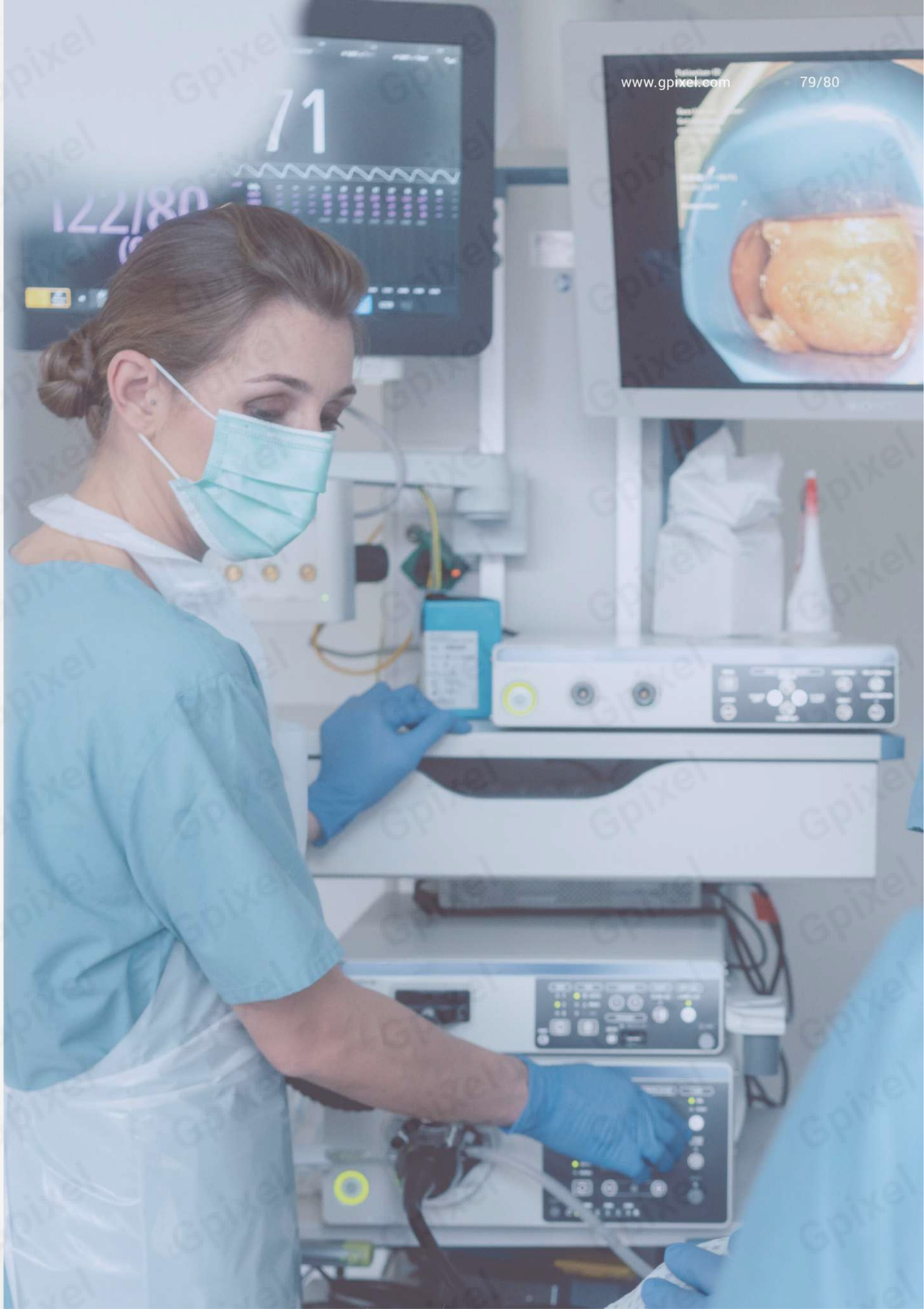
GXS1508/GXSM1508

Product Family Features

- High sensitivity
- Compact CSP package
- BSI
- Integrated WLO lens

Applications

- Disposable endoscope



Gpixel

GXS1508/GXSM1508



Small-sized CMOS image sensor/optical module

GXS1508 is a 0.16 (400 x 400) Megapixel backsideillumination image sensor designed with 1.5 μm charge domain rolling shutter pixels. It can achieve 7 ke⁻ FWC and 6 e⁻ rms read noise.

GXS1508 is smaller than 1mm, consumes less than 20 mW and can capture images and video up to 30 frames per second.

GXSM1508 is wafer level optics (WLO) integratedmodule based on GXS1508 sensor, The WLO consist of 3-surface lens with F number of 5.0, the diagonal FOV is 120°.

Its unique features make it an ideal solution for medical endoscopy's disposable devices.

Key Features and Benefits

· BSI · High Sensitivity · Compact CSP Packaging · WLO

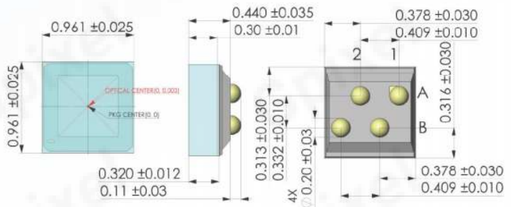
Application

· Disposable endoscope

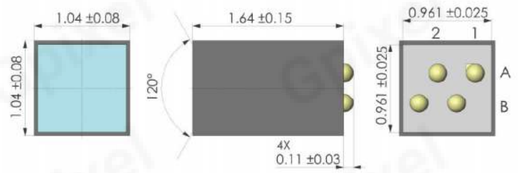
Specifications			
Nr of Active Pixels	400 (H) x 400 (V)	**Optical Format**	1/19"
Pixel size	1.5 μm x 1.5 μm	**Photosensitive Area**	0.6 mm x 0.6 mm
Shutter type	Rolling shutter	**Peak QE**	54.7% (515 nm)
Full Well Capacity	7 ke⁻	**Temporal Noise**	6.1 e⁻
Dynamic Range	61.2 dB	**Angular Response**	25.6° ± 3°
Output Format	Analog	**Dark Current**	TBD
Max Frame Rate	30 fps	**Power Consumption**	17 mW
DSNU	TBD	**Supply Voltage**	3.3 V
Chroma	RGB Color	**Package**	4 pins CSP (0.961 mm x 0.961 mm x 0.55 mm)
WLO Specification			
Field of View (FOV)	Horizontal 83°, Diagonal 120°	**F Number**	5.0
Focal Length	0.36 mm	**Optical Layout**	3-surface lens
TV Distortion	12.2 %	**DOF**	4-50 mm
IR Filter	665 nm ± 10 nm		

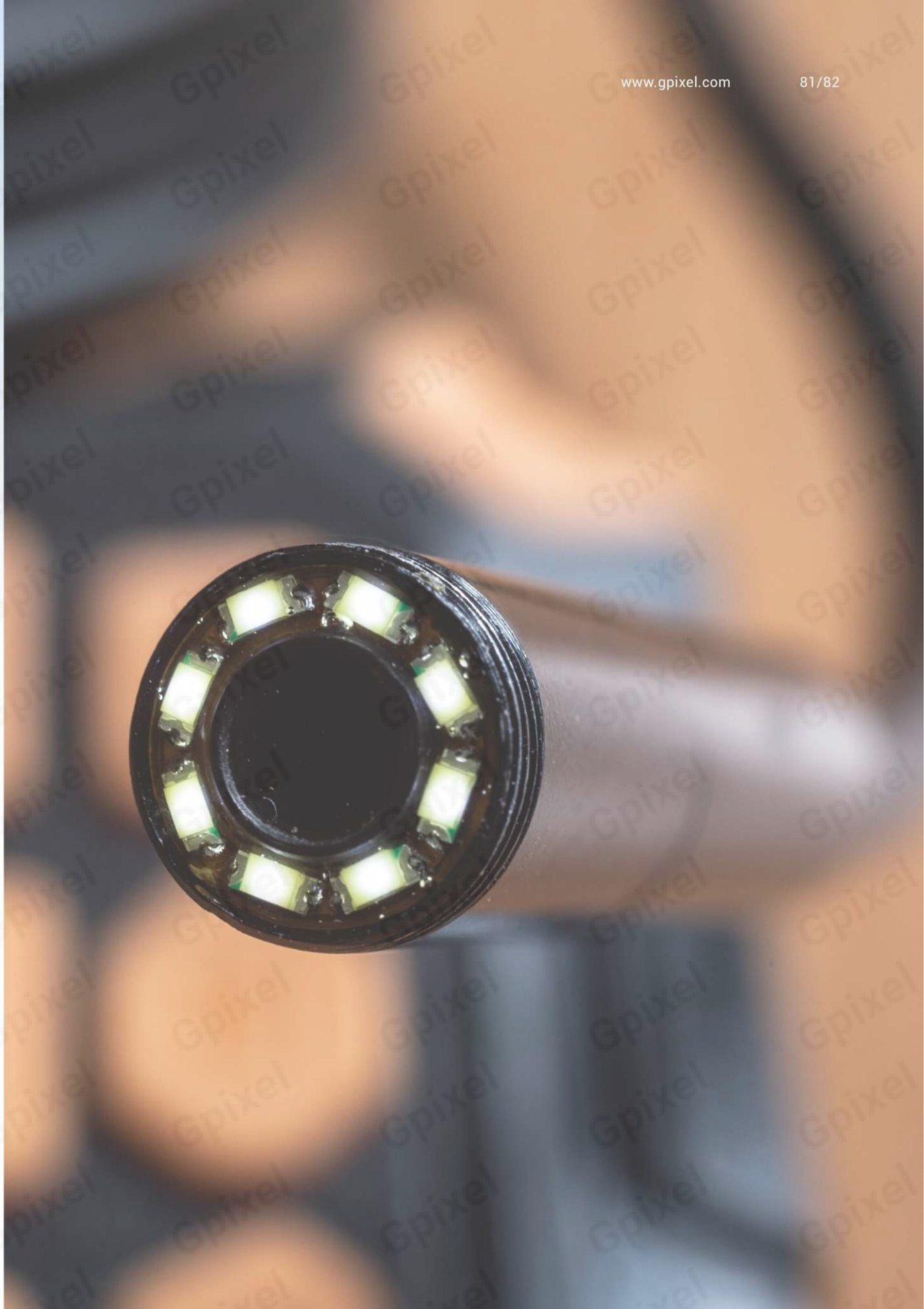
Package Drawing

GXS1508



GXSM1508





GMAX | GSPRINT | GSENSE | GLUX | GTOF | GCINE | GL | GXS | GIR

SWIR Image Sensor

GIR is a family of sensors sensitive in both the visible and the short-wave infrared (SWIR) portions of the spectrum. Gpixel's SWIR product family features sub-LVDS digital output, supporting high data rates and ease of integration. SWIR image sensors can be used in a variety of industrial and scientific applications where their ability to reveal otherwise invisible features including quality inspection in agriculture, pharmaceuticals, and semiconductors.

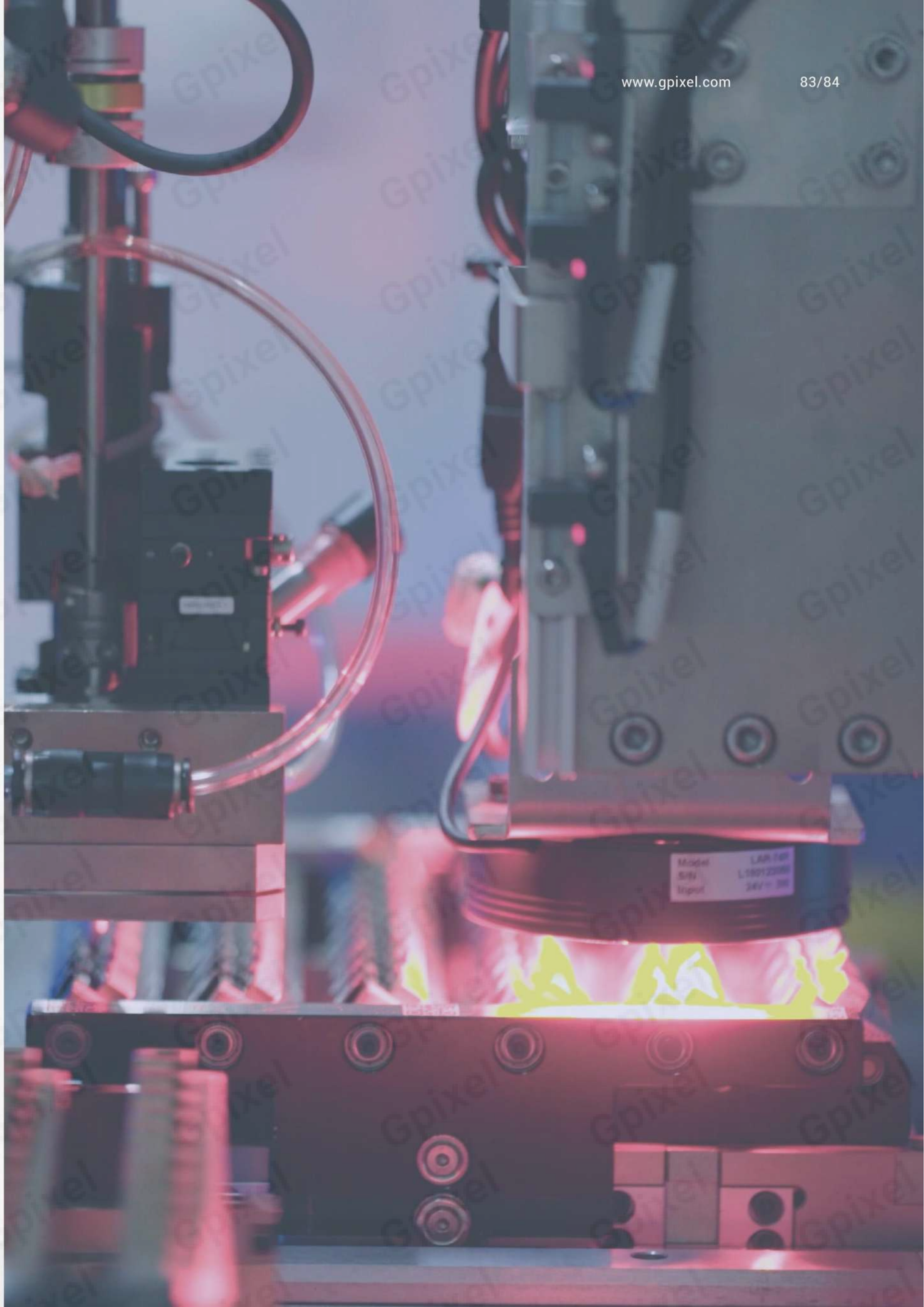
GIR2505 GIR1205

Product Family Features

- High Sensitivity
- Digital Output
- HIgh Line Rate

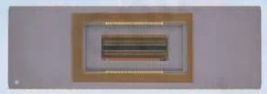
Applications

- Industrial Inspection
- Color and Food Sorting
- OCT



GIR2505

512 x 2 InGaAs LINE SCAN SENSOR



GIR2505 is a 512 (H) x 2 (V) InGaAs line scan image sensor with 25 µm square global shutter pixel. The sensor integrates a 12 bit ADC and provides 70 dB of dynamic range. Both high-gain (HG) and low-gain (LG) modes are supported. In LG mode, GIR2505 has a maximum full well capacity of 1.6 Me⁻ with readout noise of 450 e⁻. In HG mode, the maximum full well capacity is 85 ke⁻ with readout noise of 116 e⁻. It utilizes 2 pairs of Sub-LVDS interfaces with a maximum data rate of 1.68 Gbps, for a maximum line frequency of 40.4 kHz. GIR2505 also consumes less than 450 mW at the highest line frequency and is packaged in a 64 pins DIP with a package size of 57.4 x 18.9 mm.

Key Features and Benefits

· Sub-LVDS Output Format · On-chip 12 bit ADC with Dynamic Range of 70 dB · Line Rate up to 40.4 kHz

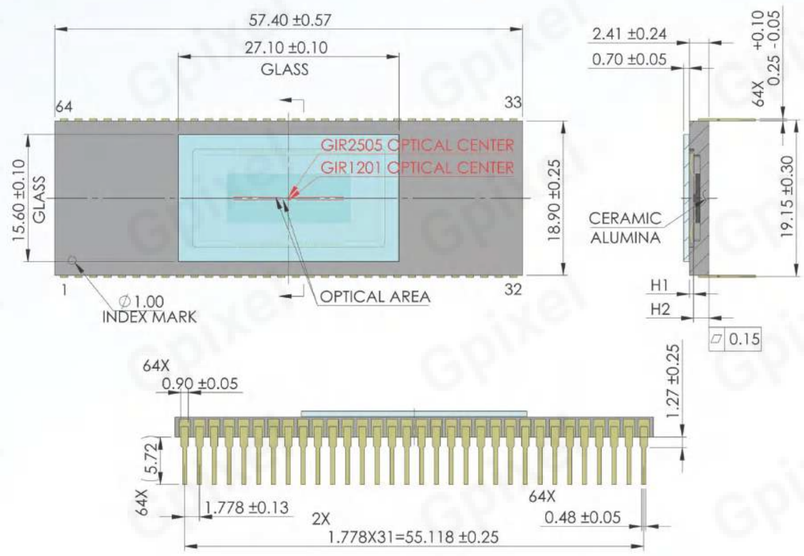
Application

·Industrial Inspection ·Color and Food Sorting ·OCT

Specifications

Nr of Active Pixels	512 (H) x 2 (V)	**Optical Format**	12.8 mm
Photosensive area	25 µm × 25 µm	**Shutter Type**	Global Shutter
Peak QE	75% (1550 nm)	**Temporal Noise**	116 e⁻ (12 bit,HG),450 e⁻ (12 bit,LG)
Full Well Capacity	85 ke⁻ (12 bit,HG),1.6 Me⁻ (12 bit,LG)	**PRNU**	< 2%
Dynamic Range	58 dB (12 bit,HG),70 dB (12 bit,LG)	**Max Line Rate**	40.4 kHz
Output Format	2 ch Sub-LVDS	**Channel Multiplexing**	2 to 1
ADC	12 bit	**Max. Data Rate**	1.68 Gbps
Chroma	-	**Power Consumption**	0.45 W
Supply Voltage	3.3 V (analog),1.5 V (digital),1.8 V (IO)	**Package**	64 pins DIP (57.4mm x 18.9 mm)

Package Drawing



GIR1201

1024 x 1 InGaAs LINE SCAN SENSOR



GIR1201 is a 1024 (H) x 1 (V) InGaAs line scan image sensor with 12.5 µm square global shutter pixel. The sensor integrates a 12 bit ADC and delivers a dynamic range of 72 dB. Both high-gain (HG) and low-gain (LG) modes are supported. In LG mode, GIR1201 has a maximum full well capacity of 1.6 Me⁻ with readout noise of 400 e⁻. In HG mode, the maximum full well capacity is 120 ke⁻ with readout noise of 88 e⁻. It utilizes 4 pairs of Sub-LVDS interfaces with a maximum data rate of 1.68 Gbps for a maximum line frequency of 71.9 kHz. GIR1201 consumes less than 450 mW at the highest line frequency and is packaged in a 64 pins DIP with a package size of 57.4 x 18.9 mm.

Key Features and Benefits

· Sub-LVDS output format · On-chip 12bit ADC with dynamic range of 72 dB · Line rate up to 71.9 kHz

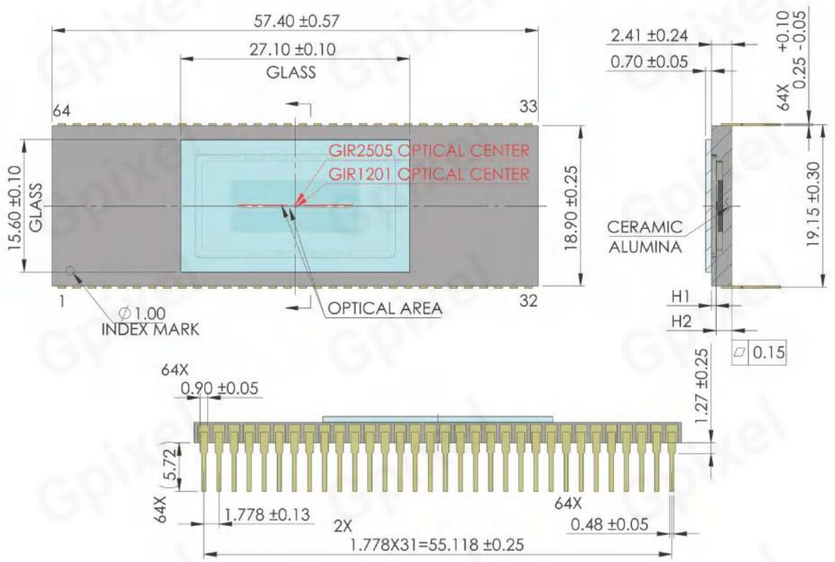
Application

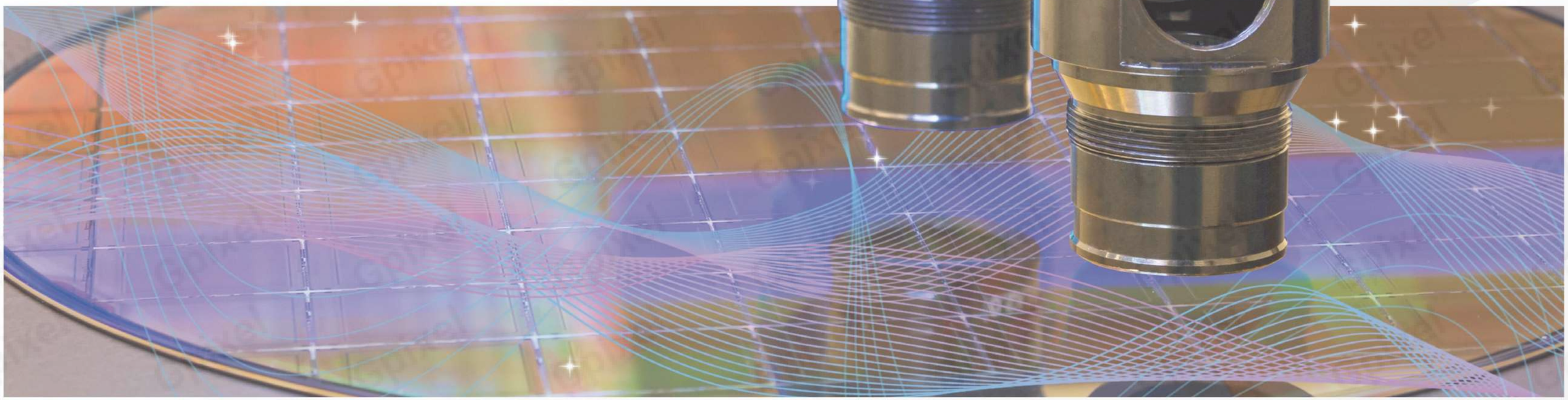
·Industrial Inspection ·Color and Food Sorting ·OCT

Specifications

Nr of Active Pixels	1024(H) x 1(V)	**Optical Format**	12.8 mm
Photosensive area	12.5 µm × 12.5 µm	**Shutter Type**	Global Shutter
Peak QE	75% (1550 nm)	**Temporal Noise**	88 e⁻ (12 bit,HG),400 e⁻ (12 bit,LG)
Full Well Capacity	120 ke⁻ (12 bit,HG),1.6 Me⁻ (12 bit,LG)	**PRNU**	< 2%
Dynamic Range	62 dB (12 bit,HG),72 dB (12 bit,LG)	**Max Line Rate**	71.9 kHz
Output Format	2 ch Sub-LVDS	**Channel Multiplexing**	2 to 1
ADC	12 bit	**Max. Data Rate**	1.68 Gbps
Chroma	-	**Power Consumption**	0.45 W
Supply Voltage	3.3 V (analog),1.5 V (digital),1.8 V (IO)	**Package**	64 pins DIP (57.4mm x 18.9 mm)

Package Drawing





Custom Design

Full Custom

- Customized IC, package, and cover glass
- Chip architecture and detailed design,
  product testing and reliability experiments

Semi Custom

- Customize an existing design
- Color filters, micro lenses
- Package type
- Glass cover plate coating
- Chip final test standard