Gpixel

Advanced CMOS Image Sensors
Gpixel Products Brochure

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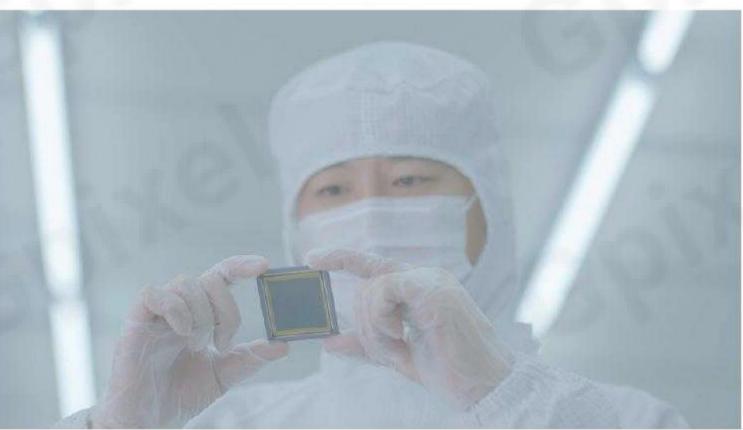TOC Osaki Building 18th Floor, 1-6-1 Osaki, Shinagawa-ku, Tokyo, 141-0032 Japan

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+ COMPANY

2012
Founding

Products
Advanced CMOS image sensors
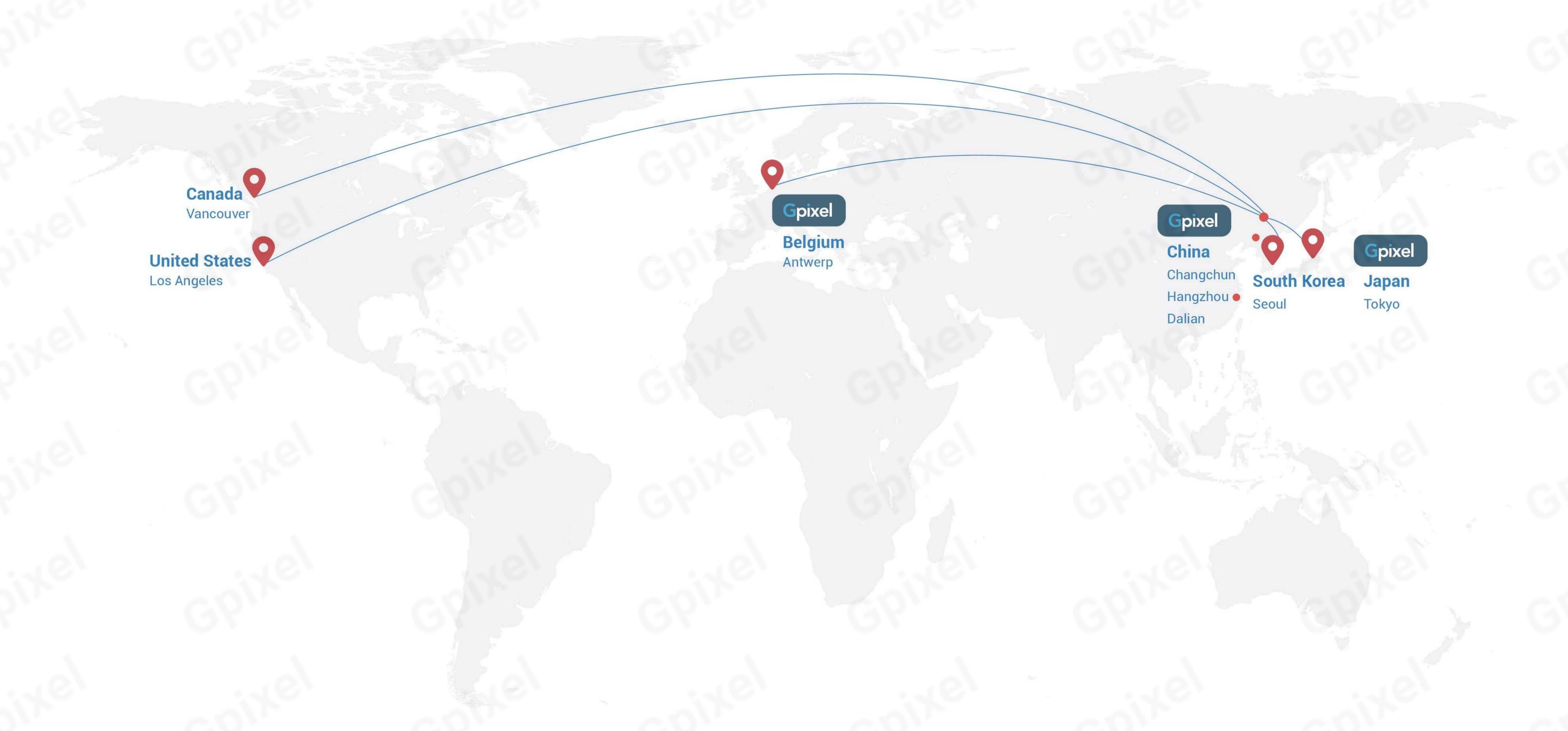
Vision
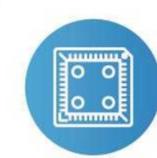Focus on technology
Insist on innovation

Founded in 2012, Gpixel foucuses on the design and development of high-performance CMOS image sensors. Company headquarters are located in Changchun, China and additional design centers are located in Hangzhou, Dalian, Antwerp, and Tokyo. Gpixel provides advanced CMOS image sensors and exceptional customer service to camera makers around the world.

The Gpixel team includes first-class semiconductor physicists and globally recognized image sensor experts. Gpixel has a strong foundation of intellectual property related to charge-domain global shutter pixels, low noise circuit design, layout optimization for performance and yield of high resolution and large format image sensors, implementation of on-chip high dynamic range modes, backside illumiation with high peak quantum efficiency, and true charge transfer based time delay and integration (TDI).

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

![Gpixel]

Canada
Vancouver

United States
Los Angeles

Gpixel
Belgium
Antwerp

Gpixel
China
Changchun
Hangzhou
Dalian

South Korea
Seoul

Gpixel
Japan
Tokyo

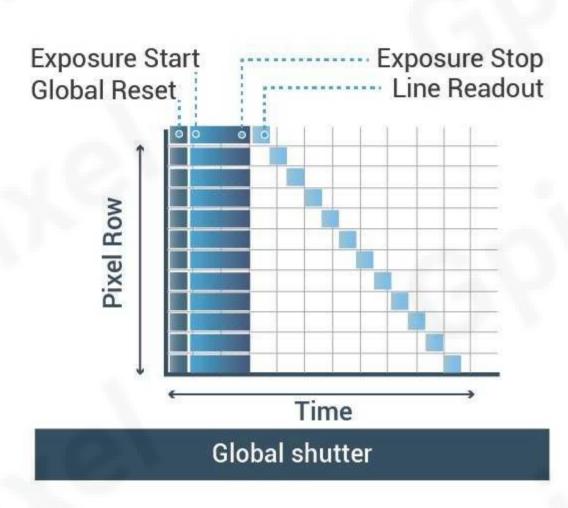# An international R&D team with deep technical expertise

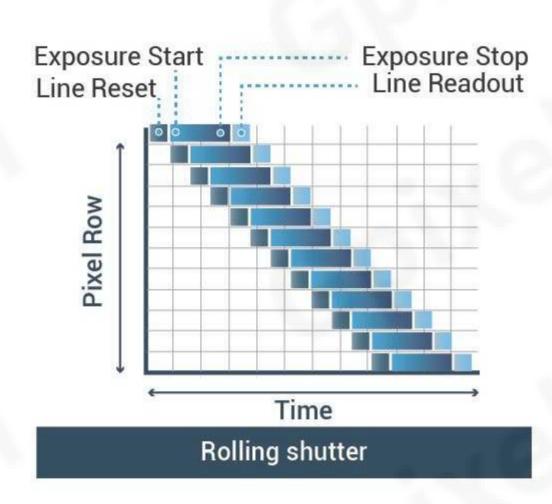Global R&D Center, the team maintains close communication and efficient collaboration.

Gpixel

Technology
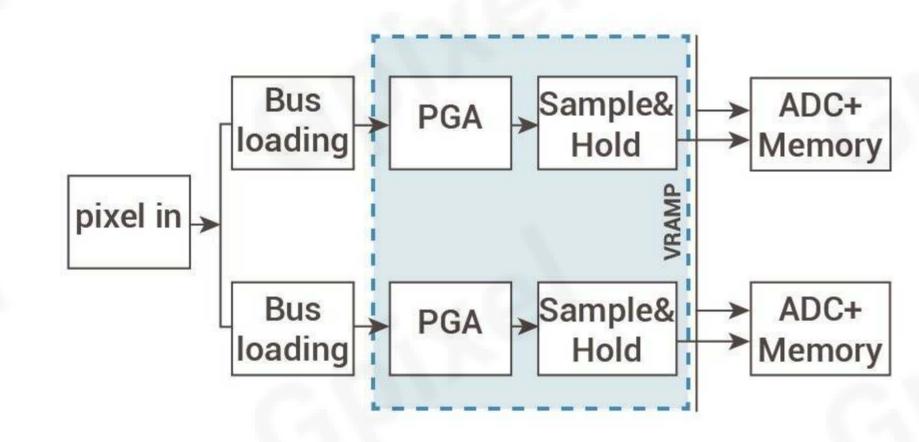
Ⓖ Global Shutter Pixels

- 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.
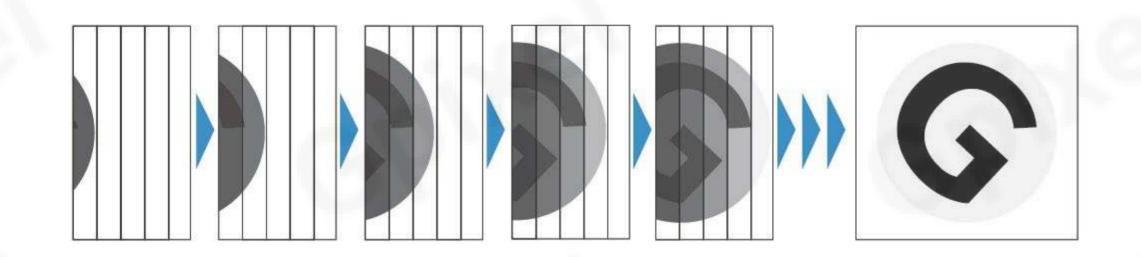

Ⓖ Low Noise, High Speed, High Dynamic Range

- 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.
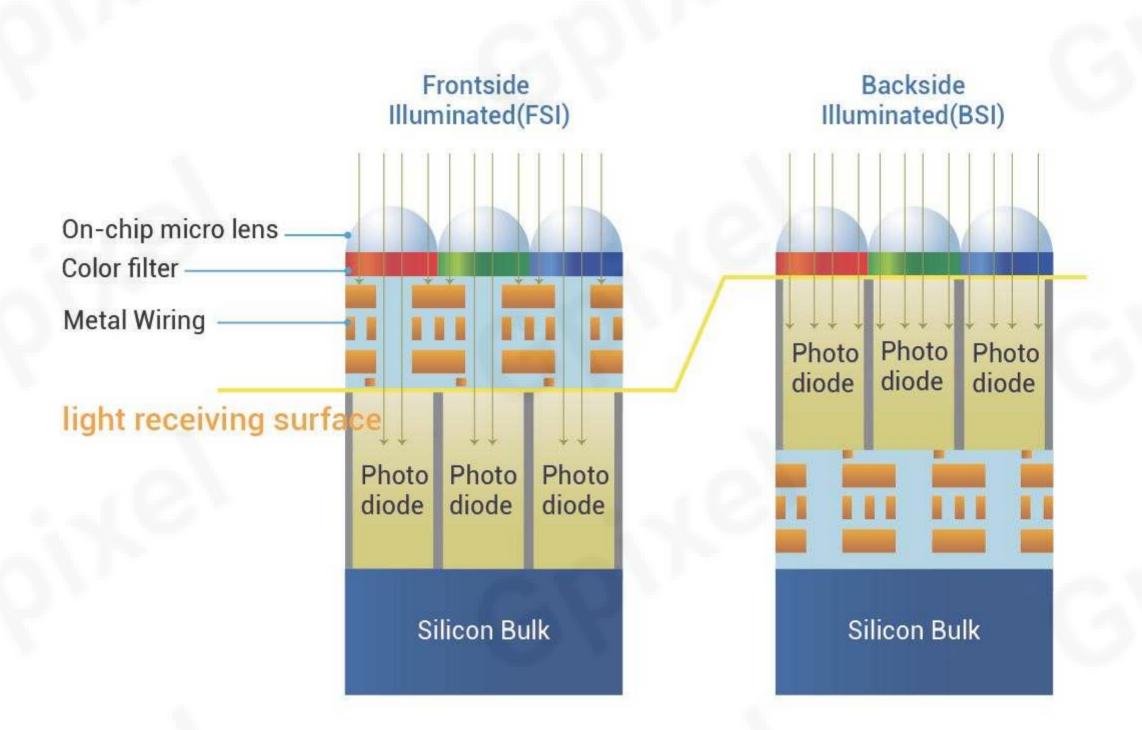- Dual-gain circuit designs achieve >100 dB dynamic range in a single exposure.

Ⓖ 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.
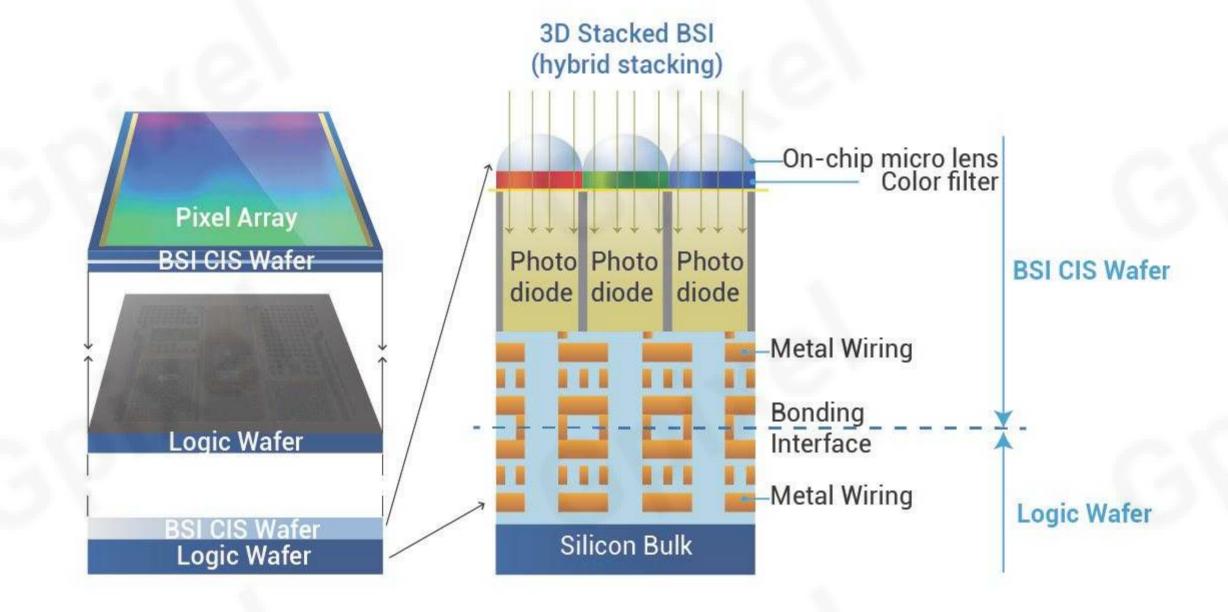

Ⓖ Backside-illumination

- 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.
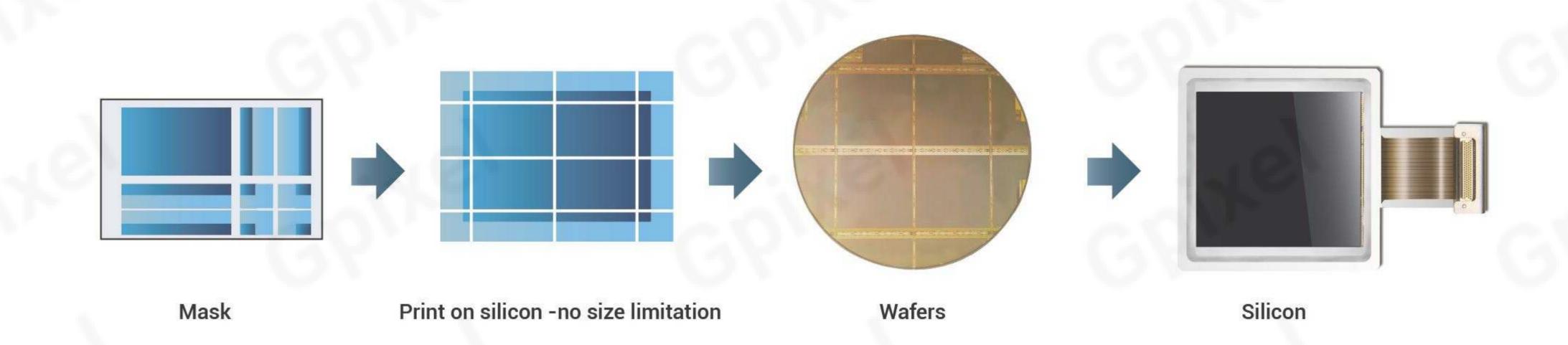
Ⓖ Advanced Wafer Stacking

- 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.

Mask   Print on silicon -no size limitation   Wafers   Silicon

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Applications

Astronomical Observations

Precision Instruments

Life Sciences

Advanced CMOS Image Sensors

Biological Fluorescence

Spectral Analysis

Microscope

Machine Vision

Semiconductors

New Energy

Logistics

Color Sorting

Motion Capture

Professional Photography and Video

Broadcasting Television

High-Speed Photography

Endoscope

OCT

X-ray Imaging

Product Contents

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

GMAX

GMAX4002   GMAX3405
GMAX2505   GMAX2509
GMAX3809   GMAX3412
GMAX3413   GMAX4416
GMAX2518   GMAX0505
GMAX4651   GMAX3265
GMAX32103   GMAX64104
GMAX32152   GMAX15271BSI

11-28

GCINE

GCINE3243
GCINE4349

59-62

GSPRINT

GSPRINT6502BSI
GSPRINT4502
GSPRINT4510
GSPRINT5514BSI
GSPRINT4521

29-36

GL

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

63-76

GSENSE

GSENSE2020BSI   GSENSE6504BSI
GSENSE4040   GSENSE4040BSI
GSENSE6060   GSENSE6060BSI
GSENSE3243BSI   GSENSE6510BSI
GSENSE1081BSI   GSENSE1517BSI
GSENSE400BSI

37-50

GXS

GXS1508/GXSM1508

77-80

GLUX

GLUX9701BSI
GLUX1605BSI

51-54

GIR

GIR1201/GIR2505

81-84

GTOF

GTOF0503

55-58

CUSTOM

CUSTOM DEDIGN
SEMI-CUSTOM

85-86

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	GMAX3413	GMAX4416	GMAX2518	GMAX0505
GMAX4651	GMAX3265	GMAX32103	GMAX32152	GMAX64104
GMAX15271BSI				

Product Family Features

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

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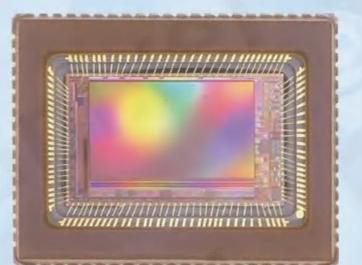
- Automation & Inspection
- Video Broadcasting
- Traffic & Transportation
- Medical Imaging

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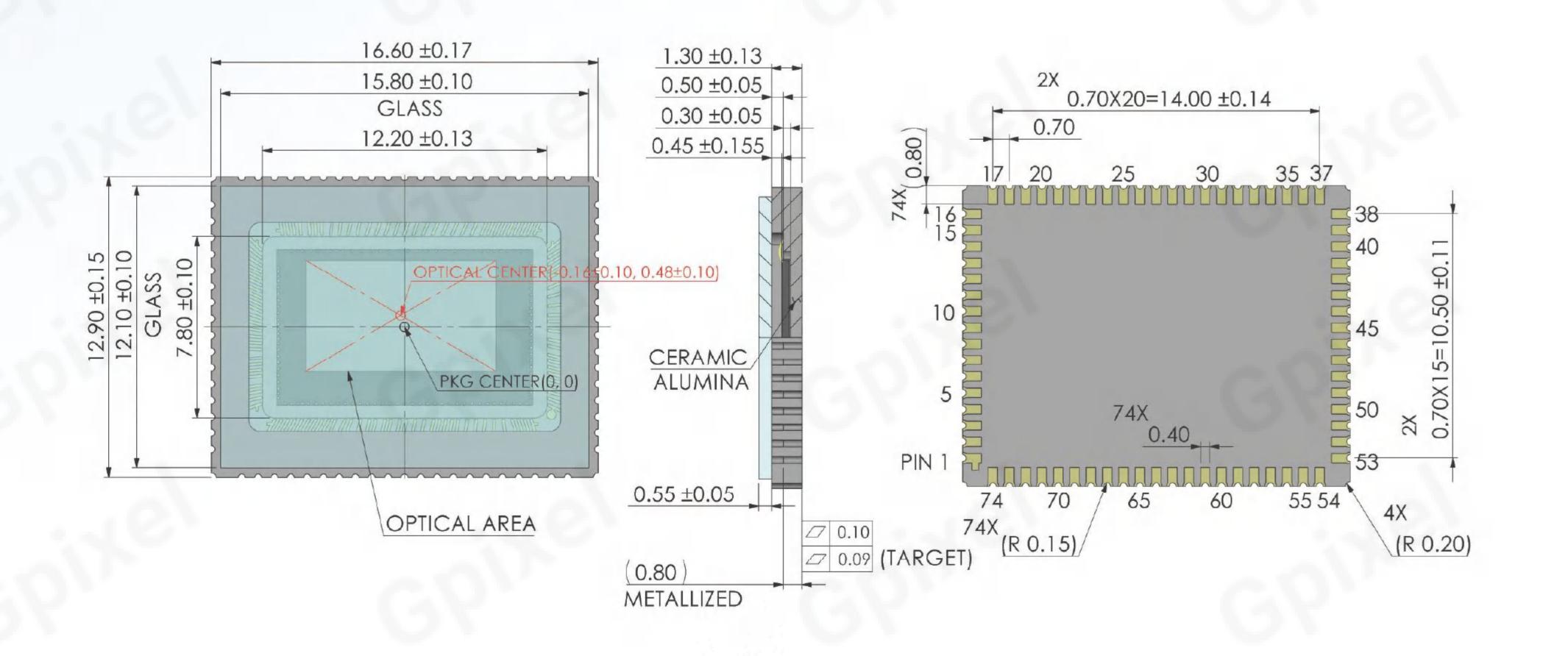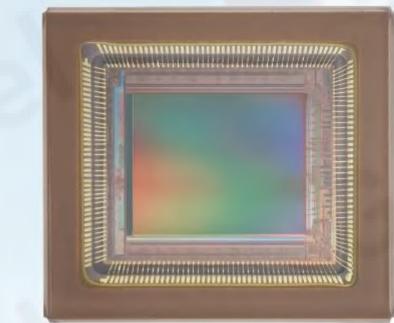
Application

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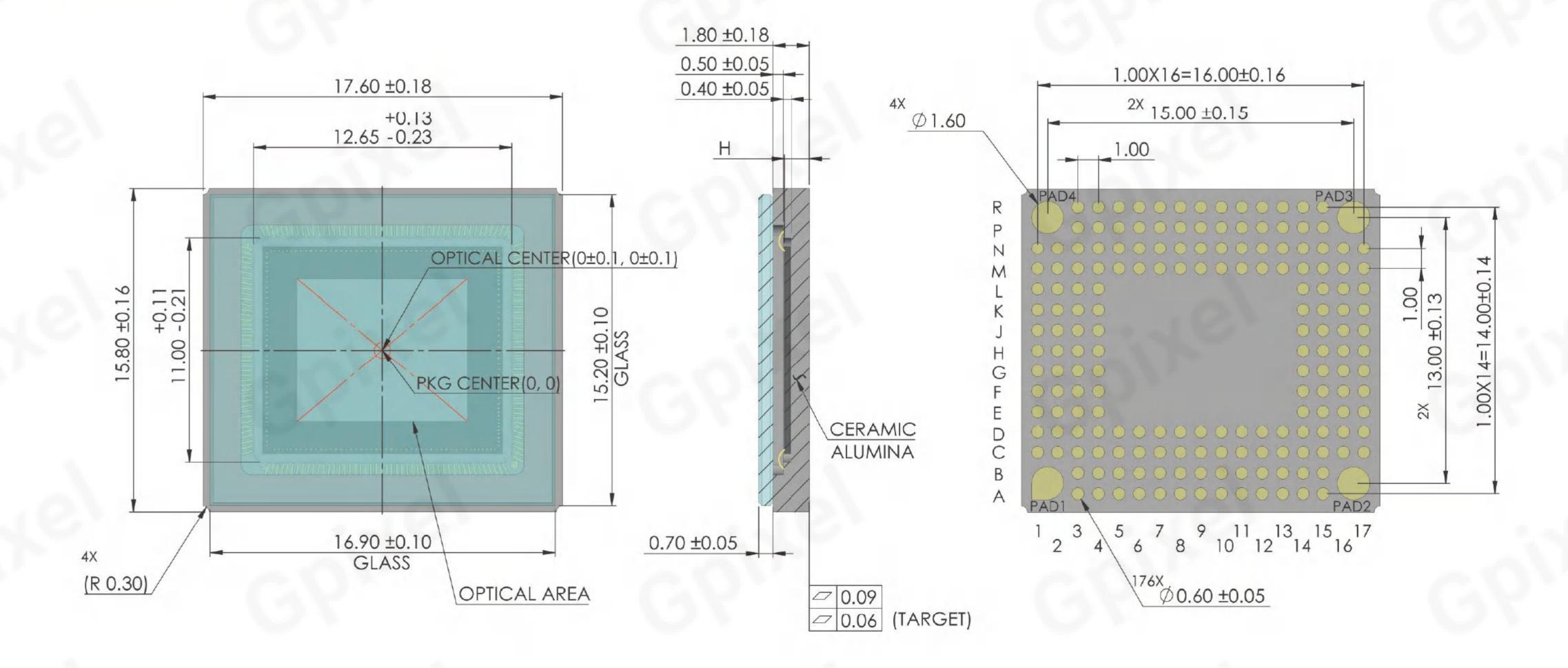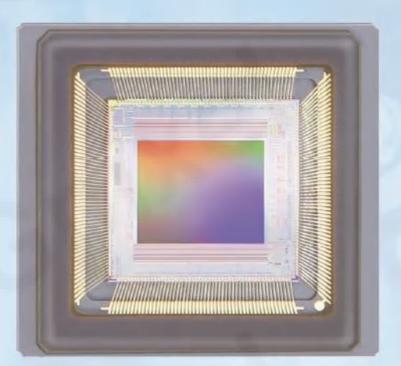
Application

·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 1.0x)
Peak QE	75% (540 nm)	Angular Response	>15° (80% Response)
Dark Current	6.5 e⁻/pixel/s (35 °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
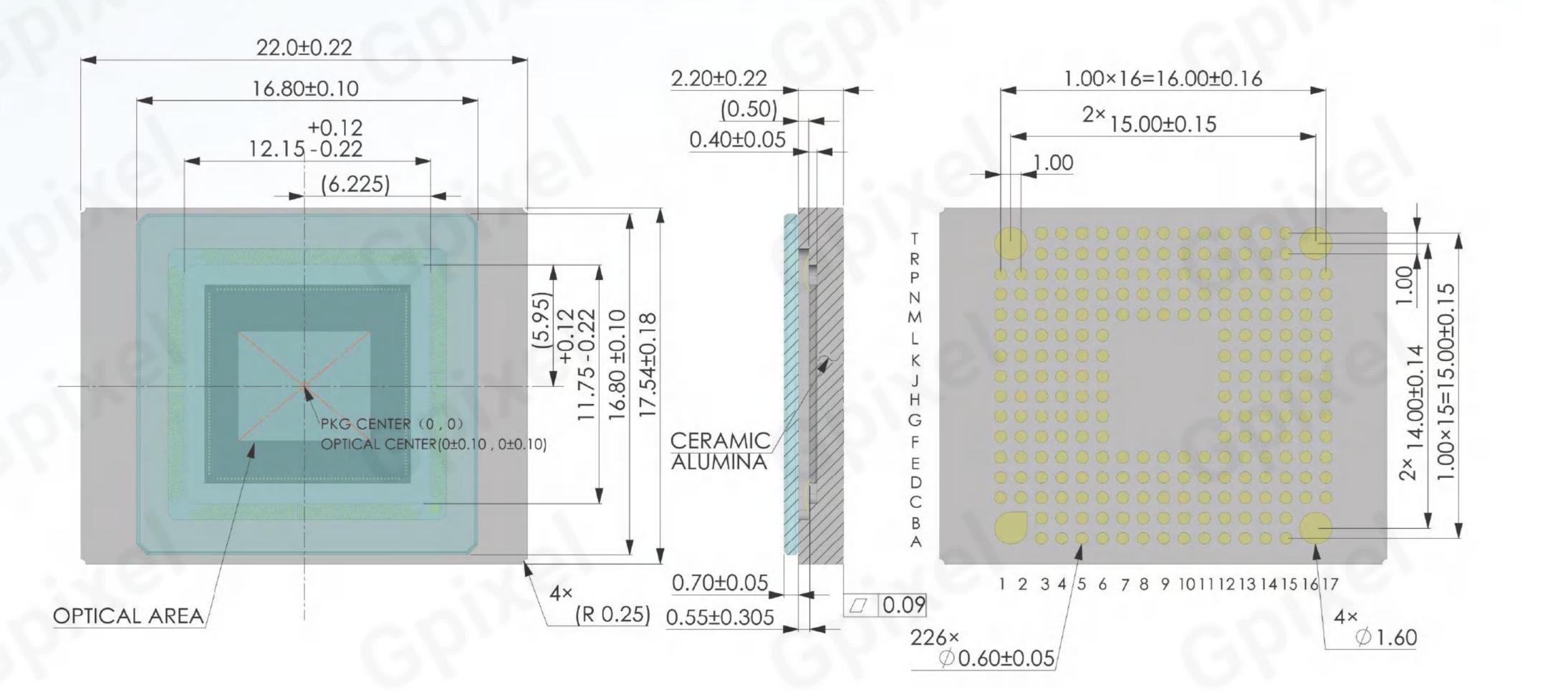· High Data Throughput up to 19.2 Gbps
· Good PLS and CRA

· 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
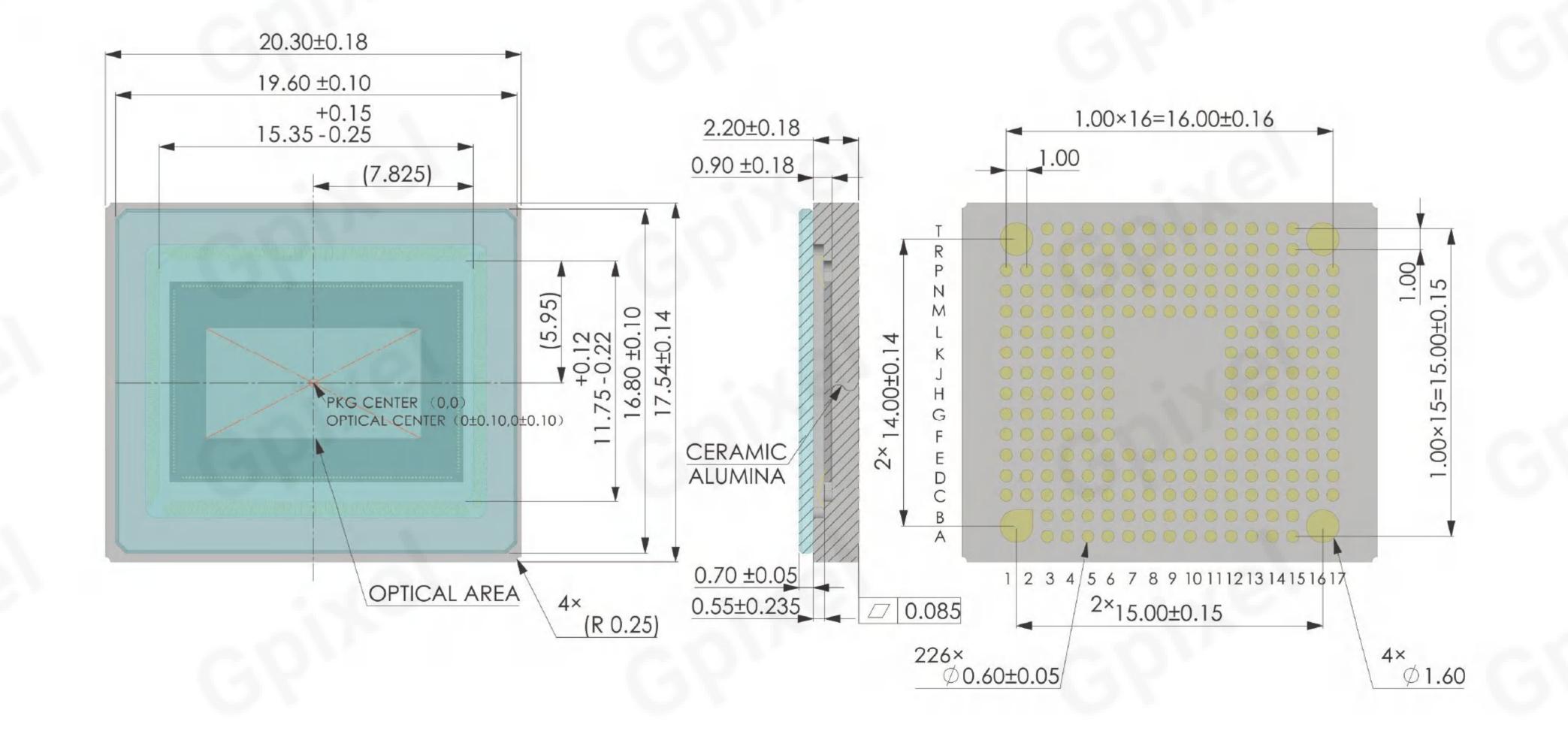
Application

·Automation & Inspection   ·Logistic & Positioning   ·Metrology   ·Motion Capture
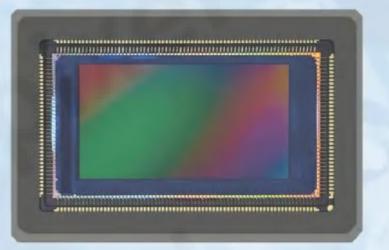
Specifications			
Nr of Active Pixels	4200(H) x 2160(V)	Optical Format	2/3"
Pixel Size	2.5 µm x 2.5 µm	Photosensitive Area	10.5 mm x 5.4 mm
Shutter Type	Global Shutter	Parasitic Light Sensitivity	65.5% (500 nm)
Full Well Capacity	6.7 ke⁻ (PGA gain 1.0x)	Temporal Noise	<-80.0 dB
Temporal Noise	1.8 e⁻ (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),1.3V (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
- On-chip Color Offset Calibration
- Excellent PLS and Angular Response

Application
- Automation & Inspection
- Intelligent Transport Systems
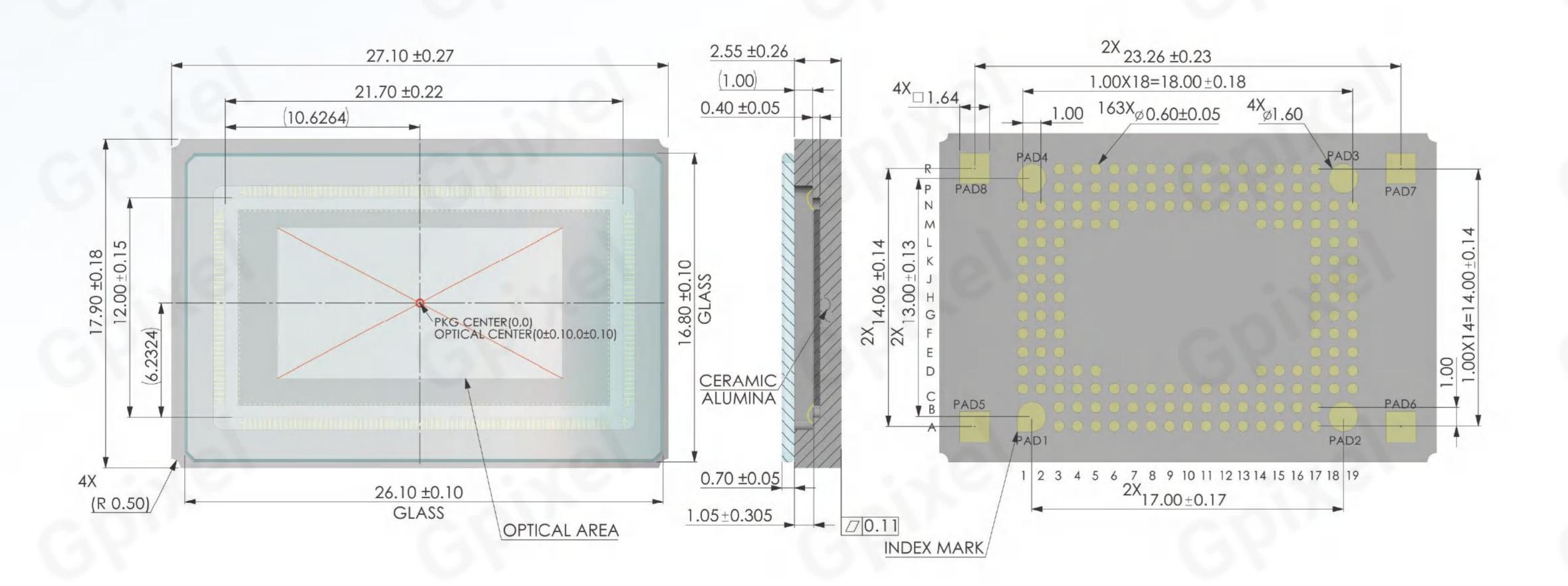
Specifications			
Nr of Active Pixels	4096(H) x 2160(V)	Optical Format	1.1"
Pixel Size	3.8 μm x 3.8 μm	Photosensitive Area	15.6 mm x 8.2 mm
Shutter Type	Global Shutter	Peak QE	61.7% (540 nm)
Full Well Capacity	11.2 ke⁻	Parasitic Light Sensitivity	-92 dB
Temporal Noise	3.3 e⁻(Analog gain 1.0x)	Angular 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 128/60 fps in 10/12 bit mode with sub-LVDS interface and 30 fps over the alternative 4 MIPI DPHY channels. Based on a high-performance 3.4 μm charge-domain global shutter pixel, GMAX3412 achieves a maximum full well capacity of 9 ke⁻ and minimum 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.
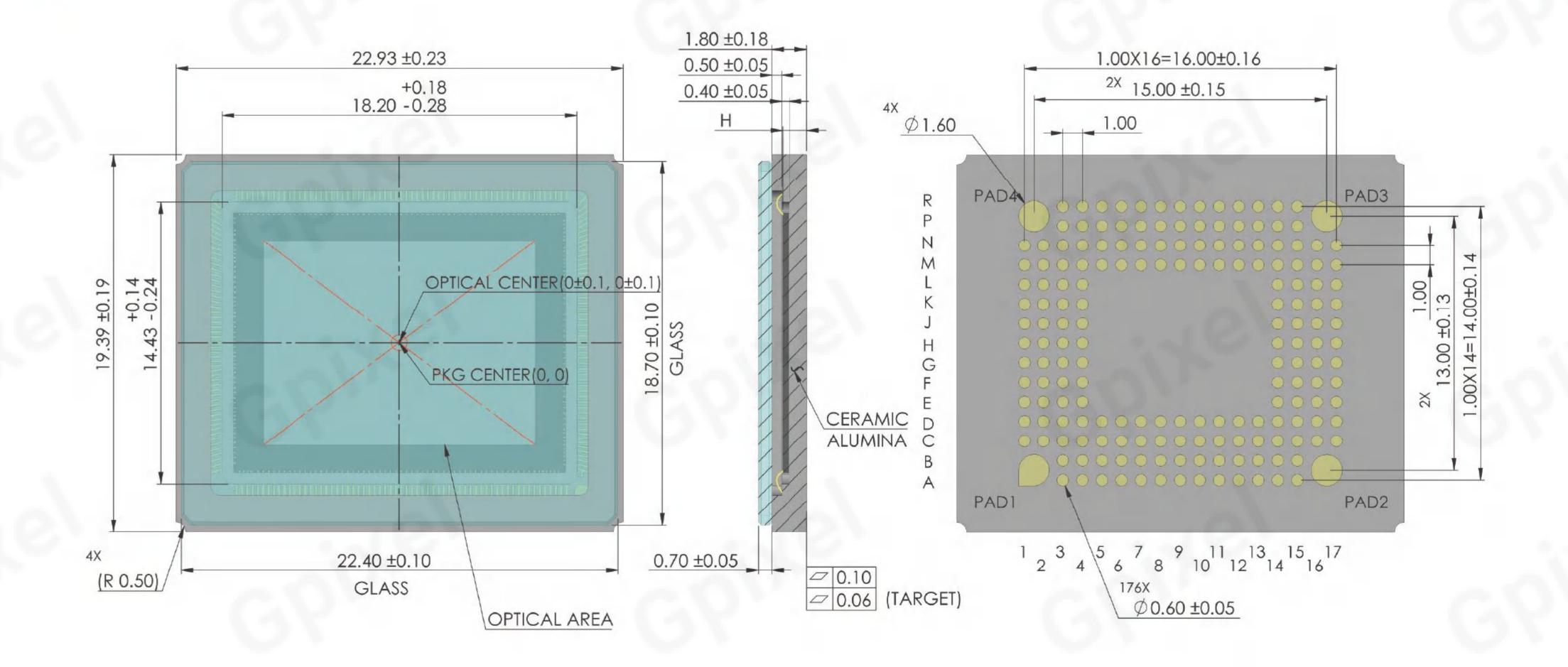
Key Features and Benefits
- 12 MP Resolution
- One Time Programmable(OTP) Memory
- Charge Domain Electronic Global Shutter
- High Speed and Good PLS and Angular Response
- NIR Enhance
- Multi-Slope HDR

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	6.5 e⁻/pixel/s (35°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

GMAX3413

12.7MP GLOBAL SHUTTER CMOS IMAGE SENSOR

GMAX3413 12.7 MP resolution into a 4/3" image format in a wide aspect ratio offering an optimal coverage of the field of view of interest in the intended applications such as Intelligent Traffic System (ITS) and logistics and parcel sorting. Like other GMAX products, the advanced low noise global shutter technology and generous pixel achieves a full well capacity of 8.6 ke⁻ and noise of 2.3 e⁻ which delivers more than 71.4 dB linear dynamic range. Gpixel's Red Fox technology is employed to deliver a NIR-enhanced QE of 30% (850 nm) for excellent performance in intelligent traffic systems.

GMAX3413 is configurable through SPI or I²C and supports on-chip color offset calibration, LED flicker mitigation, multiple region HDR and OTP functions.
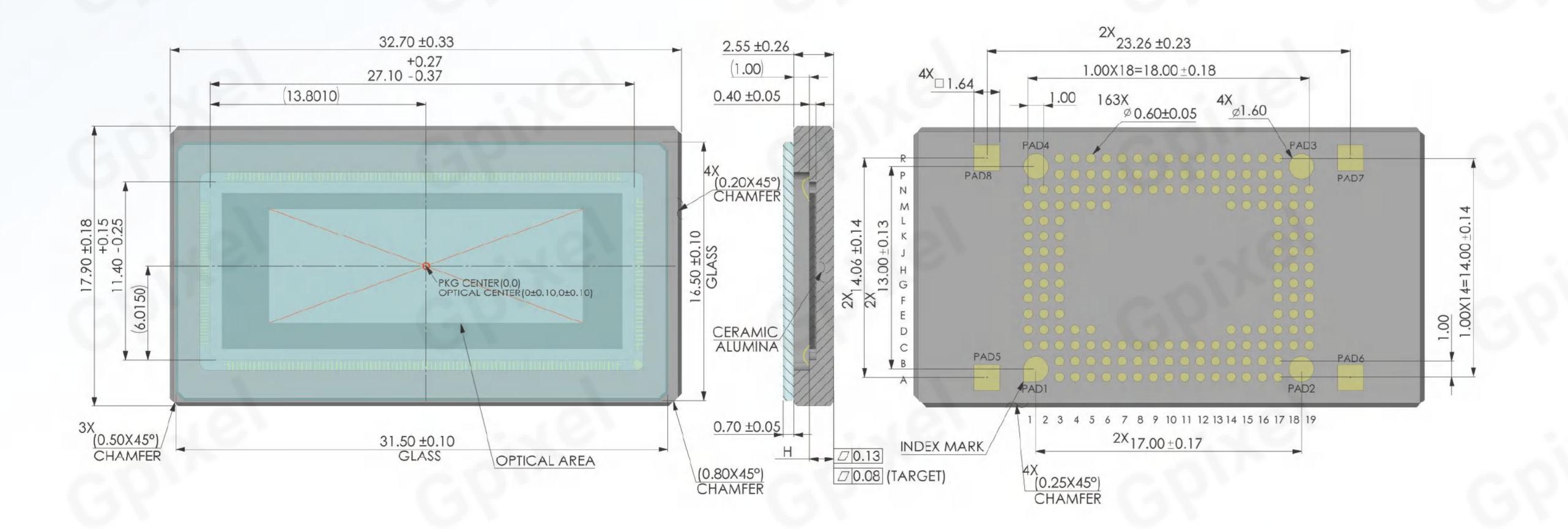
Key Features and Benefits

· Low Noise, Large Size Global Shutter Pixel Provided Optimal SNR
· LED Flicker Mitigation
· Vertical and Horizontal ROI
· Excellent PLS and Angular Response
· Wide Aspect Ratio
· Multiple Region HDR
· Vertical and Horizontal Image Flipping
· On-chip Color Offset Calibration

Application

·Automation & Inspection   ·Intelligent Transport Systems

Specifications

Nr of Active Pixels	5900(H) x 2160(V)	Optical Format	4/3"
Pixel Size	3.4 µm x 3.4 µm	Photosensitive Area	20.1 mm x 7.3 mm
Shutter Type	Global Shutter	Peak QE	62.7% (540 nm)
Full Well Capacity	8.6 ke⁻	Parasitic Light Sensitivity	-92.0 dB
Temporal Noise	2.3 e⁻	Angular Response	>15° (80% Response)
Dark Current	81 e⁻/pixel/s (35°C)	Max. SNR	39.3 dB
Dynamic Range	71.4 dB	Max Frame Rate	32 fps
Output Format	8 ch LVDS	Channel Multiplexing	8/4
ADC	12 bit	Max. Data Rate	7.68 Gbps
Chroma	Mono (NIR enhanced),RGB Color	Power Consumption	<1.2 W
Supply Voltage	3.3 V/3.6 V (analog),1.8 V - 3.3 V (IO),1.3 V (digital)	Package	163 pins LGA (32.7 mm x 17.9 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
· Binning HDR Mode
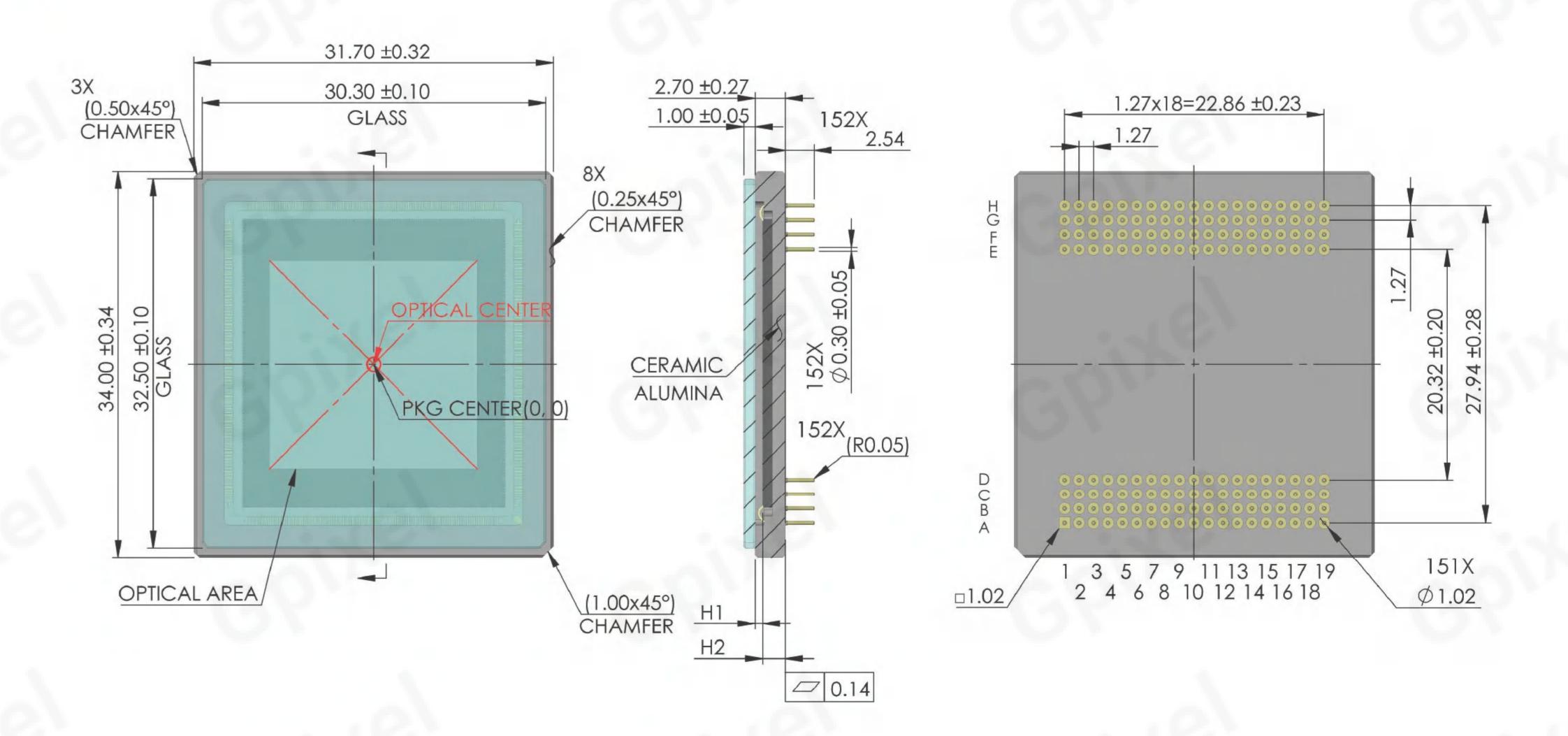· 16 MP Resolution
· Near Infrared Enhancement
· 1:1 Aspect Ratio
· Max Frame Rate: 80 fps

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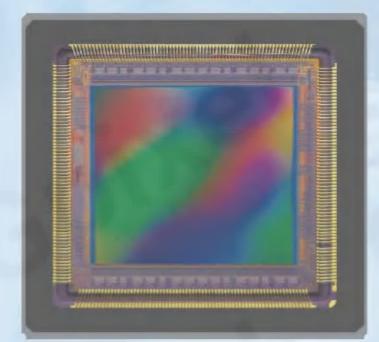
·Automation & Inspection   ·Life Sciences   ·Microscopy   ·Motion Capture

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
- High Data Throughput up to 30.72 Gbps
- Mechanically Compatible with Industry Standard Camera
- > 64% Peak QE, < -80 dB Shutter Efficiency
- Max Frame Rate: 139 fps
- High Speed and Good PLS
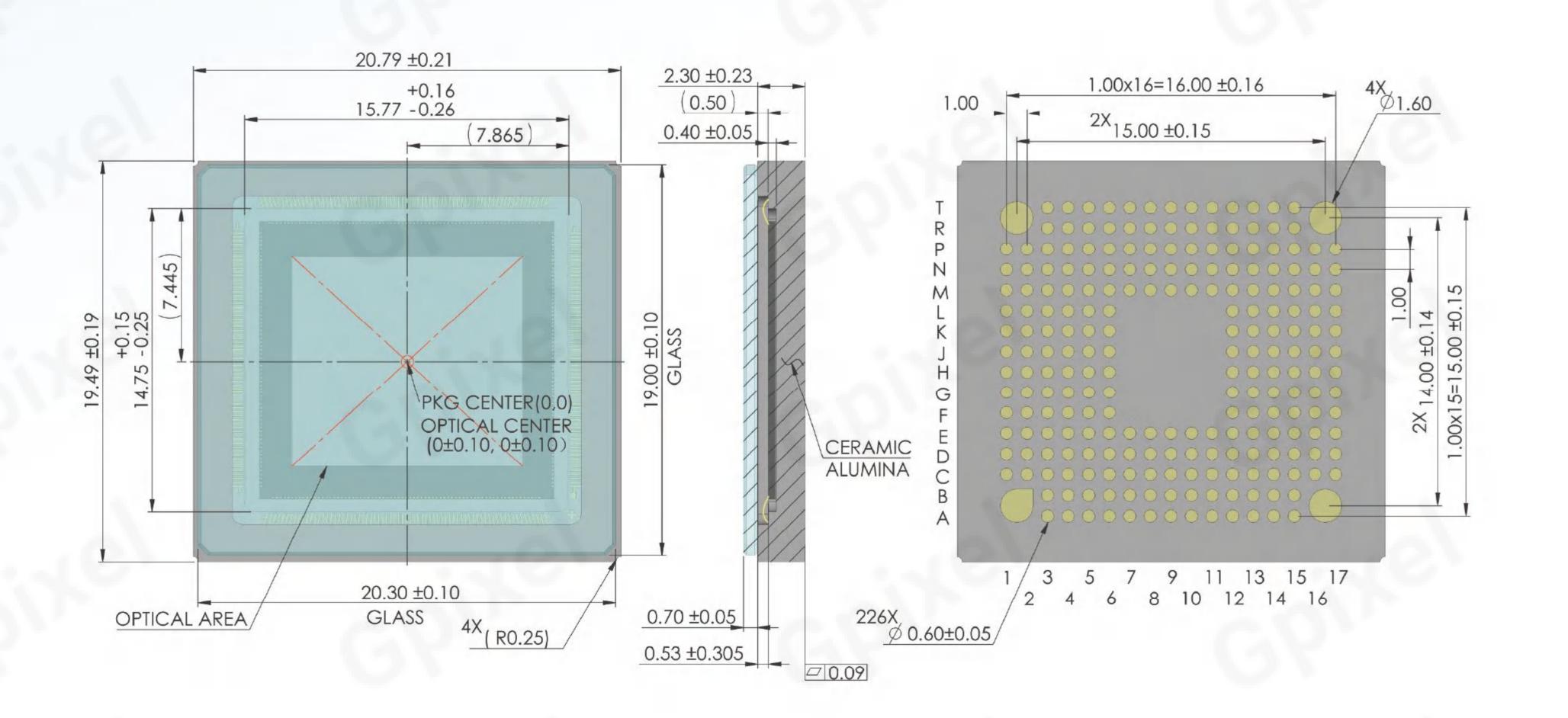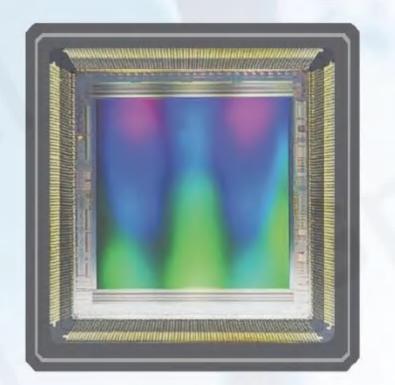
Application
- Automation & Inspection
- Logistic & Positioning
- Metrology

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

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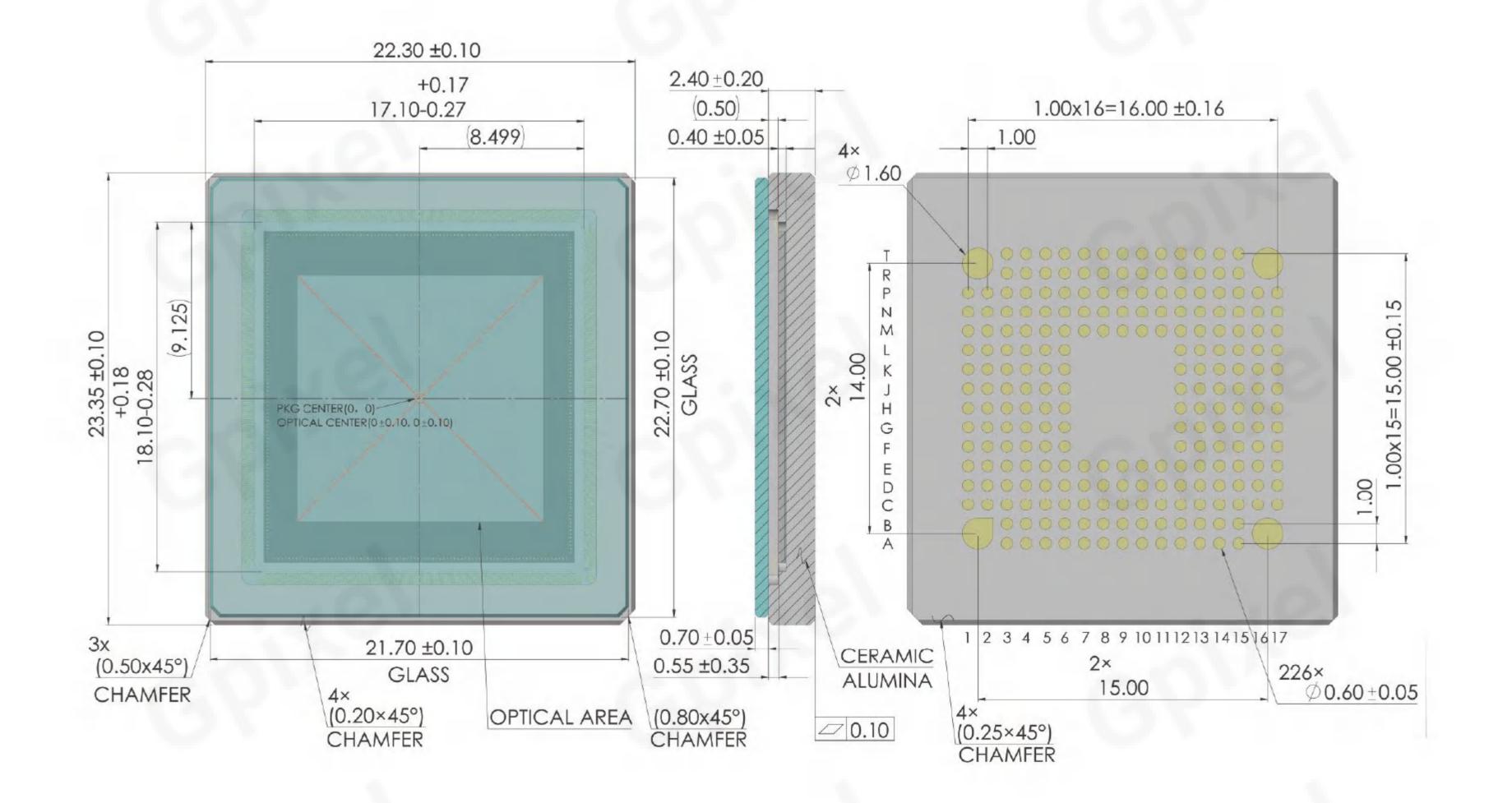
Key Features and Benefits
- 2.5 µm Global Shutter Pixel
- Optimized Tungsten Shielding Structure
- High Speed and Good PLS
- High Resolution GS in 1.1" Optical Format
- NIR Enhanced – Red Fox
- Pin-Compatible with GMAX2505, GMAX2509 and GMAX2518

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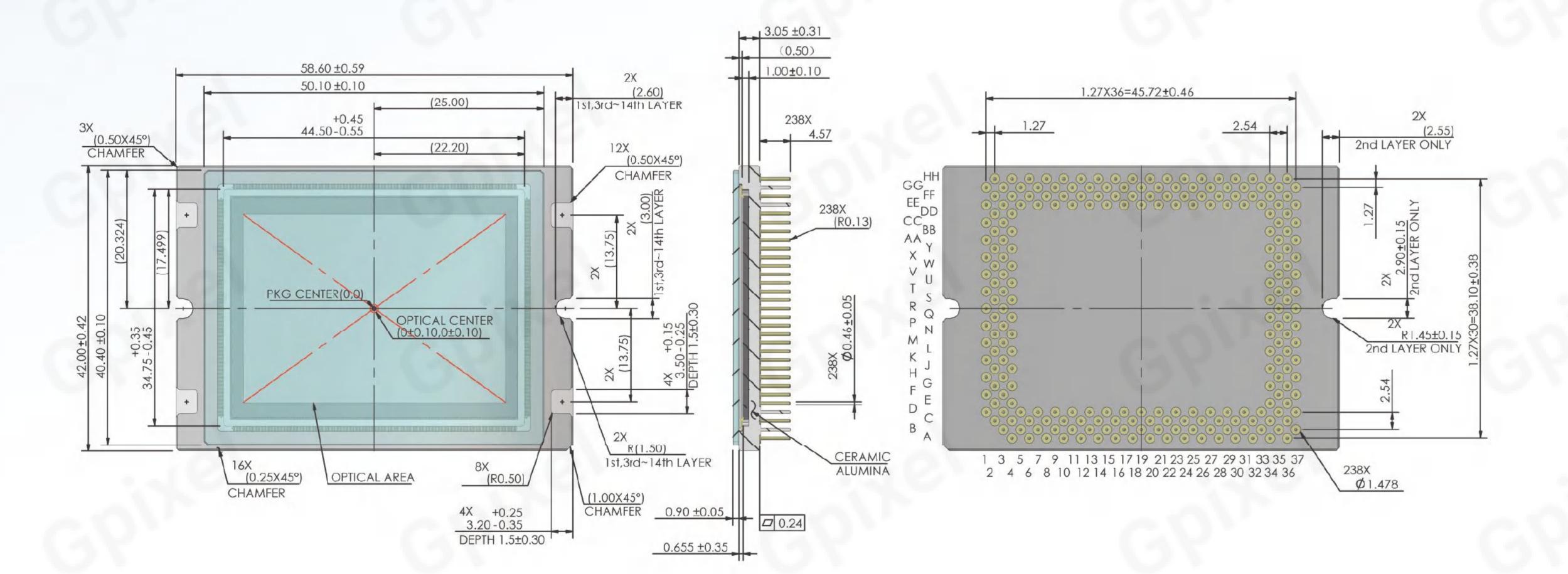· 35 mm Full Frame of Optical Format
· High Data Throughput up to 21 Gbps
· High Speed and Good PLS
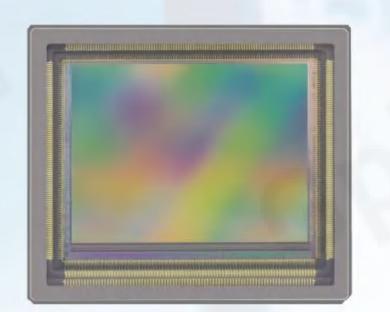· Optical Center = Package Mechanical Center

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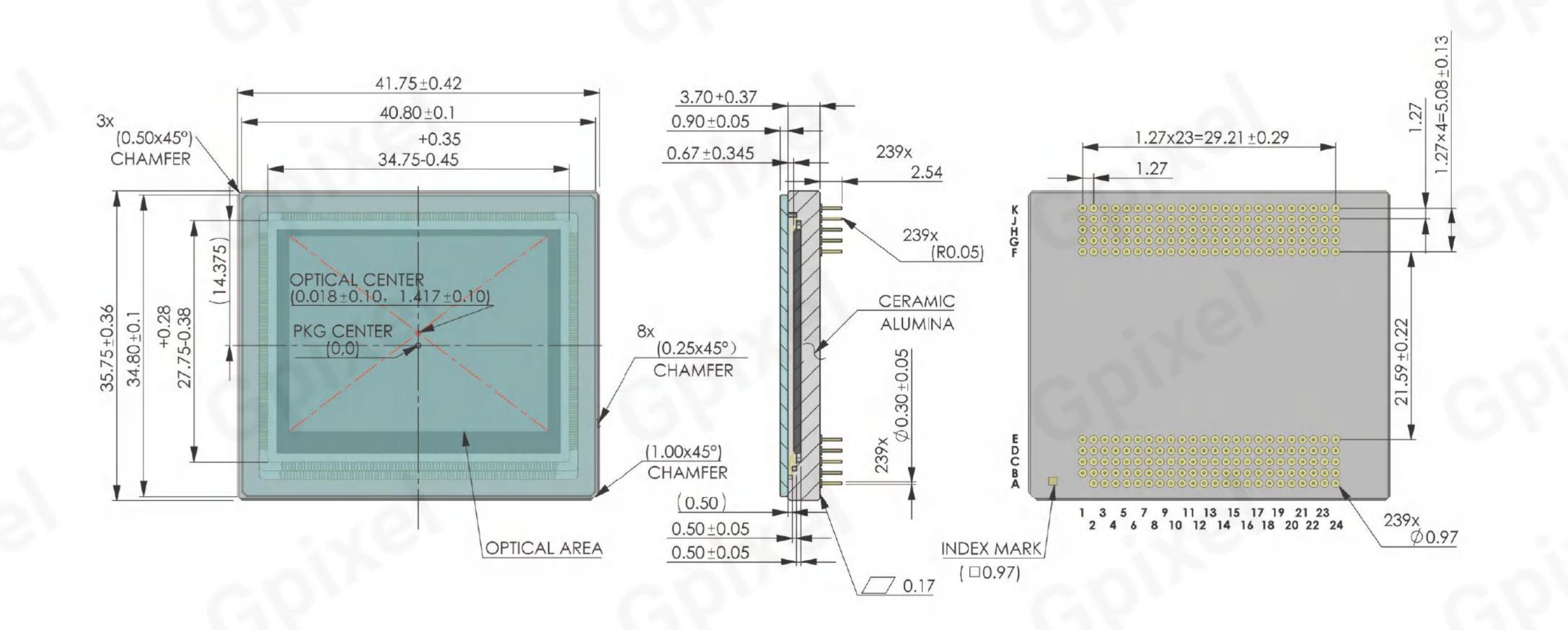
· 3.2 µm Global Shutter Pixel
· Image Diagonal: 37.4 mm
· High Speed and Good PLS
· On-chip Sequencer and SPI Control
· Excellent Resolution and Significant Frame Rate

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 Data Throughput up to 960 Mbps
· High Resolution up to 103 MP
· On Chip Sequencer and SPI Control
· High Speed and Good PLS
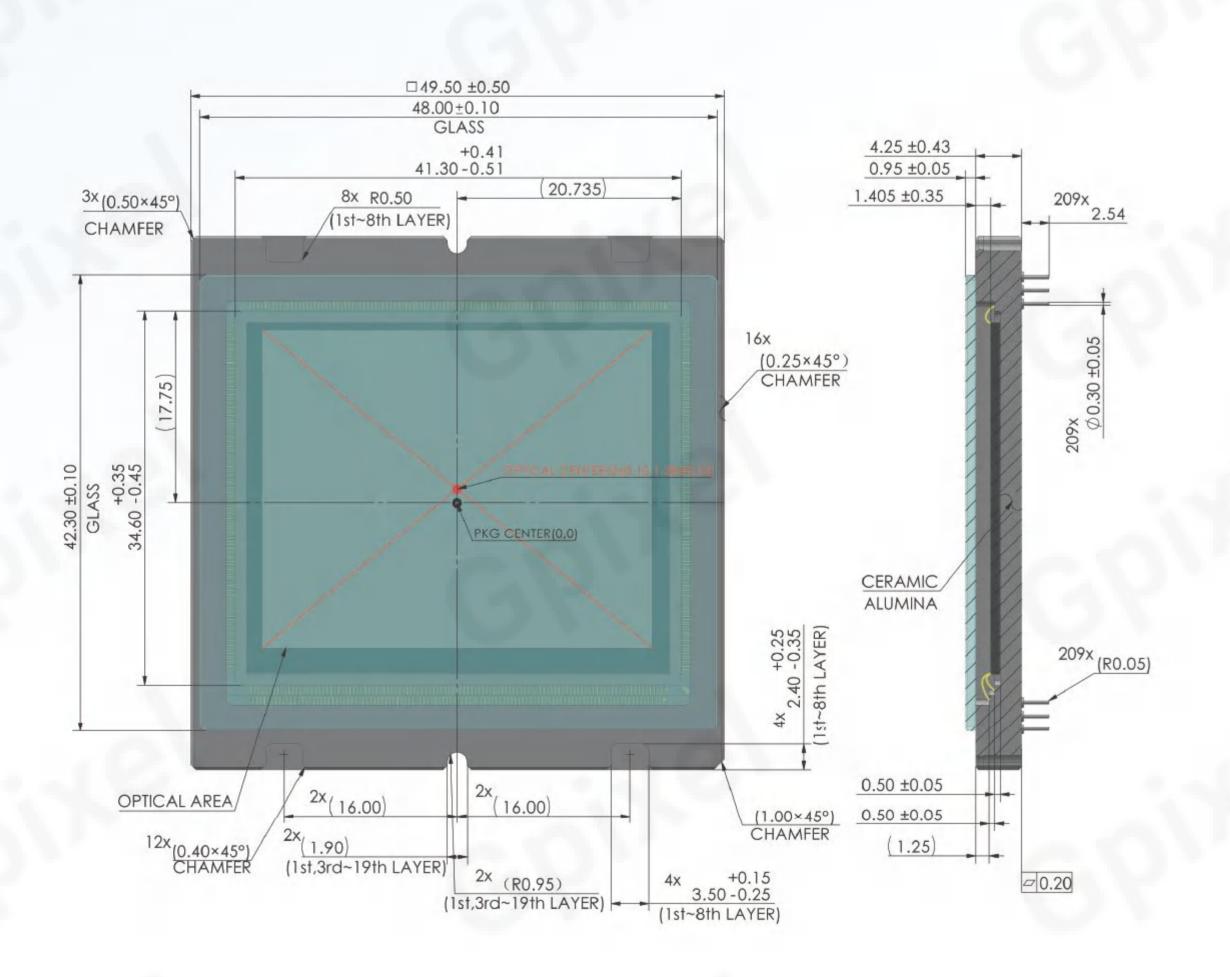
Application
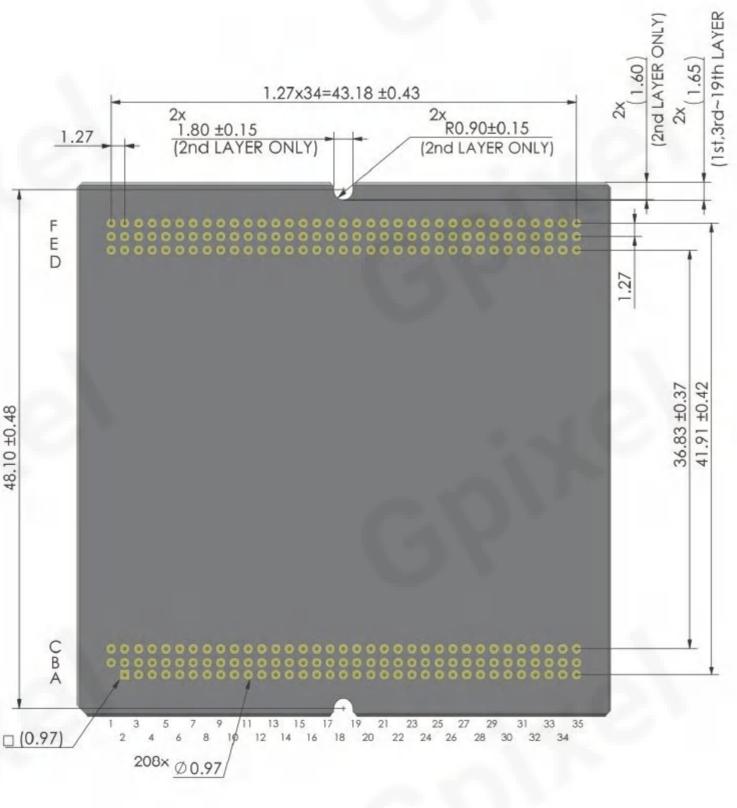
·Automation & Inspection   ·Aerial Imaging

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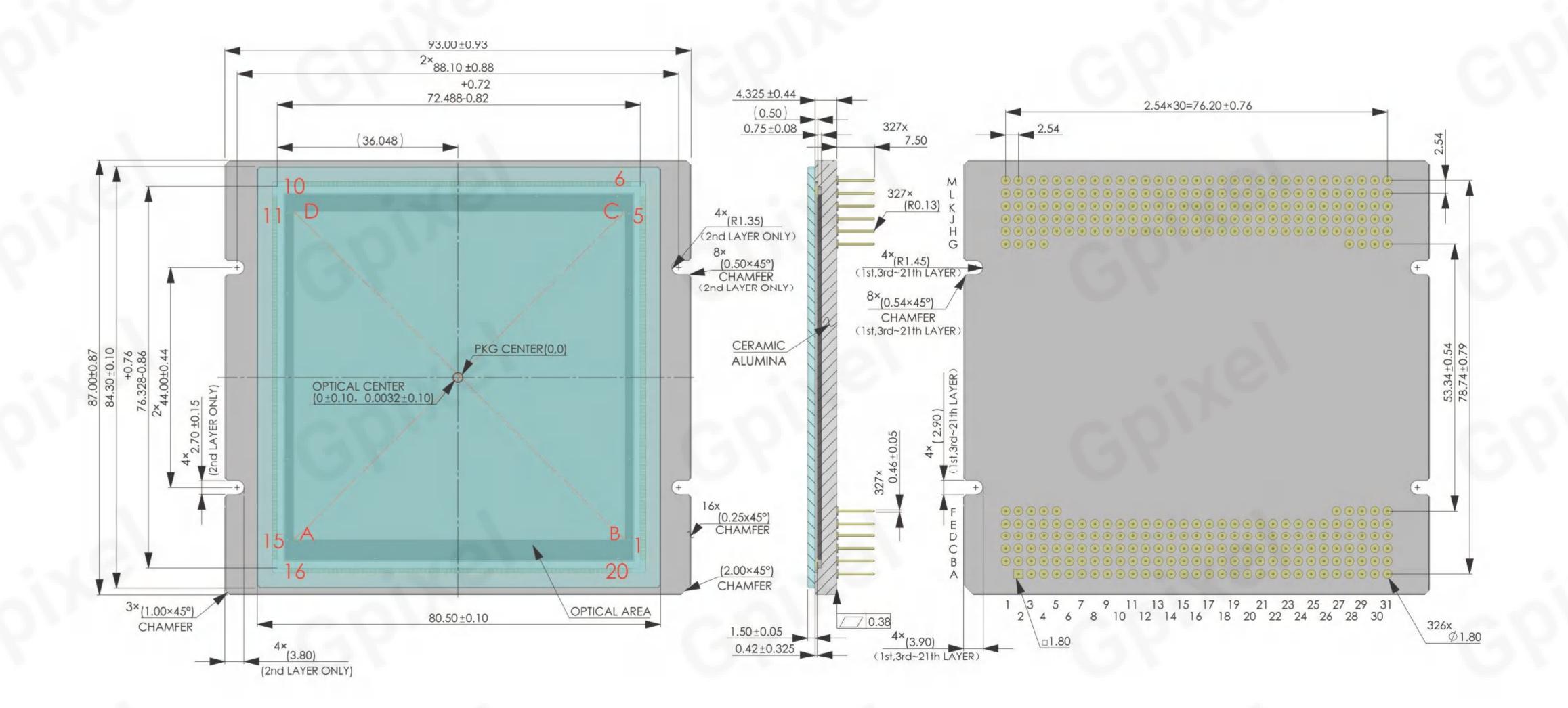· High Sensitivity, High Dynamic Range
· Large Target Surface, 100 Million Ultra-High Resolution
· Maximum Frame rate: 13.5 fps
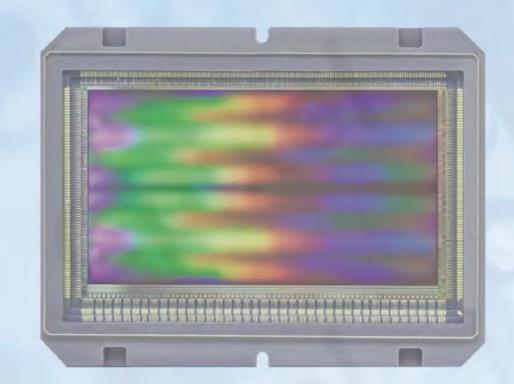
Application

·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

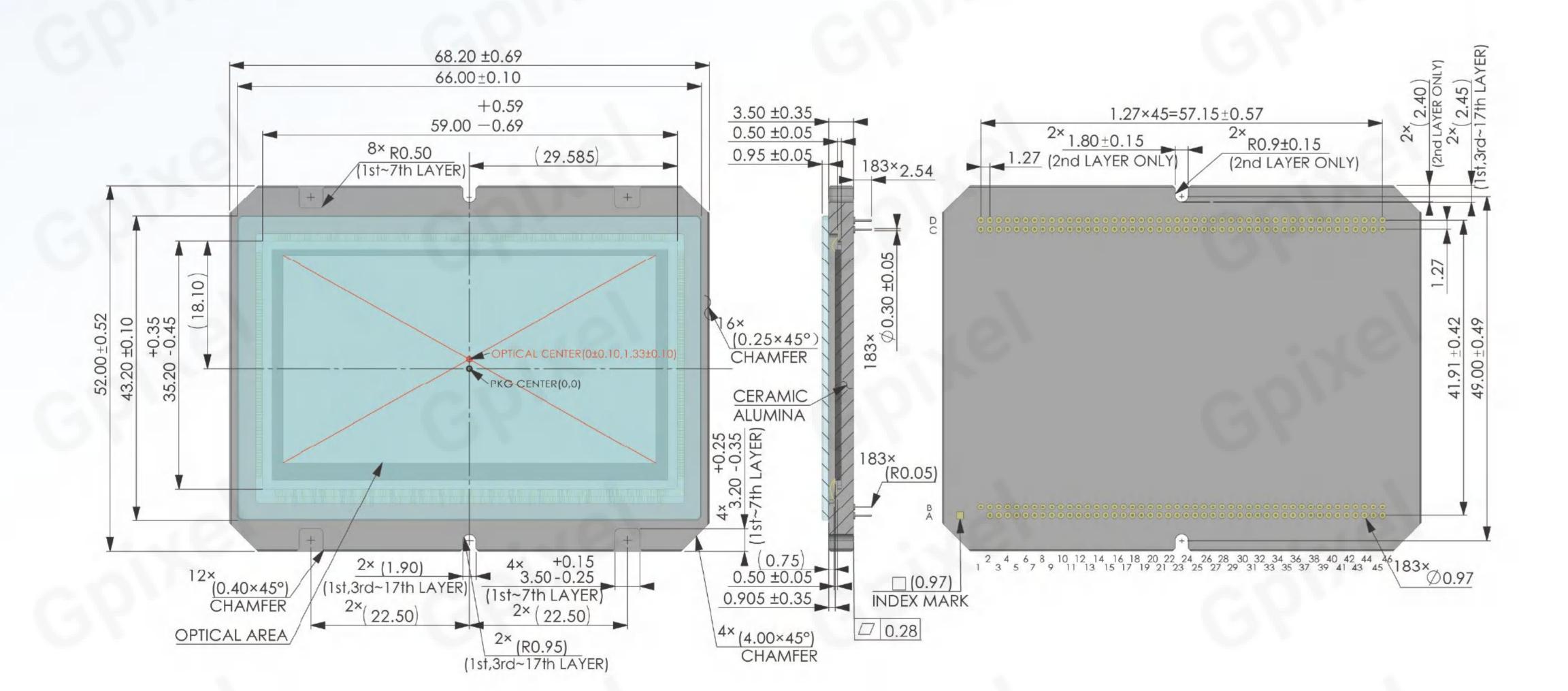· 3.2 µm Global Shutter Pixel
· large Image Plane of 60.6 mm Diagonal
· Low Noise Global Shutter
· High Data Throughput up to 960 Mbps
· High Speed and Good PLS

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.

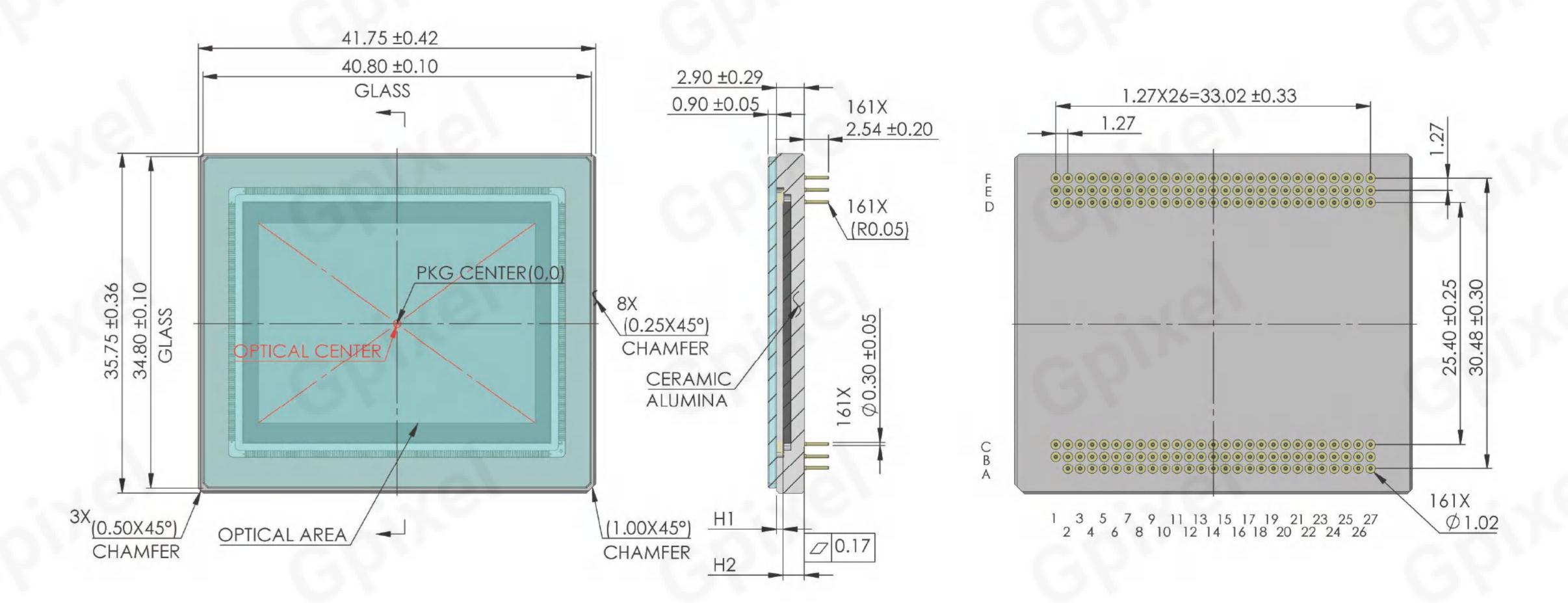### Key Features and Benefits

· 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)
Dark Current		Max. SNR	37.3 dB (14 bit,PGA gain 1.0x),37.0 dB (12 bit,PGA gain 1.0x)
Dark Current		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

Gpixel

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.

GSPRINT6502BSI   GSPRINT4502   GSPRINT4510   GSPRINT5514BSI

GSPRINT4521

Product Family Features

• Global Shutter   • High speed

• 2 MP-21MP resolution   • Low noise

Applications

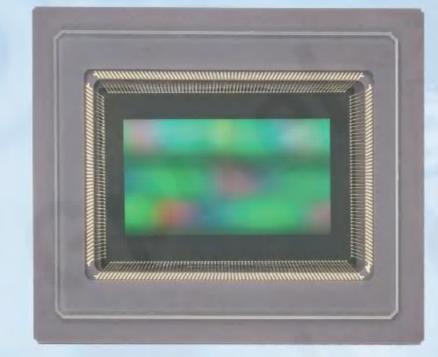• Automation & Inspection   • High-throughput scientific imaging

• Slow motion video   • 3D Laser Profiling

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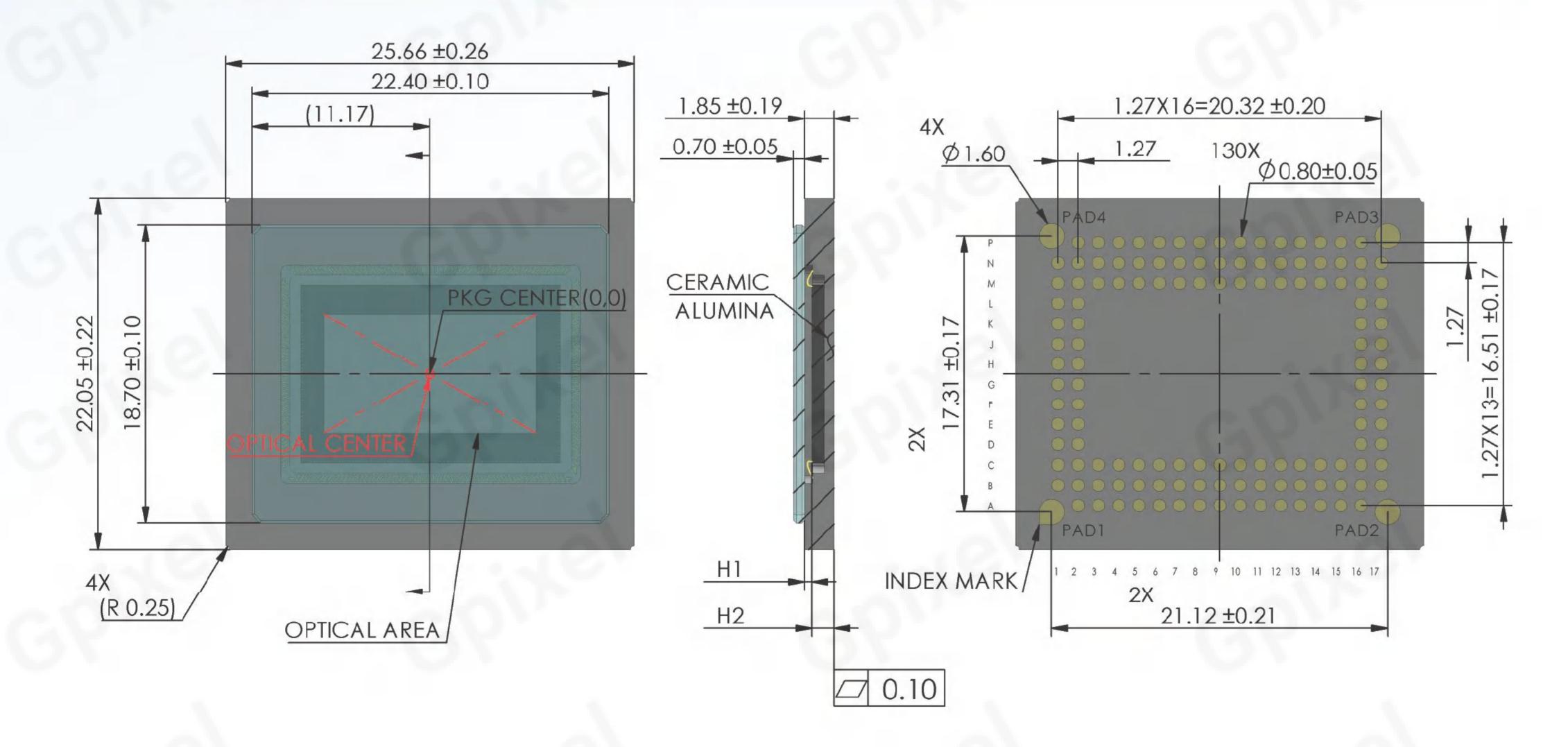
· BSI   · Multi-Slope HDR   · High Frame Rate   · Broad AR

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.
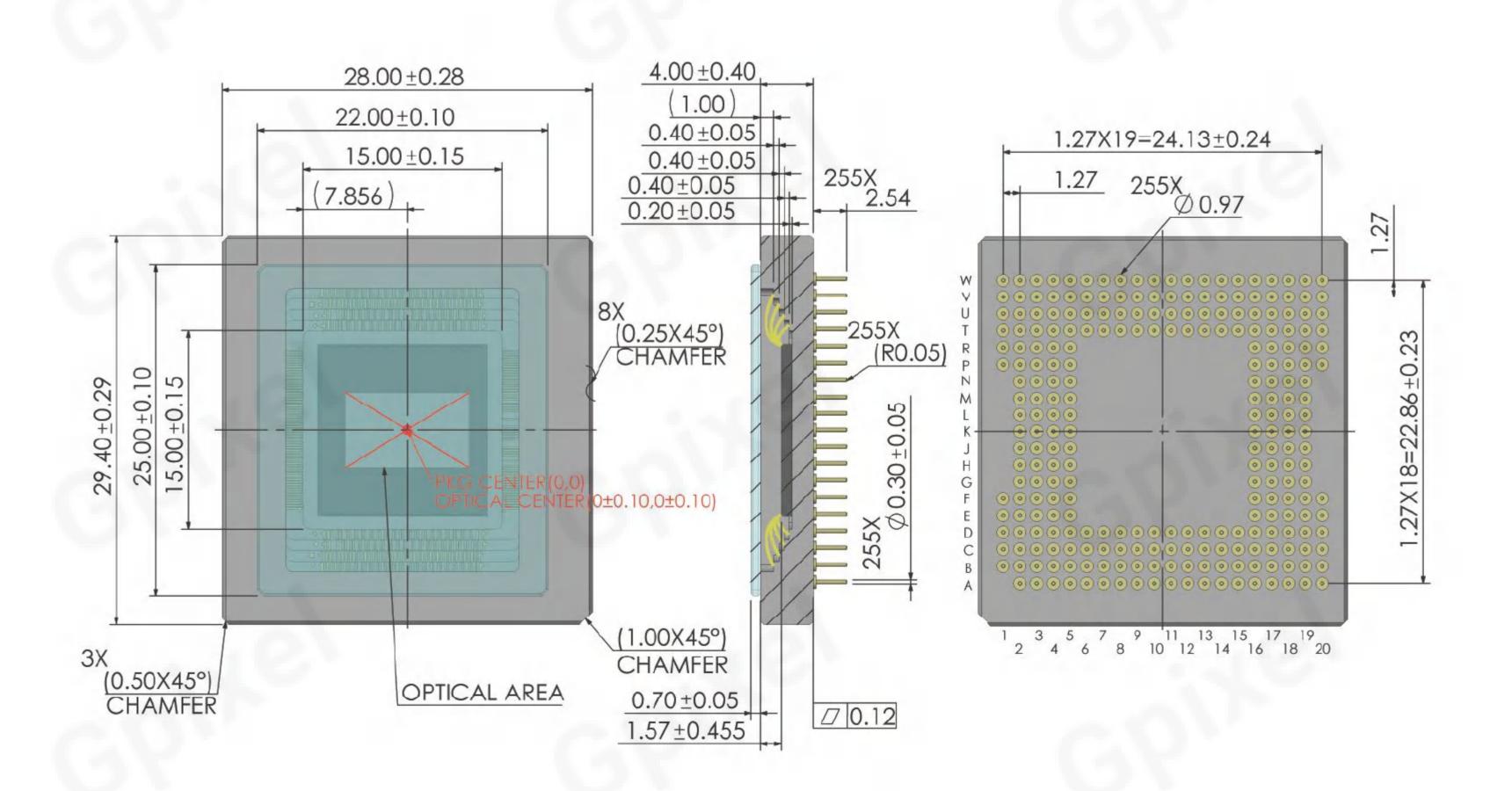
Key Features and Benefits

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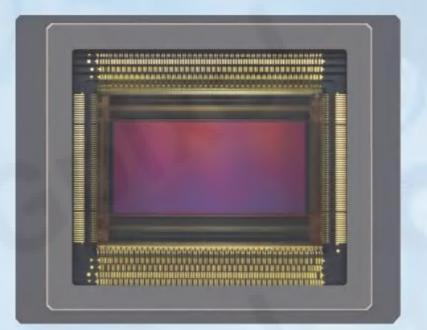
Application

·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	Photosensive 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℃)	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

Gpixel

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℃)	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

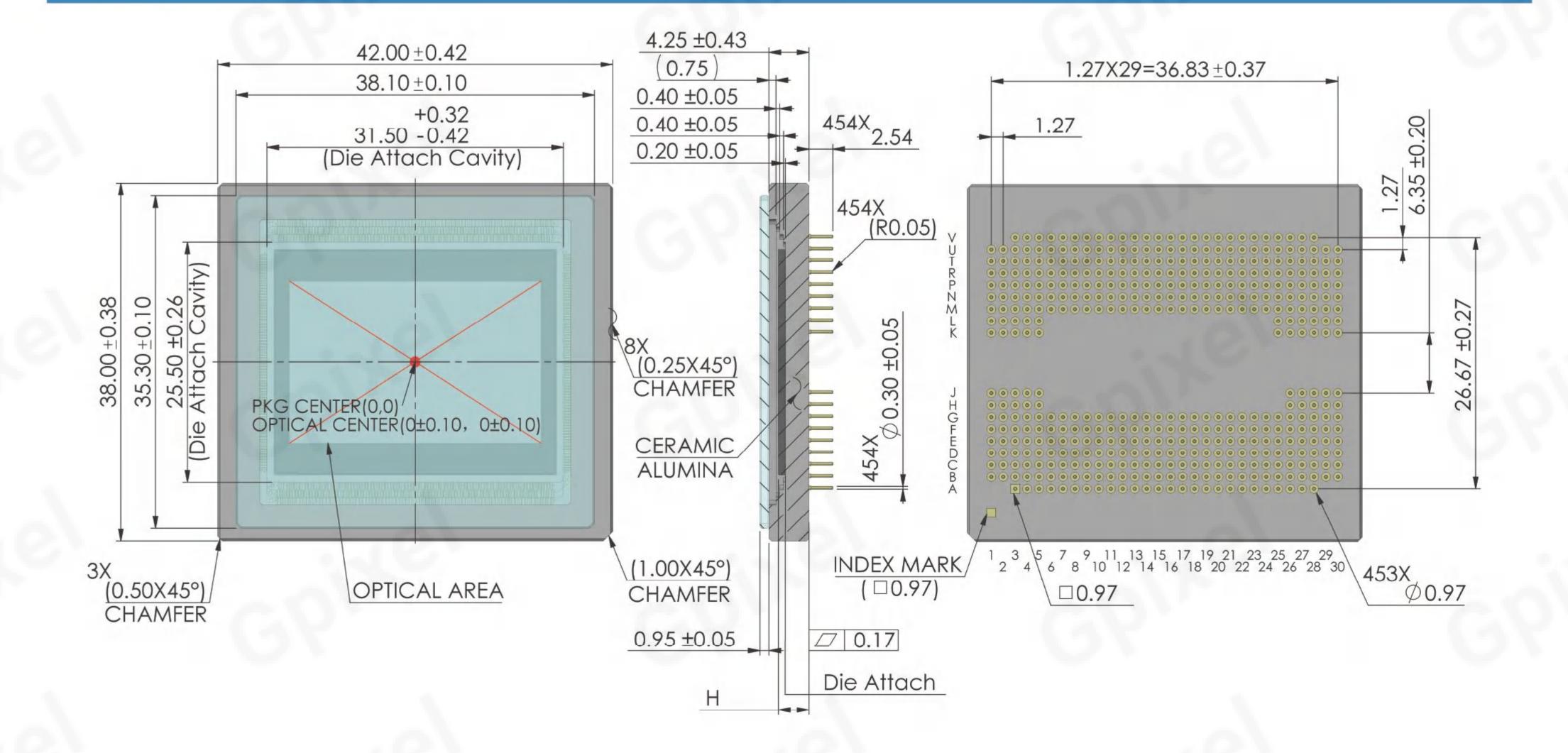· Back Side Illuminated (BSI) Global Shutter Pixels
· High Speed: Up to 670 fps (10 bit)
· High Sensitivity
· 86% QE (510nm)

Application
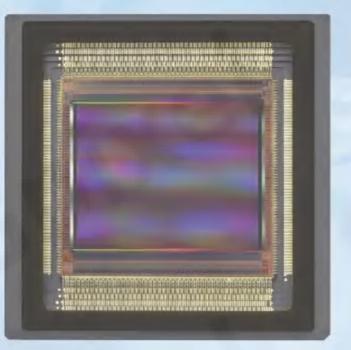
·Automation & Inspection
·Cinematography
·High Speed Imaging

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)
Dark Current	54.2 e⁻/pixel/s (60℃)	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)	Dynamic Range	61.9 dB (10 bit),66.4 dB (12 bit)
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

Gpixel

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.
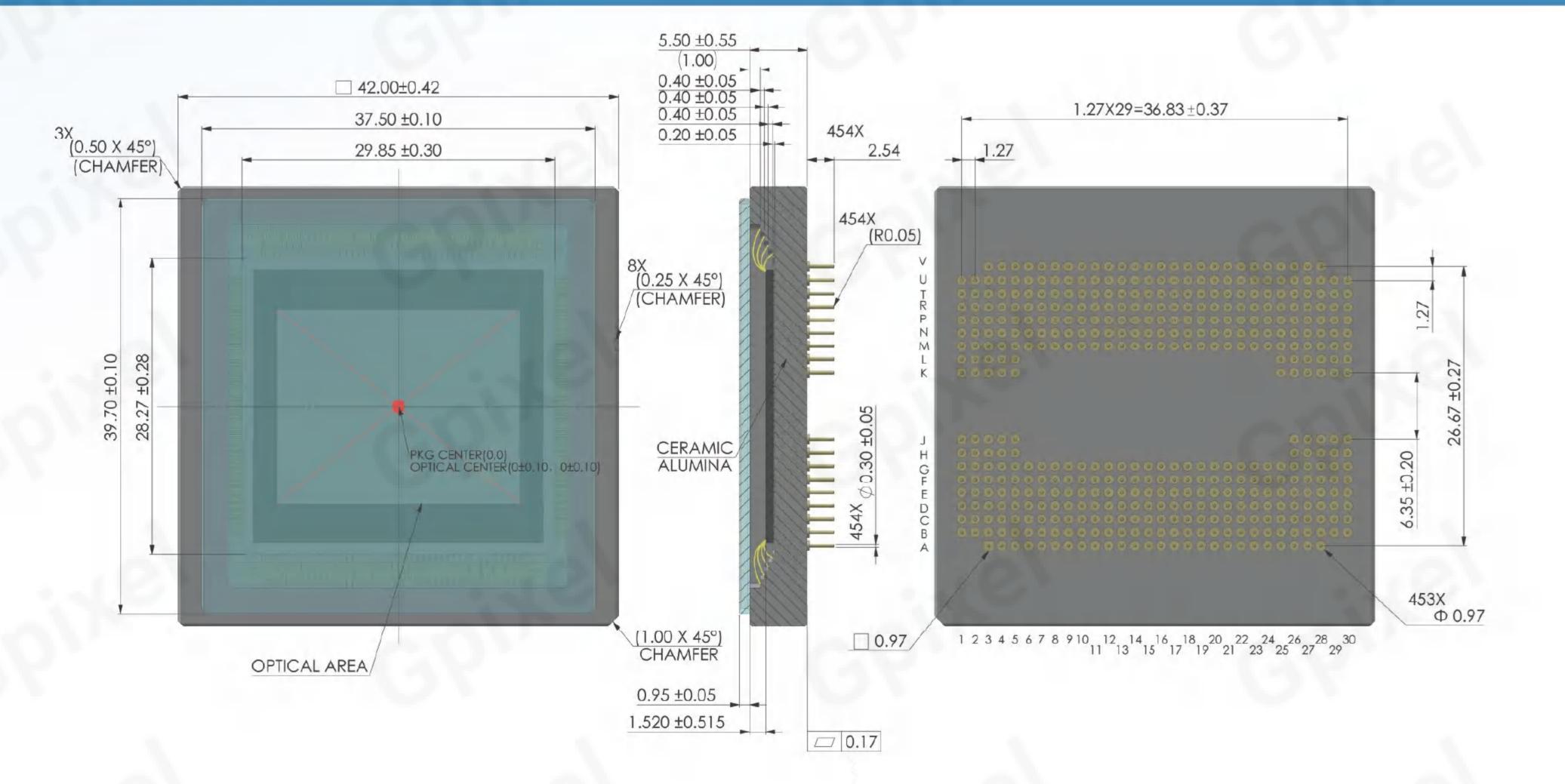
Key Features and Benefits

· 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

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	GSENSE4040	GSENSE4040BSI
GSENSE6060	GSENSE6060BSI	GSENSE3243BSI	GSENSE6510BSI
GSENSE1517BSI	GSENSE1081BSI	GSENSE400BSI	

Product Family Features

- Large Format
- High Dynamic
- BSI
- Low Noise

Applications

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

Gpixel
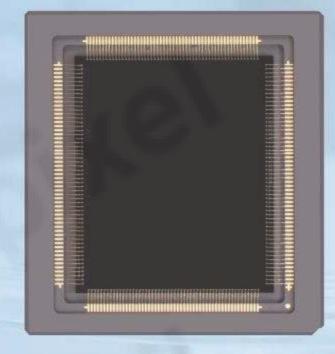
GSENSE2020BSI

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.

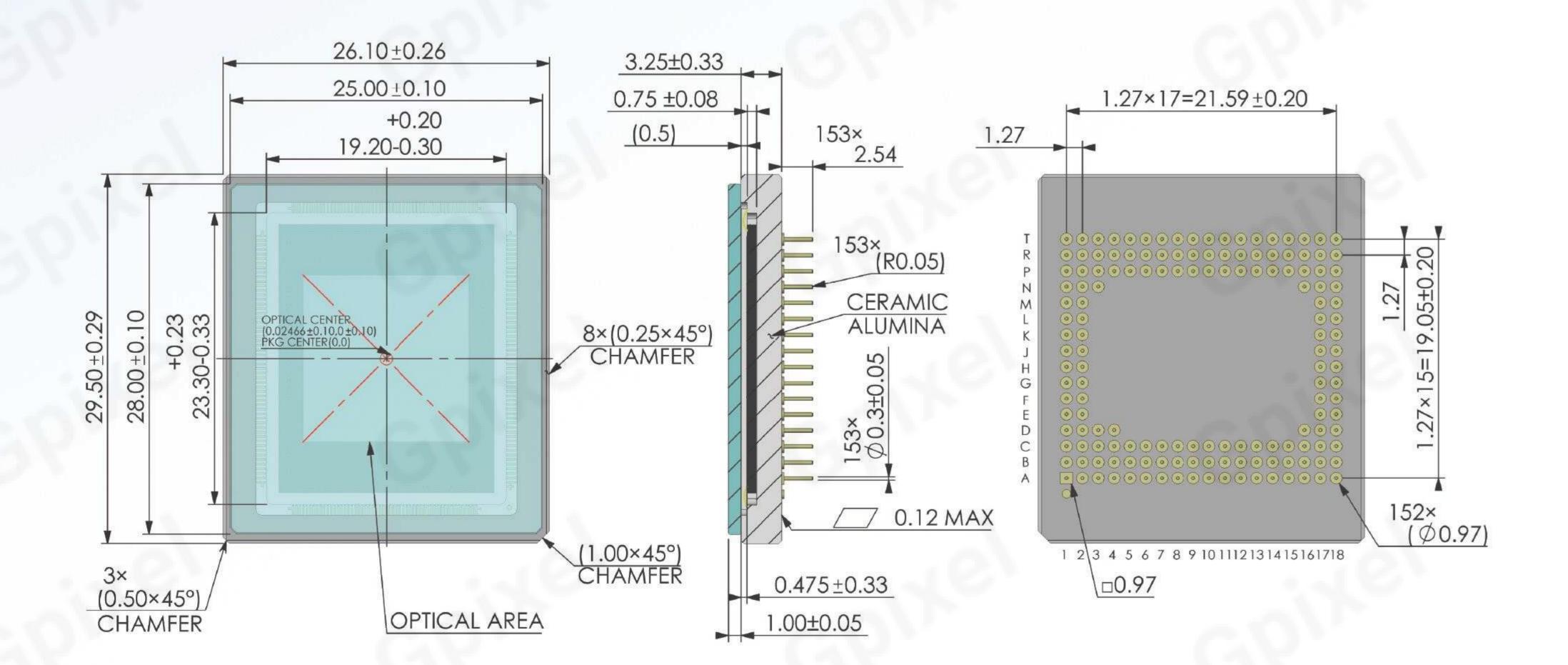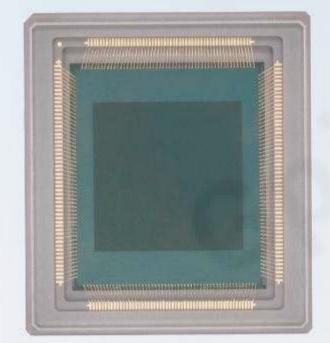### Key Features and Benefits
· Scientific BSI CMOS
· Peak QE of 95%
· Low Noise, Low Power for Long Exposure Modes

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℃)	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, the sensor achieves a read noise floor of 0.43 e⁻ rms at 100 fps while delivering 91 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 a read noise of 0.7 e⁻ at its maximum frame rate of 300 fps. Under -30℃ die temperature, sensor dark current is only 0.004 e⁻/s/p. The sensor package is mechanically identical to GSENSE2020BSI for easy integration into existing camera platforms.

Key Features and Benefits
· Max Frame Rate 300 fps
· Low Noise 0.43 e⁻ rms
· Dual-Gain HDR
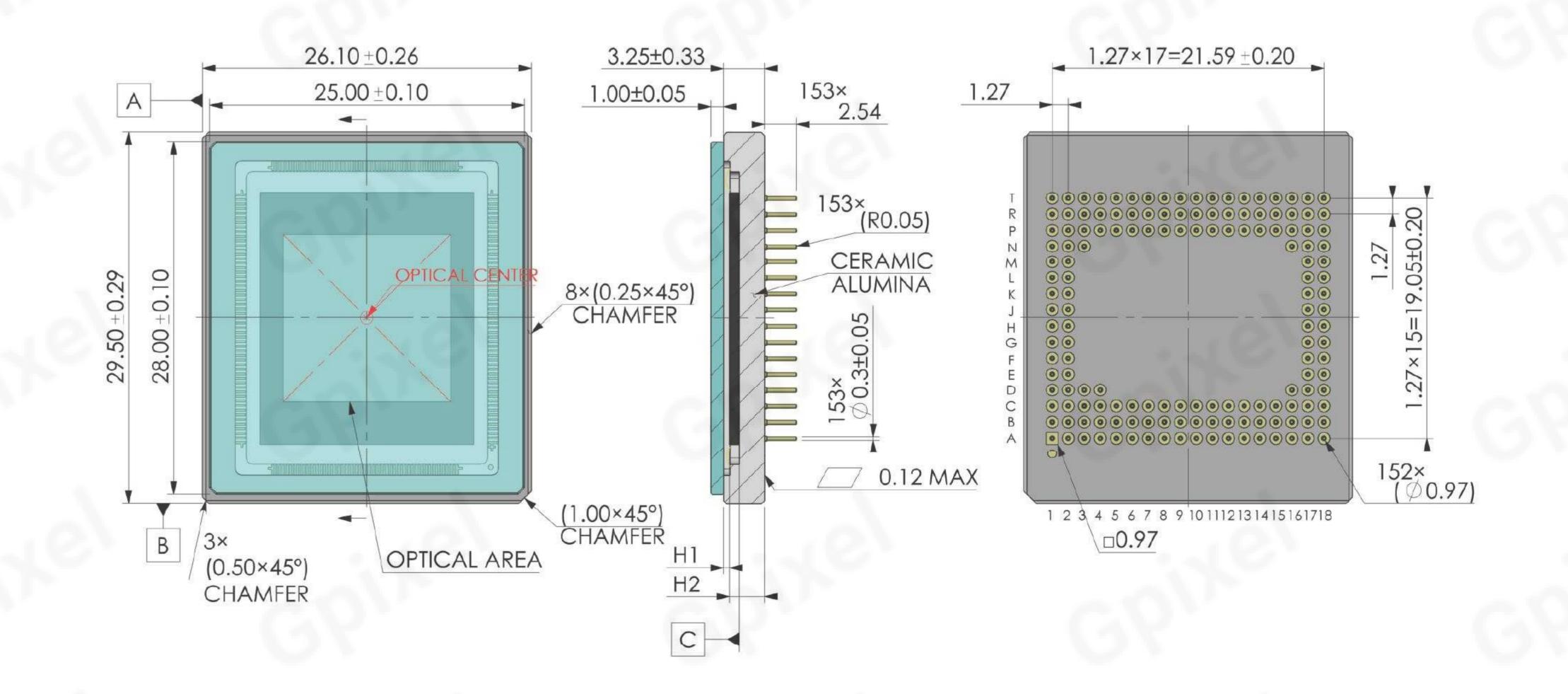· Square Optical Format
· QE 95% (450 nm)
· Average QE >50% (200~300 nm)

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	15 ke⁻	Temporal Noise	0.8 e⁻(median) / 0.85 e⁻(rms) (HDR) 0.7 e⁻(median) / 0.75 e⁻(rms) (STD)
Dark Current	0.004 e⁻/pixel/s (-30℃)	Dynamic Range	85 dB (median) / 84 dB (rms)(HDR)
Max Frame Rate	170 fps (HDR),300 fps (STD)	Output Format	16 x Sub-LVDS
Max. Data Rate	19.2 Gbps	ADC	12 bit
Chroma	Mono	Power Consumption	1.6 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

GSENSE4040

16.8MP SCIENTIFIC CMOS IMAGE SENSOR

GSENSE4040 is a 16.8 Mega pixel resolution CMOS image sensor. Featured with five transistor (5T) HDR pixel design on a 9 μm pitch, the sensor could achieve 3.7 e⁻ dark noise and 74.2 ke⁻ FWC simultaneously in HDR mode. GSENSE4040's maximum frame rate (will full resolution) is 24 fps in HDR mode. It supports 2 x 2 charge binning mode in which x 4 frame rate is achieved. These features make GSENSE4040 an ideal image sensor for various applications.

GSENSE4040 is offered in two variations: CMN and CMT. CMN is a monochrome sensor without microlens array and protected by a removable glass lid, which is ideal for X-ray imaging, charged particle detection, and micro-CT application; while CMT is a monochrome sensor with microlens array and sealed with D263® T lids with anti-reflective coating on both sides, ideal for medical imaging and astronomy applications.

Key Features and Benefits

· Peak QE of 73.9%   · Large Format
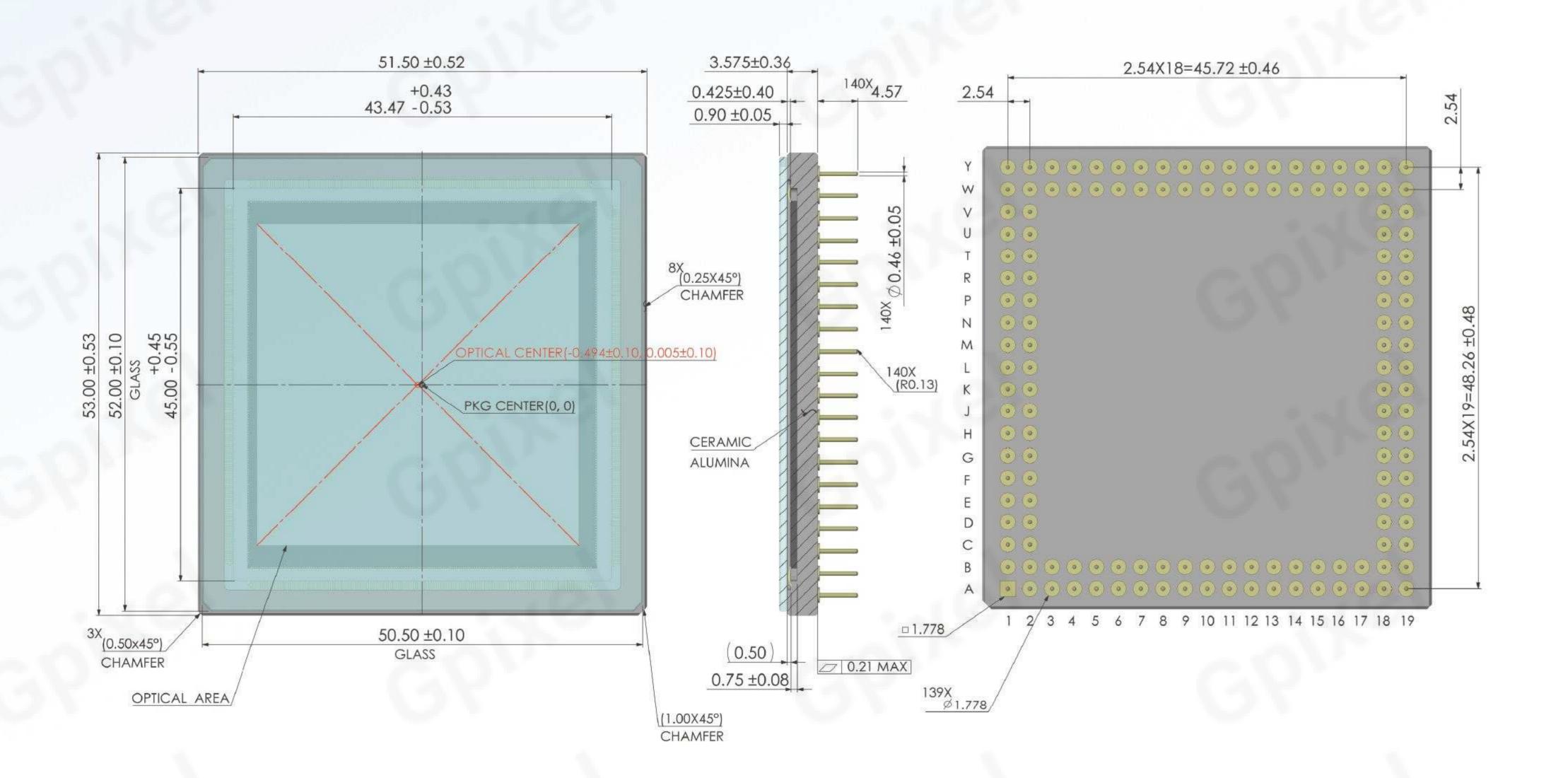
· High Dynamic Range

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	73.9% (600 nm)
Full Well Capacity	74.2 ke⁻	Temporal Noise	3.7 e⁻
Dark Current	12.2 e⁻/pixel/s (25°C)	Dynamic Range	86 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
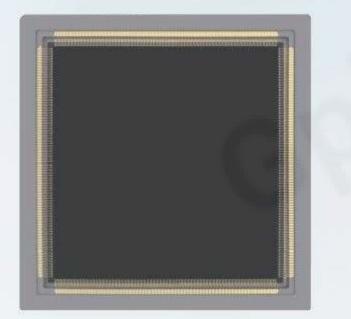
GSENSE4040BSI

16.8MP 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.
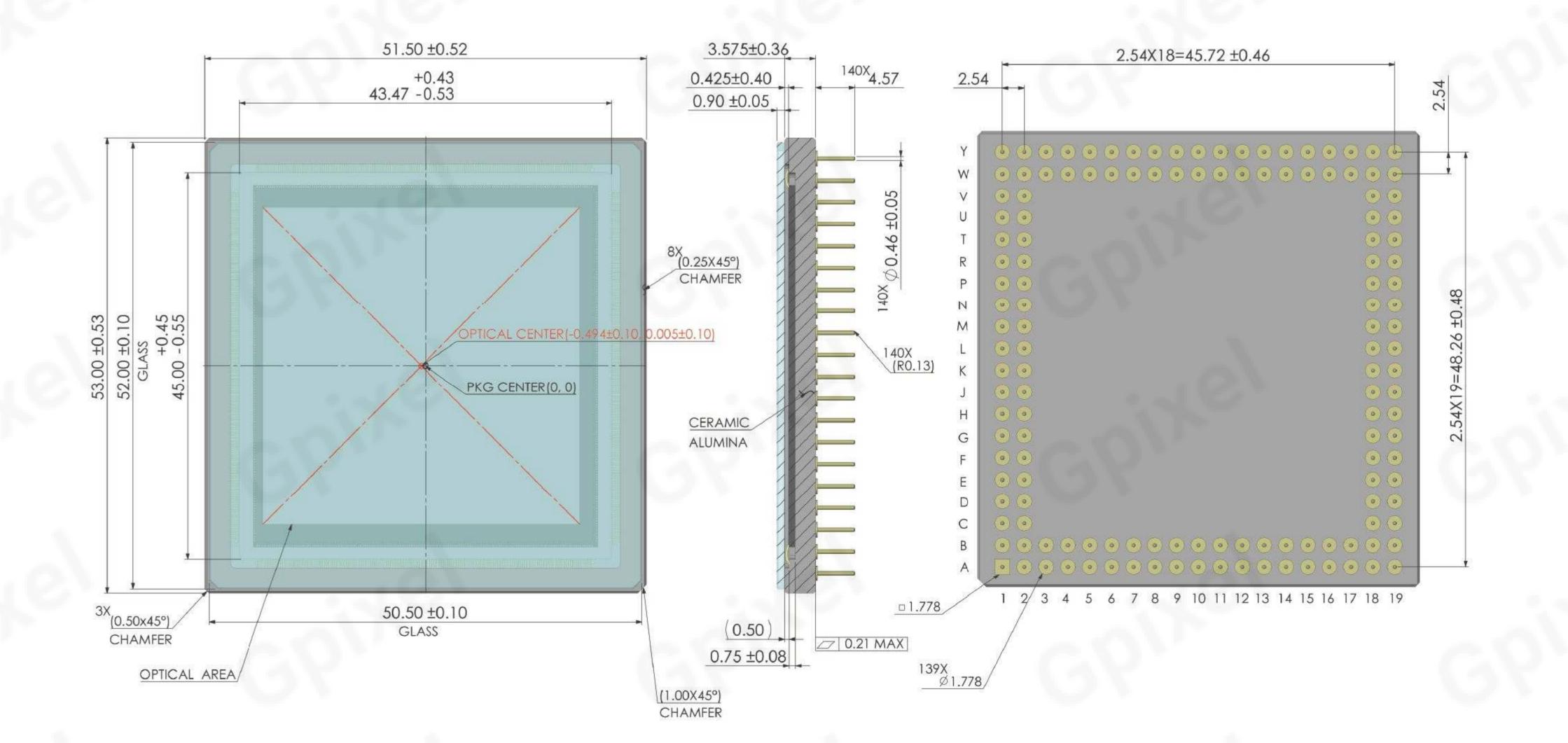
Key Features and Benefits

· 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

Gpixel

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.

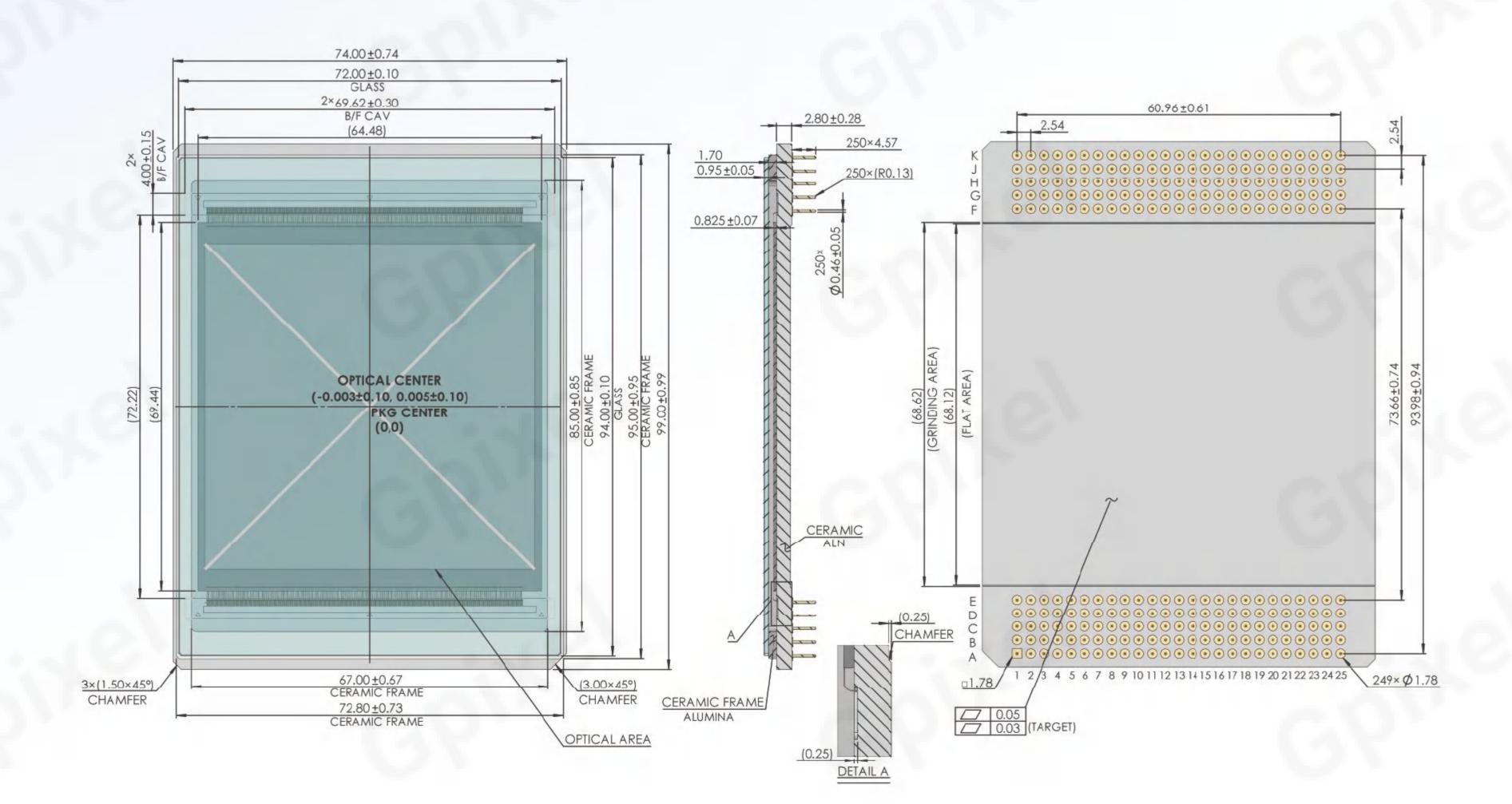### Key Features and Benefits
· Large Format Scientific CMOS   · Peak QE of 71.5%
· 14 bit with CMS

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℃)	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.
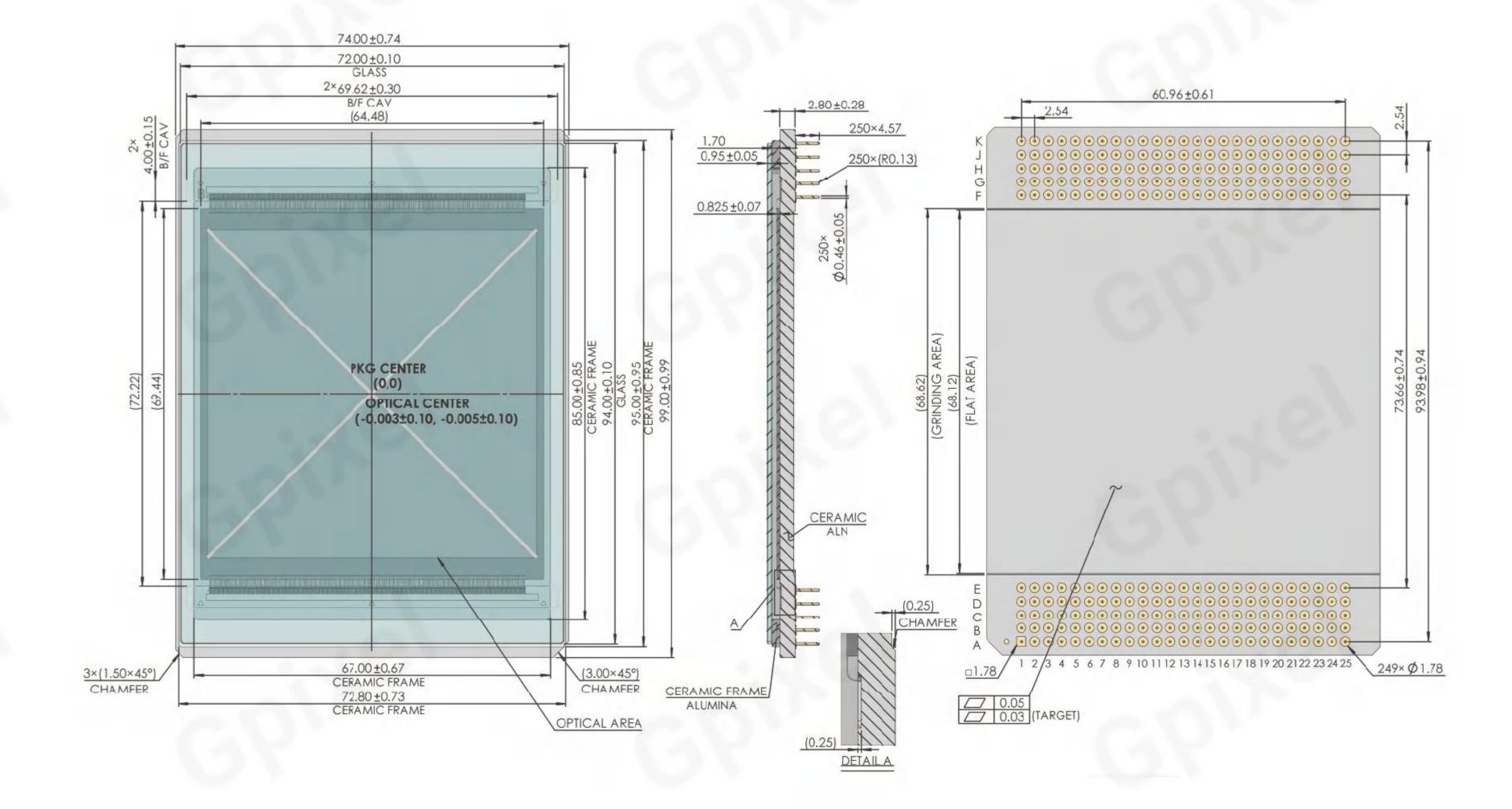
Key Features and Benefits
· Large Format BSI Scientific CMOS   · Peak QE of 95%
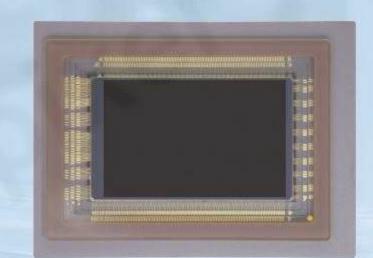· 14 bit with CMS

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℃)	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.
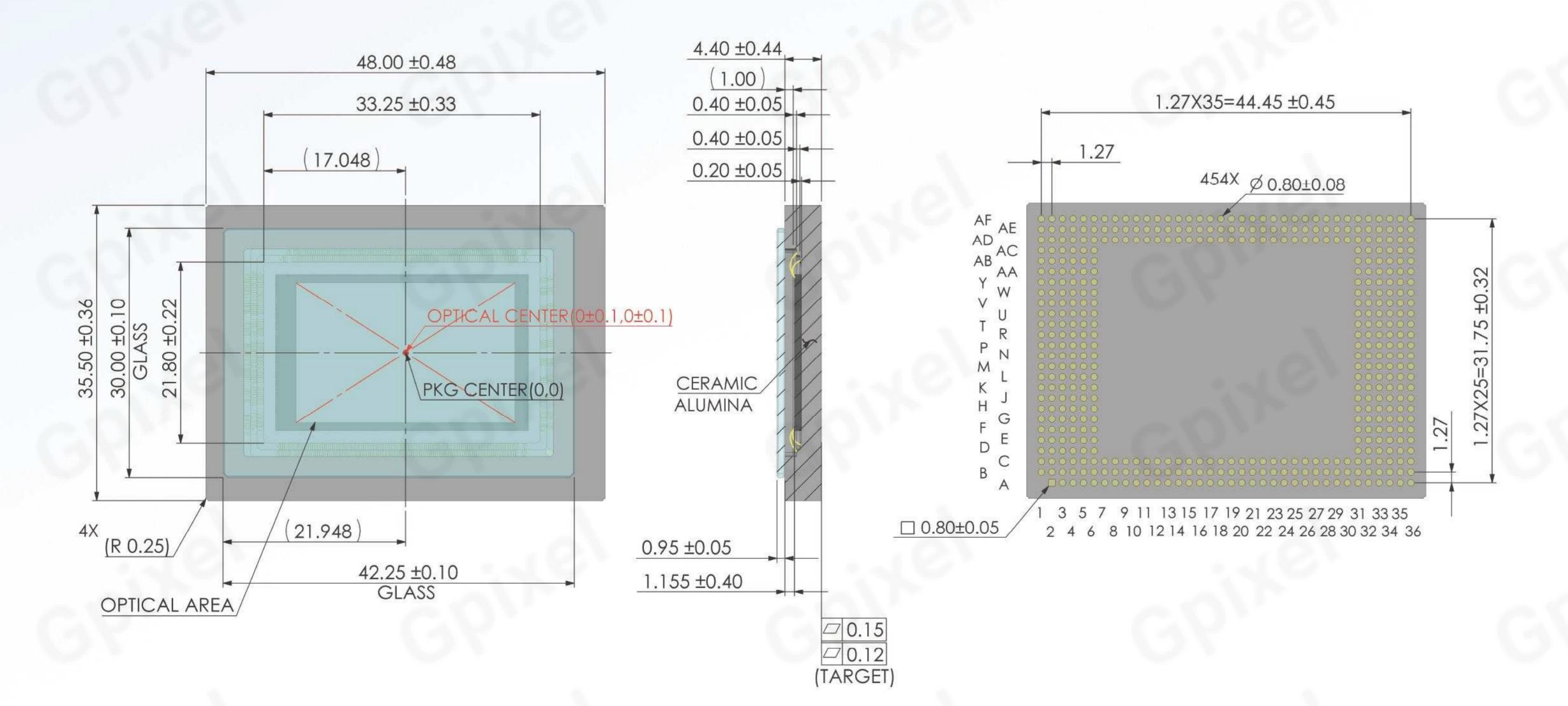
Key Features and Benefits
- Stacked BSI
- High Sensitivity
- Low Noise
- High Dynamic Range
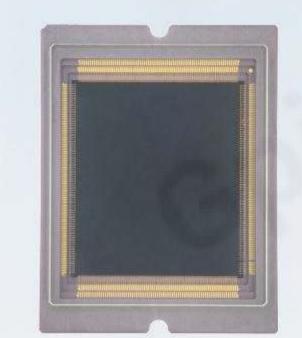- Multi-Slope HDR
- Dual Gain HDR

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.
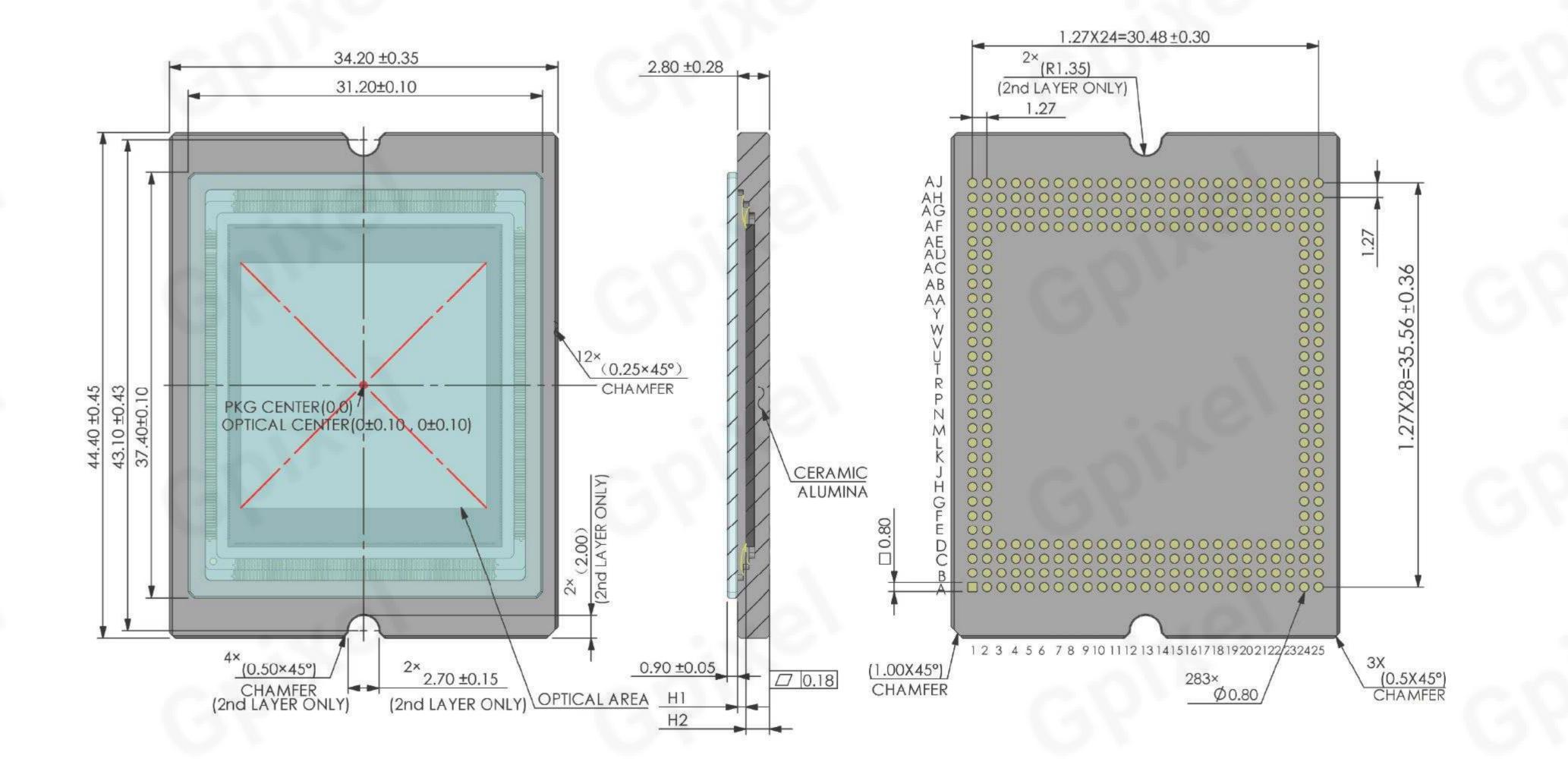
Key features and Benefits
- BSI
- High Sensitivity
- Low Noise
- Dual Gain HDR
- High Frame Rate

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

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 Al₂O₃ IPGA ceramic package is offered with removable cover glass for easy assembly into cooled camera systems.

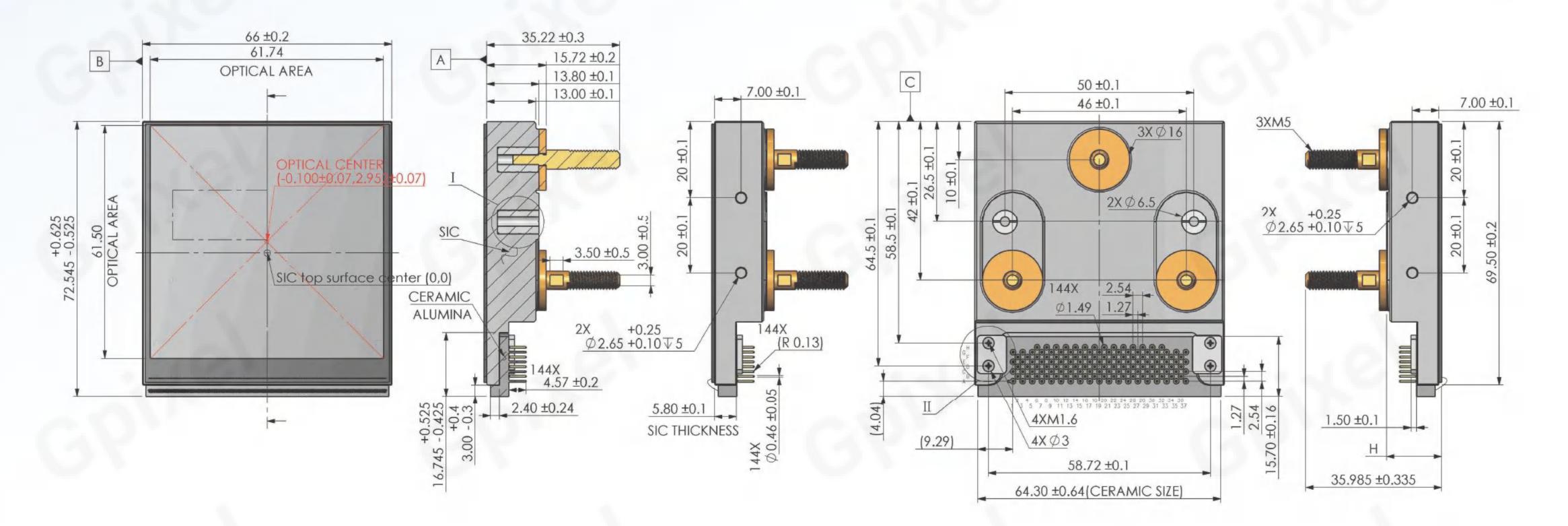### Key Features and Benefits

· 92% Peak QE (450 nm)

· On-chip 16 bit Column-Parallel ADC

· 3-Side Buttable with SiC Package

· Low Noise with 1.2 e⁻

· Low Dark Current: < 0.008 e⁻/s/pix (-70 °C)

· 61 mm SQ. Large Format Sensor with Frame Rate up to 4 fps

· Anti-Glowing

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 Al₂O₃ 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.
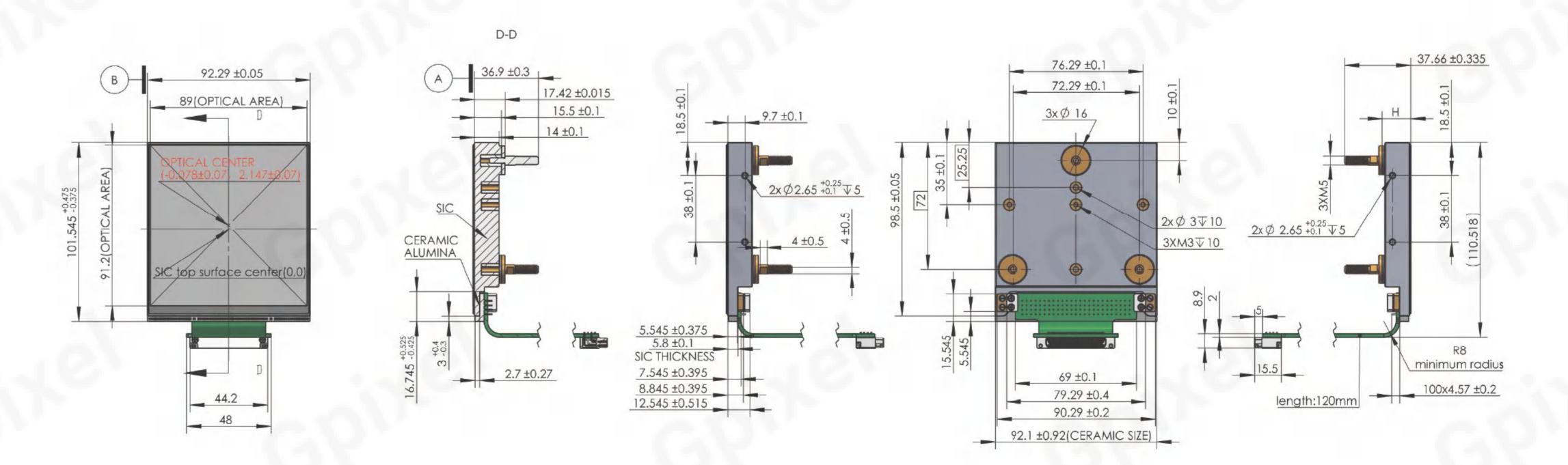
Key Features and Benefits

· 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
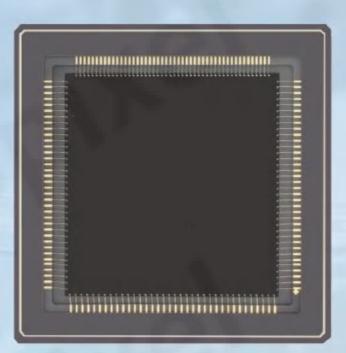
Specifications			
Nr of Active Pixels	8900(H) x 9120(V)	Optical Format	7.96"
Pixel Size	10 µm x 10 µm	Photosensitive Area	89.00 mm x 91.20 mm
Shutter Type	Rolling Shutter	Peak QE	97.11% (610 nm)
Full Well Capacity	90.68 ke⁻	Temporal Noise	5.35 e⁻
Dark Current	0.00373 e⁻/pixel/s (-70°C)	Dynamic Range	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

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℃. 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.
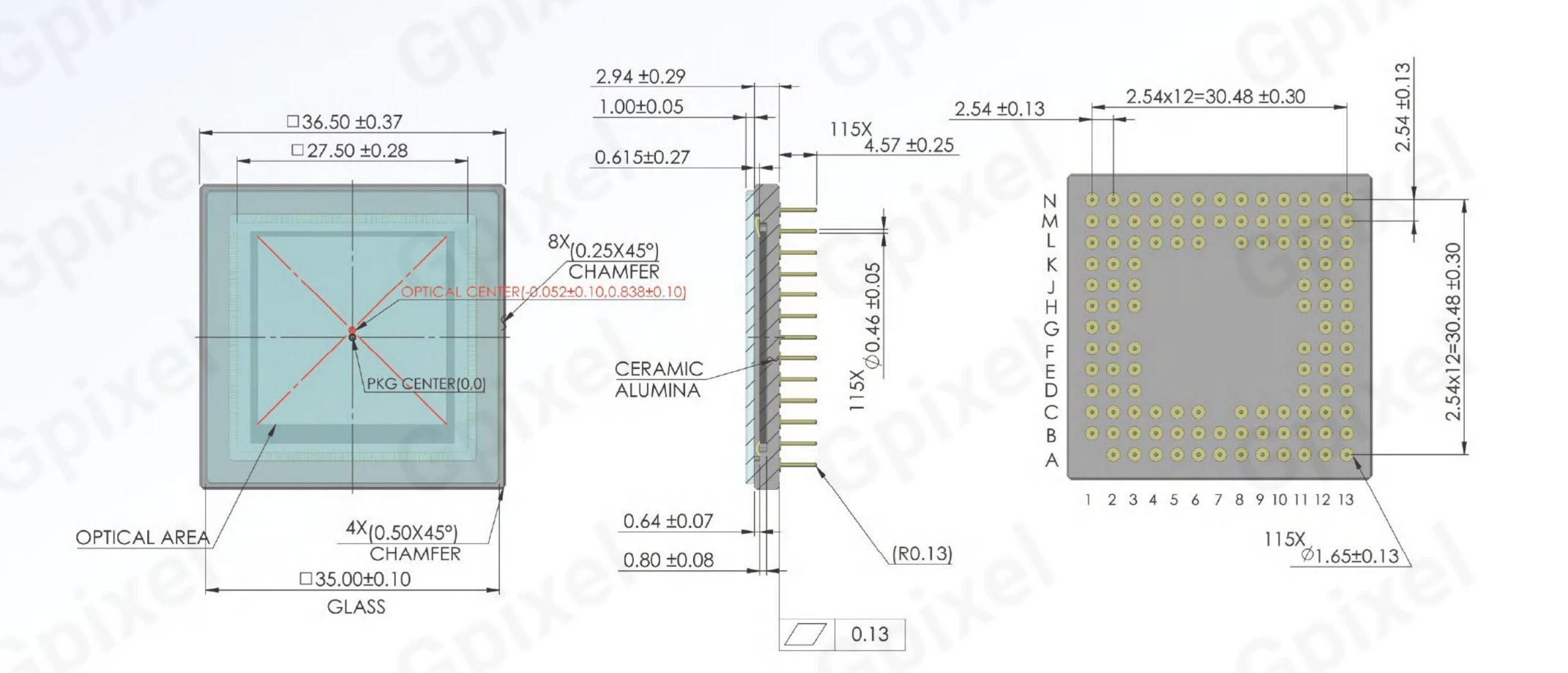
Key Features and Benefits

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

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

Gpixel

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   GLUX1605BSI

Product Family Features

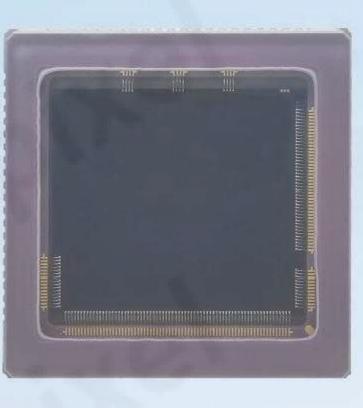• High Sensitivity   • HDR   • Low Noise   • BSI

Applications

• Scientific imaging   • Low-light Monitoring

• Ultraviolet industrial inspection

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

· High Dynamic Range

· < 1 e⁻ Readout Noise

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)

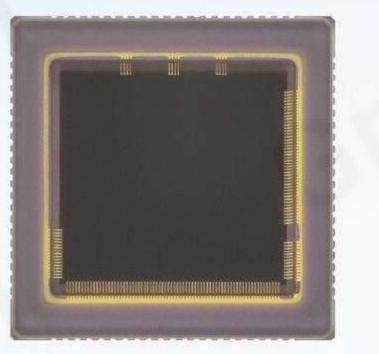| Package Drawing |
|---|
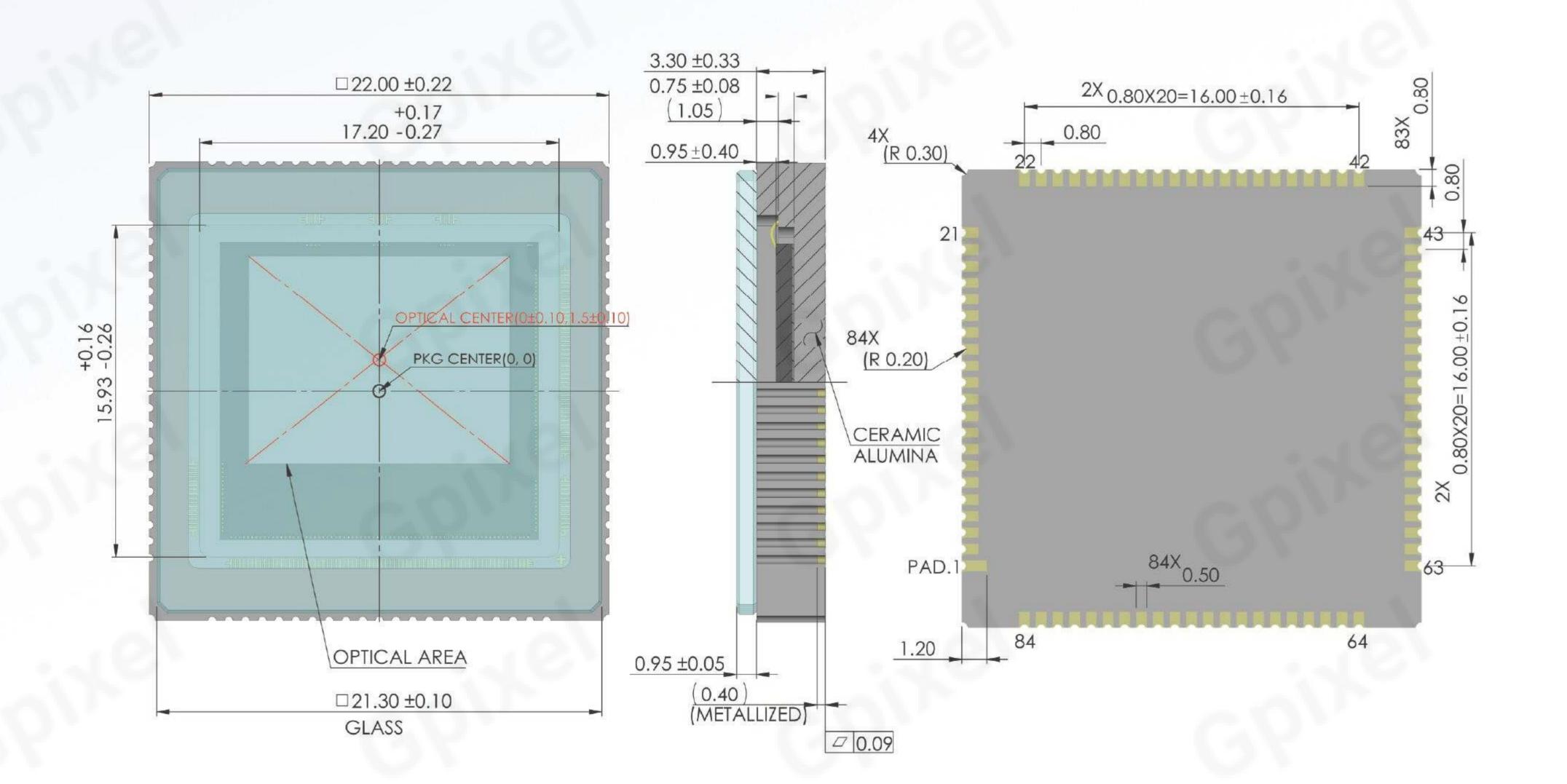
GLUX1605BSI

0.5MP BSI CMOS IMAGE SENSOR

GLUX1605BSI is a 0.5 Megapixel resolution BSI CMOS image sensor with 16 µm x 16 µm pixel size. The sensor operates in electronic rolling shutter in two operation modes: low noise mode, and HDR mode. User can choose which to operate in camera based on practical application's requirement on full well capacity, noise, dynamic range, etc. It integrates two types of output channels(Sub-LVDS and MIPI) and on-chip sequencer, which enables the sensor development less effort and hardware resource. GLUX1605BSI is pin compatible with GLUX9701BSI (1inch SXGA of GLUX image sensor family), users can operate both sensors with one set of PCB design.
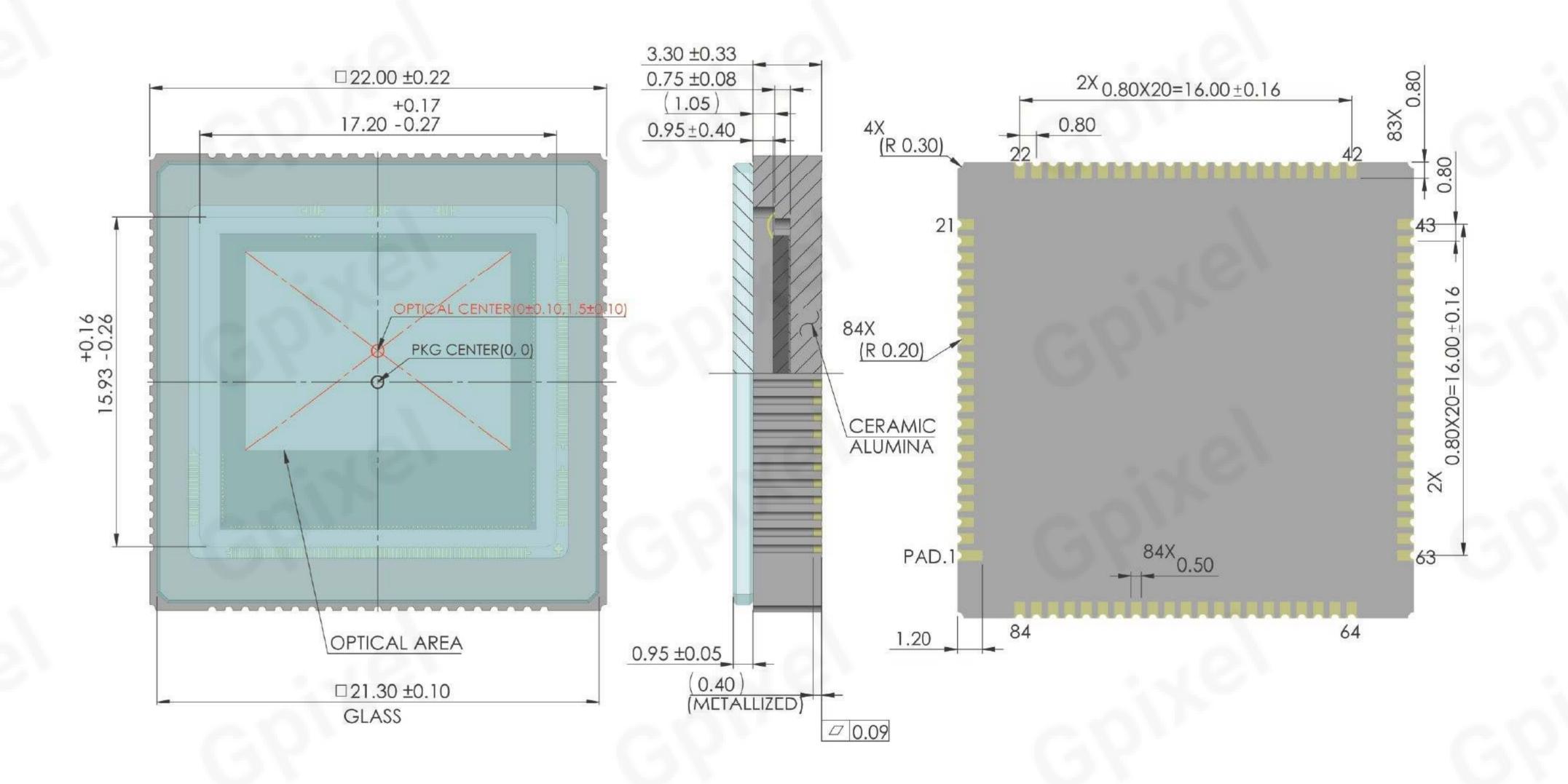
Key Features and Benefits

· Operation Mode – HDR Mode & Low Noise Mode

· On-chip 12 bit Column-Parallel ADC

· Optical Format: 1 inch

· On-chip PLL

· On-chip Sequencer

Application

Biosciences   Surveillance

Specifications			
Nr of Active Pixels	800(H) x 600(V)	Optical Format	1"
Pixel Size	16 µm x 16 µm	Photosensitive Area	12.8 mm x 9.6 mm
Shutter Type	Rolling Shutter	Peak QE	90.7% (550 nm)
Full Well Capacity	73.4 ke⁻	Dark Current	0.22 e⁻/pixel/s (-33°C)
Temporal Noise	0.9 e⁻ (Low Noise)	Max Frame Rate	60 fps
Dynamic Range	93 dB (HDR)	Max. Data Rate	1.782 Gbps
Output Format	4 ch Sub-LVDS,4 ch MIPI	ADC	12 bit
Chroma	Mono	Power Consumption	201 mW (HDR),83 mW (Low Noise)
Supply Voltage	3.3 V(analog),1.75 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

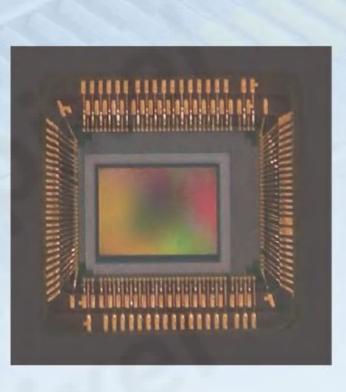• Industrial Automation

• Security monitoring

• Disorderly Grasping

• Logistics

• 3D measurement

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

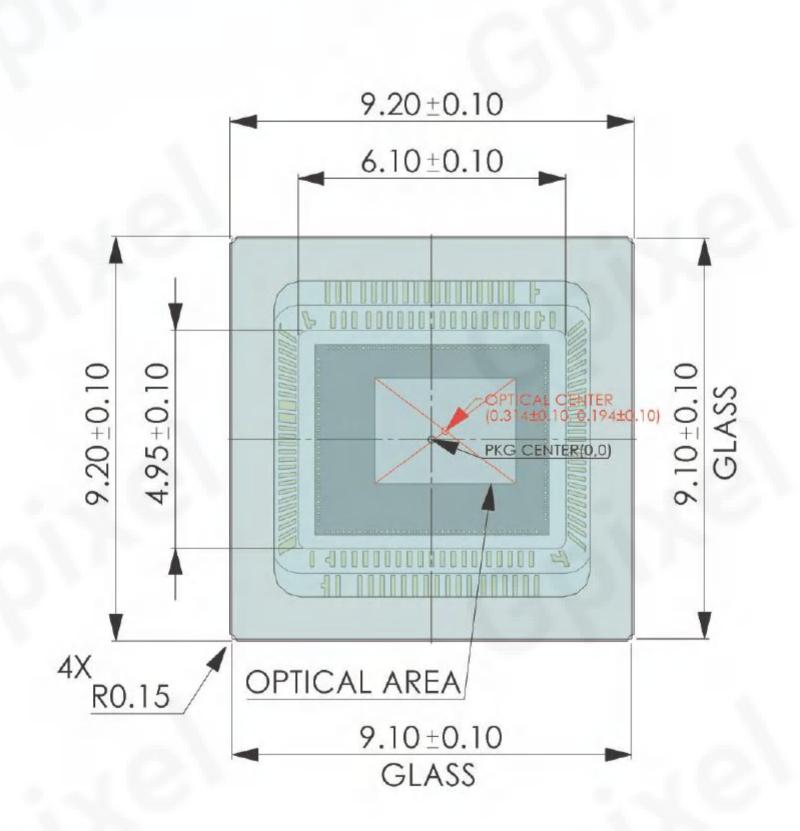· Machine Vision · Automated Guided Vehicle · Industrial Automation
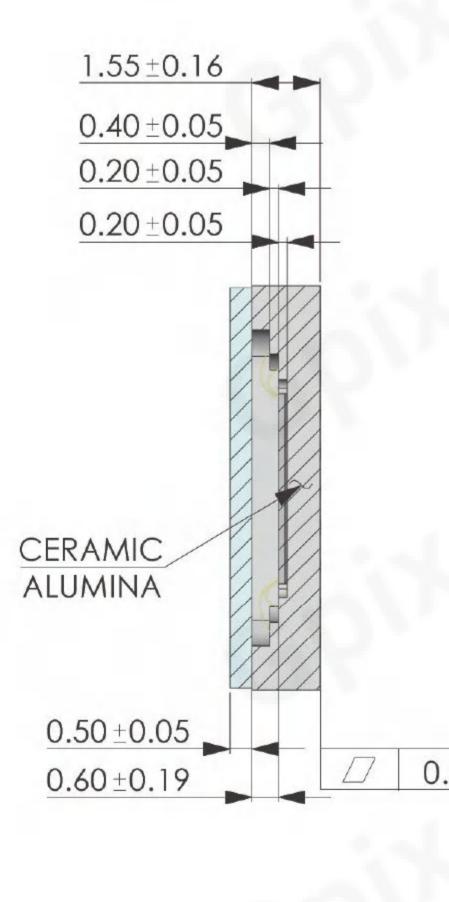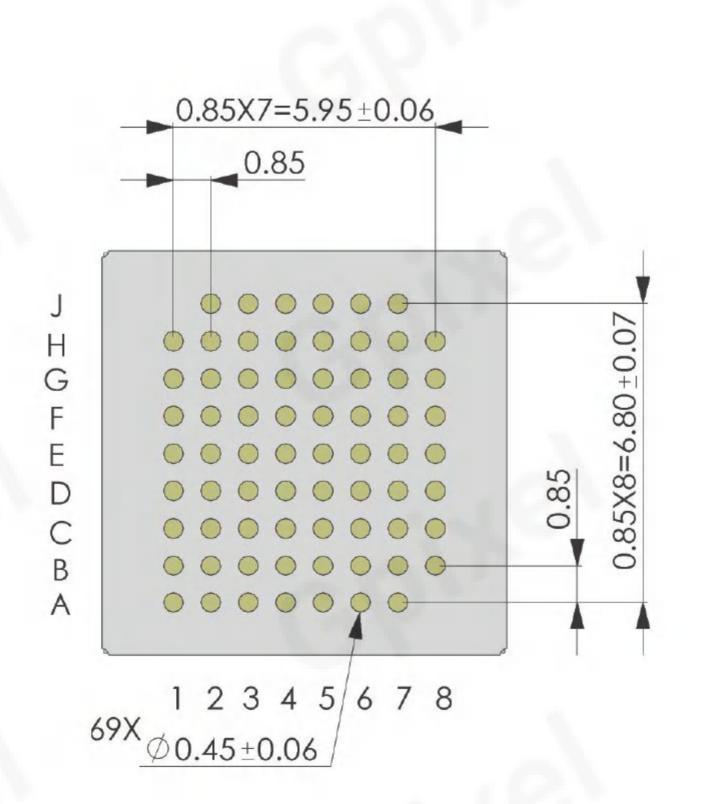· Bin Picking · Logistics · Smart Factory

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

Gpixel

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   • High Sensitivity
- Low Noise   • 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
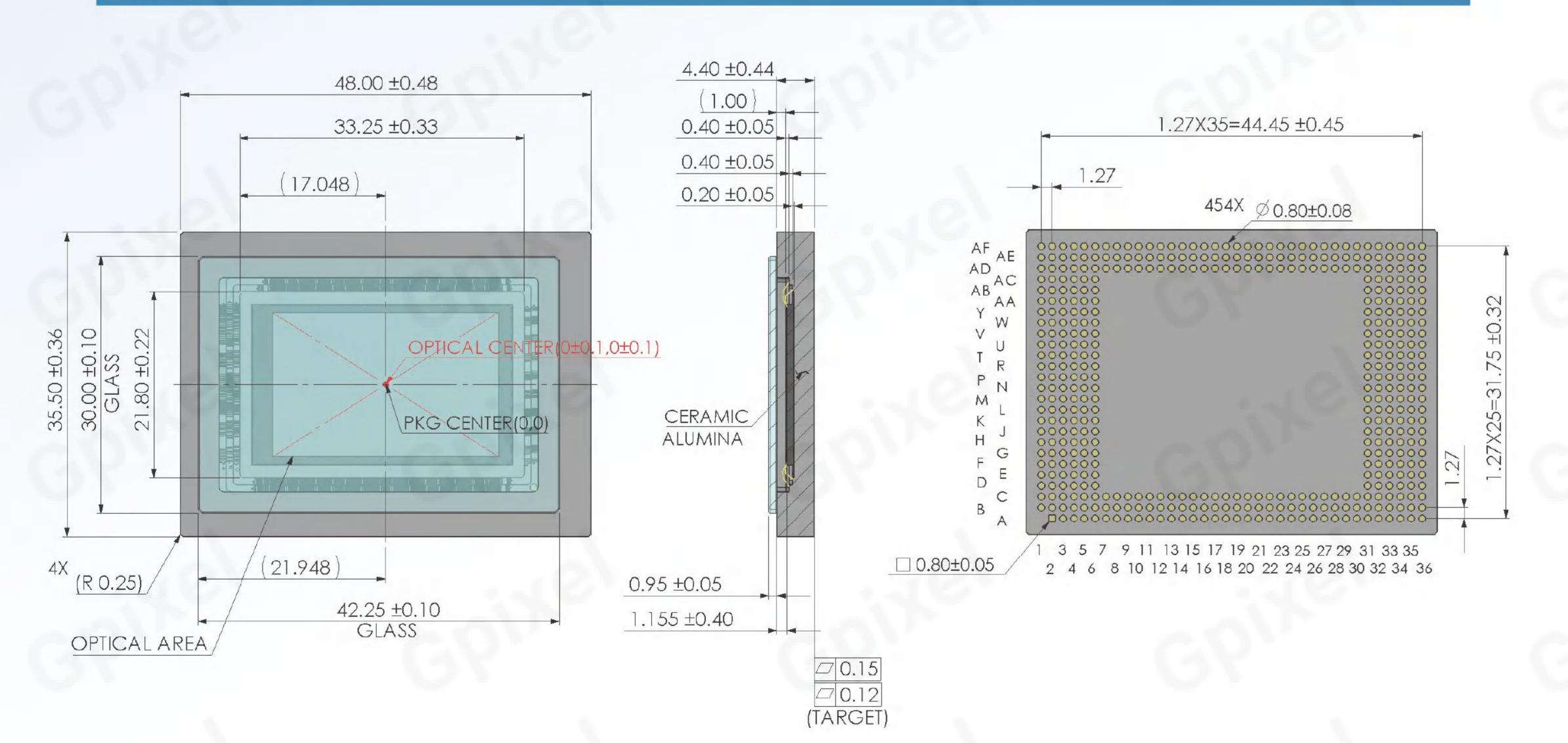· Low Noise   · Multi-Slope HDR   · Dual Gain HDR
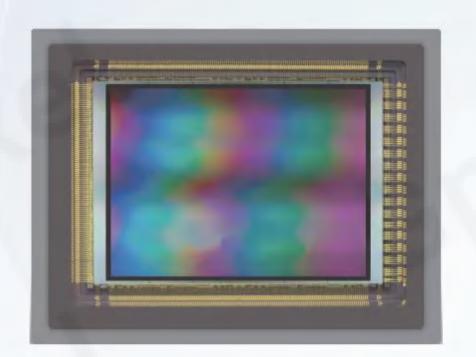
Application

· 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.
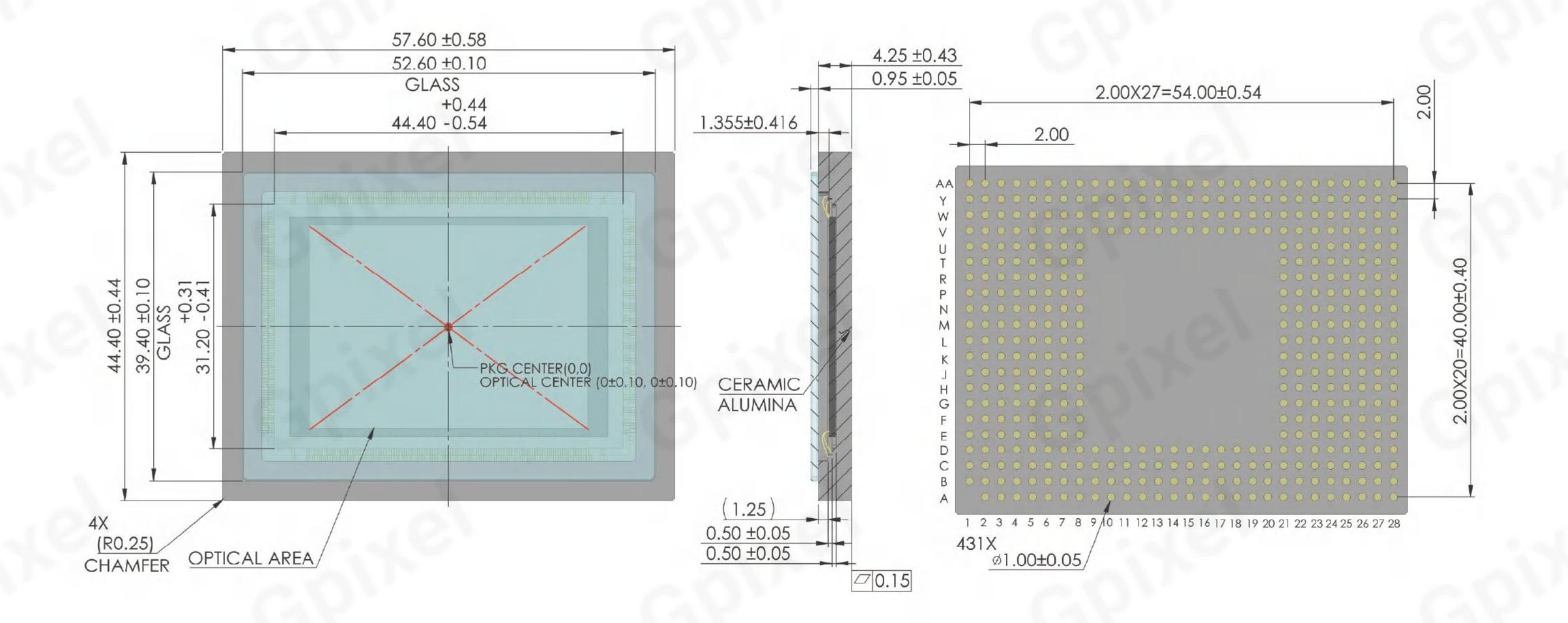
Key Features and Benefits

· 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	GLR1402BSI-M	GL1402
GL3504	GL0402	GL7004
GL0816	GLT5009BSI	GLT5018BSI
GLT5016BSI	GL7008	GL3516

Product Family Features

- Global Shutter
- TDI
- High Speed
- High Resolution

Applications

- Lithium Battery Inspection
- Printing Inspection
- Track Inspection
- PCB Testing
- Screen Inspection
- Automatic Sorting
- Semiconductor 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
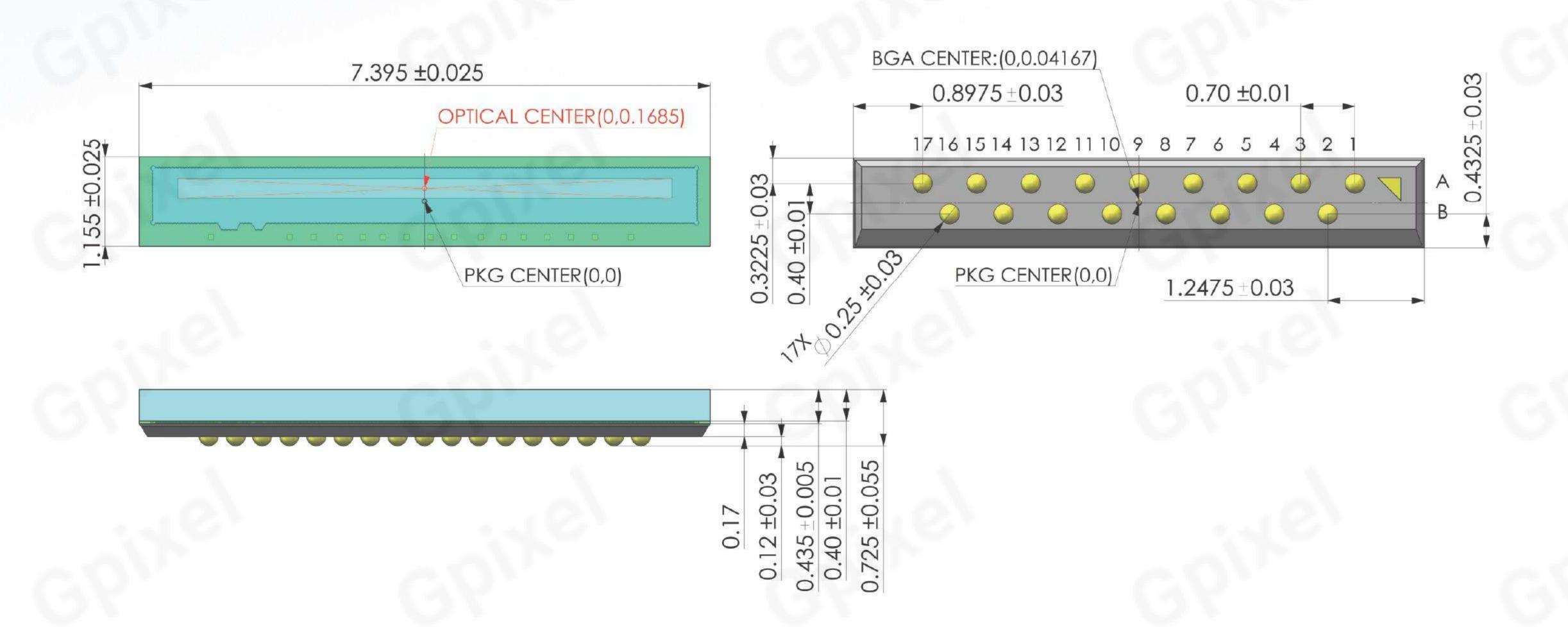
· BSI Linear Sensor   · High Sensitivity   · Large FWC
· Rectangular Pixel   · CSP Package

Application

· Automation & Inspection   · Logistic & Positioning

Specifications

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

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. 180 ke⁻ full well capacity and boasting a mere 1.4 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 94 dB. GLR1402BSI-M supports both sLVDS and CMOS data outputs, customer can switch different data channels with 12 bit / 14 bit based on demand.
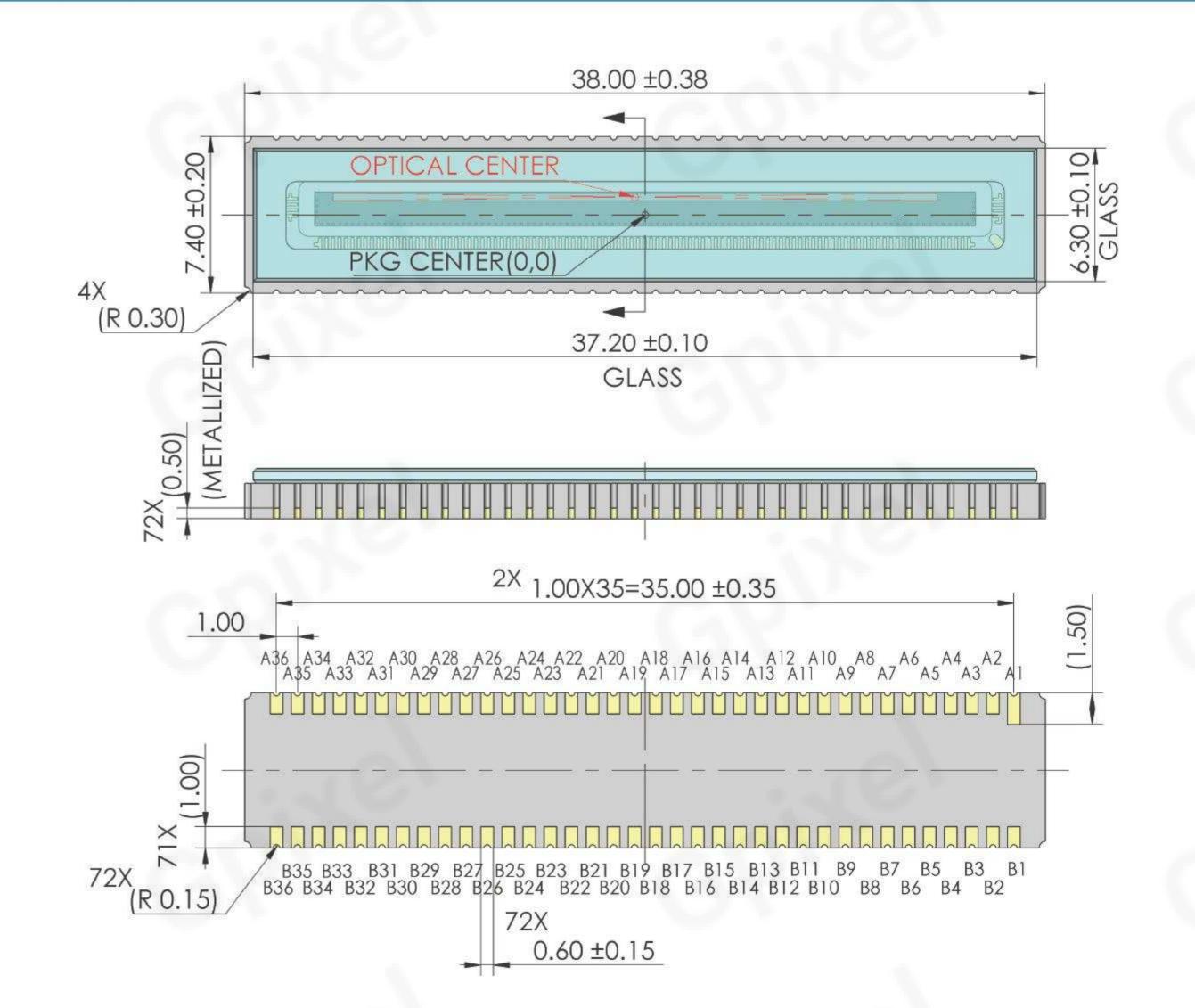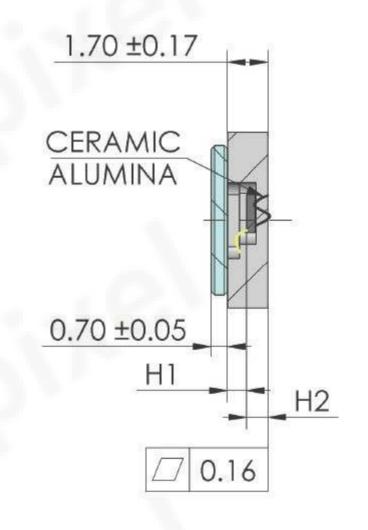
Key Features and Benefits

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

Application

· Spectroscopy

Specifications

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	85% (420 nm)	Temporal Noise	3.4 e⁻(HDR HG),1.4 e⁻(STD HG)
Full Well Capacity	180 ke⁻(LG),90 ke⁻(MG),10 ke⁻(HG)	Max. SNR	52.6 dB
Dynamic Range	94.6 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 M (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
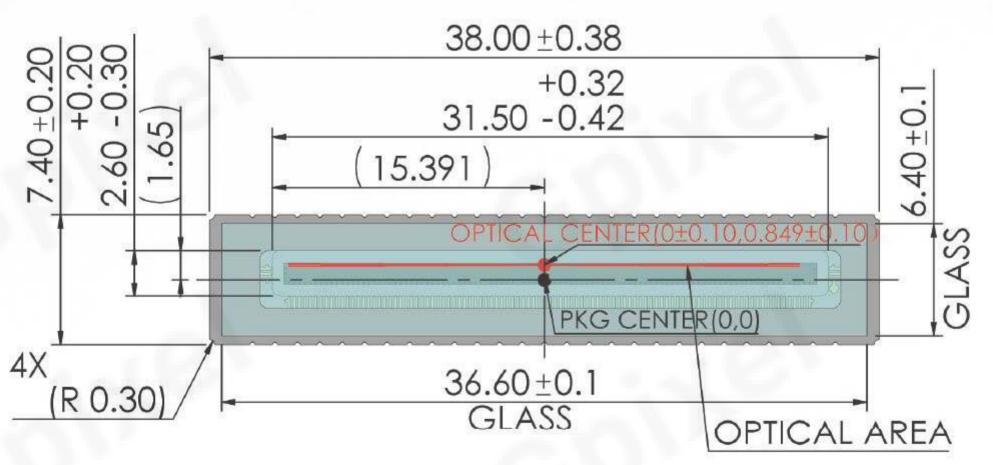
· Cost Efficient
· Low Power Consumption
· High Frame Rate
· High Dynamic Range

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
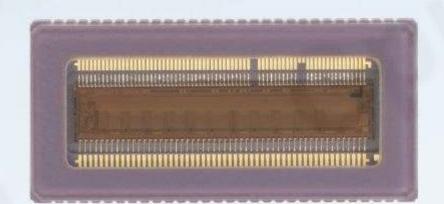
GL3504

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.
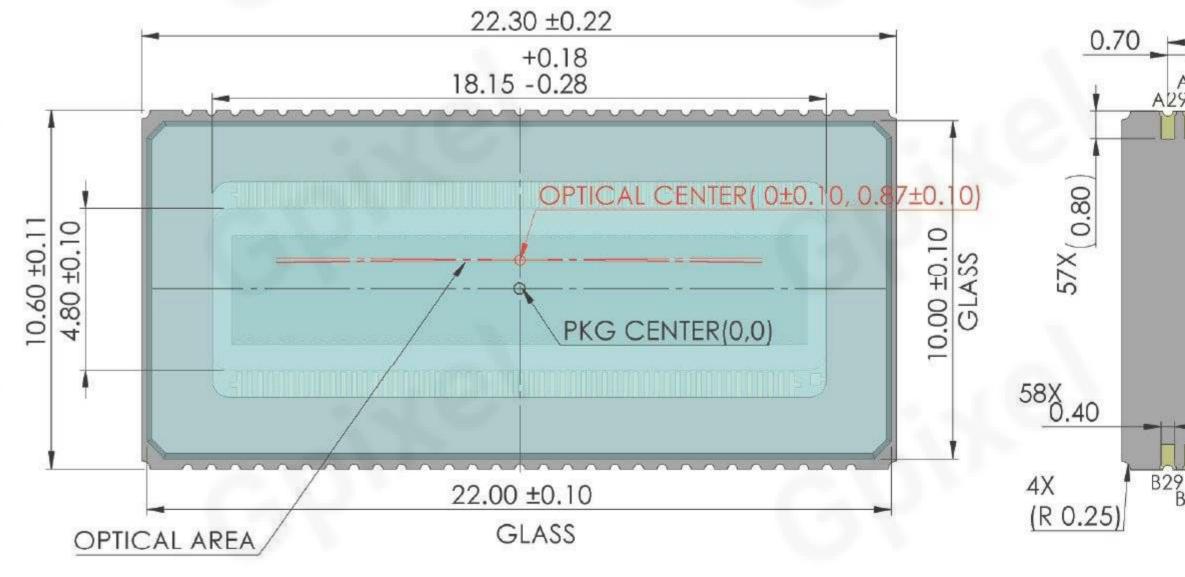
Key Features and Benefits

· High Speed
· Low Consumption
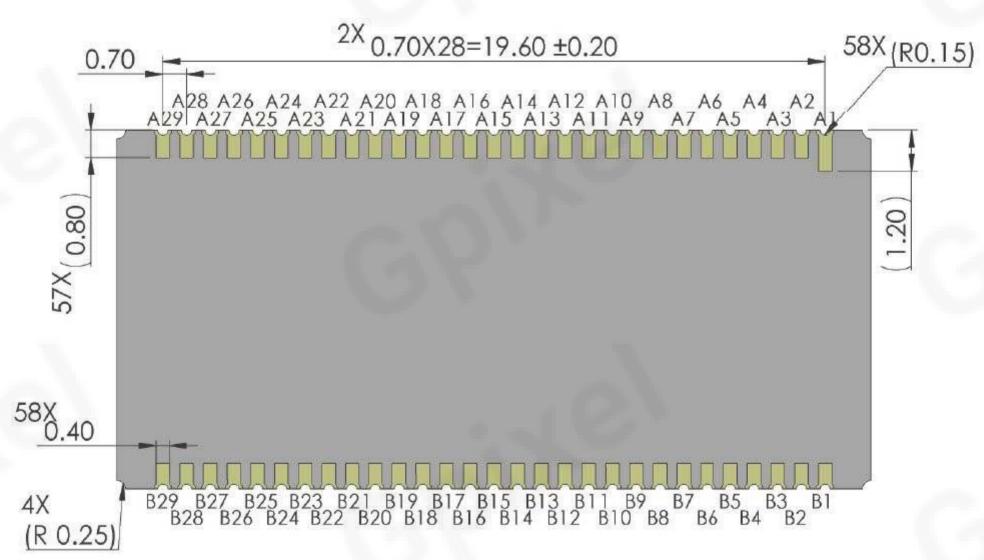· High Dynamic Range

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
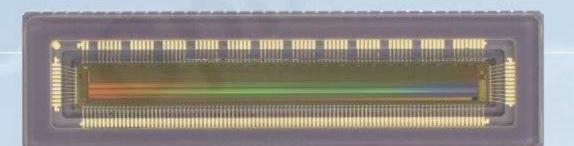
GL0402

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
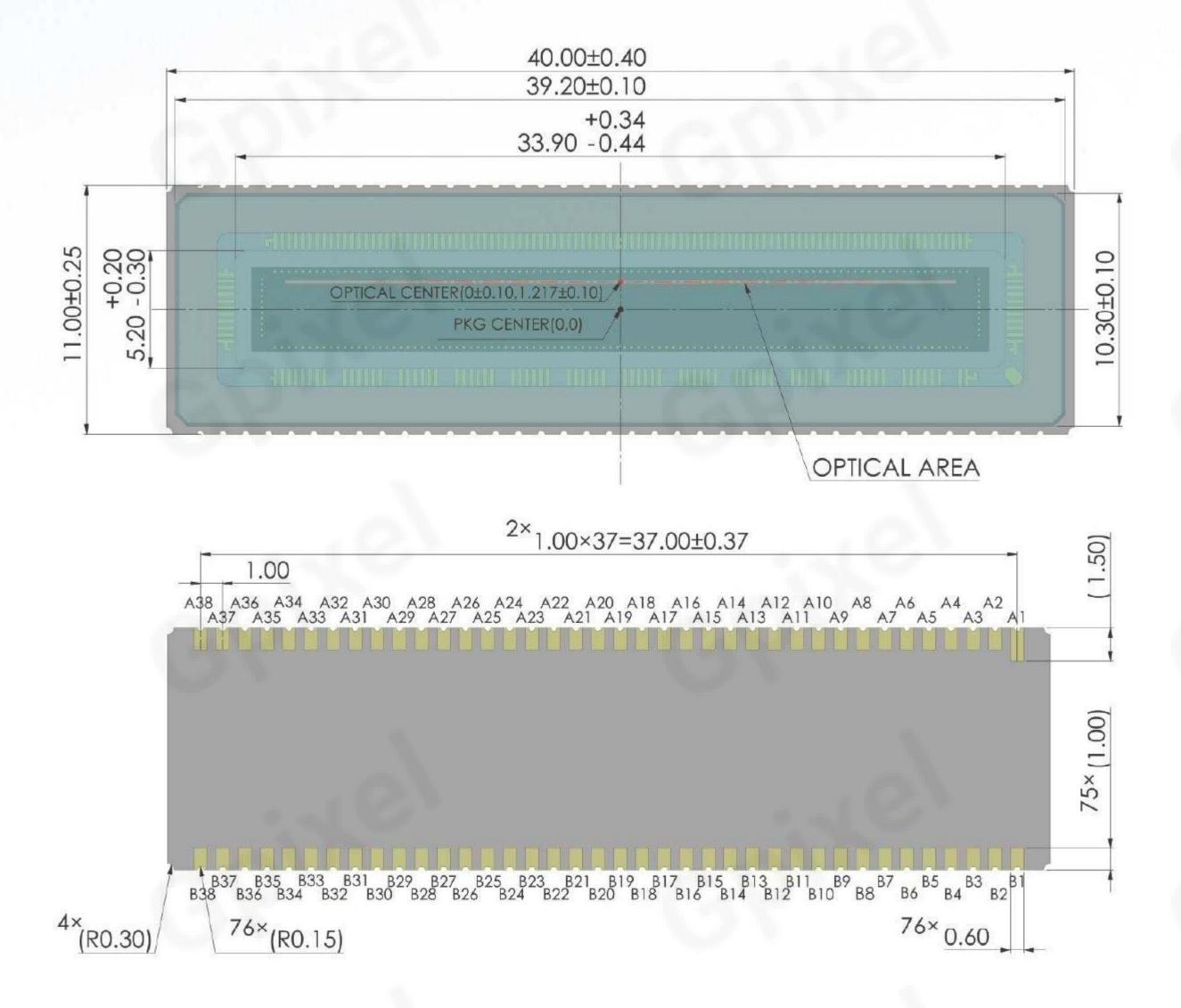· High Speed   · Low Noise
· High Dynamic Range

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
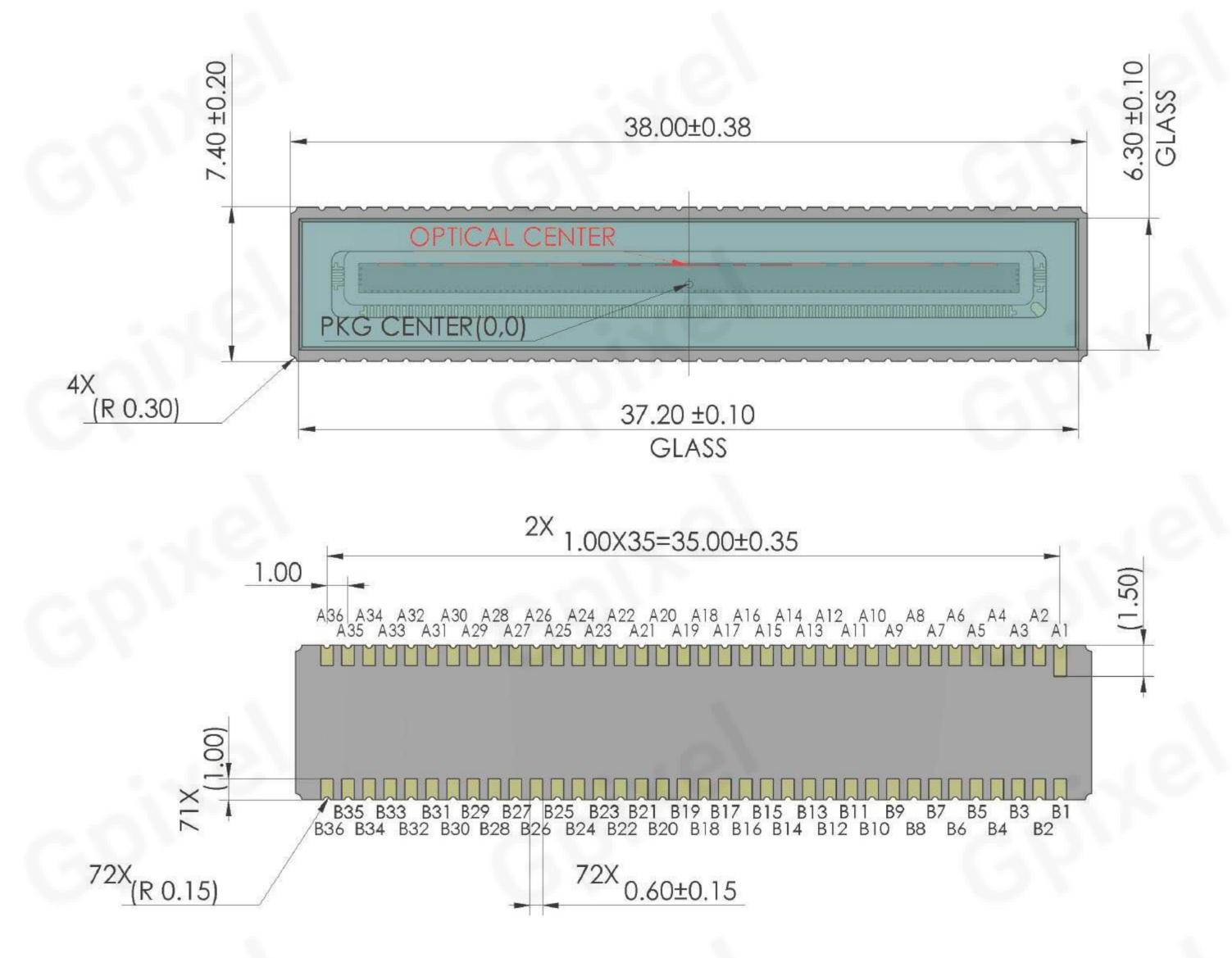· Low Power Consumption   · Cost Efficient

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
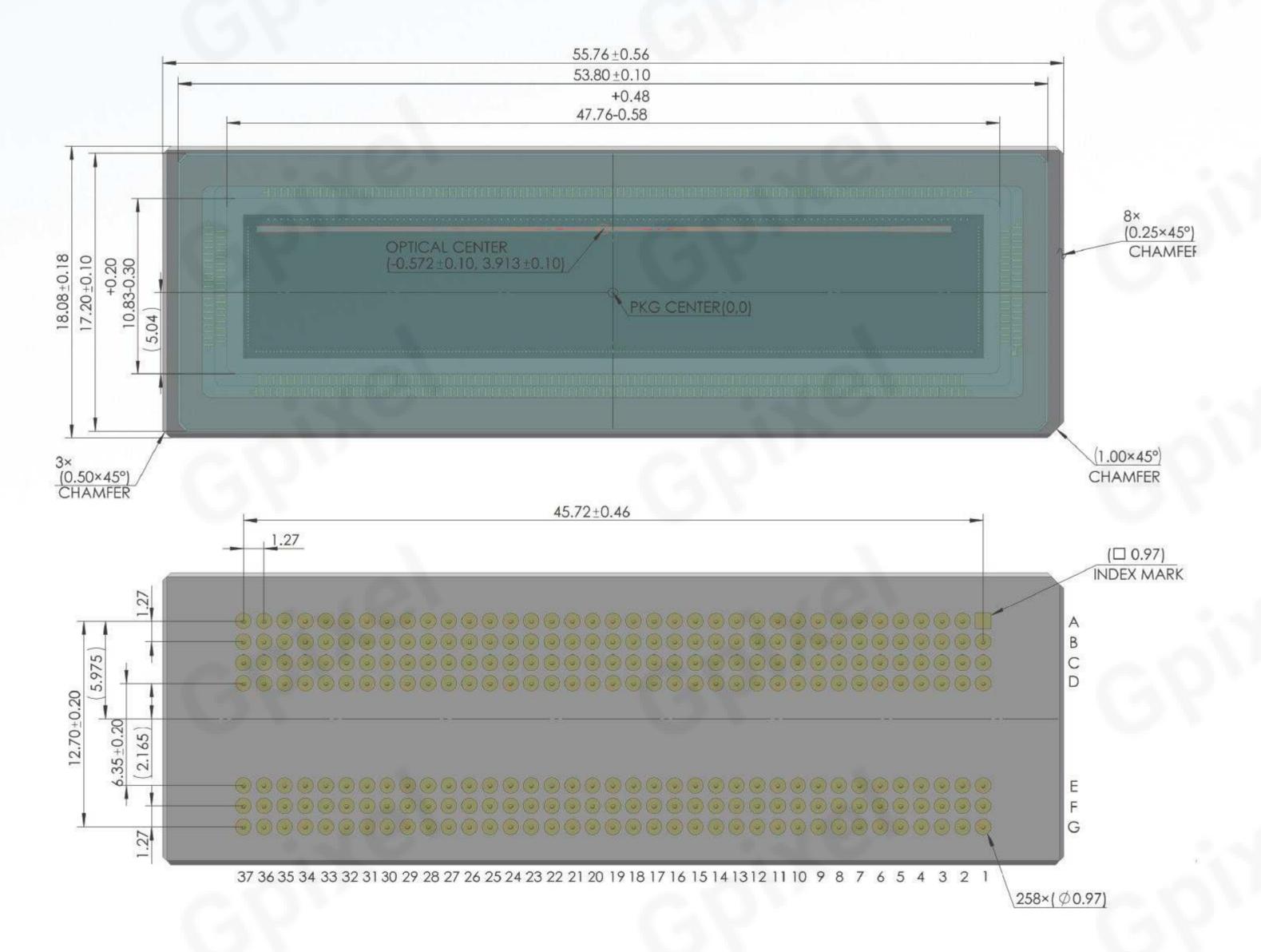
· High Speed   · TDI
· High Resolution

Application

· Automation & Inspection

Specifications

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.
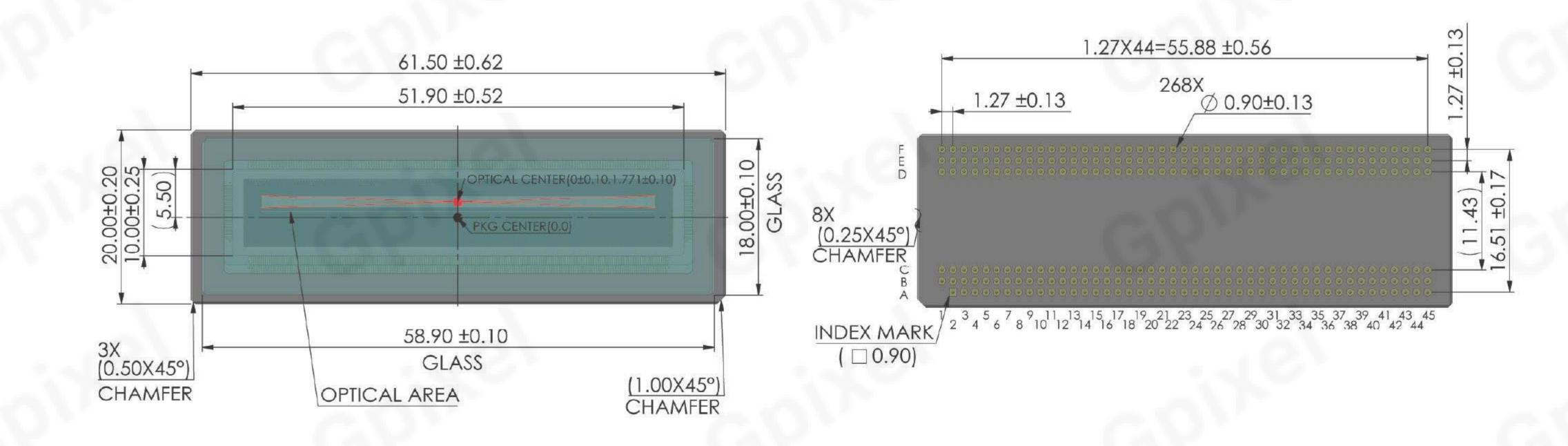
Key Features and Benefits

· 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

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℃)	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 63.9% (266 nm) and 93.4% (440 nm)
· HDR Read Out
· Back Side Illuminated (BSI) Pixels
· High Speed: up to 1 MHz
· On-chip Binning

Application
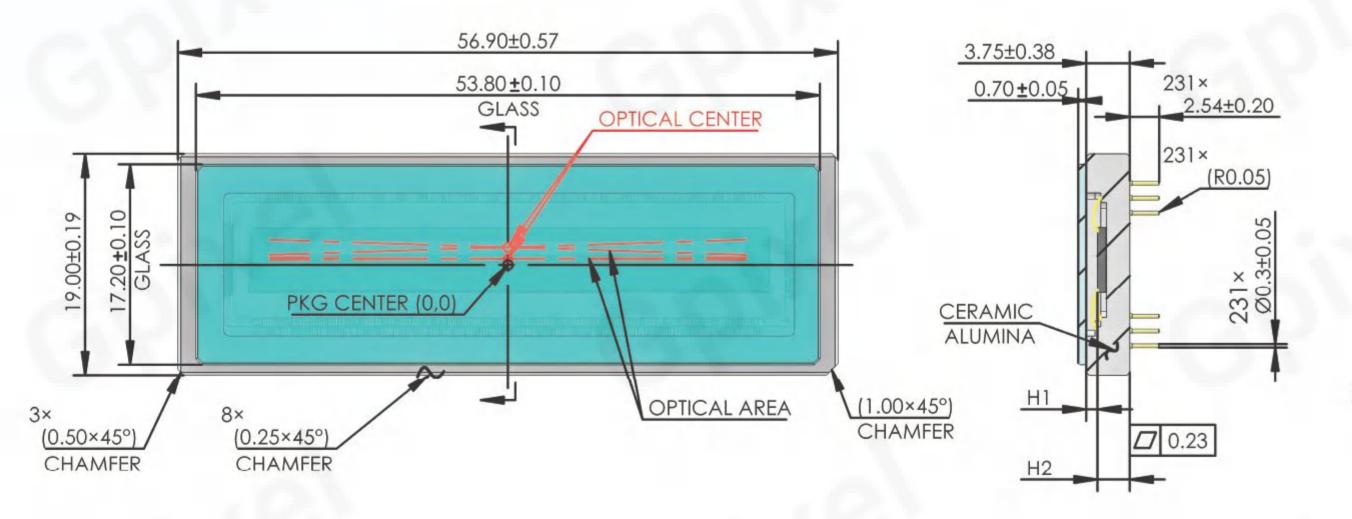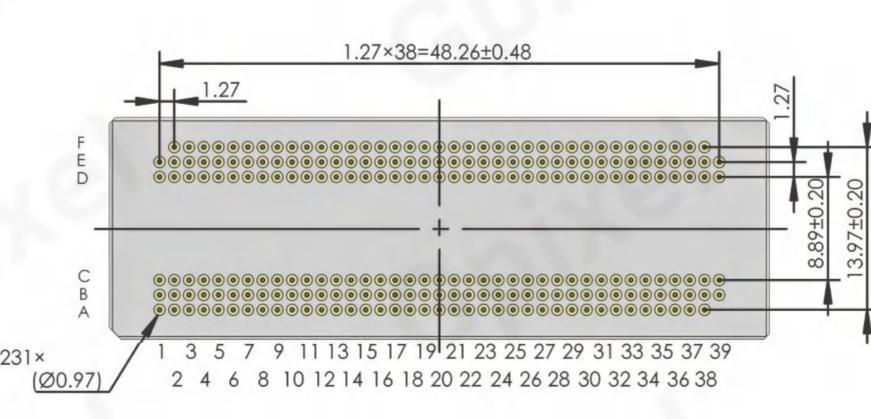
· Automation & Inspection   · Life Sciences   · Microscopy   · Microluminescence Imaging
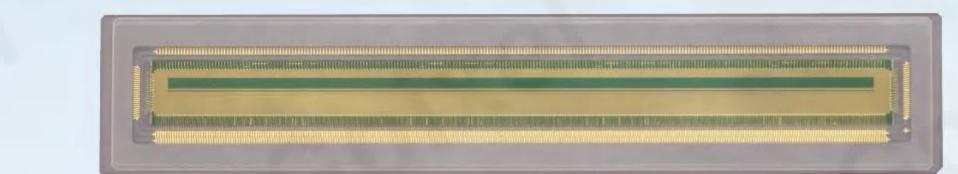
Specifications

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	63.9% (266 nm)、93.4% (440 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
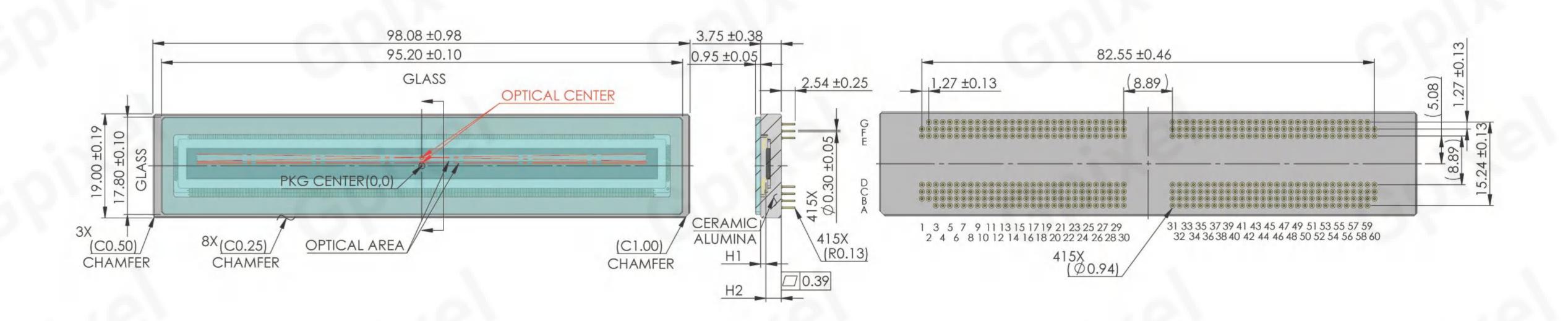
Key features and Benefits

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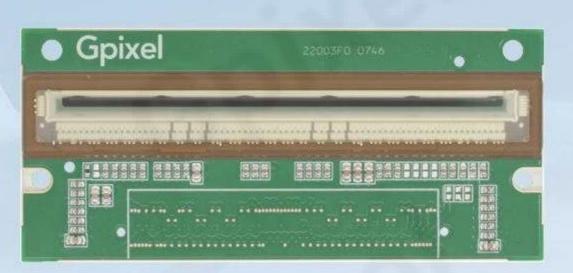· High Speed: up to 500 kHz
· Back Side Illuminated (BSI) pixels
· HDR read out
· On-chip binning

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℃)	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 and dual 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 WCu heat sink for optimal heat dissipation during high-speed scanning.

Key Features and Benefits

· Individual Exposure Control for Each Color Line   · External Trigger   · Channel Multiplexing

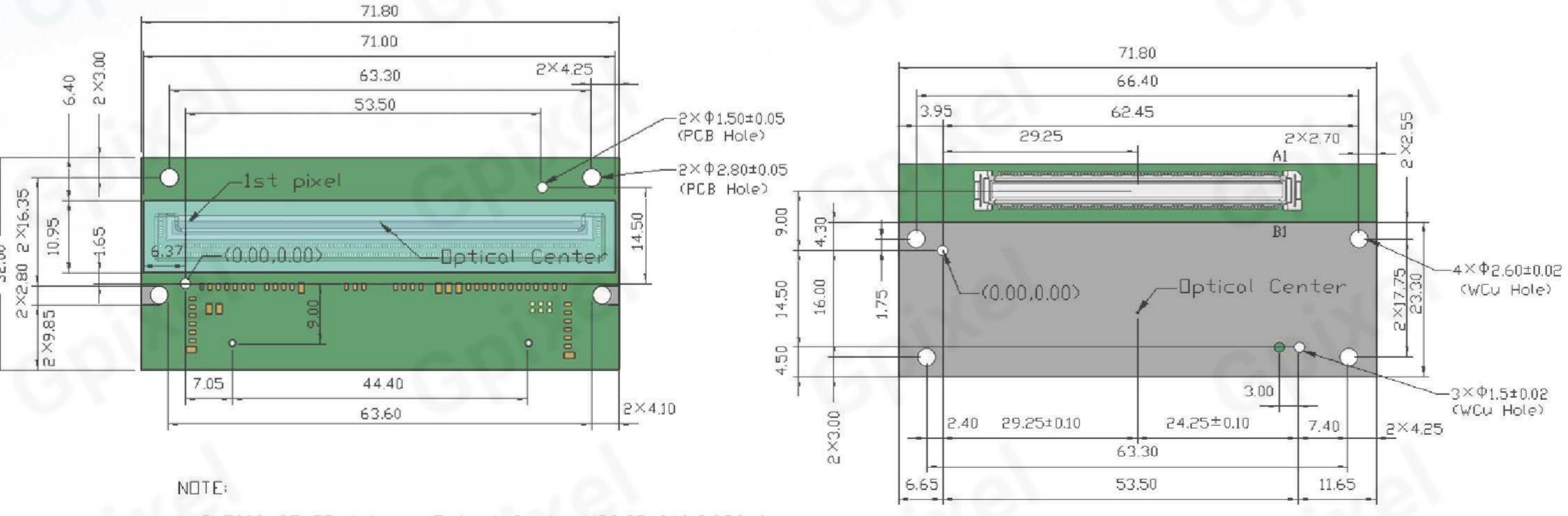· On Chip PLL   · On Chip Sequencer

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 32.0 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 WCu heat sink for optimal heat dissipation and with connector for easy integration.

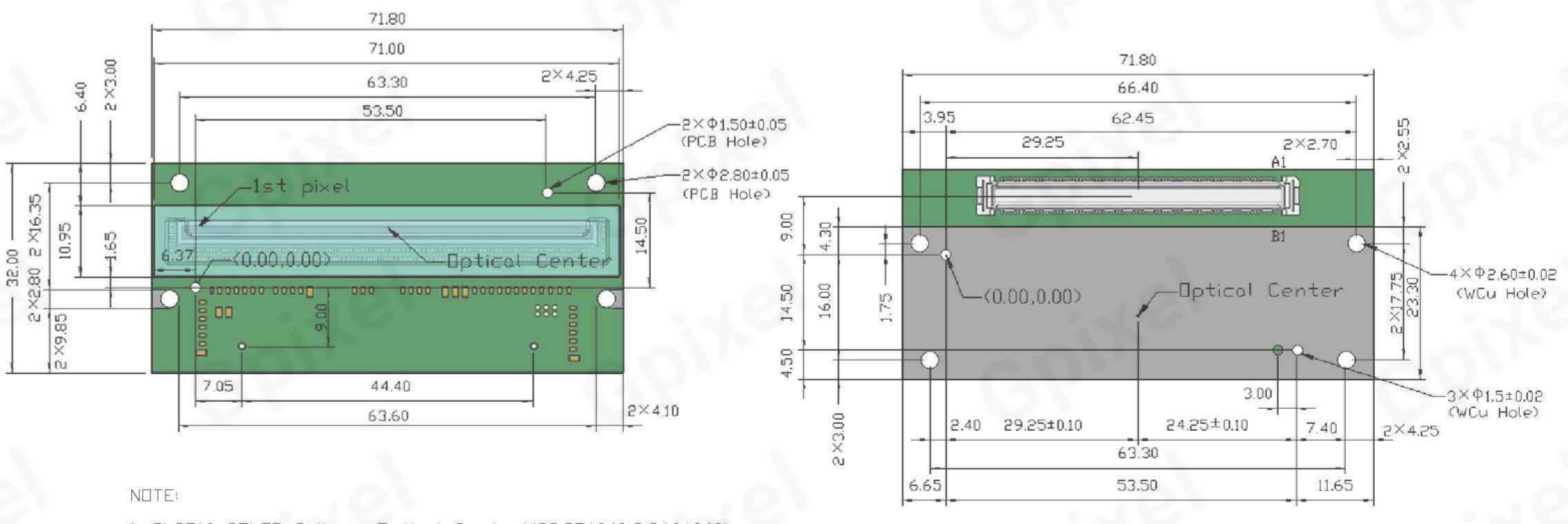### Key Features and Benefits

· High Speed   · High Resolution

· Low Power Consumption   · Easy Integration

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	8.2 e⁻
Full Well Capacity	8.4 ke⁻	Angular Response	20° (85% Response)
Dynamic Range	60.2 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 32.0 mm)

Package Drawing

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.
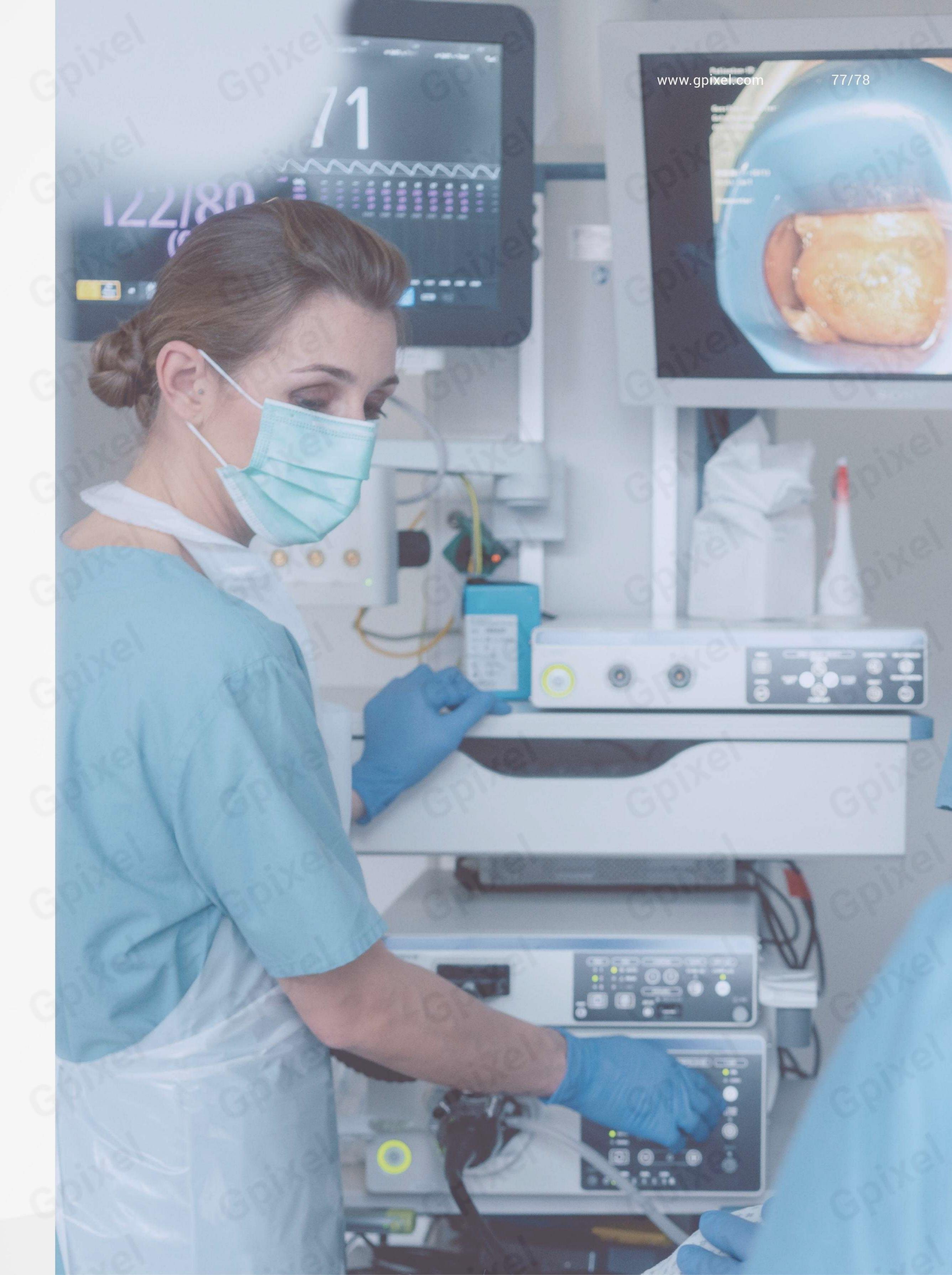
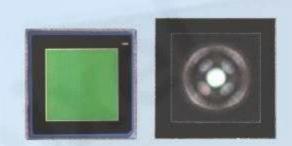GXS1508/GXSM1508

Product Family Features

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

Applications

- Disposable endoscope

GXS1508/GXSM1508

Small-sized CMOS image sensor/optical module

GXS1508 is a compact 4 pins CSP-format image sensor featuring a 400×400 resolution with 1.5 µm rolling shutter pixels. Its back-side illuminated (BSI) pixel architecture, combined with a specialized CSP package design, ensures maximum sensitivity. The sensor delivers analog signal output at up to 30 frames per second and is compatible with mainstream ISPs for analog-to-digital conversion. Its physical dimensions are just 0.961 × 0.961 × 0.55 mm.

For integrated optical solutions, GXSM1508 offers the GXS1508 sensor in a wafer-level optics (WLO) cube module, measuring 1.04 × 1.04 × 2.082 mm. The WLO stack includes three surface lenses with an F-number of 5.0, balancing light throughput and image quality. With a 120° diagonal field of view, it enables wide-angle observation even in confined spaces.

Both GXS1508 and GXSM1508 are ideal for applications such as disposable endoscopy, position sensing, smart appliances, and toys.
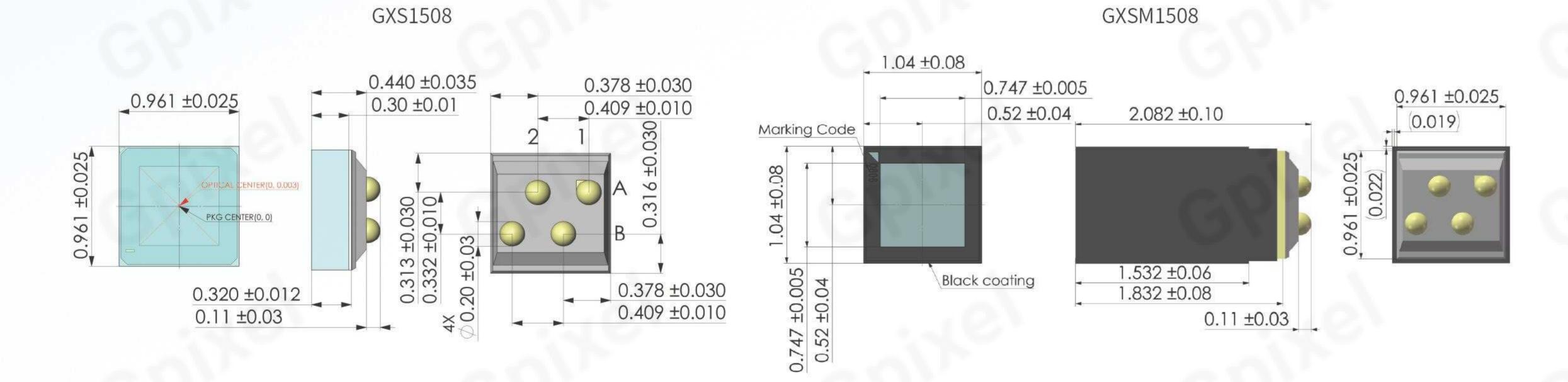
Key Features and Benefits

· WLO
· High Sensitivity
· Compact CSP Packaging

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	T.B.D
Full Well Capacity	5 ke⁻	Max Frame Rate	30 fps
Dynamic Range	57 dB	CRA	28°±3°
Output Format	Analog output	Temporal Noise	7.19 e⁻
Chroma	RGB (Bayer pattern)	Power Consumption	17.3 mW
Supply Voltage	3.3 V	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	0.417 mm	Optical Layout	3-surface lens
TV Distortion	< 16% (90% field)	Focus	Fixed Focus 4-50mm
IR Filter	665 nm ± 10 nm		

Package Drawing

GXS1508

GXSM1508

Gpixel

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

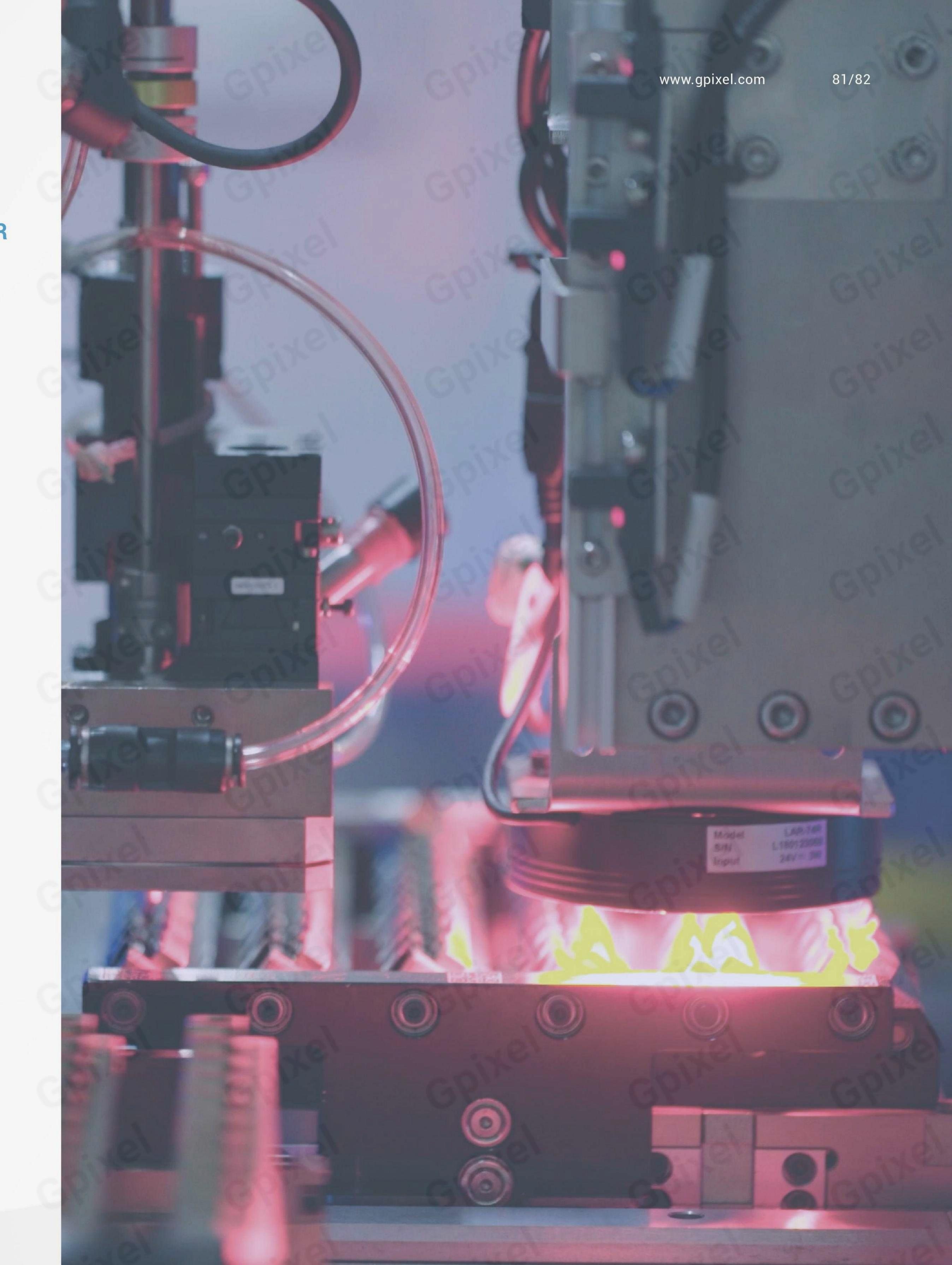• High Sensitivity   • Digital Output

• HIgh Line Rate
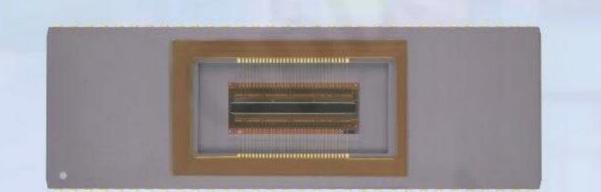
Applications

• 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
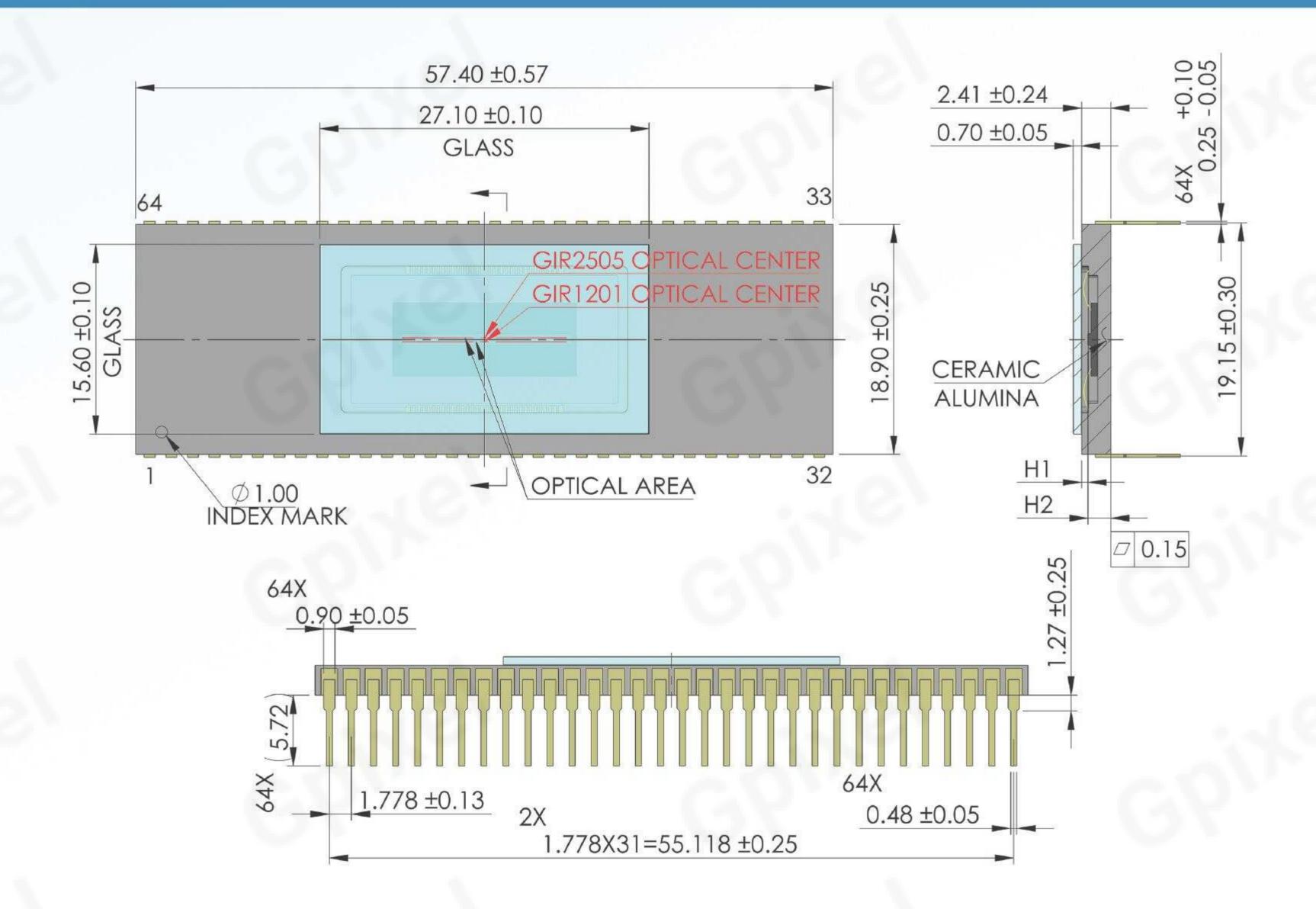
Application
·Industrial Inspection   ·Color and Food Sorting   ·OCT

Specifications

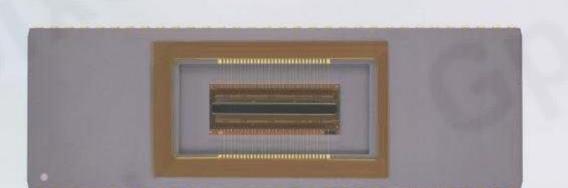|			
Nr of Active Pixels	512 (H) x 2 (V)	Optical Format	12.8 mm
Photosensive area	25 µm × 25 µm	Shutter Type	Global Shutter
Peak QE	75% (1550 nm)	Temporal Noise	116 e⁻ (12 bit,HG),450 e⁻ (12 bit,LG)
Full Well Capacity	85 ke⁻ (12 bit,HG),1.6 Me⁻ (12 bit,LG)	PRNU	< 2%
Dynamic Range	58 dB (12 bit,HG),70 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.
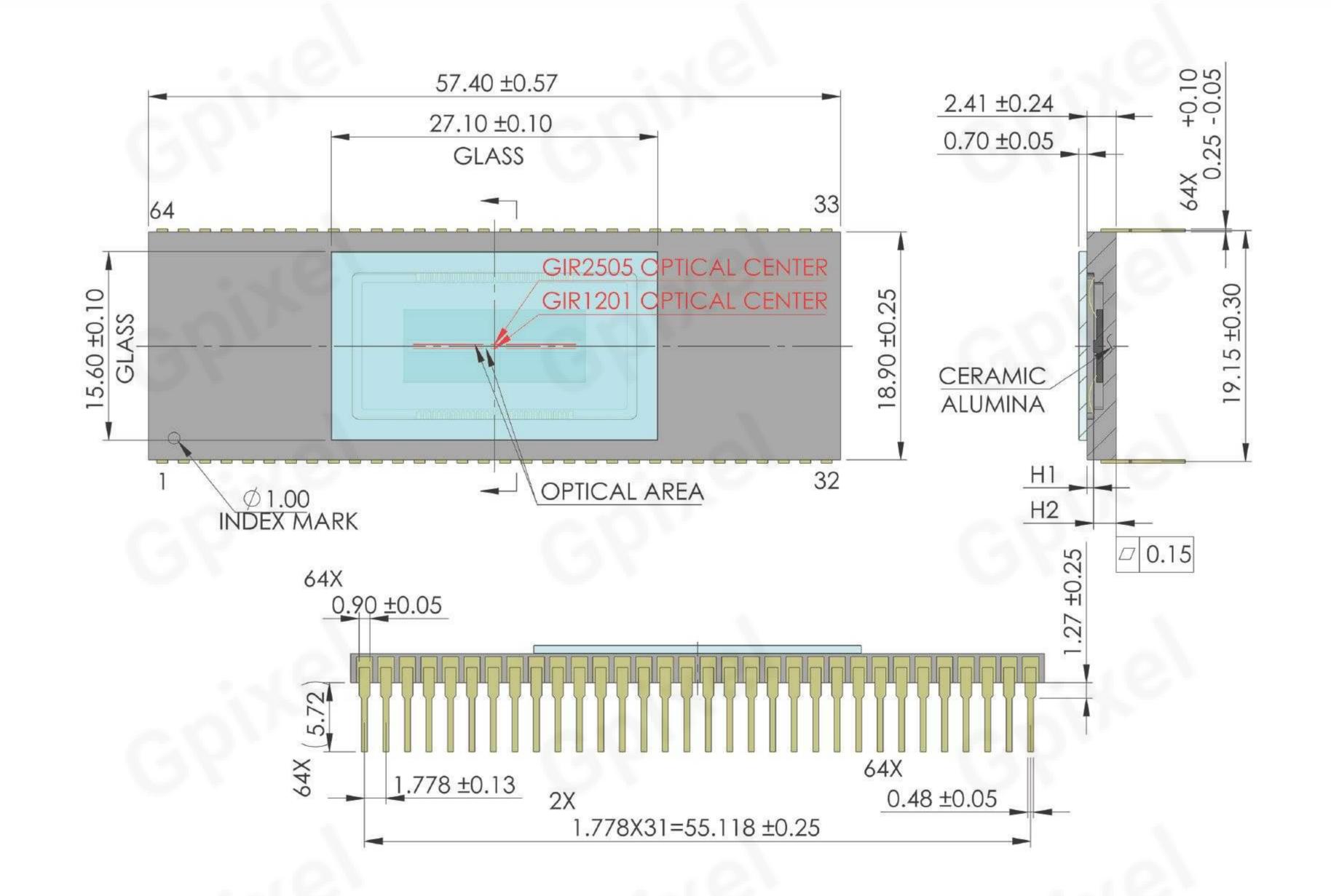
Key Features and Benefits
· Sub-LVDS output format   · On-chip 12bit ADC with dynamic range of 72 dB   · Line rate up to 71.9 kHz

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