

# Gpixel Expands Portfolio of Large Format Scientific Image Sensors for Astronomy and Physical Sciences with GSENSE1517BSI

January 28, 2025, Changchun, China – Gpixel announces the GSENSE1517BSI backside illuminated CMOS image sensor for scientific imaging.

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GSENSE1517BSI is a 4116 x 4100 (16.8 MP) resolution scientific image sensor with high-performance 15 x 15  $\mu\text{m}^2$  pixels, a large 61.74 x 61.50 mm imaging area, peak QE of 92%, and minimum read noise 1.2 e-.

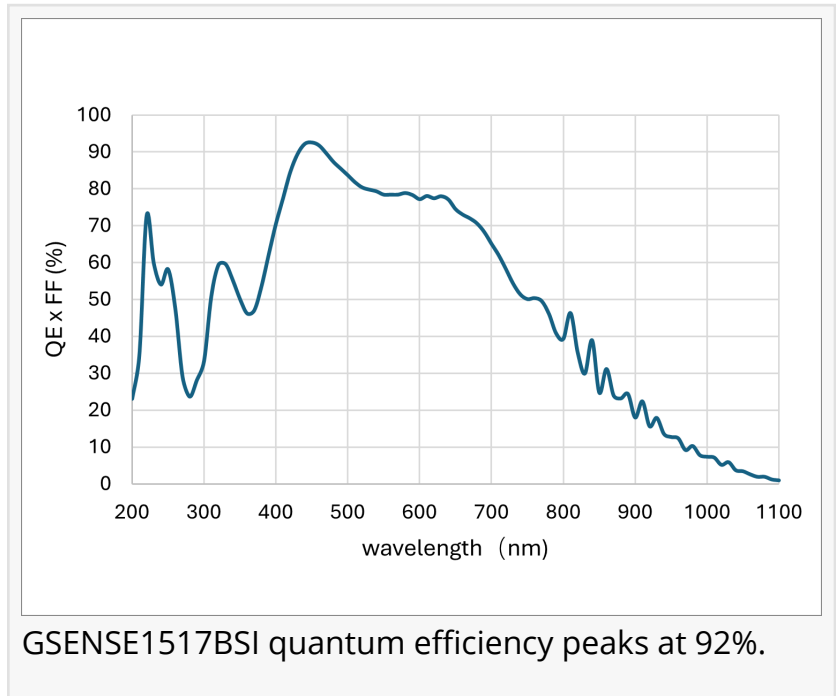
GSENSE1517BSI fills a gap in available high-performance scientific image sensors by offering a new, larger pixel size in the popular 60 mm square

format. Applications for this image sensor include astronomy imaging tasks like space situational awareness (SSA), orbital object tracking, other space-related imaging, and physical sciences research.



We continue our commitment to being the premier provider of scientific CMOS image sensors by expanding our portfolio to address the varied needs of researchers.”

*Wim Wuyts, CCO*



GSENSE1517BSI quantum efficiency peaks at 92%.

The sensor utilizes dual-gain HDR and both 12-bit and 14-bit 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. 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- provides an SNR up to 48.5 dB

The GSENSE1517BSI, developed in collaboration with industry-leading customers, offers optimized performance for astronomy applications. It features exceptionally low dark current of 0.0069 e-/p/s at -60 degrees. Additionally, its dedicated readout architecture significantly reduces glowing, making it ideal for long exposure applications.

“We continue our commitment to being the premier provider of scientific CMOS image sensors by expanding our portfolio to address the varied needs of researchers,” says Wim Wuyts, Gpixel’s Chief Commercial Officer. “The GSENSE1517BSI is a perfect complement to Gpixel’s existing large format scientific image sensor portfolio and offers the high performance of a 15- $\mu$ m pixel in the 60 mm square format popularized by GSENSE6060BSI.”

GSENSE1517BSI is assembled in a high-end SiC package designed such that the dead space on three 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-pin Al<sub>2</sub>O<sub>3</sub> IPGA ceramic package is offered with removable cover glass for easy assembly into cooled camera systems.

GSENSE1517BSI is the latest addition to Gpixel’s large-format image sensors dedicated to astronomy and scientific imaging, which includes both frontside and backside illuminated sensors in resolutions ranging from 16.8 MP to 81.7 MP, with pixel sizes from 9  $\mu$ m to 15  $\mu$ m, and imaging area up to 92 x 98 mm. Gpixel also offers customized image sensors to address scientific applications including astronomy, spectroscopy, microscopy, biosciences instrumentation, and physical science research.



The SiC package of GSENSE1517BSI is designed for 3-side butting and mechanical stability when cooled.

	GSENSE4040 16.8MP	GSENSE4040BSI 16.8MP	GSENSE6060 37.7MP	GSENSE6060BSI 37.7MP	GSENSE1517BSI 16.8MP	GSENSE1081BSI 81.7MP
Pixel	9 $\mu$ m RS	9 $\mu$ m RS GR	10 $\mu$ m RS	10 $\mu$ m RS GR	15 $\mu$ m RS GR	10 $\mu$ m RS GR
Opt. Format	Med Format	Med Format	M90	M90	M90	M130
Resolution	4096 x 4096	4096x4096	6144 x 6144	6144x6144	4116x4110	8900x9120
Chroma	Mono	Mono	Mono	Mono	Mono	Mono
FWC <sub>max</sub>	74.2 ke <sup>-</sup>	39.2 ke <sup>-</sup>	128.0 ke <sup>-</sup>	95 ke <sup>-</sup>	70 ke <sup>-</sup>	90.6 ke <sup>-</sup>
Noise <sub>min</sub>	2.3 e <sup>-</sup>	1.6 e <sup>-</sup>	4.6 e <sup>-</sup>	3.0 e <sup>-</sup>	1.2e <sup>-</sup>	5.3 e <sup>-</sup>
Dyn. Range <sub>max</sub>	86.0 dB	84.6 dB	89 dB	90.6 dB	95.3 dB	84.5 dB
QE <sub>max</sub>	74%	95%	71%	95%	92%	97%
ADC	12bit	12bit	12/14bit	12/14bit	12/14bit	15/16bit
Max. Frame Rate	24fps@HDR 96fps@2x2 HDR	24fps@HDR	44fps@12b 19fps@12b HDR 14fps@14b	26fps@12b 11fps@12HDR 8fps@14b	4fps@12/14b	0.94fps@15b 0.34fps@16b
Package	51x53 mm 140p PGA	51x53 mm 140p PGA	74x99 mm 250p PGA	74x99 mm 250p PGA	66x72mm 144p IPGA	92x98 mm 100p SiC

GSENSE large-format scientific image sensor product overview including the new GSENSE1517BSI.

Samples of GSENSE1517BSI are available today. For more information, please contact Gpixel at [info@gpixel.com](mailto:info@gpixel.com) or visit [www.gpixel.com](http://www.gpixel.com).

The Gpixel team will also be available at the Photonics West exhibition January 27-30 at San Francisco's Moscone Center, Hall A, Booth 143.

#### About the GSENSE sensor family

The GSENSE series is Gpixel's family of ultra high performance rolling shutter scientific CMOS image sensors. The product line addresses a wide variety of applications with diverse specifications including quantum efficiency over 95%, noise below 1 e-, dynamic range up to 110 dB and data rates over 76 Gbps. Primary applications include spectroscopy, fluorescence imaging, astronomy, high energy physics, UV imaging, medical imaging and high-end surveillance.

#### About Gpixel

Gpixel is an international company providing high-end customized and off the-shelf CMOS image sensor solutions for industrial, medical, scientific, and professional imaging applications. Gpixel's standard products include the GMAX and GSPRINT global shutter, fast frame rate sensors, the GSENSE high-end scientific CMOS image sensor series, the GLUX series of high sensitivity sensors for surveillance, the GL series of line scan imagers, the GLT series of TDI imagers, GTOF series of iTOF imagers, and the GCINE series of sensors for professional video and photography. Gpixel provides a broad portfolio of products leveraging the latest technologies to meet the ever-growing demands of the professional imaging market.

Gloria Putnam

Gpixel

+1 760-310-8227

[email us here](#)

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