

GIGAPYX 4600

46 Megapixel, BSI Rolling Shutter High Speed HDR CMOS image sensor



GIGAPYX is a family of large image sensors designed for those applications that demands the best of image quality CMOS sensor has to offer. Manufactured using the most advanced CIS technologies available, it offers low noise, sensitivity, intra-scene dynamic range, resolution and frame rate with no compromises. Ranging from the optical 1.5" format (14 x 18 mm²) up to 6x6 and 6x7 Medium-formats (73 x 58 mm²), this family of sensor is compliant with the major large scale optical formats of high quality applications. GIGAPYX 4600 is the first release of this family of sensors: it is a Full-Frame (35 mm) sensor, with 46 Megapixels. The device operates in Rolling-Shutter, up to 150 frames per second with 12 bits per pixel acquisition mode at full resolution, and up to 200 FPS with 8K format (8320 x 4320). The sensor provides up to 92 dB intra-scene dynamic-range thanks to in-pixel true HDR (linear output, single shot acquisition).

Key Features

- Pixel pitch of 4.4 μm with **Back Side Illuminated Technology**
- 2x2 and 4x4 Binning, color-compatible
- Ultra low color crosstalk: **Deep Trench Isolation technology**
- Resolution of 46 Megapixels (8320 x 5456)
- Ultra Low-noise **Rolling-Shutter**
- 12/13 bits dual ADC column
- Adjustable analog gain: from x0.5 to x8
- Adjustable fine digital gains and offset
- Multiple ROI, flip and skipping modes
- Advanced burst-sequence and page configuration with multiple user settings
- 8 to 128 sub-LVDS data lanes at 840 Mbps
- Versatile input trigger with 3 operating modes
- Versatile strobe outputs
- SPI up to 10 MHz control interface
- Single input clock: nominal 8 MHz
- Embedded temperature sensor
- Integrated testability features
- Available in monochrome and RGB

Base Sensor

GIGAPYX 4600

- | | |
|--------------------|---|
| • Resolution Class | 46 Megapixel |
| • Active Pixels | 8320 x 5456 |
| • Aspect Ratio | 3:2 |
| • Max Frame Rate | 200 fps in 8k 12bits
150 fps Full Frame 12bits |

Pixel Performance

- Pixel: 4.4 μm x 4.4 μm
- Linear intra-pixel Dynamic range up to 90 dB
- Dual Cvf (188/18 $\mu\text{V}/\text{e}^-$)
- High Full Well) > 50 ke-
- QE > 72% peak
- Readout Noise: 1,8 e-
- PRNU (HF): < 2%

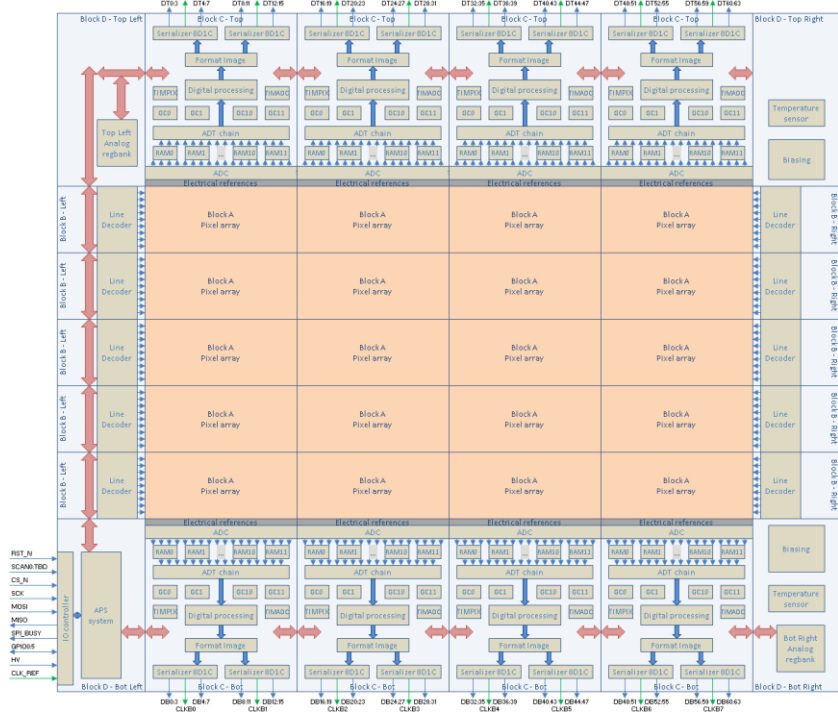
Operating conditions, packaging and filters

- Power < 6W @ full speed
- Operating temperature of 0°C to 65°C
- Ceramic package
- Monochrome or standard RGB Bayer



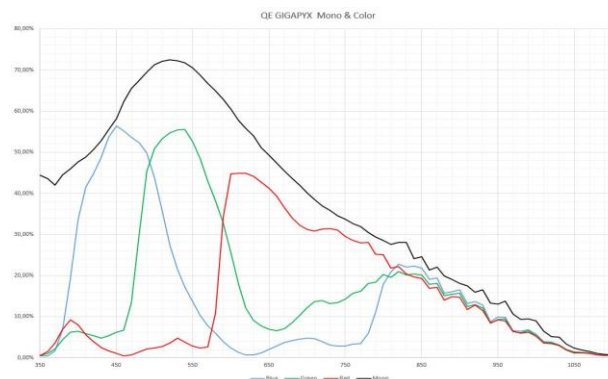
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Make your own GigaPYX sensor

- GigaPYX is manufactured using stitching technology
- By combining multiple blocks of pixels and readout, Pyxalis can manufacture the right dimension you need for your application.
- All GigaPYX family members will share the same electro-optical performances, and the same readout and addressing method
- this allows you to offer a range of cameras with consistent performance and image signature while leveraging electronic design efforts across multiple products.



Features:

- Flexible output configuration: choose from 32 to 256 sub-LVDS readout ports without compromise on resolution
- Comprehensive power for speed trade-off to adapt to your application
- Multi-Frame sequence configuration:
 - Up to 6 sets of parameter and frame configurations can be chained
 - Changing parameters: ROI (x6 in vertical direction), Gain and Offset, Frame sequencing (x repeat, next), Strobe generation
- Multi-integration by vertical ROI for Multi-spectral applications
- Vertical Flip for the whole matrix.
- Digital binning
- Digital Gain and Offset

GIGAPYX Family	Format	# of block A Along X axis	# of block A Along Y axis	Matrix sizes in mm Width x Height	Die sizes in mm Width x Height	# of data Lane + clock
GIGA46M	35 mm Full-frame	4	5	36.6 x 24.2	39 x 38.2	128 + 16
GIGA37M		4	4	36.6 x 19.4	39 x 33.4	128 + 16
GIGA110M		6	8	54.9 x 38.7	57.3 x 52.7	192 + 24
GIGA82M	65 mm	6	6	54.9 x 29	57.3 x 43	192 + 24
GIGA80M		5	7	45.8 x 33.9	48.2 x 47.9	160 + 20
GIGA27M	Super 35 mm	3	4	27.5 x 19.4	29.9 x 33.4	96 + 12
GIGA14M		2	3	18.3 x 14.5	20.7 x 28.5	64 + 8
GIGA151M	65 mm square	6	11	54.9 x 53.2	57.3 x 67.2	192 + 24
GIGA220M	Max size	8	12	73.2 x 58.1	75.6 x 72.1	256 + 32

