

# THE FLASH FAMILY

## SPECIFICALLY TAILORED FOR LASER TRIANGULATION



The Flash Family is the first family of CMOS sensors specifically tailored for 3D Laser Triangulation applications, allowing you to have high-resolution sensors with the highest speeds. Flash 2K and Flash 4K are compatible with standard optics and have a high throughput over power consumption ratio. Because of the large library of features embedded on-chip (including a powerful single frame HDR), they perfectly meet the challenges of the application.

### SENSOR BENEFITS & FEATURES

**Specifically designed for 3D laser triangulation**  
with high-resolution in a rectangular format

**Outstanding sampling resolution and speed with high power efficiency** due to very high frame rate and throughput combined with high Gbps/W ratio

**Measure all kinds of surfaces**  
using its HDR feature embedded on-chip

**Perfectly meet your application challenges**  
with its additional features

### CAN BE TAILORED TO MEET YOUR SPECIFIC REQUIREMENTS

**To differentiate even more**  
a large library of hardware and software derivatives are available

**To meet your specific application requirements**, full or partial customization is possible

**To help you design your system**, skilled local support is available in your region

### APPLICATIONS

Measure, detect and inspect:

- Length, width, height, tilt or the volume of any surface
- Shapes and profiles
- Worn or broken parts, roughness, aging, patching, humps, corrugation and waves
- In motion

For many markets:

- Battery inspection
- Electronics/PCB inspection
- Wood, metal, road, rail inspection
- Plus many more



## Sensor Characteristics

	<b>FLASH 4K</b>	<b>FLASH 2K</b>
<b>Resolution – pixels</b>	4,096 (H) × 1,080 (V)	2,048 (H) × 1,080 (V)
<b>Pixel size – square</b>		6 μm
<b>Max frame rate – fps</b>	1,786 (1,024 rows, 8 bits)	1,489 (1,024 rows, 8 bits)
<b>Bit depth</b>		8-10
<b>Dark noise – e-</b>	22	25
<b>Qsat – e-</b>	> 10,000	> 11,000
<b>Dynamic range – dB</b>	>53 (Linear integration) - Up to 100 (HDR multi-slope mode)	
<b>SNRmax – dB</b>	40	
<b>FFxQE – % @550 nm</b>	47	53
<b>Interface</b>	64 LVDS Data Ports @ 480.75 MHz + 12*	32 LVDS Data Ports @ 400 MHz + 4*
<b>Package type and size</b>	380-pin μPGA – 49 × 37 mm	228-pin μPGA – 27 × 27 mm
<b>Power supplies</b>	3.3V Analog & 1.8V Digital	
<b>Optics</b>	APS-Like at full frame 4/3" with a 3400 column-wise ROI	C-Mount
<b>Max power consumption – W</b>	3.1	1.4

\*64/32 LVDS high-speed ports for data + 12/4 LVDS for black columns, clock recovery and synchronization.

### EMBEDDED FEATURES

- Region of Interest [X,Y]: multiple ROIs defined separately by columns and by rows
- Binning: ×2 independently controlled for rows and columns
- Single-capture with the well adjustment technique and High Dynamic Range (HDR) for imaging both highly reflective and dark areas
- Concurrent exposure and readout in linear integration mode
- Analog gain control: 1×, 2×, 4×
- Offset control: on-chip, software configurable
- Trigger modes: single edge, pulse width control
- Vertical flipping

### WIDE LIBRARY OF DERIVATIVES AVAILABLE

- Soft: higher full-well capacity, additional operating modes trading-off speed, spatial resolution and power consumption, etc.
- Hard: custom color-filter array, micro-lens arrangement, etc.

To achieve even more differentiation and optimal fit for your application, more derivatives are available on request. Please contact our sales team!

An Evaluation Kit to assess the performance of the Flash sensors and a Reference Design to improve your time-to-market are also available.

### MAX FRAME RATE ACCORDING TO THE NUMBER OF ROWS

NUMBER OF ROWS	1,024	512	256	128	64	32	16	8
<b>FLASH 4K – FPS</b>	1,786	3,488	6,661	12,217	20,957	32,626	45,214	56,022
<b>FLASH 2K – FPS</b>	1,489	2,910	5,562	10,219	17,577	27,464	38,211	47,505

### ORDER CODE – FLASH 4K

EV3S4M0B-CLVFL40-T

### ORDER CODE – FLASH 2K

EV3S2M0B-CLVFL20-T