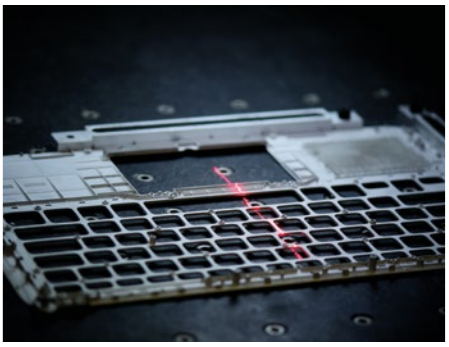
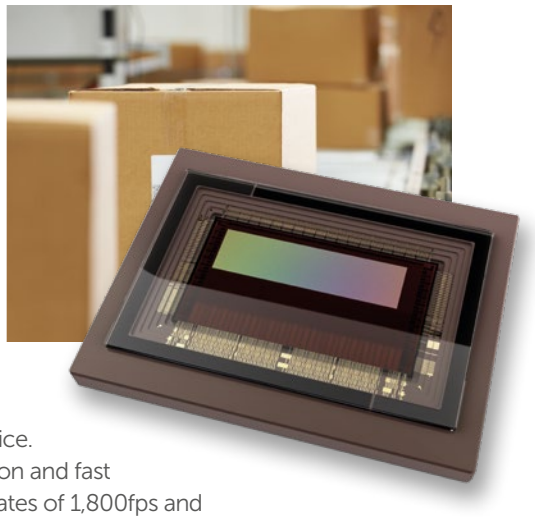
TELEDYNE e2v
Everywhereyoulook™
Part of the Teledyne Imaging Group

FLASH CMOS SENSOR FAMILY
3D Laser Triangulation Sensors

The Flash Family, Specifically Tailored for Laser Triangulation

The Flash family of image sensors allows you to have the highest speed at the lowest price. They feature a 6µm CMOS global shutter pixel which effectively combines high resolution and fast frame rate. They are available in a 4k or 2k horizontal resolution, with respective frame rates of 1,800fps and 1,500fps (@1,024 rows, 8 bits), and respective readout speeds of 61.4 Gbps and 25.6 Gbps. The sensors come in a µPGA ceramic package fitting in standard optical formats, APS-like optics in the 4k and C-Mount in the 2k.

SENSOR FEATURES

High-resolution in a rectangular format
2,048 × 1,080 & 4,096 × 1,080
Specifically designed for 3D laser triangulation

Very high frame rate and throughput
1,500fps & 1,800fps at 1,024 rows
Delivering outstanding sampling resolution and speed

HDR feature embedded on-chip
>53dB in linear, up to 100dB in multi-slope mode
To measure all kinds of surfaces

Feature-rich sensors
ROI, binning, vertical flipping, hot changes etc.
To perfectly meet application challenges

CUSTOMER BENEFITS

The first family of sensors specifically tailored for laser triangulation

» 2k and 4k horizontal resolution, matching the demands of current applications (and opening doors to new ones), that require outstanding spatial resolution with a high profiling rate

» Features only the required number of vertical resolution lines, saving on silicon and reducing the footprint (making a cheaper sensor and system), and making integration easier

A large library of derivatives are available
To fit with your requirements and to differentiate, to meet your specific application

Skilled local support
Sales and technical support is available in your region to help you design your system

APPLICATIONS

- Measuring length, width, height, tilt or volume of any surface
- PCB inspection
- Measuring shapes and profiles
- Detect worn or broken parts, roughness, aging, patching, humps, corrugation and waves
- Inspection in motion
- And more

SENSOR CHARACTERISTICS AND PERFORMANCES

	FLASH 4K	FLASH 2K
Resolution – pixels	4,096 (H) x 1,080 (V)	2,048 (H) x 1,080 (V)
Pixel size – square	6µm	
Max frame rate – fps	1,786 (1,024 rows, 8 bits)	1,489 (1,024 rows, 8 bits)
Bit depth	8	
Dark noise – e-	22	25
Qsat – e-	> 10,000	
Dynamic range – dB	>53 (Linear integration) - Up to 100 (HDR multi-slope mode)	
SNRmax – dB	40	
FFxQE – % @550 nm	47	53
Interface	64 LVDS Data Ports @ 480.75 MHz + 12*	32 LVDS Data Ports @ 400 MHz + 4*
Package type and size	380-pin µPGA – 49 x 37 mm	228-pin µPGA – 27 x 27 mm
Power supplies	3.3V Analog & 1.8V Digital	
Optics	APS-Like	C-Mount
Max power consumption – W	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: x2
- High Dynamic Range (HDR) for imaging both highly reflective and dark areas
- Concurrent exposure and readout in linear integration mode
- Analog gain control: 1x, 2x, 4x
- Offset control: on-chip, software configurable
- Trigger modes: single edge, PWC (Pulse Width Control)
- Vertical flipping

WIDE LIBRARY OF DERIVATIVES AVAILABLE

- **Software:** 10-bit operation, higher full-well capacity, additional operating modes trading-off speed, spatial resolution and power consumption, etc.
- **Hardware:** custom color-filter array, micro-lens arrangement, etc.

More derivatives are available on request, to achieve differentiation and optimal fit to your application. Please contact our sales team!

MAX FRAME RATE ACCORDING TO THE NUMBER OF ROWS

Number of rows	1,024	512	256	128	64	32	16	8
Flash 4K – fps	1,786	3,488	6,661	12,217	20,957	32,626	45,214	56,022
Flash 2K – fps	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