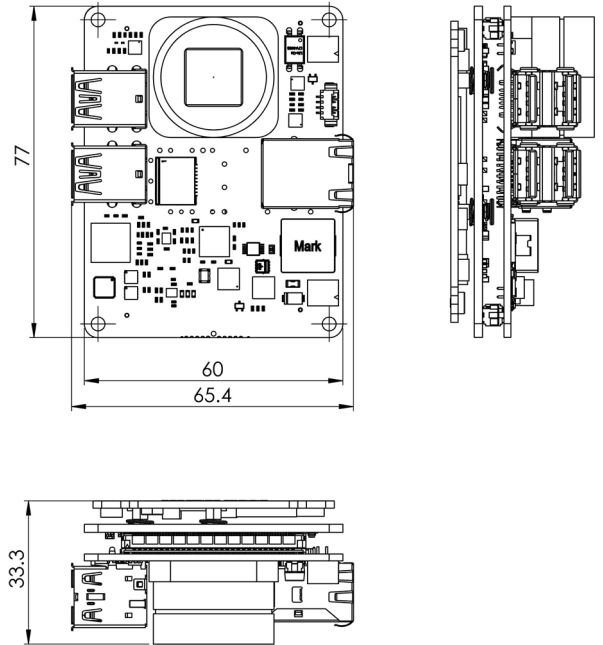
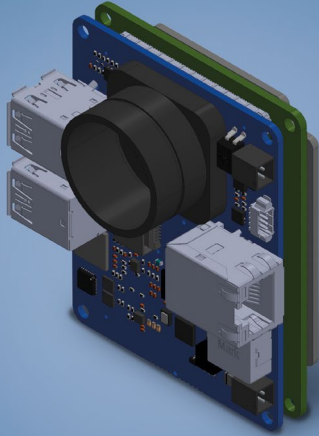


SMILODON 10G EVO



SMILODON 10G EVO is a highly customizable and user-programmable FPGA-based high-speed smart camera featuring a high-performance FPGA. It is a camera with a Xilinx Zynq FPGA, high-speed imaging sensor and a 1 or 10 Gigabit Ethernet. It includes high-performance ARM System-on-Chip (SoC) technology, combined with high-speed industrial Gpixel imaging sensors.

Smilodon 10G EVO includes full customizable and user-programmable open-reference design for a high-speed FPGA-based camera and application development system. Its emphasis is on an open hardware/software development model, high-frame rates, real-time image processing on FPGA and modern graphical user interface support on the PC side.

A suite of versatile and high-performance tools for Xilinx Zynq Ultrascale+ SoC FPGA is used to develop algorithms and process data in real-time. Images are acquired by 4 different Gpixel GMAX25xx sensors with up to 48x LVDS interface (46 Gbps), achieving brilliant images at a very high speed. The on-board 4GB DDR4 memory with 19 GB/s of bandwidth enables usage of complex buffered image processing.

KEY CAMERA FEATURES

Smilodon 10G EVO				
Resolution	5.0 MP	9 MP	18 MP	25 MP
Active Pixels (HxV)	2600 x 2160	4200 x 2160	4508 x 4096	5120 x 5120
Frame Rate	290 FPS	290 FPS	139 FPS	150 FPS
Sensor Format	1/2"CMOS	2/3"CMOS	1"CMOS	1.1"CMOS
Pixel Size	2.5 µm	2.5 µm	2.5 µm	2.5 µm
Sensor: Gpixel Sensor	GMAX2505	GMAX2509	GMAX2518	GMAX0505
Interface	1 or 10 Gigabit Ethernet SFP+ for fast data transmission			
Programmable and Reconfigurable FPGA	Xilinx Zynq Ultrascale+ Kria K26			

- Turbocharged industrial Gpixel GMAX25xx sensors, Color (Bayer) and
- Possible interfaces: 1 or 10 GigE.

The reference design can be easily edited with standard Xilinx Vivado tools. OptoMotive's custom IP cores seamlessly integrate inside the Xilinx Vivado toolchain. A large portion of the FPGA (PL) is free for the programming and development of new algorithms or the implementation of additional IP cores.

The 1.2 GHz Quad Core ARM Cortex A53 Programmable Subsystem runs a Linux OS with a custom-made EVO control and streaming stack (including Zero-copy TCP/IP stack). The SoC also includes dual 600MHz Cortex R5 processors which are free for user data processing. User applications or custom data post-processing can easily be added to the existing design.

TARGETED FOR:

- Laser triangulation - with a ready-made Peak detector on-board image processing core;
- Motion capture - with a ready-made BLOB detector or Running Length Encoder (RLE) on-board image processing core;
- Industrial process automation - to count, detect, check, verify, read, inspect and test different products, levels, components, etc. at incredible speed and
- Industrial quality control: to inspect defects, cracks or surface blemishes, size, position, dimension and color, foreign objects, quality General R&D.

CAMERA FAMILY		SMILODON 10G EVO			
Camera Model	5	9	18	25	
Model (Gpixel)	GMAX2505	GMAX2509	GMAX2518	GMAX0505	
Monochrome (M); Bayer Color (C); VIS-NIR (IR)	M or C	M or C	M or C	M or C or IR	
Diagonal mm	8.45 (1/2")	11.8 (2/3")	15.2 (1")	18.1 (1.1")	
Active pixels H x V	2600 x 2160	4200 x 2160	4508 x 4096	5120 x 5120	
Frame Rate (Full Frame)	290 FPS	290 FPS	139 FPS	150 FPS	
Pixel Size	2.5 µm	2.5 µm	2.5 µm	2.5 µm	
Dynamic Range 10bit/12bit	62/65 dB	62/65 dB	62/67 dB	60/65 dB	
ADC Resolution	10/12 bit				
Analogue Gain	x1 – x2, step of x0.25 @10bit; x1 – x4, step of x0.25 @12bit				
Region of Interest	YES, with 16 pixel increments				
Shutter Type	Electronic global shutter				
Shutter Time	5 µs – 90 s				
Pixel Clock Speed	From 1.5 to 3.8 Gpix/s				
Exposure	Linear, odd/even row HDR				
Pixel Correction	Dead pixel, LUT, flat-field correction				
Trigger Modes	Free running, trigger, overlap, pulse width				
Trigger Features	Delay 0 – 1000 ms, LP Filter 1.5Hz - 100 kHz				
Shutter Resolution	TBD				
FPGA	Xilinx Zynq Ultrascale+ Kria K26				
Free FPGA %	> 50%				
Volatile Memory	4 GB DDR4 with 19.2 GB/s bandwidth				
Non-volatile Memory	64 MB QSPI flash, 16 GB eMMC				
Lens Mount	C-mount (1" 32G thread)				
Temp Range	0 - 50°C				
Mass	TBD				
Protection	TBD				
Housing Material	CNC-machined aluminum, anodized				
RoHS	RoHS compliant				
Fixing Holes	4x M3 OEM				
Input Voltage	DC 9-50V				
Consumption	up to 30W				
IO Isolation	1x IN / 1x OUT opto-isolated				
Connectors	10G SFP+, 1G RJ45, 4x USB, 10 pin Hirose HR10A				
On-board Image Processing	As an option (if an IP Core is integrated)				
Open Reference Design	Yes				
Open architecture	Yes				
Software	Compatible with OptoMotive EVO software (full source included)				
Operating System	Windows 7, Windows 10, 64bit or 32bit				
Development Tools	Xilinx Vivado/SDK version 2021 or later; Microsoft Visual Studio 2017 or later				