

The Topaz Family

Featuring the World's Smallest 2M Industrial Grade Global Shutter Sensor



Topaz 2M is a 1,920 x 1,080 resolution, low noise image sensor, designed with Teledyne e2v's proprietary CMOS technology. A 1.5M wide-format derivative is also available, it has a reduced vertical resolution (1,920 x 800) which increases the frame per second speed.

Advanced CMOS technology enables the Topaz sensors to have uncompromised performance with only 2.5 μm pixels, and combines a unique chip layout and Chip Scale Packaging (CSP) to offer a tiny, compact form factor, ideal for cost sensitive mobile applications.

SENSOR FEATURES

2MP with small 1/3 inch optical format
7.65 mm x 4.45 mm mechanical outline with array centered in a CSP Package.

State-of-the-art FSI 2.5 μm global-shutter pixels.
In-pixel correlated double sampling, with dual light pipes providing the best QE and MTF performance.

Fast wake-up and on-the-fly register/configuration updates
2x MIMR/SIMR Regions of Interest, Context swapping and image statistics in footer.

Low power consumption < 220 mW.

MIPI CSI 2 interface
for direct data transfer to popular ISP's.

CUSTOMER BENEFITS

Extended range scanning, even in slim-mobile engine designs
Differentiation from the crowded 1MP platforms with improved cost/performance.

Excellent low-light SNR performance
Allows short exposure periods to eliminate motion blur and image distortion, for increased conveyor belt speeds and working distances.

Higher throughput and fastest scanning performance.
A powerful USP for end customers in logistics, transport, POS retail and factory automation.

Enables long battery life

Easy integration into the most popular embedded platforms.



SENSOR CHARACTERISTICS

PARAMETERS	TOPAZ 2M	TOPAZ 1.5M
Resolution (pixels)	1,920 (H) x 1,080 (V)	1,920 (H) x 800 (V)
Color filter array	B&W or color	
Pixel Type/Size (square)	Global Shutter /2.5 μm	
Size Type (inch)	1/3"	
Aspect Ratio	16:9	5:2
Maximum Frame Rates @ 8 bit @ 10 bit	100 fps 65 fps	130 fps 80 fps
Diagonal CRA (°)	14° or 25°	13.2° or 23.8°
Bit Depth	8/10	
Total Readout Noise (e-)	4	
DSNU (e-)	4	
SNR max (dB)	38	
MTF @ Nyquist, 550 nm (%)	>50	
Dynamic range (dB)	64	
Saturation capacity (e-)	6,000	
QE @ 520 nm (%)	>55	
Power consumption (mW)	220	
Standby (mW)	<1	

EMBEDDED FEATURES

- » 2 Regions of Interest modes (including overlapping)
- » Image statistics and histogram in image footer
- » Comprehensive I/O trigger functionalities
- » Up to 16x analog gain, with high granularity
- » Fast wake up—1st good frame in < 10 ms
- » Frame-to-frame context based control registers
- » Dark offset and VFPN correction
- » White balance control
- » On-chip voltage regulators/converters
- » Sub-sampling up to 1/64
- » On-chip voltage regulators/converters
- » Options:
 - Color Filter Array: B&W or color
 - Chief Ray Angle: two options available (14° or 25° for Topaz 2M & 13.2° or 23.8° for Topaz 1.5M)

CHARACTERISTICS

- » Optical & mechanical matching centers
- » Package: 7.65 mm x 4.45 mm CSP
- » Operating temperature [-40°C to 85°C]
- » Power consumption operating: 220 mW
- » Power consumption standby: 300 μW
- » MIPI CSI-2 outputs (1 or 2 lanes)
- » I²C control (high speed compatible)

TYPICAL APPLICATIONS

- » Barcodes and OCR scanning
- » Factory automation
- » Automated Optical Inspection (AOI)
- » Robotics
- » Logistics
- » Professional drones
- » IoT edge devices
- » AR/VR
- » Wearable security (body camera)

ORDER CODES	TOPAZ 2M		TOPAZ 1.5M	
	CRA 14°	CRA 25°	CRA 13.2°	CRA 23.8°
B&W	EV2S02MB-PM23000-T	EV2S02MB-PM23020-T	EV2S1M5B-PM23000-T	EV2S1M5B-PM23020-T
COLOR	EV2S02MC-PM23000-T	EV2S02MC-PM23020-T	EV2S1M5C-PM23000-T	EV2S1M5C-PM23020-T

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