

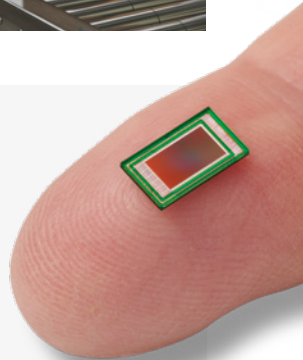
THE TOPAZ FAMILY

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 and 20+ years of know-how in barcode scanning use-cases. A 1.5M wide-format derivative is also available, it has a reduced vertical resolution (1,920 x 800) which increases the fps output (up to 130 images / second).

Advanced CMOS technology enables the Topaz sensors to deliver 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 1/3.2 inch optical format
 7.65 mm x 4.45 mm mechanical outline with array centered in a CSP Package

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

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

MIPI CSI 2 interface
 for direct data transfer to popular ISP and SOC vision platform

Low power consumption < 200 mW

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
 Unique design for end customers in logistics, transport, POS retail and factory automation

Easy integration into the most popular embedded platforms

Enables long battery life



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	
Optical Format (inch)	1/3.2"	
Aspect Ratio	16:9	5:2
Maximum Frame Rates @ 8 bit @ 10 bit	100 fps 65 fps	130 fps 85 fps
Diagonal CRA (°)	14° or 21°	13° or 20°
Bit Depth	8/10	
Total Readout Noise (e-) @ 10 bit @ 25°C	3.5	
DSNU (e-)	3.5	
SNR max (dB)	37.4	
MTF @ Nyquist, 550 nm (%)	> 60	
Dynamic Range (dB)	64	
QE @ 520 nm (%)	63	
Power Consumption (mW)	<200	

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 steps, 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
- Sub-sampling up to 1/64
- On-chip voltage regulators/converters
- Options:
 - B&W (monochrome) or Color Filter Array option
 - Chief Ray Angle: two options available (14° or 21° for Topaz 2M & 13° or 20° for Topaz 1.5M)
 - Glass protection foil option

CHARACTERISTICS

- Optical & mechanical matching centers
- Package: 7.65 mm x 4.45 mm CSP
- Operating temperature [-40°C to 85°C]
- Power consumption: < 200 mW (for 10-bit @ max. fps)
- MIPI CSI-2 outputs (1 or 2 lanes)
- I²C control (Fast + compatible 1 MHz clock rate max)

TYPICAL APPLICATIONS

- Barcodes scanning and logistics
- Factory automation
- Automated Optical Inspection (AOI)
- Professional robotics & drones
- OCR scanning
- AR/VR equipment (goggles)
- Wearable security (body camera)

ORDER CODES	TOPAZ 2M		TOPAZ 1.5M	
	CRA 14°	CRA 21°	CRA 13°	CRA 20°
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