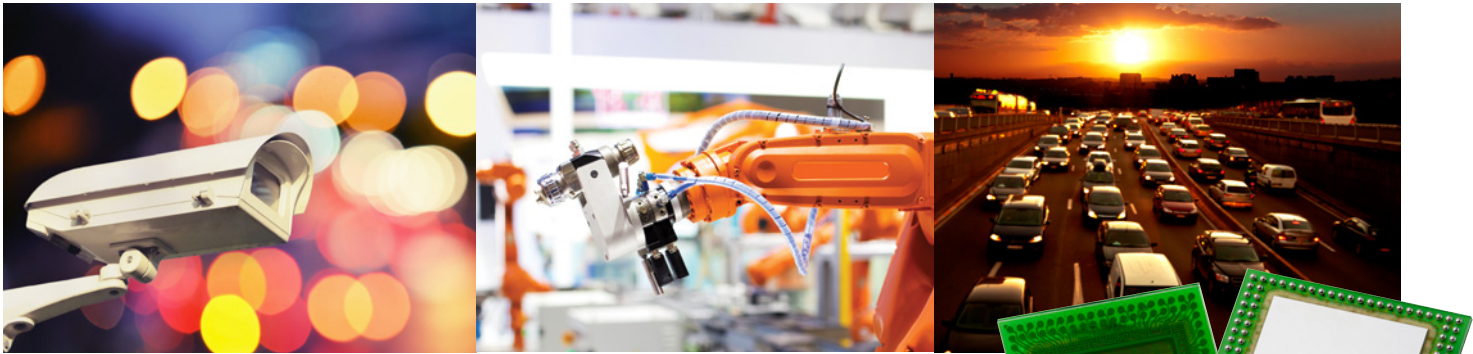# EMERALD 2M
READY FOR EMBEDDED VISION

Motion free artefacts, miniaturization, low cost and low power, are all key characteristics that fuel the design of new (and future generations) of imaging systems. Teledyne e2v's new Emerald 2M CMOS image sensor offers an easy solution to all of these requirements by integrating on-chip functionalities that reduce the computational load on the processor as well as programming time for engineers.

Camera manufacturers and industrial OEM's can benefit from the features of Emerald 2M to bring their embedded vision systems to the market with the world's smallest full HD format global shutter image sensor.

SENSOR FEATURES

Full HD resolution 2 Megapixels	**MIPI CSI-2 interface** for direct data transfer to state-of-the-art ISP/SoC	1/2.9'' optical format for **cost effective optics**
Fast Self Exposure© for single frame auto exposure control	**Single frame HDR mode** for blur-free and high dynamic image captures	**Ultra-low power consumption** ≤ 280 mW

CUSTOMER BENEFITS

Reduce total bill of materials including lighting & optics	**Long battery autonomy** for portable devices	Identify and classify **high-speed moving objects**
Miniaturized embedded vision systems due to optimized PCB area	Capture details on **high dynamic outdoor** scenes	

Sensor Characteristics

PARAMETER	EMERALD 2M		
Resolution – pixels	1,920 (H) x 1,080 (V)		
Pixel type / size – square	Global Shutter / 2.8 µm		
Size type	1"/2.9"		
Aspect ratio	16:9		
Max frame rate	60 fps @ 12 bit	80 fps @ 10 bit	115 fps @ 8 bit
Bit depth	8/10/12		
Readout noise	2.8 e-		
SNRmax	38 dB		
Dynamic range	68 dB (standard mode) up to 100+ dB (HDR mode)		
Q.E. – %, @ 550 nm	65%		

KEY ELEMENTS

- 2 Megapixels delivering full HD resolution
- 2.8 µm CMOS global shutter pixel allowing true CDS
- Compatible S-mount, C-mount
- Optical center is centered in package
- Options:
  - Color Filter Array: B&W or color
  - Package: Ceramic LGA 13.3 x 14.1 mm² or glass fan-out BGA 10.01 x 11.51 mm²
  - Chief Ray Angle: several options available to ensure the perfect match with your optics
- Footprint and optical compatible with Emerald 3.2M and 5M
- 4 lanes MIPI CSI-2
- Power consumption: ≤0.28W @ full speed & full resolution

EMBEDDED FEATURES

- ROI (up to 4, overlap and independent configurations allowed)
- Single frame HDR up to 100 dB
- Fast Self-Exposure©
- Binning (analog & digital)
- Sub sampling
- Look-up table
- Image statistics and context output in image

TYPICAL APPLICATIONS

- Machine vision
- Automated Optical Inspection
- Product tracking and counting
- Robotics
- Embedded vision systems
- Security & surveillance
- Intelligent Transportation Systems

ORDER CODES – EMERALD 2M

	GLASS FAN-OUT		CERAMIC LGA
	5° CRA	12° CRA	5° CRA
B&W	EV2S02MB-FM20150-T	EV2S02MB-FM20350-T	EV2S02MB-CM20150-T
COLOR	EV2S02MC-FM20150-T	EV2S02MC-FM20350-T	EV2S02MC-CM20150-T