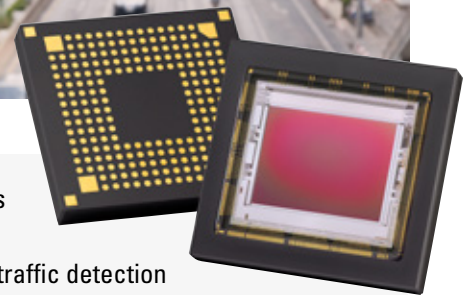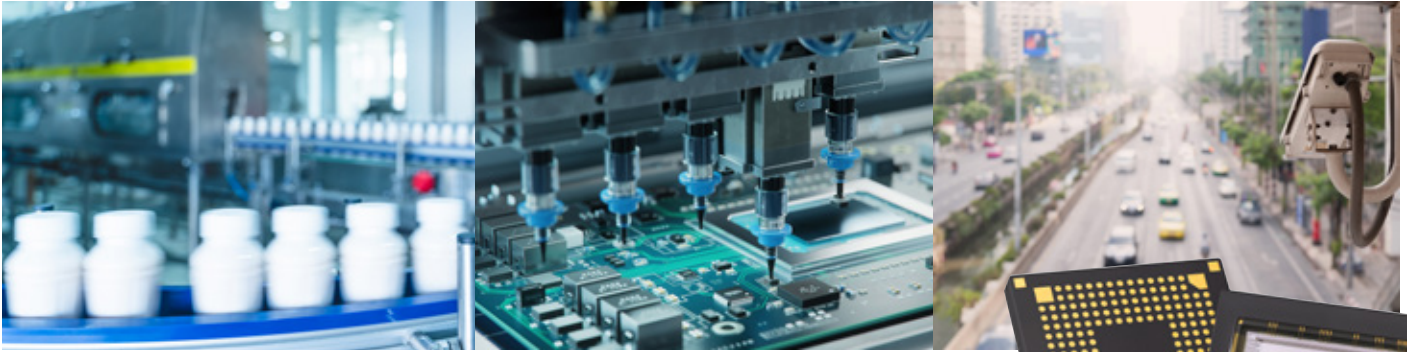# EMERALD GEN2
THE NEXT GENERATION OF HIGH-PERFORMANCE GLOBAL SHUTTER CMOS IMAGE SENSORS

Emerald™ Gen2 is a new state-of-the-art CMOS image sensor family built on Teledyne e2v's advanced imaging technologies. This new family delivers enhanced performance, making the new sensors ideal for a wide range of machine vision uses, outdoor surveillance, and traffic detection and monitoring cameras. Emerald Gen2 is available in 8.9-Megapixels (4,096 x 2,160) or 12-Megapixels (4,096 x 3,072), in monochrome or color. There are two-speed grades (standard and high) for demanding applications that require sharp images at very high speeds, such as food sorting, inspection, and Intelligent Traffic Systems.

SENSOR FEATURES

| | CUSTOMER BENEFITS |

SENSOR FEATURES		CUSTOMER BENEFITS
High image processing throughput with 100 fps frame rate @ 8.9M resolution	▶	Quick and accurate inspection capabilities
Compact 21 x 20 mm² Ceramic Land Grid Array (CLGA) package with centered matrix	▶	Compatible with 1-inch C-mount optics for easy integration and reduced costs
A state-of-the-art low noise global shutter	▶	Delivering excellent low-light SNR and the ability to work in high-contrast scenes
LVDS and MIPI CSI 2 output	▶	Flexibility in the choice of system architecture

Sensor Characteristics

PARAMETER	EMERALD GEN2-8.9M	EMERALD GEN2-12M
Resolution – pixels	4,096 (H) x 2,160 (V)	4,096 (H) x 3,072 (V)
Pixel size – square	2.8 µm	2.8 µm
Aspect ratio	17:9	4:3
Max frame rate @ 10bits – FPS (standard speed)	65[1]	33[1]
Max frame rate @ 10bits – FPS (high speed)	100[1]	70[1]
Bit depth	8/10/12	8/10/12
Readout noise – e-	3[1]	3[1]
Qsat – e-	7,200[1]	7,200[1]
Dynamic range – dB	67.5[1]	67.5[1]
SNRmax – dB	38.6[1]	38.6[1]
Q.E. – %, @ 550 nm	65[1]	65[1]

[1] Preliminary

KEY SPECIFICATIONS

- Two resolutions (8.9M & 12M) pin-to-pin compatible
- 2.8 µm CMOS global shutter pixel enabling true CDS
- Up to 65 fps @ full resolution (8.9M) at 10 bits
- Two different speed grades
- Compact ceramic LGA package 20 x 21 mm²
- Two different interfaces (LVDS & MIPI CSI-2)
- 16 LVDS outputs @850 Mbps per lane
- Power consumption: ≤2W @full speed & full resolution

EMBEDDED FEATURES

- Single Integration Multiple ROI (SIMR): up to 4, non-overlapping and the same integration for each ROI, improving frame rate
- Multi Integration Multiple ROI (MIMR): 2 independent ROI's with possible overlapping and with separated exposure, gain and repetition numbers for each ROI, improving frame rate
- High Dynamic Range mode (dual exposure with MIMR)
- Row sub sampling
- Look-up table
- Improved defective pixel correction
- FPN correction
- Flipping/mirroring
- Image statistics and context output
- Multiple trigger modes

APPLICATIONS

- Machine vision
- Product inspection and sorting
- Pick and place robot guidance
- Outdoor surveillance
- Intelligent Transportation Systems

ORDER CODES

Description	Part Number
Emerald Gen2 - 8.9M, Mono, Standard speed	EV2S8M9B-CLM0150-T
Emerald Gen2 - 8.9M, Mono, High speed	EV2S8M9B-CLM0350-T
Emerald Gen2 - 8.9M, Color, Standard speed	EV2S8M9C-CLM0150-T
Emerald Gen2 - 8.9M, Color, High speed	EV2S8M9C-CLM0350-T
Emerald Gen2 - 12M, Mono, Standard speed	EV2S12MB-CLM0150-T
Emerald Gen2 - 12M, Mono, High speed	EV2S12MB-CLM0350-T
Emerald Gen2 - 12M, Color, Standard speed	EV2S12MC-CLM0150-T
Emerald Gen2 - 12M, Color, High speed	EV2S12MC-CLM0350-T