

Compact with a Small Global Shutter CMOS Pixel



To improve production yields and speed up throughput, industrial and machine vision companies are seeking new imaging solutions which are able to operate with high precision at high speed. The Emerald 8M9 image sensor meets this challenge by combining low-noise performance with exclusive features to overcome the demands of machine vision applications.

SENSOR FEATURES

<p>High precision 8.9 Megapixel resolution</p>	<p>More objects captured in a single high resolution shot with its ROI feature</p>
<p>Combine speed and contrast with a new HDR mode</p>	<p>Reduced integration costs with its compact 2/3" optical format</p>

CUSTOMER BENEFITS

<p>Accurate and quick inspection enabling an improved defect detection ratio during high throughput</p>	<p>Simultaneous verification tasks using a single sensor</p>
<p>Lighting system costs saving due to improved dynamic range</p>	<p>Seamless and cost-effective integration</p>

SENSOR CHARACTERISTICS

	EMERALD 8M9 Standard speed	EMERALD 8M9 High speed
Resolution – pixels	4,096 (H) x 2,160 (V)	
Pixel size – square	2.8µm	
Size type – inch	2/3"	
Aspect ratio	17:9	
Max frame rate	47fps @10 bit 34fps @12 bit	107fps @10 bit 67fps @12 bit
Bit depth	8/10/12	
Readout noise – e-	2.8 (standard mode) 1.7 (ultra-low noise mode)	
Qsat – e-	≥ 6,000	
Dynamic range – dB	67.5 (normal mode) 71.9 (ultra-low noise mode) up to 120 (HDR mode)	
SNRmax – dB	>39	
Q.E. – %, @ 550nm	65	

KEY ELEMENTS

- » 8.9 Megapixels delivering 4k ultra high definition resolution
- » 2.8µm CMOS global shutter pixel allowing true CDS
- » Up to 107fps @ full resolution & 10 bits
- » 2 speed grades
- » Pin-to-pin compatible with Emerald 12M and 16M
- » Ceramic LGA package, 20 x 21mm², 224 pins
- » 16 LVDS outputs @800 Mbps
- » Power consumption: ≤1.6 W @ full speed & full resolution

EMBEDDED FEATURES

- » ROI (up to 4, overlap and independent configurations allowed)
- » High Dynamic Range modes
- » Binning
- » Sub sampling
- » Look-up table
- » Defective pixel correction
- » Flipping/mirroring
- » Image statistics and context output
- » Multiple trigger modes
- » SPI controls

TYPICAL APPLICATIONS

- » Machine vision
- » Product inspection and sorting
- » Pick & place robot guidance