

# Bora, the Industry's First 1.3MP Time of Flight Sensor



**Bora** is a 1.3 million pixel Time of Flight CMOS image sensor, designed with Teledyne e2v's proprietary CMOS imaging technology, and ideal for systems operating at short or mid distances and ranges. Based on an innovative 10  $\mu\text{m}$  pixel design and incorporating a resolution of 1,280 x 1,024 pixels, Bora offers excellent sensitivity and a unique on-chip gated global shutter mode. This enables gating times of down to 42 ns, allowing a 1.3 MP depth resolution to be obtained, while still maintaining excellent precision and speed performances.

## SENSOR FEATURES

### Excellent precision and speed performance

Fast gating times and excellent sensitivity  
>305 fps @ full resolution, 10 bits

### Compact, with high spatial resolution

1,280 x 1,024 resolution

### Flexible configuration

Frame-to-frame timing configuration changes  
HDR feature by multi-capture for lower noise, higher precision

## CUSTOMER BENEFITS

### Reliable real-time 3D detection image capture

>30 fps depth map at full resolution

### Very large Field-of-View scene capture

1.3MP spatial resolution in both 2D and 3D  
Optimized and cost effective systems

### Greater adaptability to various scenarios

Short and mid-range distance ranges  
(10 m and over)  
Ambient light robustness

## BORA CMOS SENSOR

3D Time of Flight Sensor

SENSOR CHARACTERISTICS	
Resolution – pixels	1,280 x 1,024
Aspect Ratio	5 : 4
Size Type	1 inch
Pixel Type / size – square	Three Memory Node global shutter – gated global shutter / 10 $\mu$ m
Maximum frame rate – fps	175 / 305 @ full resolution, 12 / 10 bit
FFxQE – %, – nm	5.7 / 3.3 @ full resolution, 12 / 10 bit
MTF – %	45 @ 850 nm / 22 @ 940 nm
Transfer time – ns	$\geq$ 42
Readout noise – e- RMS	< 33
Linearity: L <sub>Emin</sub> / L <sub>Emax</sub> – %	-1.5 / +1.5
Full well capacity – e-	25,000
Temporal noise – e-	< 33
Dynamic Range – dB	59 @ single frame

### EMBEDDED FEATURES

- » Multi integration mode
- » Region of interest
- » Sub-sampling (horizontal/vertical)

### SYSTEM INTEGRATION

- » Package: 67 pins ceramic PGA
- » Operating temperature [-40°C to 65°C]
- » Output format true 8/10/12 bit LVDS and synchronization
- » SPI controls

### TYPICAL APPLICATIONS

- » Robotics
- » Logistics
- » Factory safety and surveillance
- » Construction and building mapping

### ORDER CODE

Bora samples: EV3S0M5B-CLVN000-P

Bora production devices: EV3S0M5B-CLVN000-T

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