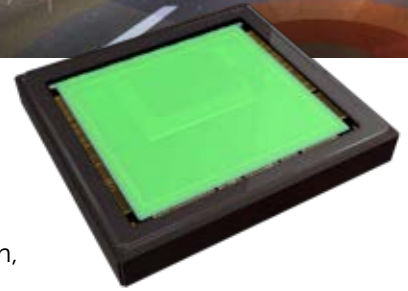


Hydra3D

The Best-in-Class Time of Flight Sensor



Hydra3D is a 832 x 600 pixel resolution CMOS image sensor, designed with Teledyne e2v's proprietary CMOS technology, which enables the next generation of 3D vision systems. The sensor includes a 10 μm, three-tap cutting-edge pixel, which provides very fast transfer times for customers seeking the highest levels of 3D performance, including high depth resolution, high speed and flexible operation conditions. Hydra3D can be operated in real-time at short, mid and long range distances, in both indoor and outdoor conditions, while providing a best-in-class temporal precision.



SENSOR FEATURES

Excellent precision and speed performance
due to its innovative three-tap cutting-edge pixel
Fast transfer times and excellent
demodulation contrast and sensitivity

Compact, with high spatial resolution
832 x 600 resolution

Flexible configuration
Frame-to-frame timing configuration changes
HDR feature
On-chip multi-system management

CUSTOMER BENEFITS

Reliable 3D detection of fast moving scenes and real-time decisions
High precision, no motion blur
>30 fps depth map

Larger Field-of-View scene capture
832 x 600 spatial resolution in both 2D and 3D
Compatible with 2/3" optics

Greater adaptability to various scenarios, in all light conditions
Together with HDR, high flexibility to trade-off
distance range, object reflectivity, frame rate,
etc. Robust to ambient light and multi-systems

HYDRA3D CMOS SENSOR

3D Time of Flight sensor

SENSOR CHARACTERISTICS ¹				
Resolution – pixels	832 x 600			
Aspect Ratio	4 : 3			
Size Type	2/3 (10.3 mm diagonal)			
Pixel Type / size – square	Three-tap global shutter – gated global shutter / 10 µm			
Maximum frame rate @ 12 bits	416.7 fps ²			
FFxQE – %, @ 940 nm	18.4 ³			
Transfer time – ns	≥ 20			
Readout noise – e- RMS	2.5			
Linearity: L _{Emin} / L _{Emax} – %	-1 / +1			
	Node A	Node B	Node C	A+B+C
Full well capacity – e-	10,000	10,000	10,000	30,000
Temporal noise – e-	10	10	10	17.3
Dynamic Range ⁴ – dB	60	60	60	64.7

1. Expected performances, to be confirmed by measurements

2. Considering only readout. Exposure is not concurrent

3. In 2D greyscale mode

4. Single readout, 2D greyscale mode

EMBEDDED FEATURES

- » Multiple acquisition modes: distance measurement and greyscale
- » High Dynamic Range mode through non-destructive readout
- » Programmable exposure time
- » Row-wise ROI (up to 4 for distance measurement, 1 for 2D greyscale image)
- » Column-wise ROI (with 64 columns granularity)
- » Frame-to-frame “hot” changes of exposure parameters and ROI
- » Multiple trigger modes
- » HFPN correction
- » On-chip multi-system management

SYSTEM INTEGRATION

- » Package: ceramic LGA
- » Operating temperature [-40°C to 105°C]
- » Power consumption: 2.2 W⁵
- » Scalable LVDS outputs (13, 7 or 4 channels)
- » SPI controls

5. Full array, 200ns gating cycle duration (three phases), 10% duty cycle, 50% gating time

TYPICAL APPLICATIONS

- » Factory automation
- » Robotics
- » Logistics
- » Surveillance
- » ITS
- » Mapping / building
- » Drones

ORDER CODE – HYDRA3D SAMPLES

EV3S0M5B-CLVN000-T

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