

TOPPAN

**TOPPAN
3D ToF Sensor**

TOPPANホールディングス株式会社
TOPPAN HOLDINGS INC.

Product Catalog

TPHT4030

VGA 3D ToF Sensor

hybrid ToF™

Description

The new Short Pulse based hybrid ToF™(hToF)™ sensor has a 4-tap pixel structure, back-side illumination (BSI) and VGA resolution depth image sensor that is developed for next-generation ToF sensing devices. This sensor supports highly-flexible measurement range and up to 120fps fast-tracking performance with ambient light tolerance. It is suitable for FA and service robots, obstacle detection and SLAM for autonomous robot applications.

Feature

- Thanks to TOPPAN's original pixel structure, 1.5x high sensitivity performance than conventional ToF sensors.
- Fast and accurate dynamic 3D sensing thanks to pixel operation optimized for our unique ToF sensing technology.
- With the Dynamic Ambient Light Suppression (DALSS) technology, the objects are recognized even with an ambient light of up to 100,000 lx.
- Flexible measurement range by hToF™ sensing techniques.
- The smart interference cancelation function for the use of multiple ToF cameras.

Optical format	1/4 Type
Die size	8.1 mm x 8.1 mm (Tentative)
Number of pixels	647 x 488
Pixel size	5.6µm x 5.6µm
Temperature sensor	1 x 488
Pixel structure	4Tap ToF pixel
Shutter type	Gloval shutter
ADC	On-chip 12-bit
Frame rate	30fps(Typ.), up to 120fps
Read time	≤ 13msec(Typ.)
Sensor interface	4data + 1 clock lanes LVDS
Output data rate	540Mbps
Input clock frequency	27MHz
Power supply voltage	1.2V / 3.3V + bias voltages
Q.E.	49% @850nm, 30% @940nm
Ordering	Wafer or Die

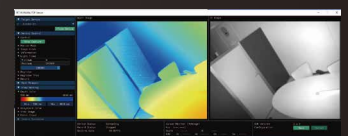
ToF Evaluation Camera Kit

Dimensions	60 x 60 x 60mm (Camera head)
Weight	965g
Depth sensor	TPHT4030A 3D ToF Sensor
Depth sensing method	Short pulse based hToF™ Sensing
Active pixels	640 x 480
Measurement range	0.5 ~ 7m (Normal) 1 ~ 20m (Wide range)
Frame rate	30, 60, 90 and 120fps (Normal) 15fps (Wide Range)
Illumination	4x VCSEL (λ = 940nm)
Illumination power	T.B.D. Laser class 1 (IEC60825-1 Ed. 3)
Depth noise	≤ 1% (@4m, Normal) ≤ 1% (@20m, Wide range)
Field of view	60° (H) x 45° (V)
Power supply	12V / 2A
Interface	USB3.0 (Micro-B)
Operation system	Windows 10, Linux (Ubuntu)
Remark	Separate ToF camera head and Depth Calculation unit type



ToF Camera Head

Depth Calc. Unit



VGA ToF viewer

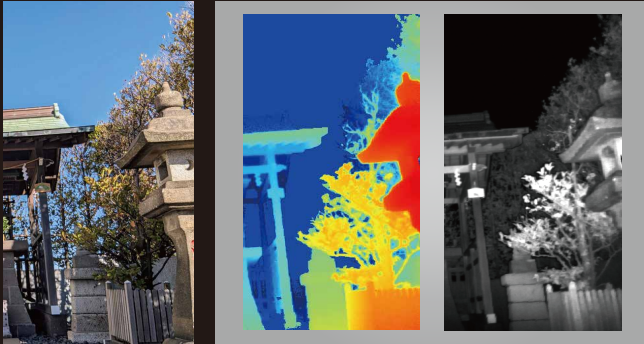
Kit Contents

- ToF evaluation camera for TPHT4030 Sensor
- VGA ToF viewer application for sensor evaluation
- USB cable, AC adapter (plug: Type A)
- Camera Cable (Camera head - Depth Calc. Unit)
- SDK documents
- Camera documents

This product is under development and will be upgraded in the future to improve sensing performances. The above specifications might be changed depending on the camera settings.

High Ambient Light Tolerance

Capable of 3D sensing both indoors and outdoors in approximately 100,000 lx environment.



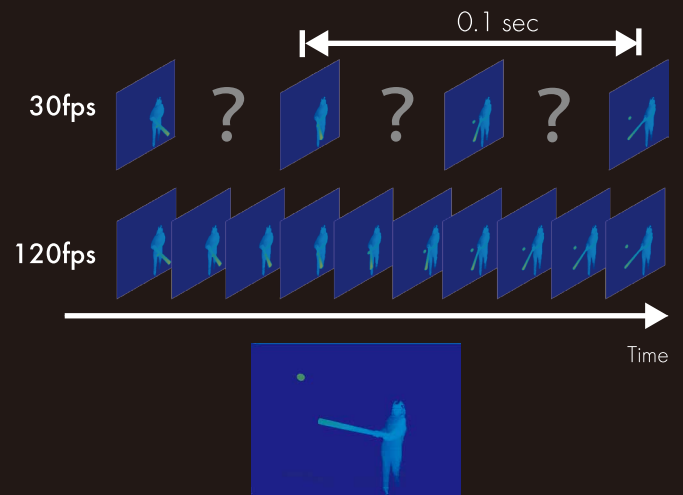
Outdoor

Depth

Infrared

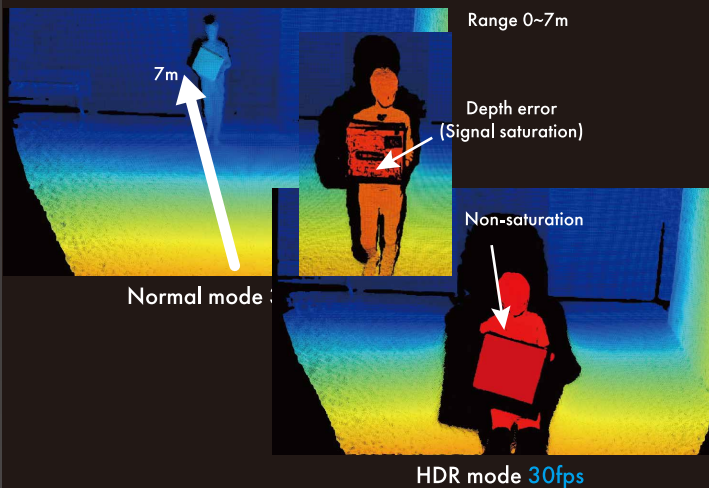
High Frame Rate

120fps operation by short pulse ToF method thanks to less motion blurs and artifacts



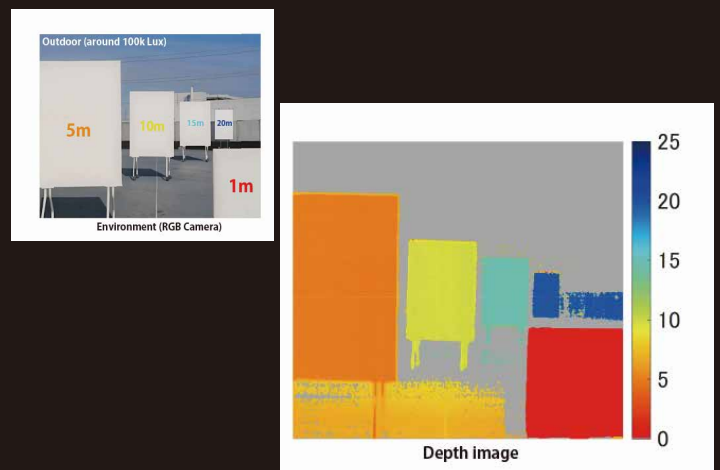
HighDynamic Range

Enables signal dynamic range expansion without decreasing frame rate



Long Working Distance

Depth sensing up to 20m by the long range mode using hybrid ToFTM technology



Document

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TOPPAN ToF Sensing BLOG
<https://toppan-tof.jp/>



Challenging and Seeking to the new field,
where nobody can achieve, and where nobody has done before.

TOPPAN

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