



カメラモジュール
ラインアップ
Dec. 2019

双峰エンタープライズ株式会社

IMX219レンズモジュールシリーズ

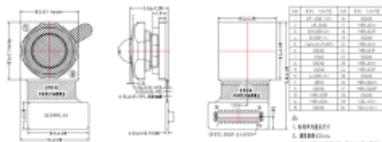
2019年のハイライト

Vision System向けイメージセンサーモジュール
SE219GS-00-CB (w/ IRCF), SE219FE-01-CB (w/o IRCF)

あのIMX219が(x, y)投影サイズそのままに魚眼カメラになりました。
しかも厚みは6mm以下。狭い場所に仕込むことができます。
従来製品(76°)に対し圧倒的な情報量の画像取得が可能です。



バンダイ様の人気商品
ガシャポンのザクヘッドに
びったり収まります。



Physical Computing Lab for TechStars から販売中!

魚眼カメラ応用例: detect_cat (アプリSW配布中。)



Vision Processing適用事例

認識系アプリ



測距系アプリ



超広角応用ステレオ測距



ラインレーザー+単眼ステレオ測距
120° 広角レーザーとの組み合わせ
(展示有)

Soho Enterprise Ltd. Fish Eye Camera Board w/ 8Mpix CIS for Single Board Computers ■SE219FE-00/01-CB

- Ultra Wide View Angle: FoV = 187° ± 3° Suitable for wide angle image recognition usage in AIoT
- Adopted the most mature image sensor for SBC. Sony IMX219PQH5-C
- Camera Driver with AE/AFWB functions for "linker board" is available. Processed in Embedded HW ISP, Full Size 20fps/FHD 30
- w/ IRCF(-00), w/o IRCF(-01) modules are available
- Extensivity: FFC connector for MIPI CSI-2 4 lane connection for fast
- Ready for use: No need remodeling the module to get wide FoV

- Assumed application cases
- Monitoring wildlife ecology, harm to agriculture
 - Home-use video monitoring & recording
 - VR Stereo Vision
 - 360° monitoring on drones, robot cars, etc.
 - Wide vision for Robots, AI speaker, any others
 - Sports camera for tennis, volleyball, badminton

Fish Eye Lens Module: SE219FE-00/01

Item	SE219FE-00-CB	SE219FE-01-CB
Product Code	SE219FE-00-CB	SE219FE-01-CB
Manufacturer	Sony	Sony
Image Sensor	Back-side illuminated CMOS image sensor	Back-side illuminated CMOS image sensor
Pixel size	1.12um x 1.12um	1.12um x 1.12um
Active Image Area	3280 x 2464 8Mpix	3280 x 2464 8Mpix
Optical Size	Type 1/4 Diagonal 4.65mm	Type 1/4 Diagonal 4.65mm
Operation Temperature	-20~60°C Function guarantee	-20~60°C Function guarantee
Storage Temperature	-30~80°C Performance guarantee	-30~80°C Performance guarantee
Configuration	Type 1/4, 0P	Type 1/4, 0P
FoV	187° ± 3°	187° ± 3°
F No.	2.10 ± 0%	2.10 ± 0%
Focus range	30cm - ∞, Adjusted at 60cm when shipped	30cm - ∞, Adjusted at 60cm when shipped
Connector	30pin	Compatible w/ Rasp Camera v2.1 module
Size	8.5mm*9.5mm*5.50mm	Compatible w/ Rasp Camera v2.1 module
Weight	0.4g	0.4g
Power Supply	Analog: 2.8V ± 0.2V	Analog: 2.8V ± 0.2V
	Digital: 1.2V ± 0.12V	Digital: 1.2V ± 0.12V
	IO: 1.8V ± 0.18V	IO: 1.8V ± 0.18V
Size	25mm*24mm	Almost same size and compatible position for screw holes with RaspberryPi camera V2.1.
Connector	1.0mm pitch 15pin	For Tricker board, RaspberryPi
	0.5mm pitch 22pin	RaspberryPi, RPi3 compute module, etc.
IO Format		Support MIPI CSI-2 2lane and 4 lane
Output	Maximum speed	Full size 30fps, FHD: 60fps, 720P: 180fps (MIPI 4 lane mode)
Power Supply	3.3V ± 0.3V	Generate Analog 2.8V by on-board LDO
		Generate Digital 1.2V by on-board DC-converter
		Generate Analog 1.8V by on-board LDO
		Generate AF 2.8V by on-board optional LDO

SE Camera Board Series Product Brochure

Key Specifications		SE219FE-00/01-CB
Image Sensor	Product Code	BOC219PQH5-C
	Manufacturer	Sony
Lens	FoV	187° ± 3°
	F No.	2.10 ± 0%
Module	Connector	30pin
	Size	8.5mm*9.5mm*5.50mm
Power Supply	Analog	2.8V ± 0.2V
	Digital	1.2V ± 0.12V
Board	Size	25mm*24mm
	Connector	1.0mm pitch 15pin
Power Supply	IO	1.8V ± 0.18V
	Output	Maximum speed

- Why are the SE camera boards suitable for AIoT vision processing applications?
- Good image quality**
The SE camera series uses a high-quality Sony image sensors of better SNR.
 - Ready to use on linker board and other SBCs**
Camera drivers are ready. Easy to customize for PoC prototyping
 - Variety of Options**
Wide variety of options for resolution, global shutter, wide FoV lens, focus driver, etc.
 - Low Latency, RAW Image**
Suitable for real-time autonomous control system
 - Affordable for everyone**
Pricing that individuals can purchase from a single item in line with the corporate philosophy of helping to create open innovation.
- Further Information:
<https://soho-enterprise.com/>
<https://www.visionproc.org/index.php>

OPNOUS ToFカメラシリーズ

OPNOUS社各種製品サンプル取次販売中



OPNM8508B



- VCSEL Power: 2W * 1
- Lens FOV: 70° * 55°
- IR Filter: 940nm
- Resolution: 228 * 171
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 3m
- Accuracy: <1%
- Interface: MIPI
- Dimension: 12.0mm * 12mm * 6.2mm

OPNM8808B



- VCSEL Power: 2W * 1
- Lens FOV: 70° * 55°
- IR Filter: 940nm
- Resolution: 228 * 171
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 3m
- Accuracy: <1%
- Interface: CSI
- Dimension: 12mm * 12mm * 6.2mm

OPNM8818A



- VCSEL Power: 2W * 1
- Lens FOV: 70° * 55°
- IR Filter: 940nm
- Resolution: 228 * 171
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 3m
- Accuracy: <1%
- Interface: CSI
- Dimension: 18.0mm * 12.0mm * 12.0mm

OPNM8608B



- VCSEL Power: 2W
- Lens FOV: 70° * 55°
- IR Filter: 940nm
- Resolution: 228 * 171
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 3m
- Accuracy: <1%
- Interface: CSI
- Dimension: 12.0mm * 12.0mm * 6.2mm
- IR Filter: 940nm
- Dimension: 25.2mm * 12mm * 6.2mm

Confidential

OPNOUS社各種製品サンプル取次販売中

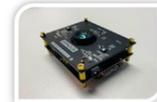


OPNE8008A



- VCSEL Power: 2W * 1
- Lens FOV: 70° * 55°
- IR Filter: 940nm
- Resolution: 228 * 171
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 3m
- Accuracy: <1%
- Interface: CSI
- Dimension: 12mm * 12mm * 6.2mm

OPNE8008Bx



- VCSEL Power: 2W * 1
- Lens FOV: 70° * 55°
- IR Filter: 940nm
- Resolution: 228 * 171
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 3m
- Accuracy: <1%
- Interface: CSI
- Dimension: 12mm * 12mm * 6.2mm

Confidential

OPNOUS社と共同開発中、SBC対応ToFセンサーモジュール
OPNM8708A-CB (仮称)

自走ロボットや自動搬送機に必要なDepth情報を正確に取得するToFセンサーが
いよいよTinker Boardでも手軽に使えるようになります。
顔認識においても3D情報がはいると飛躍的に精度が高まります。
ご期待ください。

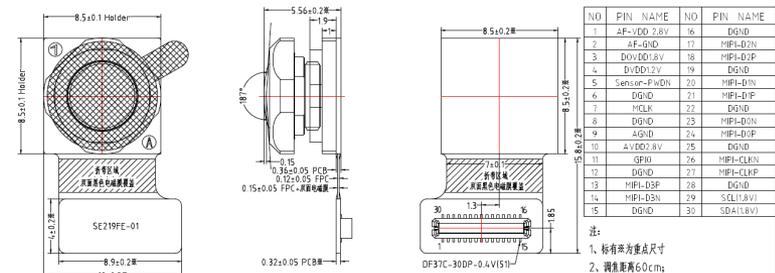
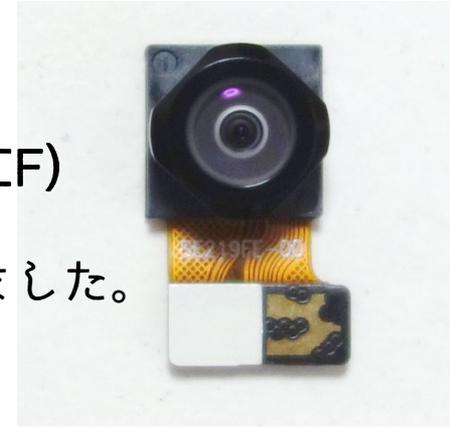


- VCSEL Power: 2W * 1
- Lens FOV: 70° * 55°
- IR Filter: 940nm
- Resolution: 228 * 171
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 3m
- Accuracy: <1%
- Interface: MIPI
- Dimension: 19mm * 14mm * 6mm

2019年のハイライト

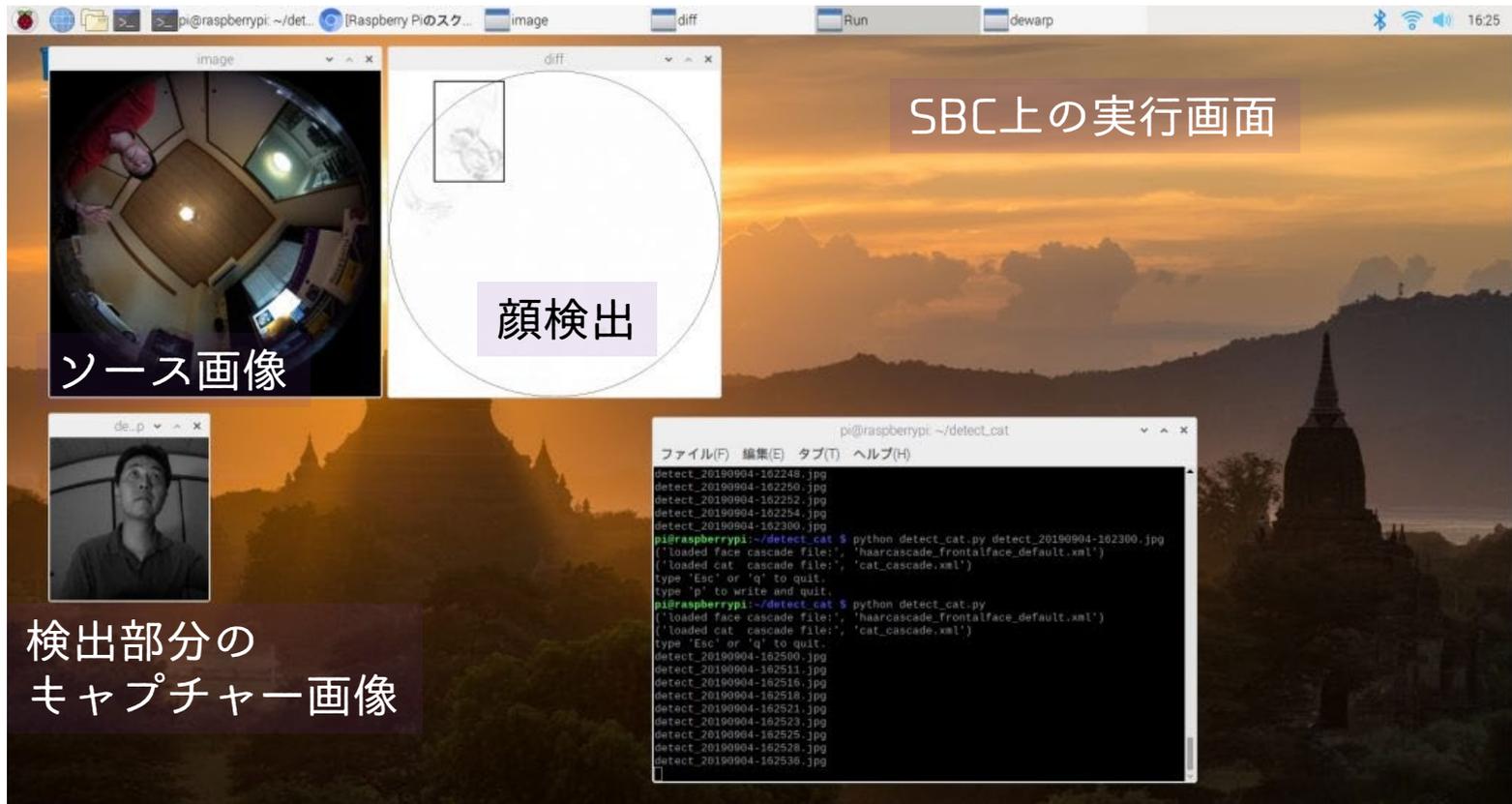
Vision System向けイメージセンサーモジュール SE219GS-00-CB (w/ IRCF), SE219FE-01-CB (w/o IRCF)

あのIMX219が(x, y)投影サイズそのままに魚眼カメラになりました。
しかも厚みは6mm以下。狭い場所に仕込むことができます。
従来製品(76°)に対し圧倒的な情報量の画像取得が可能です。



から販売中!

魚眼カメラ応用事例：detect_cat（アプリSW配布中。）

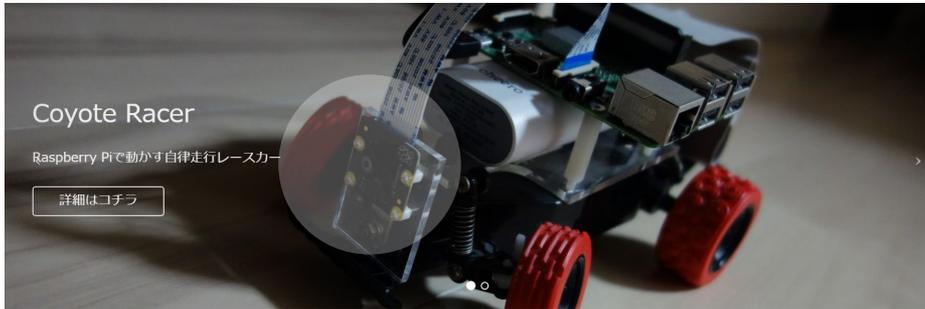


Vision Processing適用事例

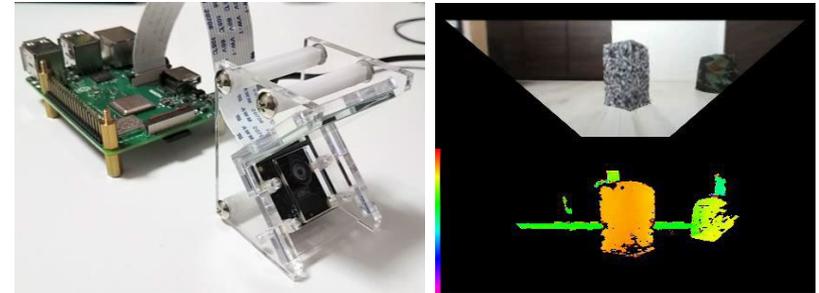
認識系アプリ



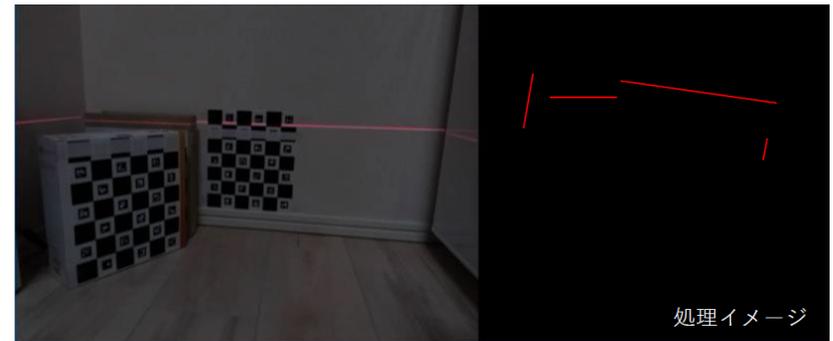
Coyote Racer



測距系アプリ



超広角応用ステレオ測距



ラインレーザー+単眼ステレオ測距
120° 広角レーザーとの組み合わせ
(展示有)



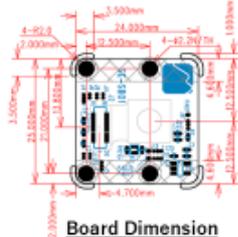
Soho Enterprise Ltd.

Fish Eye Camera Board w/ 8Mpix CIS for Single Board Computers

SE219FE-00/01-CB



- **Ultra Wide View Angle: FoV = 187° ± 3°**
Suitable for wide angle image recognition usage in AIoT area.
- **Adopted the most mature image sensor for SBC.**
Sony IMX219PQH5-C
- **Camera Driver with AE/AWB functions for "tinker board" is available.**
Processed in Embedded HW ISP. Full Size 20fps/FHD 30fps
- **w/ IRCF(-00), w/o IRCF(-01) modules are available**
- **Extensivity:**
FFC connector for MIPI CSI-2 4 lane connection for faster fps.
- **Ready for use**
No need remodeling the module to get wide FoV



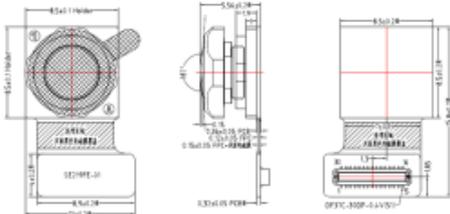
Assumed application cases

- Look down monitoring with few blind spots
- VR Stereo Vision
- Wide vision for Robots, AI speaker, any others
- Monitoring wildlife ecology, ham to agriculture
- Home-use video monitoring & recording
- 360° monitoring on drones, robot cars, etc.
- Sports camera for tennis, volleyball, badminton, etc.

Fish Eye Lens Module: SE219FE-00/01



NO.	ITEM	UNIT	QTY	REMARK
1	SE219FE-00/01	PCB	1	SE219FE-00/01
2	SE219FE-00/01	PCB	1	SE219FE-00/01
3	SE219FE-00/01	PCB	1	SE219FE-00/01
4	SE219FE-00/01	PCB	1	SE219FE-00/01
5	SE219FE-00/01	PCB	1	SE219FE-00/01
6	SE219FE-00/01	PCB	1	SE219FE-00/01
7	SE219FE-00/01	PCB	1	SE219FE-00/01
8	SE219FE-00/01	PCB	1	SE219FE-00/01
9	SE219FE-00/01	PCB	1	SE219FE-00/01
10	SE219FE-00/01	PCB	1	SE219FE-00/01
11	SE219FE-00/01	PCB	1	SE219FE-00/01
12	SE219FE-00/01	PCB	1	SE219FE-00/01
13	SE219FE-00/01	PCB	1	SE219FE-00/01
14	SE219FE-00/01	PCB	1	SE219FE-00/01
15	SE219FE-00/01	PCB	1	SE219FE-00/01
16	SE219FE-00/01	PCB	1	SE219FE-00/01
17	SE219FE-00/01	PCB	1	SE219FE-00/01
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20	SE219FE-00/01	PCB	1	SE219FE-00/01
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25	SE219FE-00/01	PCB	1	SE219FE-00/01
26	SE219FE-00/01	PCB	1	SE219FE-00/01
27	SE219FE-00/01	PCB	1	SE219FE-00/01
28	SE219FE-00/01	PCB	1	SE219FE-00/01
29	SE219FE-00/01	PCB	1	SE219FE-00/01
30	SE219FE-00/01	PCB	1	SE219FE-00/01



NO.	PIN NAME	NO.	PIN NAME
1	NC	16	DGND
2	NC	17	MIP1-D0N
3	DIVDD1.5V	18	MIP1-D0P
4	DIVDD1.5V	19	DGND
5	Sensor-PHCLK	20	MIP1-CLN
6	DGND	21	MIP1-D0P
7	MCLK	22	DGND
8	DGND	23	MIP1-D0N
9	ASND	24	MIP1-D0P
10	AVDDC1.5V	25	DGND
11	SPOTV1.5V	26	MIP1-CLN
12	DGND	27	MIP1-CLKP
13	MIP1-D0P	28	DGND
14	MIP1-D0N	29	SCLL1.5V
15	DGND	30	SCAL1.5V

Same (x, y) form factor & compatible pin assignment w/ the module on Raspberry Camera V2.1

Ver. 1.1.0

Key Specifications		SE219FE-00/01-CB	
Image Sensor	Manufacturer	Sony Back-side illuminated CMOS image sensor	
	Pixel size	1.12um x 1.12um	
	Active Image Area	3280 x 2464 8Mpix	
	Optical Size	Type 1/4 Diagonal 4.60mm	
	Operation Temperature	-20~60°C Function guarantee -20~60°C Performance guarantee	
Module	Storage Temperature	-30~80°C	
	Configuration	Type 1/4, 6P	
	FoV	187° ± 3°	
	F No.	2.10 ± 6%	
	Focus range	30cm ~ Infinity, Adjusted at 60cm when shipped.	
Board	Connector	30pin Compatible w/ Raspi Camera v2.1 module	
	Size	8.5mm*8.5mm*5.56mm Lens Holder size. Same (x, y) size to Raspi module	
	Weight	0.4g	
	Power Supply	Analog 2.8V ± 0.2V Digital 1.2V ± 0.12V IO 1.8V ± 0.18V	
	Output	Size 25mm* 24mm Almost same size and compatible position for screw holes with RaspberryPi camera V2.1. Connector 1.0mm pitch 15pin For Tinker board, RaspberryPi 0.5mm pitch 22pin RaspberryPi0, Raspi compute module, etc. I/O Format Support MIPI CSI-2 2lane and 4 lane Maximum speed Full size: 30fps, FHD: 60fps, 720P: 180fps (MIPI 4 lane mode)	
Power Supply	Generate Analog 2.8V by on-board LDO		
	Generate Digital 1.2V by on-board DD-converter. Generate Analog 1.8V by on-board LDO Generate AF 2.8V by on-board optional LDO		

Why are the SE camera boards suitable for AIoT vision processing applications?

- Good image quality**
The SE camera series uses a high-quality Sony image sensors of better SNR.
- Ready to use on tinker board and other SBCs**
Camera drivers are ready. Easy to customize for PoC prototyping
- Variety of Options**
Wide variety of options for resolution, global shutter, wide FoV lens, focus driver, etc.
- Low Latency, RAW image**
Suitable for real-time autonomous control system
- Affordable for everyone**
Pricing that individuals can purchase from a single item in line with the corporate philosophy of *helping to create open innovation.*

Further Information:

<https://soho-enterprise.com/>
<https://www.visionproc.org/index.php>

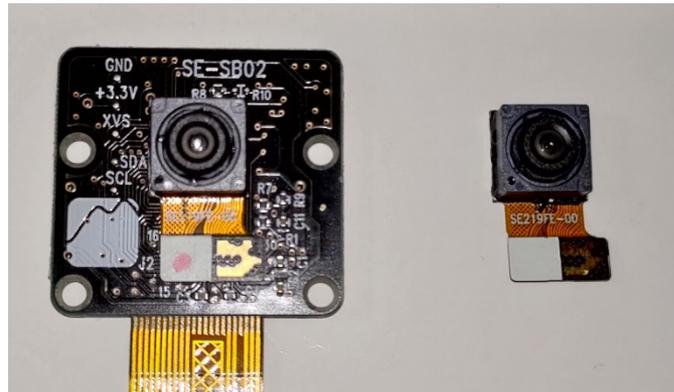


2019年末にかけてサンプル出荷開始予定

FoV=120° 固定フォーカスカメラ

SE219FFW-00-CB (w/ IRCF), SE219FFW-01-CB (w/o IRCF)

想定適用例：広角3D動画、顔認識、ドアホン、見守り監視、自律移動ロボットのセンシングなど



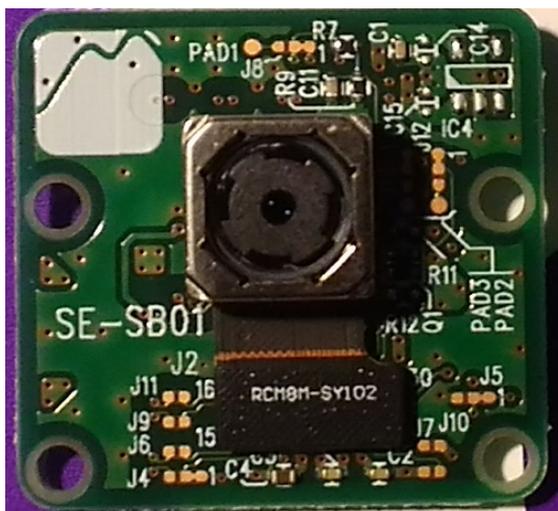
FoV=120° フォーカスドライバ内蔵カメラ

SE219AFW-00-CB (w/ IRCF), SE219AFW-01-CB (w/o IRCF)

想定適用例：AR/VRゴーグル用カメラ、スマートグラス、ウェアラブルカメラ

Vision System向けイメージセンサーモジュール SE219AF-00-CB (w/ IRCF)

待望のフォーカスドライバ内蔵のIMX219カメラモジュール
3cm～無限遠(要調整) でフォーカス合わせが可能。
シャープなイメージのマクロ撮影において特に性能を発揮
Tinker BoardのカメラドライバーにAF機能実装検討中



2018年製品、サンプル出荷中

Vision System向けイメージセンサーモジュール第一弾
SE397GS-00/01-CB, SE397GSW-00-CB
 High speed global shutter camera

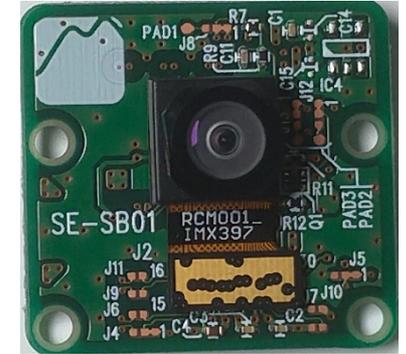
画素ピッチ：3.45um (IMX219は1.12um)で高感度
 すなわち高速シャッターがきれる。
 動被写体を、ボケ、歪みを少なく撮影できる！
 FoV=90° および180° 品、
 90° 品はIRCF 有/無 選択可能

SE397GS-01-CB



FoV 90° NoIR

SE397GSW-00-CB



Diagonal 2.799 mm (Type 1/6.4) 0.32 Mega-Pixel (VGA) CMOS Image Sensor with Square Pixel for B/W Cameras

IMX397CLN-C

Pregius

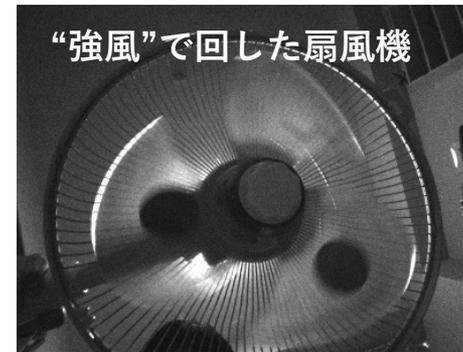
Description

IMX397CLN-C is a diagonal 2.799 mm (Type1/6.4) 0.32 Mega-pixel CMOS active pixel type image sensor with a square pixel array. By introducing Global Shutter technology with low PLS (Parasitic Light Sensitivity), high sensitivity and low noise, motion blur is suppressed. It equips an electronic shutter with variable integration time. It operates with three power supply voltages: analog 2.8 V, digital 1.2 V and 1.8 V for input / output interface and achieves low power consumption.

(Application: FA Cameras, Sensing)

Features

- ◆ CSI-2 serial data output (DPHY ver1.1 compliant)
- ◆ 2-wire serial communication circuit
- ◆ 10-bit A/D converter
- ◆ CDS / PGA (digital 24dB, analog 18dB)
- ◆ Automatic optical black clamp circuit
- ◆ Variable-speed electronic shutter (1H units)
- ◆ Independent flipping and mirroring
- ◆ Pixel binning readout and H / V sub-sampling function
- ◆ Dual sensor synchronization operation
- ◆ Trigger (Internal & External)



Rolling Shutter



Motion Blur

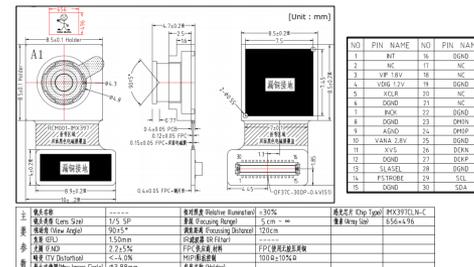


Global Shutter



<https://www.teledynedalsa.com/en/learn/knowledg-e-center/global-shutter-imaging/>

IMX397 Camera Lens Module



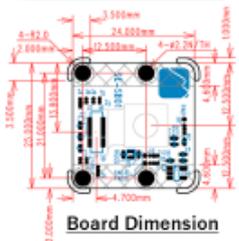


Global Shutter Camera Board w/ VGA CIS for Single Board Computers

SE397GS-00/01-CB



- **Adopted Sony Global Shutter Image Sensor**
Sony IMX397CLN-C high sensitivity GS CIS
- **Wide View Angle: FoV(D) -90° ±5°**
Suitable for wide angle image recognition usage in AIoT area
- **High Speed Operation**
Up to 240fps
- **Camera Driver for "tinker board" is available.**
Tinker board & RaspberryPi in RAW capture mode
- **Extensivity:**
Synchronization by XVS (GPIO)
- **w/ IRCF(-00), w/o IRCF(-01) modules are available**
- **Ultra-Wide-Angle Option: FoV(D)-180° (Tentative)**

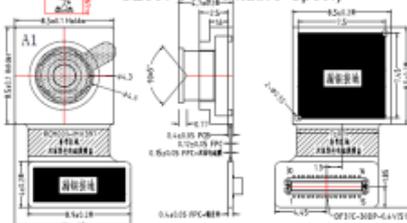


Assumed application cases

- Machine vision for the object in fast motion
- Vision analysis in sports training
- Biometrics
- Measurement device to adjust the mechanical timing
- Stereo depth measurement in motion
- Motion capture for gesture control in VR game
- Motion capture for computer graphic animation



Global Shutter Camera Module SE397GS (Tentative Spec.)



Same (x, y) form factor & compatible pin assignment w/ Raspberry Camera V2.1

NO	PIN NAME	NO	PIN NAME
1	INT	16	DGND
2	NC	17	NC
3	VIF 1.8V	18	NC
4	VDIG 1.2V	19	DGND
5	XXLR	20	NC
6	DGND	21	NC
7	INCK	22	DGND
8	DGND	23	DMEN
9	AGND	24	DMEN
10	VANA 2.8V	25	DGND
11	XVS	26	BCM
12	DGND	27	BCM
13	SLASEL	28	DGND
14	FSTROBE	29	SCL
15	DGND	30	SDA

NO	ITEM	UNIT	VALUE	NO	ITEM	UNIT	VALUE	NO	ITEM	UNIT	VALUE
1	WAVE	mm	1.27	1	WAVE	mm	1.27	1	WAVE	mm	1.27
2	WAVE	mm	1.27	2	WAVE	mm	1.27	2	WAVE	mm	1.27
3	WAVE	mm	1.27	3	WAVE	mm	1.27	3	WAVE	mm	1.27
4	WAVE	mm	1.27	4	WAVE	mm	1.27	4	WAVE	mm	1.27
5	WAVE	mm	1.27	5	WAVE	mm	1.27	5	WAVE	mm	1.27
6	WAVE	mm	1.27	6	WAVE	mm	1.27	6	WAVE	mm	1.27
7	WAVE	mm	1.27	7	WAVE	mm	1.27	7	WAVE	mm	1.27
8	WAVE	mm	1.27	8	WAVE	mm	1.27	8	WAVE	mm	1.27
9	WAVE	mm	1.27	9	WAVE	mm	1.27	9	WAVE	mm	1.27
10	WAVE	mm	1.27	10	WAVE	mm	1.27	10	WAVE	mm	1.27
11	WAVE	mm	1.27	11	WAVE	mm	1.27	11	WAVE	mm	1.27
12	WAVE	mm	1.27	12	WAVE	mm	1.27	12	WAVE	mm	1.27
13	WAVE	mm	1.27	13	WAVE	mm	1.27	13	WAVE	mm	1.27
14	WAVE	mm	1.27	14	WAVE	mm	1.27	14	WAVE	mm	1.27
15	WAVE	mm	1.27	15	WAVE	mm	1.27	15	WAVE	mm	1.27

Ver. 1.2.0

Key Specifications		SE397GS-CB	
Image sensor	Manufacturer	Sony Back-side illuminated CMOS image sensor	
	Pixel size	3.45um x 3.45um	
	Active Image Area	640 x 480 VGA	
	Optical Size	Type 1/8.4 Diagonal 2.80mm	
	Operation Temperature	-30~75°C Function guarantee -10~60°C Performance guarantee	
	Storage Temperature	-40~80°C	
Lens	Lens configuration	GS: Type 1/5 5P, GSW: Type 1/4 6P	
	FoV	GS: 90° ±5°, GSW: 180° ±3° (diagonal)	
	F No.	GS: 2.2 ±5%, GSW: 2.1 ±5%	
	Focus range	5cm - Infinity, Adjusted at 120cm when shipped (GS), TBD for GSW	
Module	Connector	30pin	
	Size	8.5mm*8.5mm *4.7mm	
	Weight	0.4g	
	Power Supply	Analog: 2.8V ±0.2V Digital: 1.2V ±0.12V IO: 1.8V ±0.18V	
	Size	25mm*24mm	
	Connector	1.0mm pitch 15pin 0.5mm pitch 22pin	
Board	Output	I/O Format: Support MIPI CSI-2 1lane Maximum speed: Full size: 240fps	
	Power Supply	3.3V ±0.3V	
	Size	Almost same size and compatible position for screw holes with RaspberryPi camera V2.1.	
	Connector	For Tinker board, RaspberryPi RaspberryPi0, Raspi compute module, etc.	
Output	Support MIPI CSI-2 1lane		
Power Supply	Generate Analog 2.8V by on-board LDO Generate Digital 1.2V by on-board DD-converter Generate Analog 1.8V by on-board LDO Generate AF 2.8V by on-board optional LDO		

Why are the SE camera boards suitable for AIoT vision processing applications?

1. **Good image quality**
The SE camera series uses a high-quality Sony image sensor of better SNR.
2. **Ready to use on tinker board and other SBCs**
Camera drivers are ready. Easy to customize for PoC prototyping
3. **Variety of Options**
Wide variety of options for resolution, global shutter, wide FoV lens, focus driver, etc.
4. **Low Latency, RAW image**
Suitable for real-time autonomous control system
5. **Affordable for everyone**
Pricing that individuals can purchase from a single item in line with the corporate philosophy of helping to create open innovation.

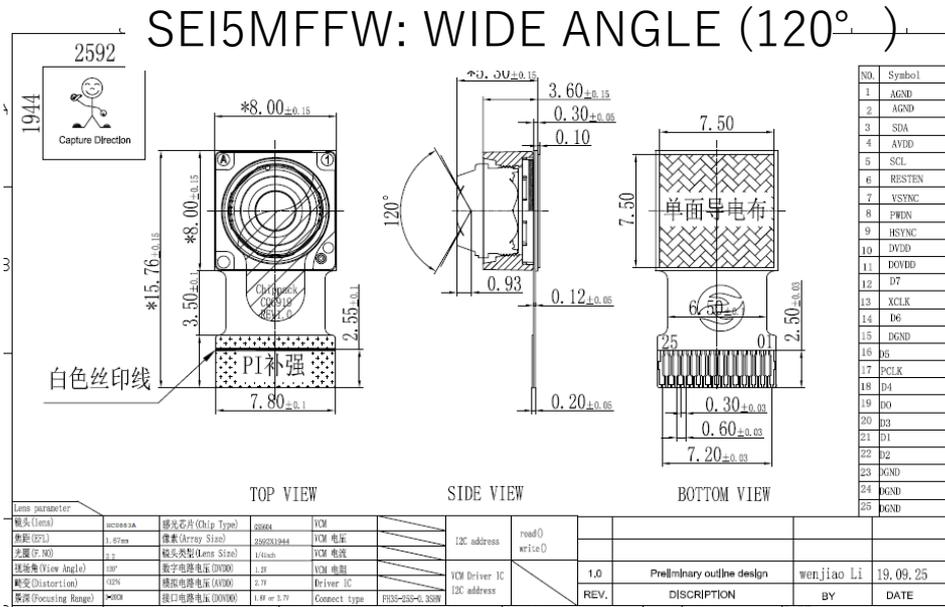
Further Information:
<https://soho-enterprise.com/>
<https://www.visionproc.org/index.php>



Ver. 1.2.0

汎用カメラモジュールシリーズ SEI5MFF-D, SEI5MFFW-D

ISP内蔵型5Mpixイメージセンサーを使ったレンズモジュール。
DVP IF(DVP)タイプから順次発売予定



魚眼タイプ : SEI5MFE-D
AFタイプ : SEI5MAF-D(76°), SEI5MAFW-D(120°)
ラインアップに追加していきます。

SE-SB02基板に接続可能なMIPI IFバージョンも開発可能

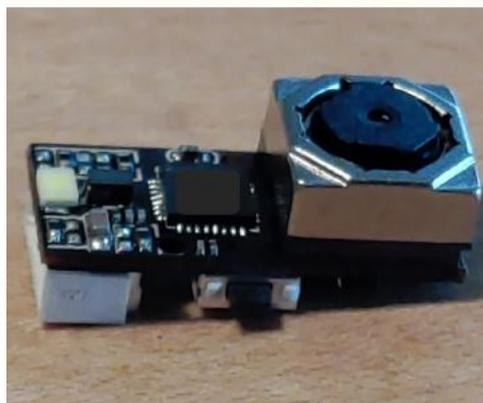
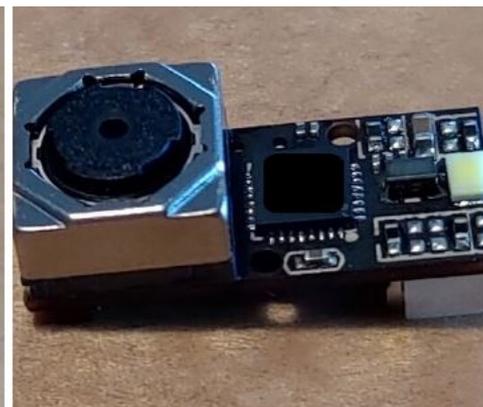
イメージセンサ	
センサタイプ	1/4型 CMOSイメージセンサ
有効画素数	511万画素
記録画素数	504万画素
カメラ制御	
ISO感度	ISO 40~800
シーンセレクション	12/パターン
露出制御	自動、シャッター優先、ISO感度優先、長時間AEモード
測光モード	マルチパターン、中央重点、画面全体平均、スポット
露出補正	±2EV、1/3EVステップ
シャッタースピード	1/8 s (長時間AEモード) ~1/42000 s
ホワイトバランス設定	オートホワイトバランス、太陽光、曇天、蛍光灯、ランプ
フォーカス制御	オート、シングルAF、連続AF、マニュアル
画像フォーマット	
出力画像フォーマット	JPEG (4:2:2)、Y/Cb/Cr、YUV、RGB、RAW、JPEG+YUV (サムネイル)
静止画データレート	5M pixel 15 frame/s JPEG output
動画データレート	SVGA 30 frame/s YCbCr output
HDビデオ出力	1080p (1920×1030 30 frame/s)、720p (1208×720 60 frame/s) JPEG output、JPEG+YCbCr output

2019年末にかけてサンプル出荷開始予定

5 Mpix USB2.0カメラ(UVC)

SE-U5シリーズ

プラットフォームを選ばない手軽且つ高画質のUSBカメラです。
Single Board ComputerにMIPIカメラの他に複数のカメラをつなぎたいときや、
本体から比較的遠くに設置したい場合に適したソリューション。
レンズオプション各種、カスタマイズ応相談。



OPNOUS社各種製品サンプル取次販売中



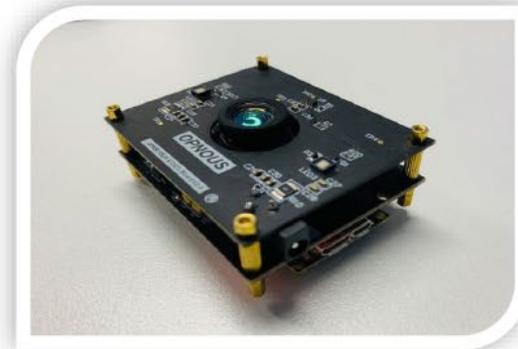
Confidential

OPNE8008A



- VCSEL Power: 2W * 1
- Lens FOV: 72° * 55°
- IR Filter: 850nm
- Resolution: 320*240
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 5m
- Accuracy: <1%
- Interface : USB3.0
- Dimension: 54mm * 30mm * 16.5mm

OPNE8008Bx



- VCSEL Power: 2W * 2
- Lens FOV: 40° * 30° or 86° * 68°
- IR Filter: 850nm/940nm
- Resolution: 320 * 240
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 5m
- Accuracy: <1%
- Interface : USB3.0
- Dimension: 53mm * 44mm*30mm

OPNOUS社各種製品サンプル取次販売中



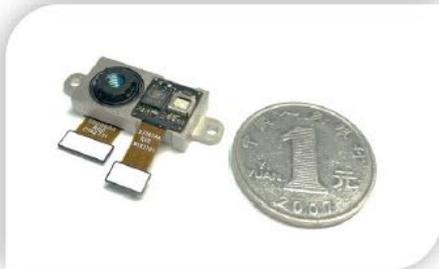
Confidential

OPNM8508B



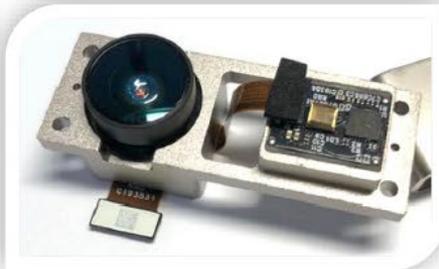
- VCSEL Power: 2W * 1
- Lens FOV: 70° * 55°
- IR Filter: 940nm
- Resolution: 320 * 240
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 3m
- Accuracy: <1%
- Interface : MIPI
- Dimension: 15.03mm * 9.5mm * 6.33mm

OPNM8808B



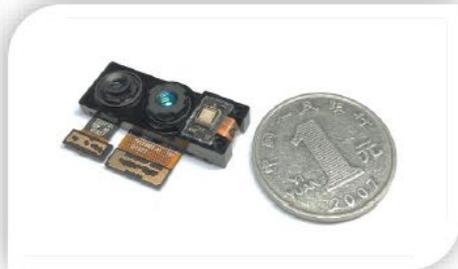
- VCSEL Power: 2W * 1
- Lens FOV: 72° * 55°
- IR Filter: 850nm
- Resolution: 320*240
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 5m
- Accuracy: <1%
- Interface : MIPI
- Dimension: 33mm * 12mm * 6.23mm

OPNM8818A



- VCSEL Power: 2W * 1
- Lens FOV: 120° * 10°
- IR Filter: 850nm
- Resolution: 320*40
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 5m
- Accuracy: <1%
- Interface : MIPI
- Dimension: 48.60mm * 17.90mm * 15.79mm

OPNM8608B



- VCSEL Power: 2W
- Lens FOV: 72° * 55°
- IR Filter: 850nm
- Resolution: 320 * 240
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 3m
- Accuracy: <1%

- RGB Resolution : 2M
- RGB FOV: 77° (D)
- RGB Pixel Size: 2.9um
- RGB Optic Size: ⅝.8"
- RGB Shutter: Rolling Shutter
- Chroma: RGB, Bayer Color

- Interface : MIPI * 2
- Dimension: 29.25mm * 11mm * 6.1mm

OPNOUS社と共同開発中、SBC対応ToFセンサーモジュール OPNM8708A-CB（仮称）

自走ロボットや自動搬送機に必要なDepth情報を正確に取得するToFセンサーがいよいよTinker Boardでも手軽に使えるようになります。
顔認識においても3D情報がはいると飛躍的に精度が高まります。
ご期待ください。



- VCSEL Power: 2W * 1
- Lens FOV: 70° * 55°
- IR Filter: 940nm
- Resolution: 228 * 171
- Frame Rate: 10, 30, 60
- Distance: 0.15m - 3m
- Accuracy: <1%
- Interface : MIPI
- Dimension: 19mm * 14mm * 6mm