Contact Information

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FSM-IMX296

a Sony® IMX296LLR / IMX296LQR Sensor Module

General Description:

This FRAMOS Sensor Module (FSM) provides the Sony IMX296 sensor on a very compact 26.5 mm x 26.5 mm module. The Global Shutter sensor has a native resolution of 1.6 [MP] and an optical format of 1/2.9 at a pixel size of 3.45 x 3.45 µm. The Module has a MIPI CSI-2 interface with up to 1-data lanes.

FRAMOS Sensor Modules enable users to seamlessly plug the latest image sensor technology into common processing platforms. These modules feature a fully modular design that utilizes standardized connectors and mechanicals. The modules include image sensors on a PCB and have resolutions from 0.4 MP to 24 MP with both rolling and global shutter options. FRAMOS Sensor Modules are ideal in evaluating a sensor as part of a proof-of-concept design. The modules also can compare and contrast multiple sensors using a common backend and integrate them into third-party processor boards.

Targeted Use:

Applications for industry, security and surveillance, and consumer cameras.

Specifications:

Model Name	FSM-IMX296M / FSM-IMX296C (V1A-V1B)

Image Sensor

Vendor	Sony IMX296LLR / IMX296LQR
Shutter Type	CMOS Rolling Shutter
Technology / Grade	Pregius (Gen2) / Sensing
Chromacity	Mono
Optical Format	1/2.9"
Pixel Size	3.45 µm x 3.45 µm
Maximum Resolution	1.6 Mpx / 1456 x 1088 px
Framerate (Maximum)	60.4 FPS (1-Lane)
Bit Depth	10 bit

Interface

Data Interface	MIPI CSI-2 (1 Lane)
Communication Interface	I²C (4-wire serial)
Drive Frequency	37.125 / 74.25 / 54 MHz
Input Voltages	1.2V, 1.8V, 3.3V
Interface Connector	Hirose DF40C-60DP-0.4V(51)
EEPROM (Sensor ID)	No

Mechanical

Dimensions (H x W)	26.5 mm x 26.5 mm

Environmental

Operating Temperature	-30°C to +75°C (function)
	-10°C to +60°C (performance)
Storage Temperature	-40°C to +85°C
Ambient Humidity	20% to 95% RH,
	non condensing

Software Support

Driver	V4L2 Based Device Driver
	Libargus / Argus Camera (ISP Tuned)
	Isaac ROS compliant
Supported Platforms	NVIDIA Jetson Family: AGX Xavier,
	Xavier NX, AGX Orin.
	Qualcomm DragonBoard 410C
Software Version(s)	NVIDIA JP5.1 / L4T35.2.1
	DB410C: Linaro 18.01 / Kernel 4.14

Suggested Accessories and Adapters

Compatible FSA Type	FSA-FT6/A
Recommended Devkit(s)	FSM-IMX296x/TXA_Devkit (AGX)
	FSM-IMX296x/NVN_Devkit (NX)
Lens Mounts	M12 or C/CS-Mount options

Features:

- Image sensors on a PCB with connector, available off-the-shelf.

- Large lineup of products with resolutions from 0.4MP to 24MP, available with either rolling or global shutter imagers

- Available with MIPI CSI-2 (D-PHY) output.

- Converter boards for SubLVDS and SLVS imagers

- Standardized mechanicals with small footprints of 26.5 x 26.5 mm and 28 x 28 mm

Applications:

- Engineers looking to reduce their time-to-market with a rapid prototyping module, ready to integrate to various third party processing platforms.

- Embedded vision projects which benefit from an open platform by diving down to the component level. Gauge implementations against Sony's reference.

- Make educated "build vs buy" decisions and benefit from FRAMOS's long-term camera development experience for your tailored productization.

> **Note** Some modules are compatabile with earlier versions of Jetpack. Contact us for further available options.

> **Note** A matrix with compatible Sensor Adapters (FSA) and Processor Board Adapters (FPA) for various setups can be found in the FSM Ecosystem User Manual.

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PixelMate™ Connector Pinout and Signal Description

> **WARNING** Pin 1 is identified on the board. Orient accordingly, paying close attention to the pin number in reference to the locator view illustrated below. Failure to align correctly will cause permanent damage.
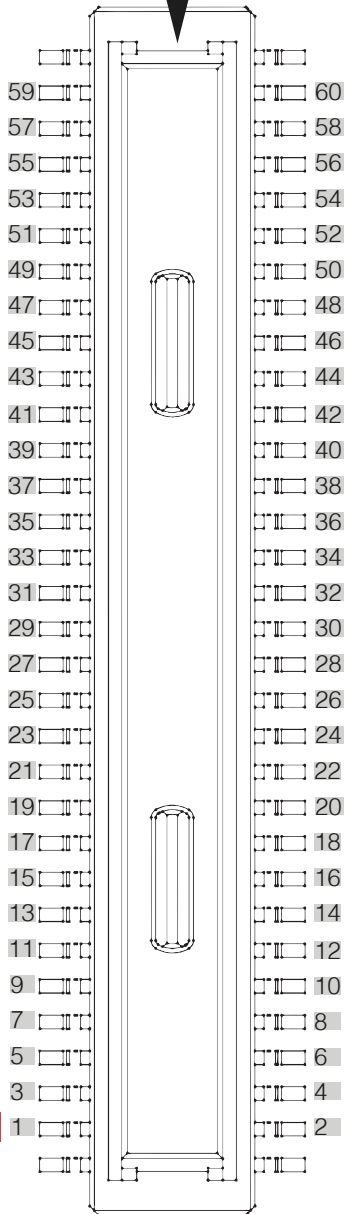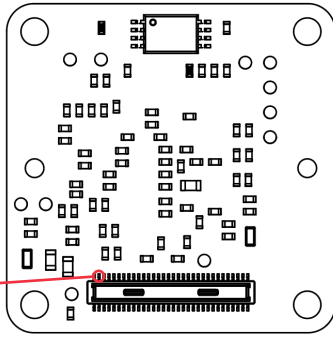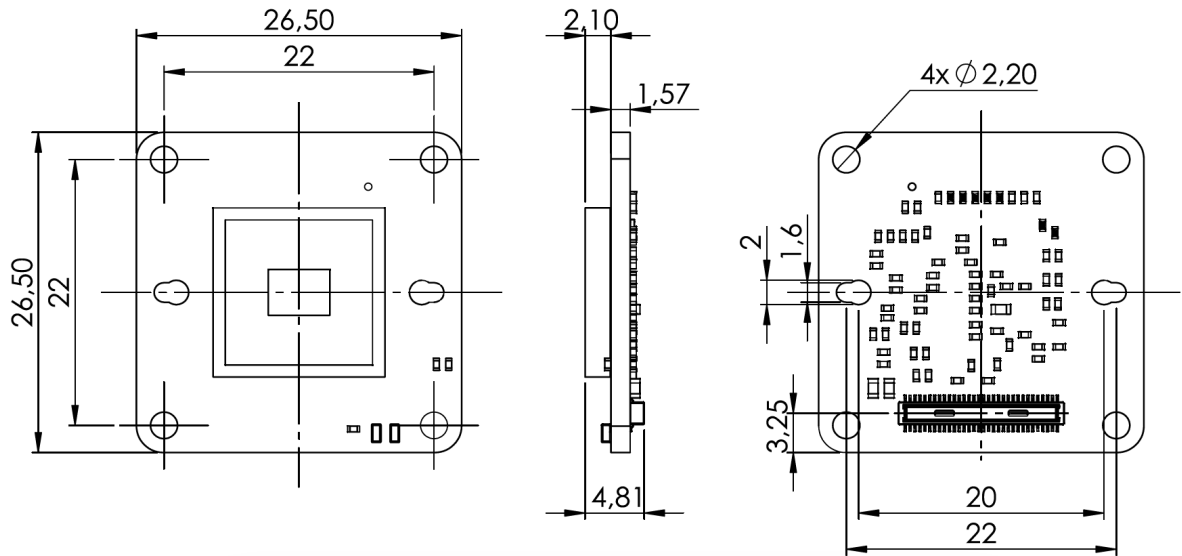
> **Note** Signals are routed directly from image sensor to connector. Details on specific signals are described in the respective Sony® image sensor datasheet.


| J1 Pin	Pin Description	J1 Pin	Pin Description
Pin1	NC	Pin2	NC
Pin3	NC	Pin4	NC
Pin5	3V3	Pin6	1V2
Pin7	3V3	Pin8	1V2
Pin9	1V8	Pin10	NC
Pin11	GND	Pin12	GND
Pin13	GND	Pin14	GND
Pin15	XCLR	Pin16	NC
Pin17	NC	Pin18	SDO
Pin19	XMASTER	Pin20	TOUT1
Pin21	SCK_SCL	Pin22	NC
Pin23	XCE	Pin24	NC
Pin25	XVS	Pin26	TOUT2
Pin27	SDI_SDA	Pin28	NC
Pin29	XHS	Pin30	NC
Pin31	XTRIG	Pin32	TOUT0
Pin33	NC	Pin34	NC
Pin35	SLAMODE	Pin36	NC
Pin37	GND	Pin38	GND
Pin39	INCK	Pin40	NC
Pin41	NC	Pin42	NC
Pin43	GND	Pin44	GND
Pin45	NC	Pin46	NC
Pin47	NC	Pin48	NC
Pin49	GND	Pin50	GND
Pin51	CSI_D0_N	Pin52	NC
Pin53	CSI_D0_P	Pin54	NC
Pin55	GND	Pin56	GND
Pin57	NC	Pin58	CSI_CLK_P
Pin59	NC	Pin60	CSI_CLK_N

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![FRAMOS logo]

Physical Dimensions

FSM-IMX296C (Color)
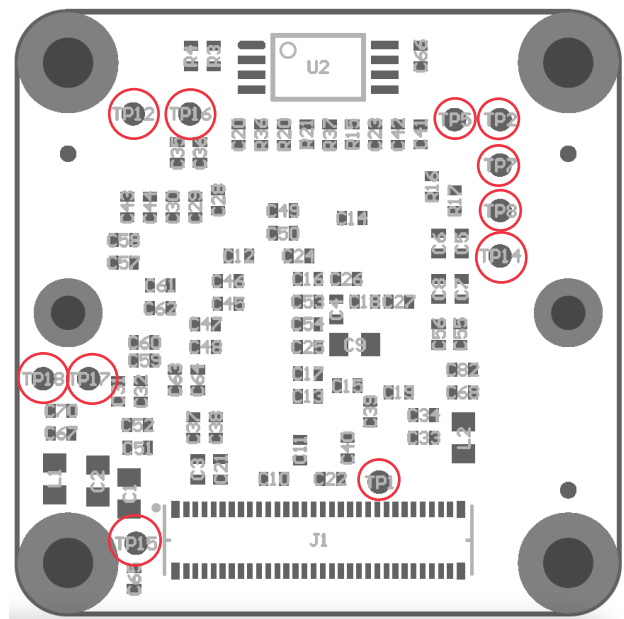### Spectral Sensitivity
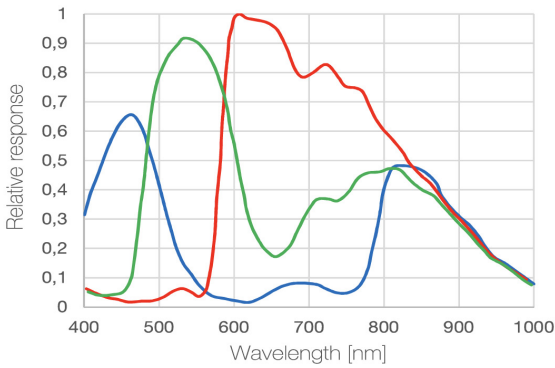
FSM-IMX296M (Mono)
Spectral Sensitivity
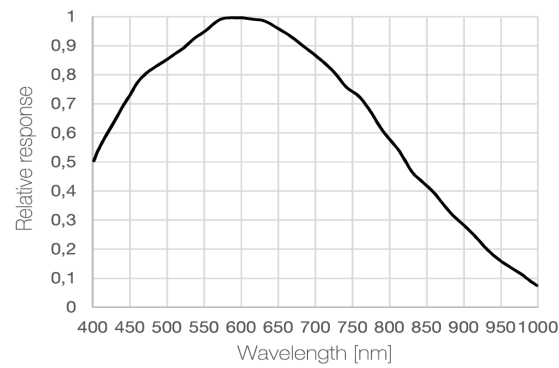
Note Additional information surrounding the image sensor can be found in the Sony® datasheets.

Testpoints

Test Point	Description
TP1	XHS
TP2	XVS
TP5	SCK SCL
TP7	SDI SDA
TP8	INCK
TP12	XCLR
TP14	GND
TP15	3V3
TP16	1V8
TP17	1V2
TP18	GND

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Order Codes

FSM-IMX296M-000-V1B	No lens mount
FSM-IMX296M-01S-V1A	M12 Mount (DW LH-15.0)
FSM-IMX296M-01C-V1A	M12 Mount (CMT821B)
FSM-IMX296M-00G-V1A	M12 Mount (CMT168)
FSM-IMX296M-04G-V1A	C/CS-Mount (FMA-MNT-CCS/265-V1A)

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

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 [FSM-IMX296C-01S-V1C]()