Contact Information

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FSM-IMX304

a Sony® IMX304LLR / IMX304LQR Sensor Module

General Description:

This FRAMOS Sensor Module (FSM) provides the Sony IMX304 sensor on a very compact 28 mm x 28 mm module. The Global Shutter sensor has a native resolution of 12.4 [MP] and an optical format of 1.1 inch at a pixel size of 3.45 x 3.45 µm. The Module has a LVDS interface with up to 8-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-IMX304M / FSM-IMX304C (V1A)

Image Sensor

Vendor	Sony IMX304LLR / Sony IMX304LQR
Shutter Type	CMOS Rolling Shutter
Technology / Grade	Pregius (Gen2) / Industrial
Chromacity	Color / Mono
Optical Format	1.1"
Pixel Size	3.45 x 3.45 µm
Maximum Resolution	12.4 Mpx / 4112 x 3008 px
Framerate (Maximum)	CSI-2: 23.4 FPS (4-Lane)
Bit Depth	12 bit

Interface

Data Interface	SubLVDS (4 / 8 Lane)
Communication Interface	I²C (4-wire serial)
Drive Frequency	37.125 / 54 / 74.25 MHz
Input Voltages	1.2V, 1.8V, 3.3V
Interface Connector	Hirose DF40C-60DP-0.4V(51)
EEPROM (Sensor ID)	Yes

Mechanical

Dimensions (H x W)	28 mm x 28 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, AGX Orin.
Software Version(s)	NVIDIA JP5.1 / L4T35.2.1

Suggested Accessories and Adapters

Compatible FSA Type	FSA-FT15/A-00G
Recommended Devkit(s)	FSM-IMX304x/TXA_Devkit (AGX)
Lens Mounts	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.

# 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.
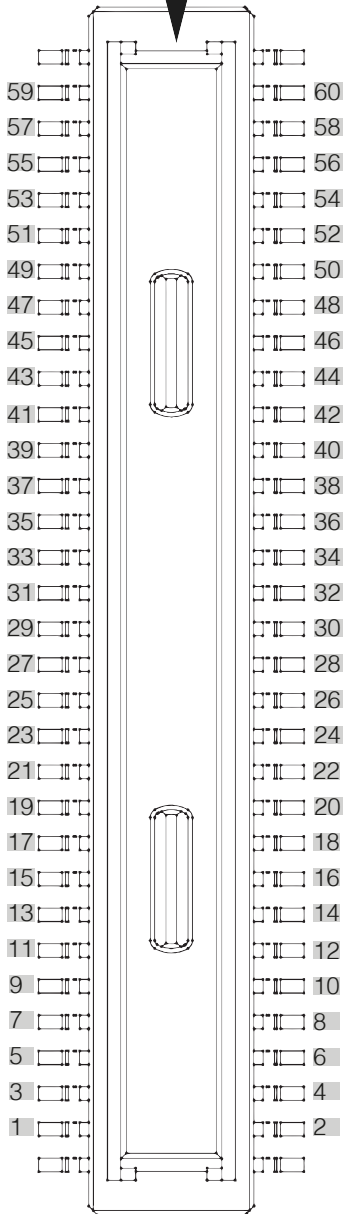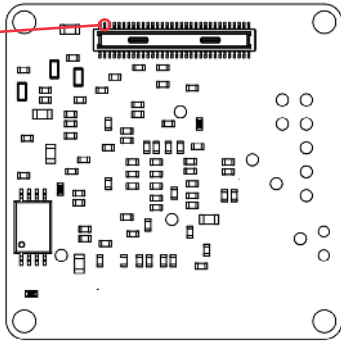

Note Signals are routed directly from image sensor to connector. Details on specific signals are described in the respective Sony® image sensor datasheet.

| J1 Pin	Pin Description	J1 Pin	Pin Description
Pin1	NC	Pin2	1V8_EEPROM
Pin3	NC	Pin4	1V8_EEPROM
Pin5	3V3	Pin6	1V2
Pin7	3V3	Pin8	1V2
Pin9	1V8	Pin10	NC
Pin11	GND	Pin12	GND
Pin13	GND	Pin14	GND
Pin15	SDA	Pin16	SCL
Pin17	SDO	Pin18	XCE
Pin19	TOUT0	Pin20	SLAMODE
Pin21	TOUT1	Pin22	XMASTER
Pin23	TOUT2	Pin24	NC
Pin25	NC	Pin26	XTRIG
Pin27	NC	Pin28	XHS
Pin29	NC	Pin30	XVS
Pin31	GND	Pin32	GND
Pin33	RST	Pin34	D_DATA_7_P
Pin35	MCLK	Pin36	D_DATA_7_N
Pin37	GND	Pin38	GND
Pin39	D_DATA_6_P	Pin40	D_DATA_5_P
Pin41	D_DATA_6_N	Pin42	D_DATA_5_N
Pin43	GND	Pin44	GND
Pin45	D_DATA_4_P	Pin46	D_DATA_3_P
Pin47	D_DATA_4_N	Pin48	D_DATA_3_N
Pin49	GND	Pin50	GND
Pin51	D_DATA_2_P	Pin52	D_DATA_1_P
Pin53	D_DATA_2_N	Pin54	D_DATA_1_N
Pin55	GND	Pin56	GND
Pin57	D_DATA_0_P	Pin58	D_CLK_0_P
Pin59	D_DATA_0_N	Pin60	D_CLK_0_N

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Physical Dimensions
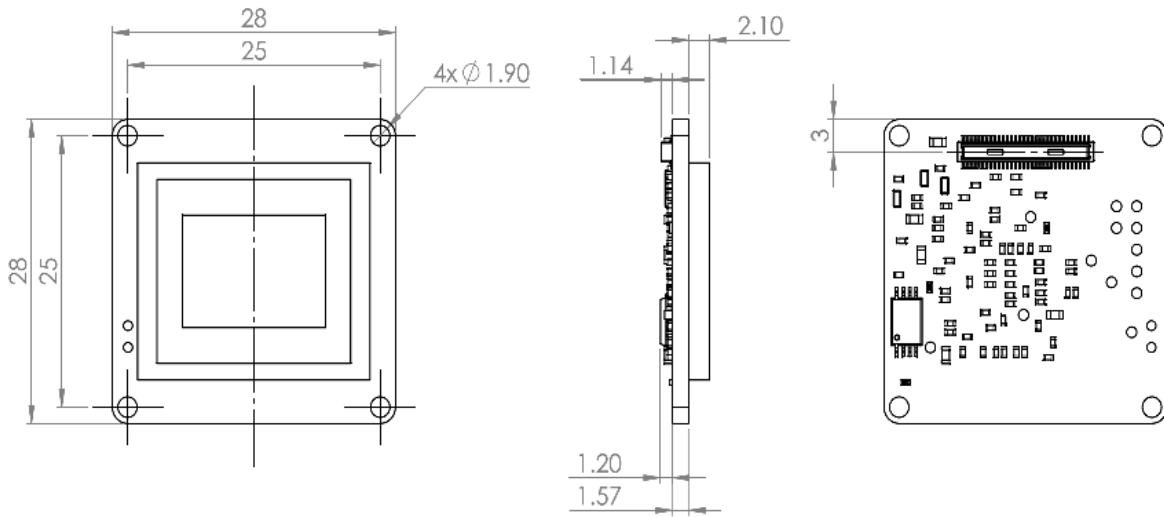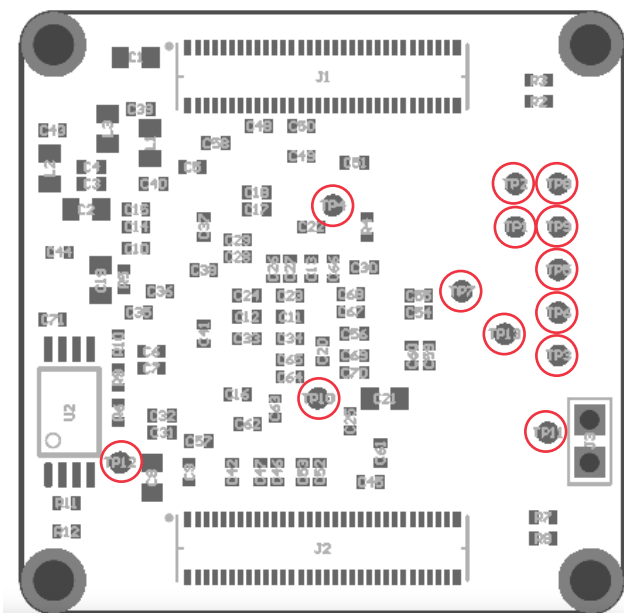

FSM-IMX304C (Color)
Spectral Sensitivity
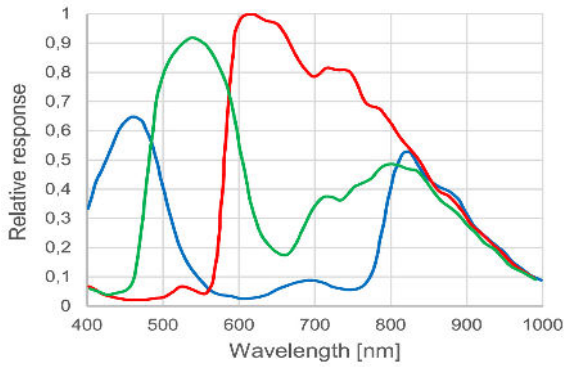
FSM-IMX304M (Mono)
Spectral Sensitivity
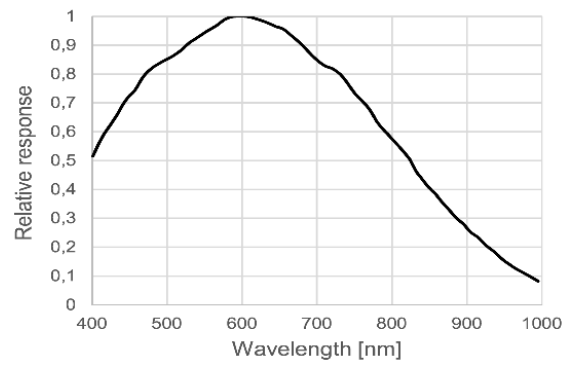
Note Additional information surrounding the image sensor can be found in the Sony® datasheets.

Testpoints

Test Point	Description
TP1	SDA
TP2	SCL
TP3	SLAMODE
TP4	RST
TP5	XVS
TP6	XHS
TP7	MCLK
TP8	XTRIG
TP9	XMASTER
TP10	1V2_D
TP11	1V8_D
TP12	3V3_A
TP13	GND

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Order Codes

FSM-IMX304M-000-V1A	No lens mount
FSM-IMX304M-04G-V1A	C/CS-Mount (FMA-MNT-CCS/280-V1A)
FSM-IMX304C-000-V1A	No lens mount
FSM-IMX304C-04G-V1A	C/CS-Mount (FMA-MNT-CCS/280-V1A)