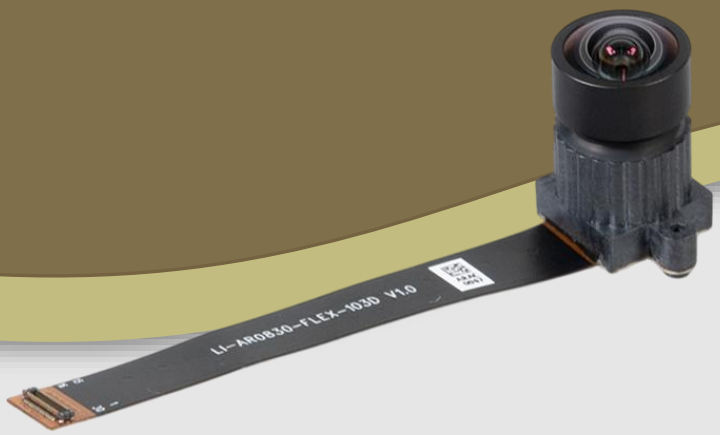
LEOPARD IMAGING

LI-AR0830-FLEX-103D



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INTRODUCTION

The LI-AR0830-FLEX-103D is a 4K MIPI D−PHY RGB-IR camera equipped with ON Semiconductor 1/2.9 inch 8 MP CMOS digital image RGB-IR sensor AR0830. It features high frame rates without motion blur and excellent near-infrared sensitivity, making it ideal for scenarios requiring simultaneous visible light and infrared data capture. This camera outputs RAW data.

SPECIFICATIONS

Maximum Frame Rate	60 fps @ Full size, linear mode
Output Format	10-bit RAW data
Focusing Range	50 cm ~ Infinity
Sensor	ON Semiconductor 1/2.9-inch 8 MP (16:9) CMOS Image Sensor AR0830
Optical Format	1/2.9"
Resolution	3840 (H) x 2160 (V) (active pixels)
Pixel Size	1.4 µm Back Side Illuminated (BSI)
Color / Mono	RGB-IR
ISP	Not included
Dynamic Range	73 dB
Interface	4-lane MIPI D-PHY
Power Consumption	TBD
Operating Temp	TBD
Storage Temp	TBD
Weight	~8 g

APPLICATIONS

- IoT
- Drone
- Robots

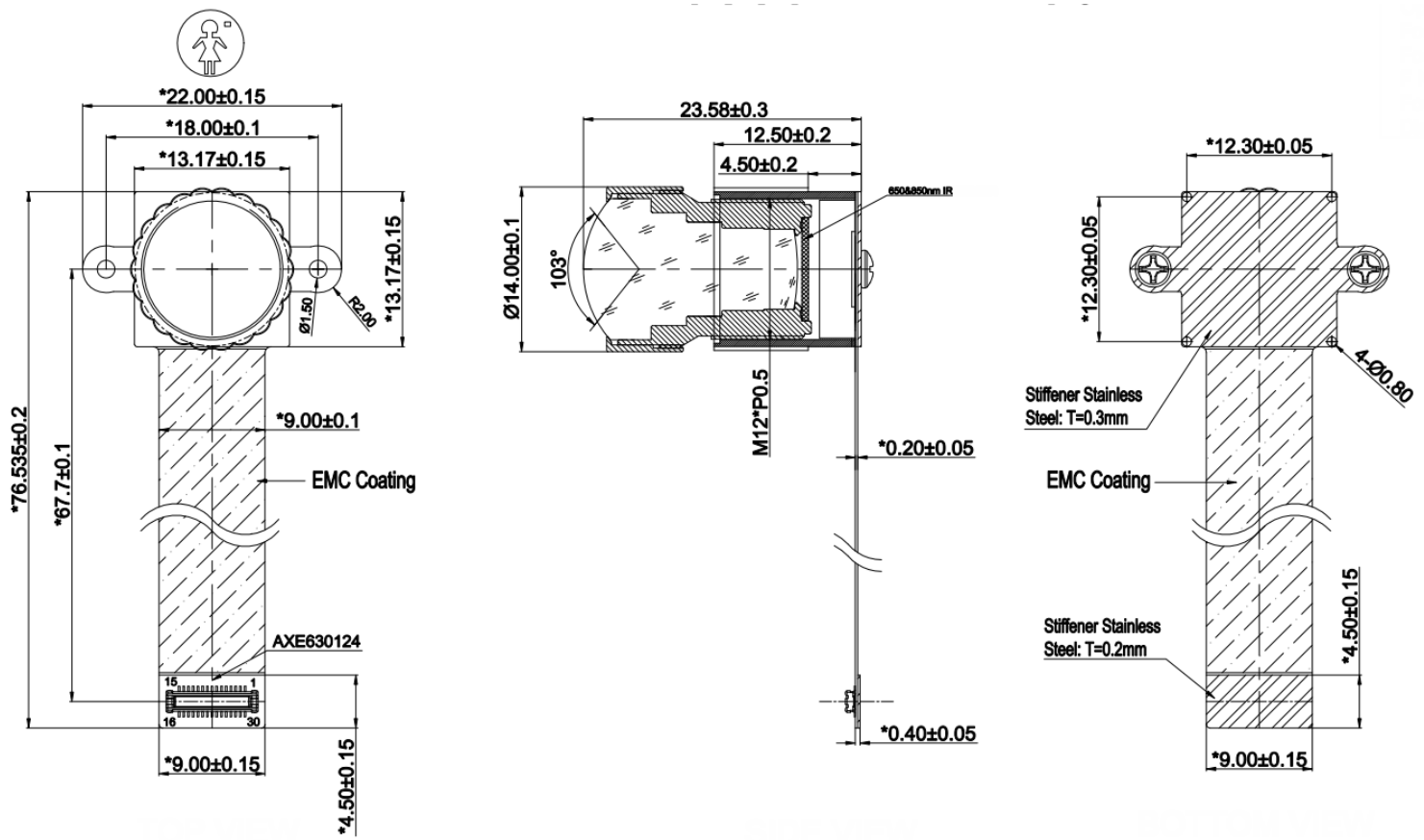
LENS SPECIFICATIONS

Effective Focal Length	2.5 ± 5% mm
Aperture, F/#	2.6 ± 5%
Field of View (FOV)	103˚ diagonal
	93˚ horizontal
	62˚ vertical
Distortion	< -8%
IR Cut Filter	Visible + 850 nm dual bandpass filter





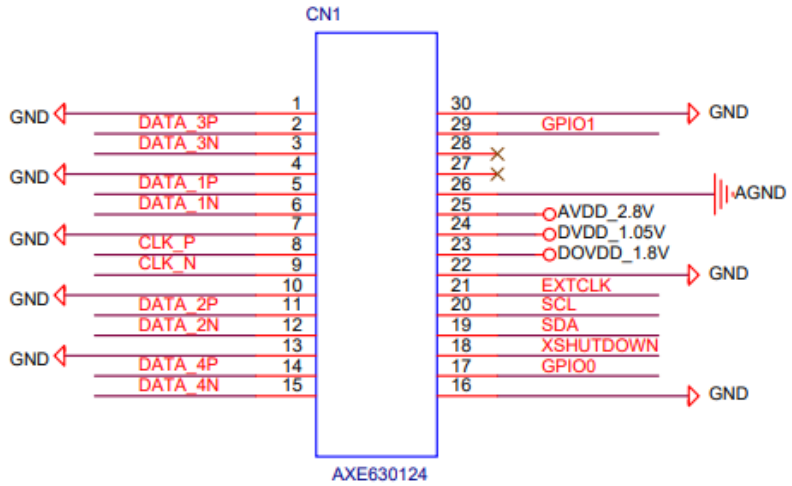
DIMENSIONS



- Unit: mm

INTERFACE

- Connector Part#: AXE630124
- Number of Positions: 30
- Sensor I2C Address: 0x36 (7-bit)
- External Power Supply: 2.8V, 1.8V, 1.05V



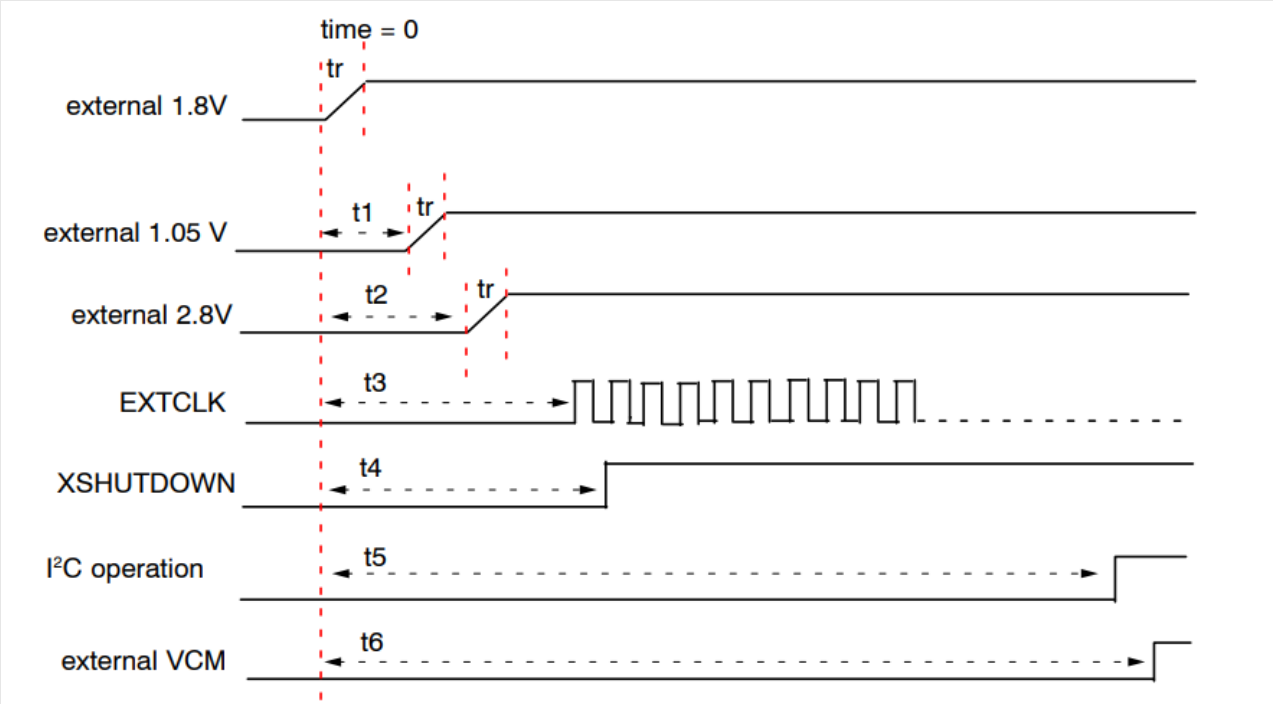
Pinout Details

Pin No	Signal Name	Pin Type	Description	Voltage Level
1	GND	POWER	Ground signal for digital	-
2	DATA_D3P	OUTPUT	MIPI Data Lane 3 Differential Pair +	MIPI DPHY
3	DATA_D3N	OUTPUT	MIPI Data Lane 3 Differential Pair -	MIPI DPHY
4	GND	POWER	Ground signal for digital	-
5	DATA_D1P	OUTPUT	MIPI Data Lane 1 Differential Pair +	MIPI DPHY
6	DATA_D1N	OUTPUT	MIPI Data Lane 1 Differential Pair -	MIPI DPHY
7	GND	POWER	Ground signal for digital	-
8	CLK_P	OUTPUT	MIPI Clock Lane Differential Pair +	MIPI DPHY
9	CLK_N	OUTPUT	MIPI Clock Lane Differential Pair -	MIPI DPHY
10	GND	POWER	Ground signal for digital	-
11	DATA_D2P	OUTPUT	MIPI Data Lane 2 Differential Pair +	MIPI DPHY
12	DATA_D2N	OUTPUT	MIPI Data Lane 2 Differential Pair -	MIPI DPHY
13	GND	POWER	Ground signal for digital	-
14	DATA_D4P	OUTPUT	MIPI Data Lane 4 Differential Pair +	MIPI DPHY
15	DATA_D4N	OUTPUT	MIPI Data Lane 4 Differential Pair -	MIPI DPHY
16	GND	POWER	Ground signal for digital	-
17	GPIO0	I/O	1.8V IO signal for camera	1.8V
18	XSHUTDOWN	INPUT	1.8V IO camera reset signal (Active low signal) ((Require pullup at host side))	1.8V
19	SDA	I/O	1.8V IO Camera I2C SDA signal ((Require pullup at host side))	1.8V
20	SCL	INPUT	1.8V IO Camera I2C SCL signal ((Require pullup at host side))	1.8V
21	EXTCLK	INPUT	External clock input signal	1.8V
22	GND	POWER	Ground signal for digital	-
23	DOVDD_1.8V	POWER	1.8V Power supply (Must be provided from host side)	1.8V
24	DVDD_1.05V	POWER	1.05V Power supply (Must be provided from host side)	1.05V
25	AVDD_2.8V	POWER	2.8V Power supply (Must be provided from host side)	2.8V
26	AGND	POWER	Ground signal for analog	-
27	-	-	-	-
28	-	-	-	-
29	GPIO1	I/O	1.8V IO signal for camera	1.8V
30	GND	POWER	Ground signal for digital	GND

External Power supply Power On Sequence

The recommended power–up sequence for the module as shown:

1. Set XSHUTDOWN LOW
2. Power up DOVDD_1.8V
3. After 1–500 ms, power up DVDD_1.05V and AVDD_2.8V (any order).
4. Apply EXTCLK (can be applied anytime).
5. After 1–500 ms, set XSHUTDOWN HIGH
6. HOST configuration through I2C (PLL, output,etc).
7. Set mode_select = 1 bit.
8. PLL internally enables and locks.
9. AR0830 enters streaming mode.



Timing	Min.	Max.
t1	1 ms	-
t2	t1+1 ms	-
t3	-	< t4
t4	t2+1 ms	-
t5	t4+2.5 ms	
tr	100 µs	

NOTE: A minimum ramping time of 100 µs for "tr" is needed to minimize surge of supply current when powering up the 1.05 V, 1.8 V, and 2.8 V external power supplies.

Power Consumption

Conditions	Symbol	Typ.	Max.	Unit
4K linear mode (3840 × 2160), 60 fps	I_{AVDD}	20	30	mA
	I_{OVDD}	36	60	mA
	I_{DVDD}	60	85	mA
4K LI–HDR mode (3840 × 2160), 15 fps	I_{AVDD}	24	35	mA
	I_{OVDD}	43	72	mA
	I_{DVDD}	44	60	mA
4K LI–HDR mode (3840 × 2160), 30 fps	I_{AVDD}	25	37	mA
	I_{OVDD}	43	72	mA
	I_{DVDD}	63	86	mA
1080P Linear mode (1920 × 1080), 120 fps	I_{AVDD}	25	37	mA
	I_{OVDD}	43	72	mA
	I_{DVDD}	63	86	mA
4K xDR 12-bit mode (3840 × 2160), 30 fps	I_{AVDD}	35	50	mA
	I_{OVDD}	35	60	mA
	I_{DVDD}	77	106	mA
4K SLP linear mode (3840 × 2160), 1 fps	I_{AVDD}	350	-	mA
	I_{OVDD}	620	-	mA
	I_{DVDD}	1000	-	mA
960 × 540 SLP mode (960 × 540) 1fps	I_{AVDD}	115	-	µA
	I_{OVDD}	90	-	µA
	I_{DVDD}	200	-	µA
Motion Detection mode 1 fps (internal operation, no pixel output)	I_{AVDD}	15	-	µA
	I_{OVDD}	33	-	µA
	I_{DVDD}	675	-	µA
Motion Detection with streaming mode (960 × 540), 1 fps	I_{AVDD}	130	-	µA
	I_{OVDD}	105	-	µA
	I_{DVDD}	230	-	µA

REVISION HISTORY

Revision	Description	Release Date
0.1	Initial draft.	04 Nov 2026

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