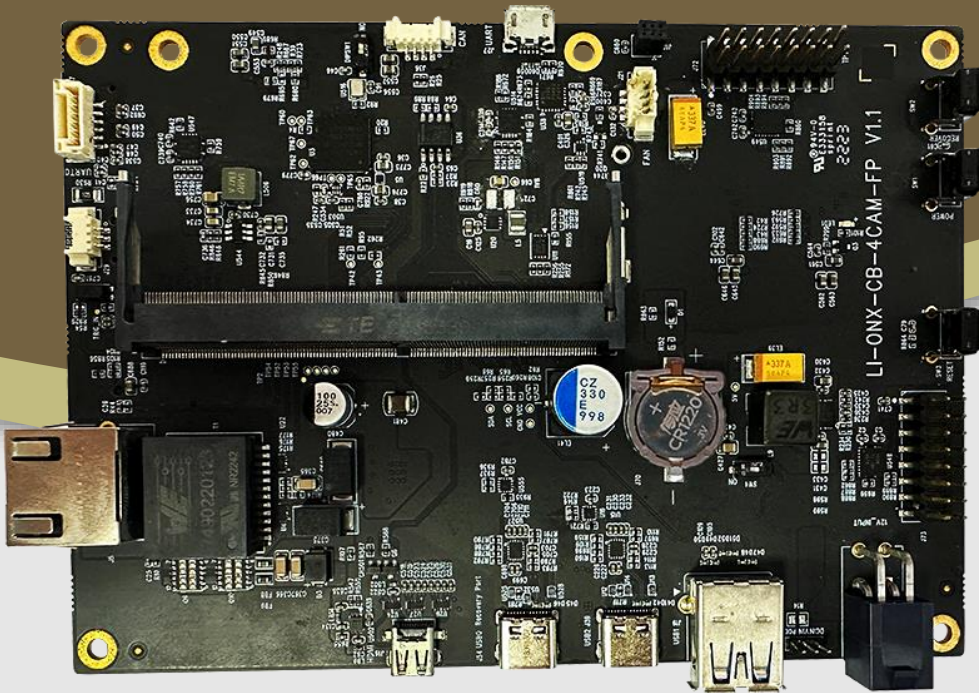




LEOPARD
IMAGING

LI-ONX-CB-4CAM-FP



Address:

910 Auburn Ct
Fremont, CA 94538
USA



Phone:

+1 (408)263-0988

Fax:

+1 (408)217-1960



Sales:

sales@leopardimaging.com

Support:

support@leopardimaging.com

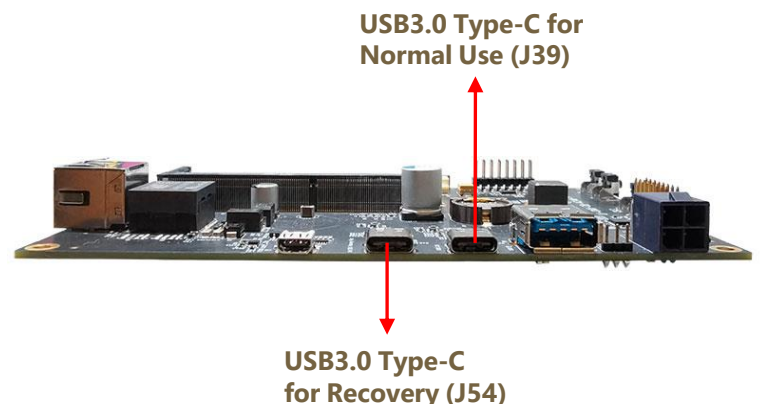
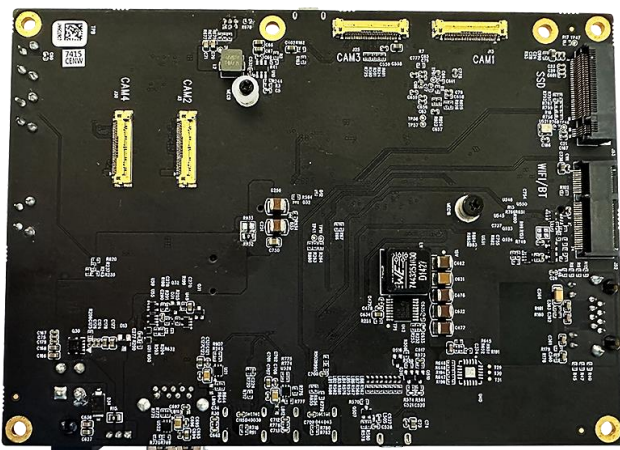
TECHNICAL FEATURES

- Carrier board for NVIDIA® Jetson Orin™ NX SOM which power supply range is 5V ~ 19V

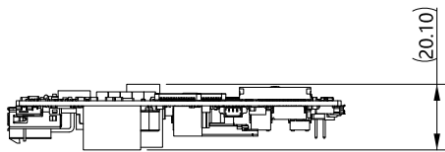
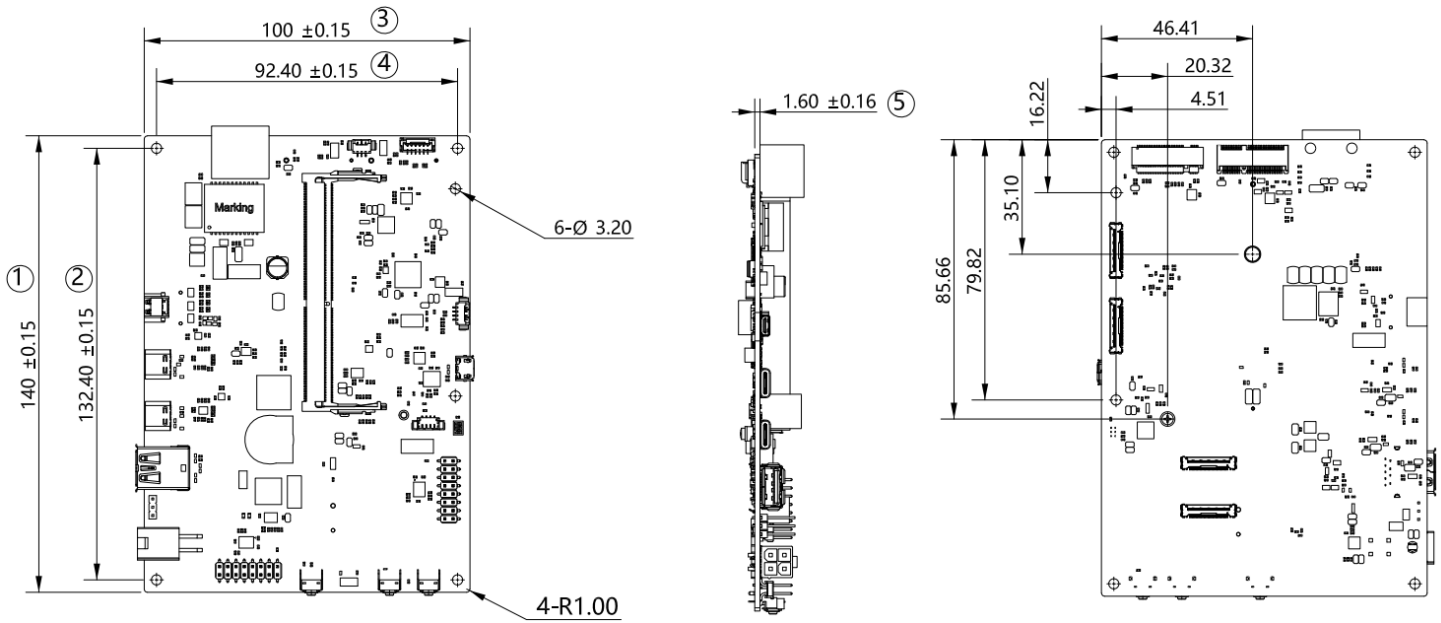
NOTE: If you are looking for carrier board for Orin NANO SOM, refer to:

<https://leopardimaging.com/product/platform-partners/nvidia/nvidia-jetson-orin/orin-nano/li-ono-cb-4cam-fp/>

- 4 x MIPI CSI-2 camera interfaces (4 x 2-lane)
- 1 x Power interface (DC 12V)
- 1 x USB3.0 Type-C interface for normal use (J39)
- 1 x USB3.0 Type-C interface for recovery function only (J54)
- 1 x USB3.0 Type-A interface
- 1 x RJ45 Ethernet interface
- 1 x UART interface (USB2.0 Micro-B)
- 1 x WIFI & Bluetooth interface
- 1 x SSD connection interface
- 1 x CAN connector
- 1 x Micro HDMI interface
- 1 x Fan connector
- Auto-Boot switcher
- PoE supported (Optional)
- Weight: ~ 112 g (Without NX SOM)
- Operating temperature: -20°C ~ +60°C
- Part#: **LI-ONX-CB-4CAM-FP**



DIMENSIONS



TOLERANCE TABLE					
LENGTH TOLERANCE		CHAMFER TOLERANCE		ANGLE TOLERANCE	
Size X	Tolerance	Size X	Tolerance	Size X	Tolerance
$0.5 < X \leq 3$	± 0.1	$0.5 < X \leq 3$	± 0.2	$X \leq 10$	$\pm 1^\circ$
$3 < X \leq 6$	± 0.1	$3 < X \leq 6$	± 0.5	$10 < X \leq 50$	$\pm 30'$
$6 < X \leq 30$	± 0.2	$6 < X \leq 30$	± 1	$50 < X \leq 120$	$\pm 20'$
$30 < X \leq 120$	± 0.3	$X > 30$	± 2	$120 < X \leq 400$	$\pm 10'$
$120 < X \leq 400$	± 0.5			$X > 400$	$\pm 5'$
$400 < X \leq 1000$	± 0.8				
$X > 1000$	± 1.2				

NOTE:

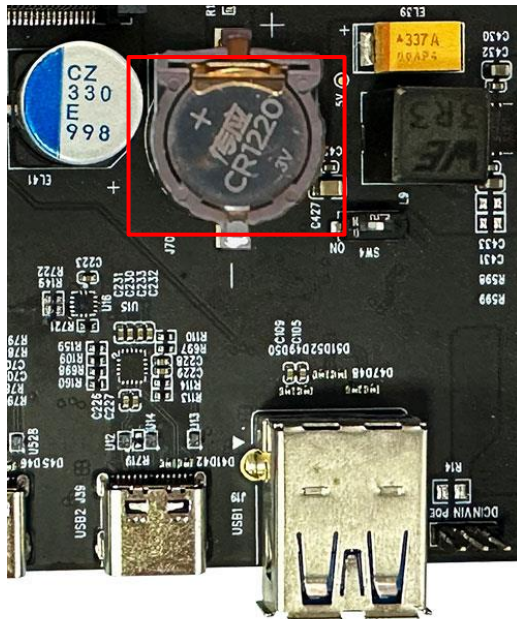
- ⊗ marked are important sizes.
- Tolerances for others unmarked - refer to the Tolerance Table.
- All materials are compliant with RoHS requirements.

Unit: mm

BOM DETAILS

#	Items	QTY	Unit
1	LI-ONX-CB-4CAM-FP V1.1 board NOTE: The button cell on the board is not included	1	Piece
2	12 VDC power supply: 1 x 12V power adapter + 1 x cable adapter NOTE: The cable adapter is for testing only	1	Set

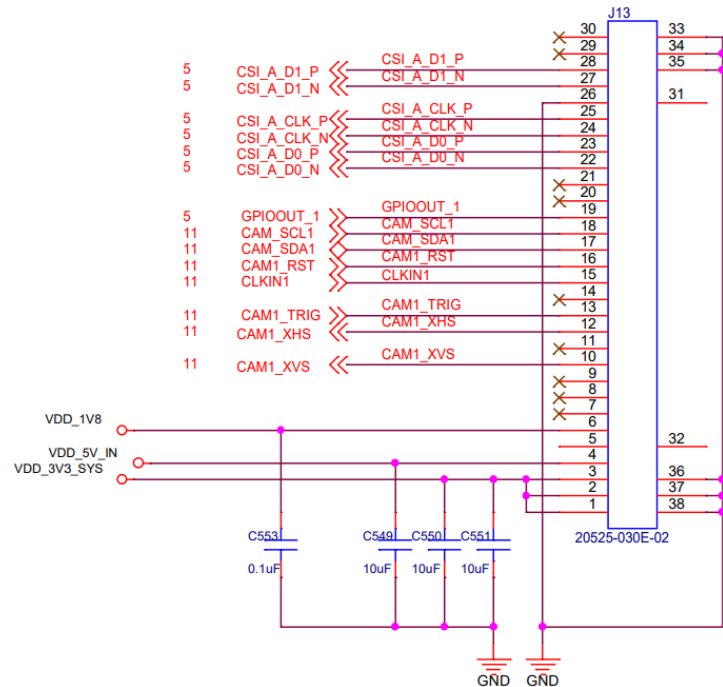
BUTTON CELL (**NOT** included in the Product)



NOTE: The button cell shown above is only for your reference. Please buy according to your actual requirements.

INTERFACE OF J13 ((MIPI Channel 1))

- Part#: 20525-030E-02
- Number of Positions: 30
- Pitch: 0.4 mm
- Mating I-PEX Cable: FAW-1233-xx



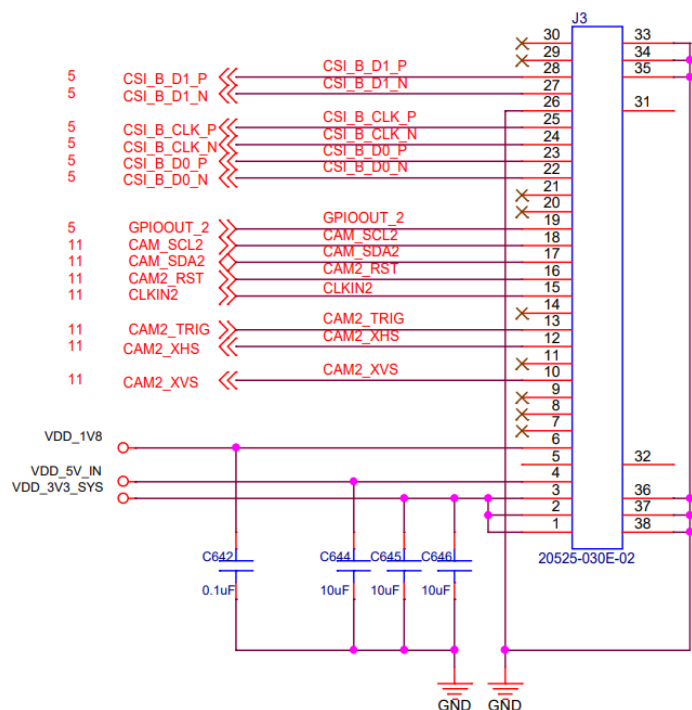
PINOUT DETAILS OF IPEX CONNECTOR J13

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	VDD_3V3_SYS	Power supply	Power	3.3V
2	VDD_3V3_SYS	Power supply	Power	3.3V
3	VDD_3V3_SYS	Power supply	Power	3.3V
4	VDD_5V_IN	Power supply	Power	5V
5	-	-	-	-
6	VDD_1V8	Power supply	Power	1.8V
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	CAM1_XVS	Vertical synchronization	Bidir	1.8V
11	-	-	-	-
12	CAM1_XHS	Horizontal synchronization	Bidir	1.8V
13	CAM1_TRIG	Trigger signal	Bidir	1.8V
14	-	-	-	-

Pin No	Pin Name	Description	Pin Type	Voltage Level
15	CLKIN1	Clock input	Input	1.8V
16	CAM1_RST	Reset signal	Output	1.8V
17	CAM_SDA1	The SDA signal of camera I2C	Bidir	1.8V
18	CAM_SCL1	The SCL signal of camera I2C	Bidir	1.8V
19	GPIIOOUT_1	GPIO signal	Bidir	1.8V
20	-	-	-	-
21	-	-	-	-
22	CSI_A_D0_N	N signal of the D0 A-port differential signal of MIPI	Bidir	1.8V
23	CSI_A_D0_P	P signal of the D0 A-port differential signal of MIPI	Bidir	1.8V
24	CSI_A_CLK_N	N signal of the A-port CLOCK differential signal of MIPI	Bidir	1.8V
25	CSI_A_CLK_P	P signal of the A-port CLOCK differential signal of MIPI	Bidir	1.8V
26	GND	GND	-	-
27	CSI_A_D1_N	N signal of the D1 A-port differential signal of MIPI	Bidir	1.8V
28	CSI_A_D1_P	P signal of the D1 A-port differential signal of MIPI	Bidir	1.8V
29	-	-	-	-
30	-	-	-	-

INTERFACE J3 (MIPI Channel 2)

- Part#: 20525-030E-02
- Number of Positions: 30
- Pitch: 0.4 mm
- Mating I-PEX Cable: FAW-1233-xx

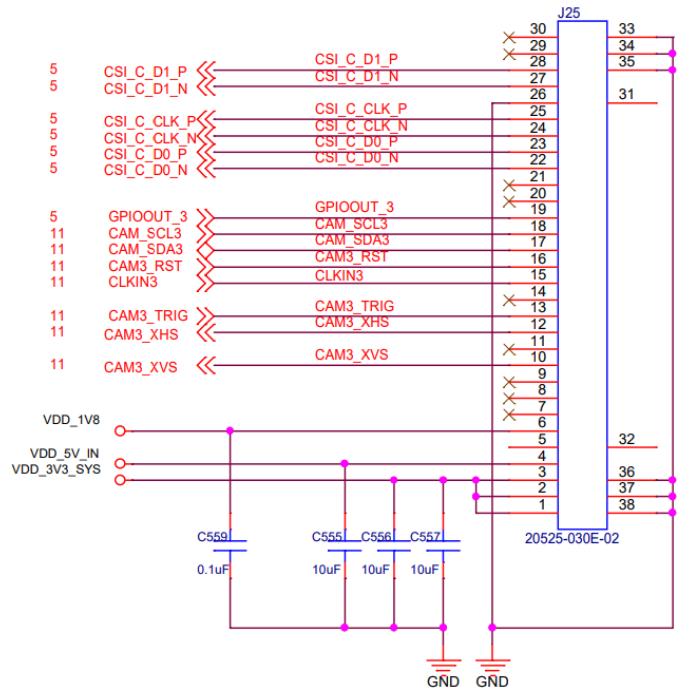


PINOUT DETAILS OF IPEX CONNECTOR J3

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	VDD_3V3_SYS	Power supply	Power	3.3V
2	VDD_3V3_SYS	Power supply	Power	3.3V
3	VDD_3V3_SYS	Power supply	Power	3.3V
4	VDD_5V_IN	Power supply	Power	5V
5	-	-	-	-
6	VDD_1V8	Power supply	Power	1.8V
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	CAM2_XVS	Vertical synchronization	Bidir	1.8V
11	-	-	-	-
12	CAM2_XHS	Horizontal synchronization	Bidir	1.8V
13	CAM2_TRIG	Trigger signal	Bidir	1.8V
14	-	-	-	-
15	CLKIN2	Clock input	Input	1.8V
16	CAM2_RST	Reset signal	Output	1.8V
17	CAM_SDA2	The SDA signal of camera I2C	Bidir	1.8V
18	CAM_SCL2	The SCL signal of camera I2C	Bidir	1.8V
19	GPIOOUT_2	GPIO signal	Bidir	1.8V
20	-	-	-	-
21	-	-	-	-
22	CSI_B_D0_N	N signal of the D0 B-port differential signal of MIPI	Bidir	1.8V
23	CSI_B_D0_P	P signal of the D0 B-port differential signal of MIPI	Bidir	1.8V
24	CSI_B_CLK_N	N signal of the B-port CLOCK differential signal of MIPI	Bidir	1.8V
25	CSI_B_CLK_P	P signal of the B-port CLOCK differential signal of MIPI	Bidir	1.8V
26	GND	GND	-	-
27	CSI_B_D1_N	N signal of the D1 B-port differential signal of MIPI	Bidir	1.8V
28	CSI_B_D1_P	P signal of the D1 B-port differential signal of MIPI	Bidir	1.8V
29	-	-	-	-
30	-	-	-	-

INTERFACE J25 (MIPI Channel 3)

- Part#: 20525-030E-02
- Number of Positions: 30
- Pitch: 0.4 mm
- Mating I-PEX Cable: FAW-1233-xx



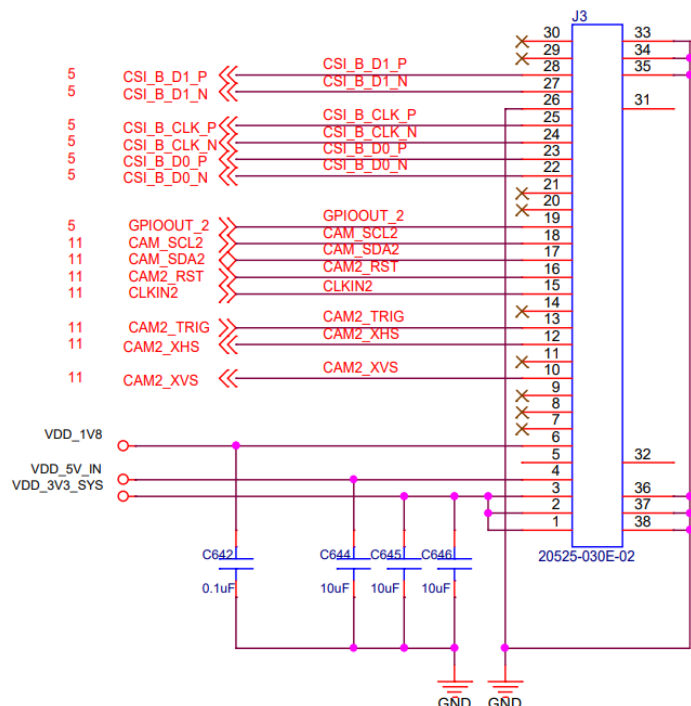
PINOUT DETAILS OF IPEX CONNECTOR J25

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	VDD_3V3_SYS	Power supply	Power	3.3V
2	VDD_3V3_SYS	Power supply	Power	3.3V
3	VDD_3V3_SYS	Power supply	Power	3.3V
4	VDD_5V_IN	Power supply	Power	5V
5	-	-	-	-
6	VDD_1V8	Power supply	Power	1.8V
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	CAM3_XVS	Vertical synchronization	Bidir	1.8V
11	-	-	-	-
12	CAM3_XHS	Horizontal synchronization	Bidir	1.8V
13	CAM3_TRIG	Trigger signal	Bidir	1.8V
14	-	-	-	-

Pin No	Pin Name	Description	Pin Type	Voltage Level
15	CLKIN3	Clock input	Input	1.8V
16	CAM3_RST	Reset signal	Output	1.8V
17	CAM_SDA3	The SDA signal of camera I2C	Bidir	1.8V
18	CAM_SCL3	The SCL signal of camera I2C	Bidir	1.8V
19	GPIOOUT_3	GPIO signal	Bidir	1.8V
20	-	-	-	-
21	-	-	-	-
22	CSI_C_D0_N	N signal of the D0 C-port differential signal of MIPI	Bidir	1.8V
23	CSI_C_D0_P	P signal of the D0 C-port differential signal of MIPI	Bidir	1.8V
24	CSI_C_CLK_N	N signal of the C-port CLOCK differential signal of MIPI	Bidir	1.8V
25	CSI_C_CLK_P	P signal of the C-port CLOCK differential signal of MIPI	Bidir	1.8V
26	GND	GND	-	-
27	CSI_C_D1_N	N signal of the D1 C-port differential signal of MIPI	Bidir	1.8V
28	CSI_C_D1_P	P signal of the D1 C-port differential signal of MIPI	Bidir	1.8V
29	-	-	-	-
30	-	-	-	-

INTERFACE J30 (MIPI Channel 4)

- Part#: 20525-030E-02
- Number of Positions: 30
- Pitch: 0.4 mm
- Mating I-PEX Cable: FAW-1233-xx

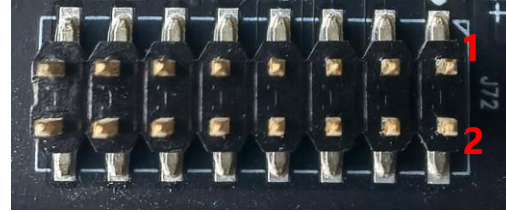


PINOUT DETAILS OF IPEX CONNECTOR J30

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	VDD_3V3_SYS	Power supply	Power	3.3V
2	VDD_3V3_SYS	Power supply	Power	3.3V
3	VDD_3V3_SYS	Power supply	Power	3.3V
4	VDD_5V_IN	Power supply	Power	5V
5	-	-	-	-
6	VDD_1V8	Power supply	Power	1.8V
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	CAM4_XVS	Vertical synchronization	Bidir	1.8V
11	-	-	-	-
12	CAM4_XHS	Horizontal synchronization	Bidir	1.8V
13	CAM4_TRIG	Trigger signal	Bidir	1.8V
14	-	-	-	-
15	CLKIN4	Clock input	Input	1.8V
16	CAM4_RST	Reset signal	Output	1.8V
17	CAM_SDA4	The SDA signal of camera I2C	Bidir	1.8V
18	CAM_SCL4	The SCL signal of camera I2C	Bidir	1.8V
19	GPIOOT_4	GPIO signal	Bidir	1.8V
20	-	-	-	-
21	-	-	-	-
22	CSI_D_D0_N	N signal of the D0 D-port differential signal of MIPI	Bidir	1.8V
23	CSI_D_D0_P	P signal of the D0 D-port differential signal of MIPI	Bidir	1.8V
24	CSI_D_CLK_N	N signal of the D-port CLOCK differential signal of MIPI	Bidir	1.8V
25	CSI_D_CLK_P	P signal of the D-port CLOCK differential signal of MIPI	Bidir	1.8V
26	GND	GND	-	-
27	CSI_D_D1_N	N signal of the D1 D-port differential signal of MIPI	Bidir	1.8V
28	CSI_D_D1_P	P signal of the D1 D-port differential signal of MIPI	Bidir	1.8V
29	-	-	-	-
30	-	-	-	-

IO CONNECTOR J72

- Part#: M20-8760842P
- Number of Positions: 16
- Number of Rows: 2
- Pitch: 2.54 mm
- IO Voltage Level: 3.3V

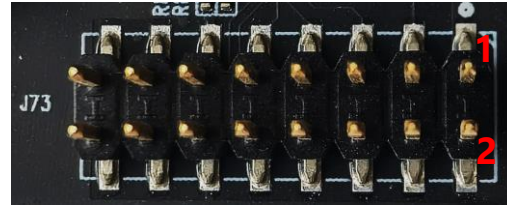


PINOUT DETAILS OF J72

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	VDD_3V3_SYS	Power supply	Power	3.3V
2	VDD_3V3_SYS	Power supply	Power	3.3V
3	GEN2_I2C_SCL	The clock of SOM's I2C1	Bidir	3.3V
4	SPI2_SCK_LS	The SPI2 clock of the SOM converted by the level-converted chip	Bidir	3.3V
5	GEN2_I2C_SDA	The data of SOM's I2C1	Bidir	3.3V
6	SPI2_MISO_LS	The SPI2 MISO of the SOM converted by the level-converted chip	Input	3.3V
7	SYS_RST_IN	SYS_RST_IN of the SOM	Input	3.3V
8	SPI2_MOSI_LS	The SPI2 MOSI of the SOM converted by the level-converted chip	Output	3.3V
9	SPI2_CS1_LS	The SPI2 CS1 of the SOM converted by the level-converted chip	Output	3.3V
10	SPI2_CS0_LS	The SPI2 CS0 of the SOM converted by the level-converted chip	Output	3.3V
11	GND	GND	-	-
12	GND	GND	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-

IO CONNECTOR J73

- Part#: M20-8760842P
- Number of Positions: 16
- Number of Rows: 2
- Pitch: 2.54 mm
- IO Voltage Level: 3.3V

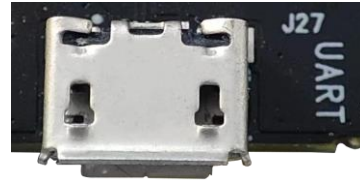


PINOUT DETAILS OF J73

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	VDD_3V3_SYS	Power supply	Power	3.3V
2	VDD_3V3_SYS	Power supply	Power	3.3V
3	I2S0_DOUT_LS	The I2S0 data out of the SOM converted by the level-converted chip	Output	3.3V
4	GPIO_OUT	The FAN_PWM signal of the SOM converted by the level-converted chip	Output	3.3V
5	I2S0_DIN_LS	The I2S0 data in of the SOM converted by the level-converted chip	Input	3.3V
6	MOD_SLEEP_OUT	The module sleep signal of the SOM converted by the level-converted chip	Output	3.3V
7	I2S0_FS_LS	The I2S0 sample frequency of the SOM converted by the level-converted chip	Output	3.3V
8	-	-	-	-
9	I2S0_SCLK_LS	The I2S0 sclk of the SOM converted by the level-converted chip	Bidir	3.3V
10	-	-	-	-
11	GND	GND	-	-
12	GND	GND	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-

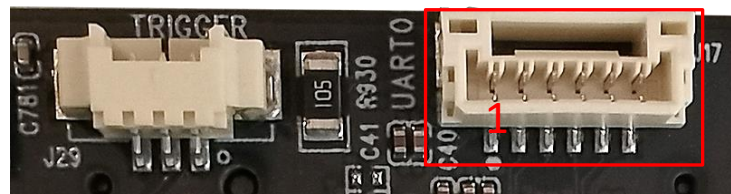
UART PORT J27 (USB2.0 Micro-B)

- USB2.0 UART bridge integrated



UART PORT J17

- Part#: BM06B-GHS-TB
- Number of Positions: 6
- Number of Rows: 1
- Pitch: 1.25 mm

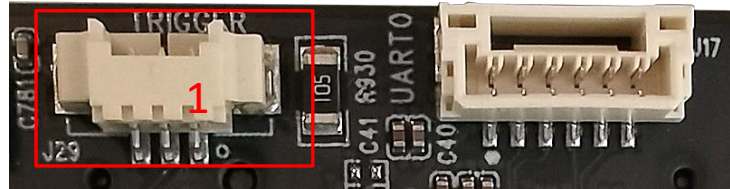


PINOUT DETAILS OF J17

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	VDD_5V_IN	5V IN	Power	5V
2	UART0_TXD_3V3	The TXD of UART0	Bidir	3.3V
3	UART0_RXD_3V3	The RXD of UART0	Bidir	3.3V
4	UART0_CTS_3V3	The CTS of UART0	Bidir	3.3V
5	UART0_RTS_3V3	The RTS of UART0	Bidir	3.3V
6	GND	GND	-	-

INTERFACE J29 (External Trigger Input)

- Part#: 532610371
- Number of Positions: 3
- Number of Rows: 1
- Pitch: 1.25 mm

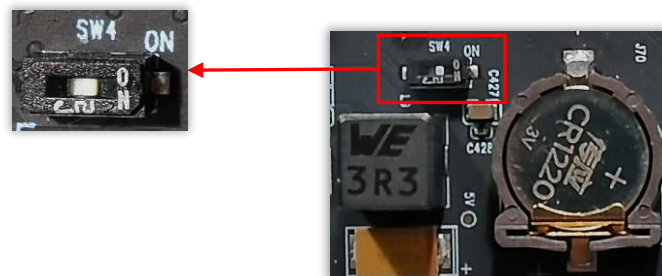


PINOUT DETAILS OF J29

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	GND_OC	GND_OC	Input	-
2	TRIG_IN	External TRIG IN	Input	3.3V
3	GND_OC	GND_OC	Input	-

BOOT MODE (SW4)

Status	Boot Mode
On	Manual Mode
Off	Auto Mode



Buttons (Power, Recovery, Reset)

Buttons	Function
SW1	Power
SW2	Force recovery
SW3	System reset



INTERFACE J36 (CAN Connector)

■ Part#: BM04B-GHS-TB



PINOUT DETAILS OF J36

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	VDD_5V_IN	5V IN	Power	5V
2	CANH	The high signal of the CAN sends and receives chip	Bidir	5V
3	CANL	The low signal of the CAN sends and receives chip	Bidir	5V
4	GND	GND	-	-
5	GND	GND	-	-
6	GND	GND	-	-

INTERFACE J6 (Power Input Connector)

- Part#: 1724480004
- Number of Positions: 4
- Number of Rows: 2
- Pitch: 4.20 mm

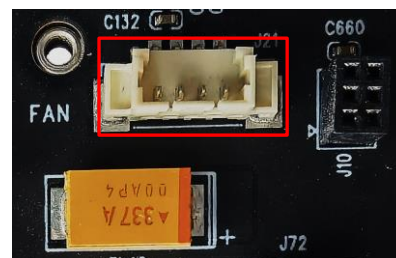


PINOUT DETAILS OF J6

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	DCDC_IN	Power 12V	Power_In	12V
2	DCDC_IN	Power 12V	Power_In	12V
3	GND	GND	Power_Gnd	-
4	GND	GND	Power_Gnd	-

INTERFACE J21 (SoC Fan Header)

- Part#: 0533980471
- Number of Positions: 4
- Number of Rows: 1
- Pitch: 1.25 mm



PINOUT DETAILS OF J21

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	GND	GND	-	-
2	PWR	SoC Fan power supply	Power	5V
3	TACH	Speed control of the SOC FAN	Output	5V
4	PWM	Pulse Width Modulation of the SOC FAN	Output	5V
5	GND	GND	-	-
6	GND	GND	-	-

INTERFACE J11 (Jumper for Main Power)

- Part#: M22-2010305
- Number of Positions: 3
- Number of Rows: 1

Without Jumper:



With Jumper:



DCDC



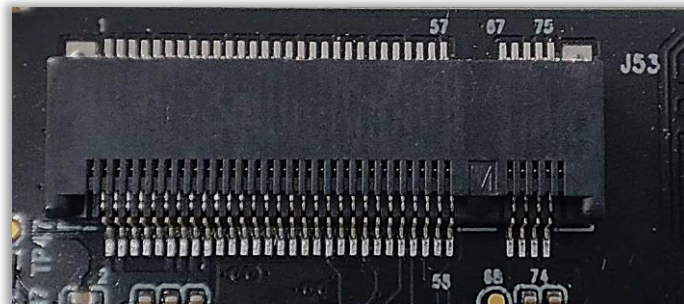
POE

PINOUT DETAILS OF J11

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	15V	Power 15V	Power In	15V
2	VIN	Power	Power	-
3	DCDC_IN	Power 12V	Power In	12V

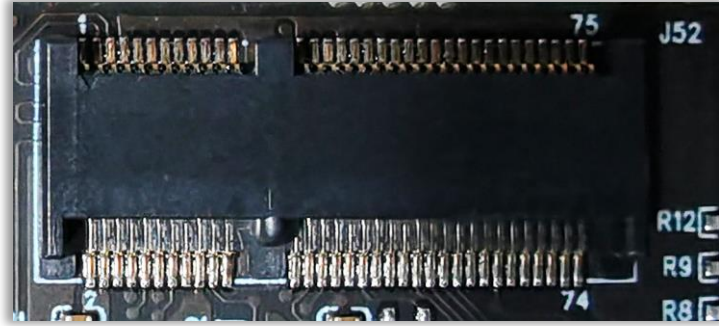
INTERFACE J53 (PCIe x4 Based M.2 M Connector for SSD)

- Part#: SM3ZS067U410AMR1000
- Number of Positions: 67
- Number of Rows: 2
- Pitch: 0.50 mm



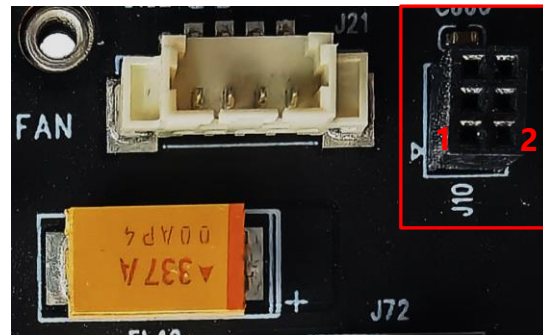
● INTERFACE J52 (M.2 Key E Connector for WIFI & Bluetooth)

- Part#: 246411067401894E
- Number of Positions: 67
- Number of Rows: 2
- Pitch: 0.50 mm



● INTERFACE J10 (JTAG Header)

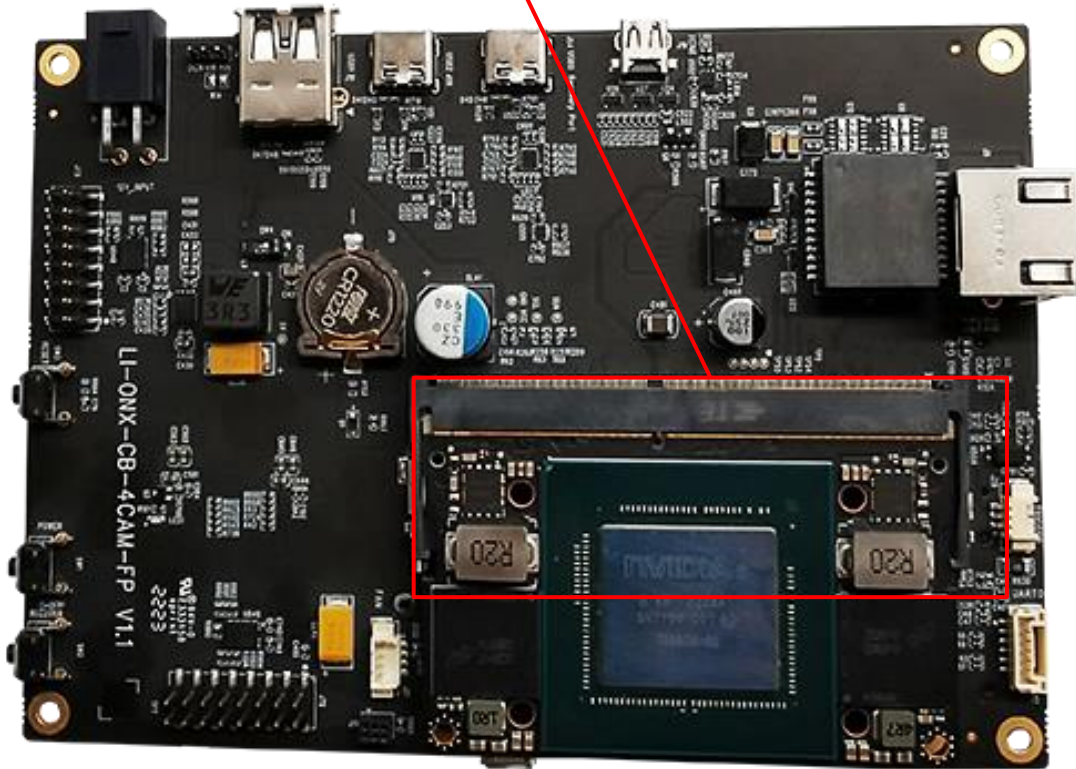
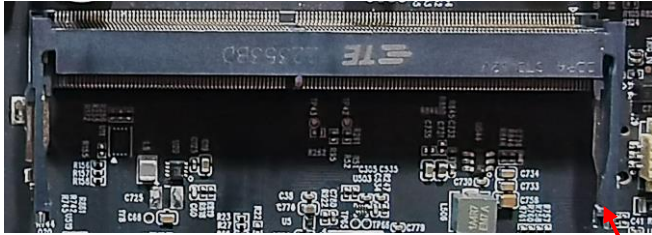
- Part#: 20021311-00006T4LF
- Number of Rows: 2
- Pitch: 1.27 mm
- Number of Positions: 6
- Pin Assignment



● PINOUT DETAILS OF J10

Pin No	Pin Name	Description	Pin Type	Voltage Level
1	JTAG_TDO	JTAG test data output	Output	3.3V
2	JTAG_TMS	JTAG test mode selection	Bidir	3.3V
3	JTAG_TDI	JTAG test data input	Input	3.3V
4	JTAG_TCK	JTAG test clock	Bidir	3.3V
5	VCCIO1	JTAG power supply	Power	3.3V
6	GND	GND	-	-

- Connector to NVIDIA® Jetson Orin™ NX SOM



NOTE:

NVIDIA® Jetson Orin™ NX SOM is not included.

● REVISION HISTORY

Revision	Description	Release Date
1.0	First release.	09 May 2023
1.1	Updated board version from 1.0 to 1.1 and revised related interfaces.	03 Jul 2023
1.2	Added WIFI & Bluetooth interface and related description.	19 Sep 2023
1.3	1. Deleted compatibility description for NANO. 2. Add website address of LI-ONX-CB-4CAM-FP. 3. Updated BOM. 4. Added section "Button Cell". 5. Updated Interfaces J17, J72, J73, J6, J21 and J10	11 Oct 2023
1.4	1. Updated Operating temperature. 2. Added PINOUT DETAILS OF INTERFACES.	28 Apr 2024

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