VisionCB-x2L-STD Datasheet and Pinout

Rev. 20240104101426

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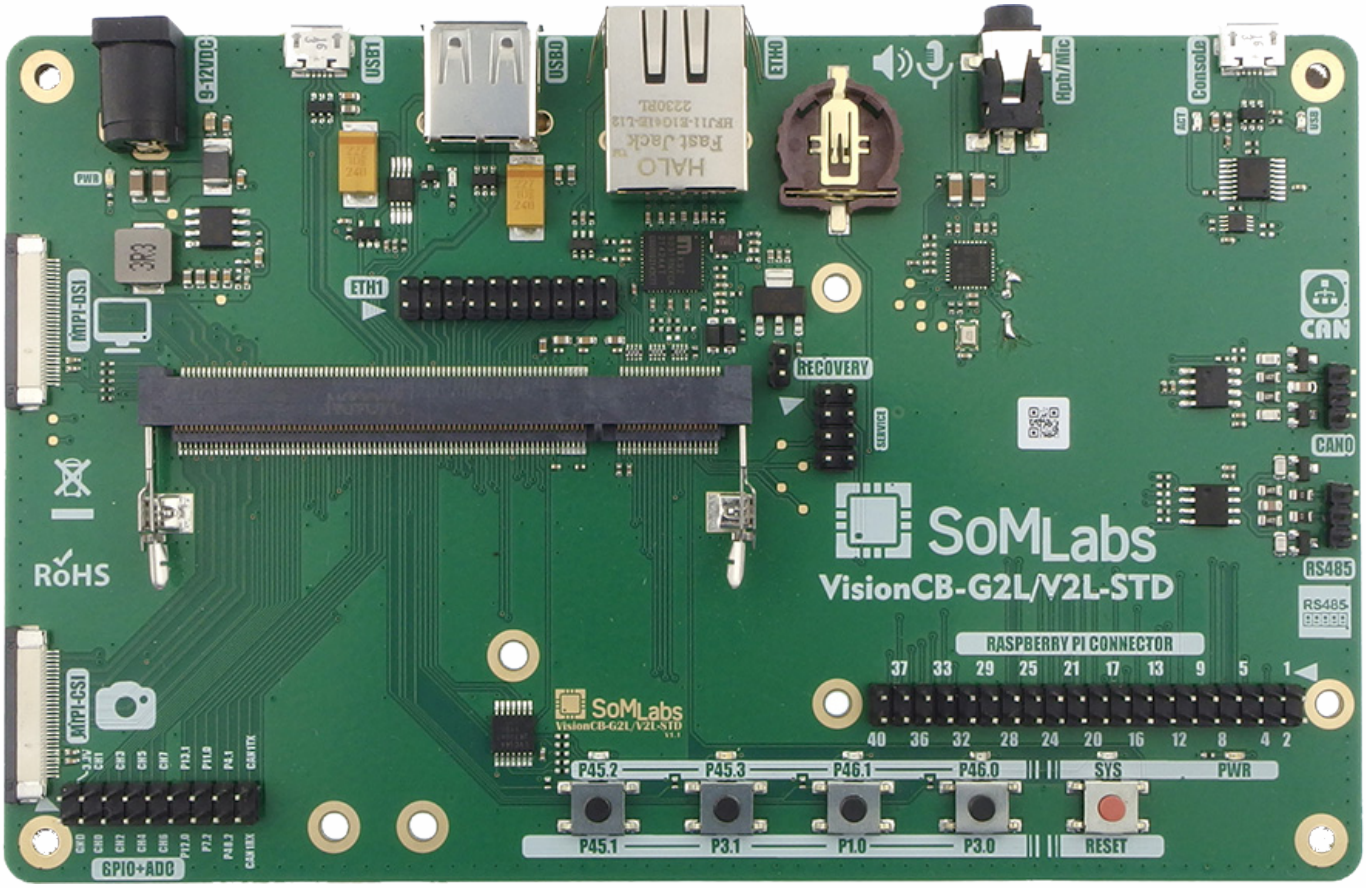
VisionCB-x2L-STD v.1.2 Datasheet and Pinout

General description



The VisionCB-x2L-STD (with SOM equipped with Renesas RZ/V2L and RZ/G2L MPUs compatible) is a carrier board for the VisionSOM-V2L and VisionSOM-G2L family of computer-on-modules which are powered by dual-core Renesas MPUs (2 x ARM Cortex-A55 + Cortex-M33). The carrier board, together with a System on Module (SoM), makes a complete development platform similar to SBC. The carrier board houses the most common interfaces such as USB, Ethernet, CAN, RS485, audio codec, etc. A large variety of interfaces allows to use it as both a complete development platform or as a stand-alone end-product. The VisionCB-x2L-STD is equipped with a simple user interface consisting of 4 buttons and 4 LEDs. VisionCB-x2L-STD carrier board is also equipped with a large number of popular peripherals, including: RS485, CAN, 10/100/1G Ethernet, MIPI display and camera connectors, serial console port on USB vCOM.

Applications

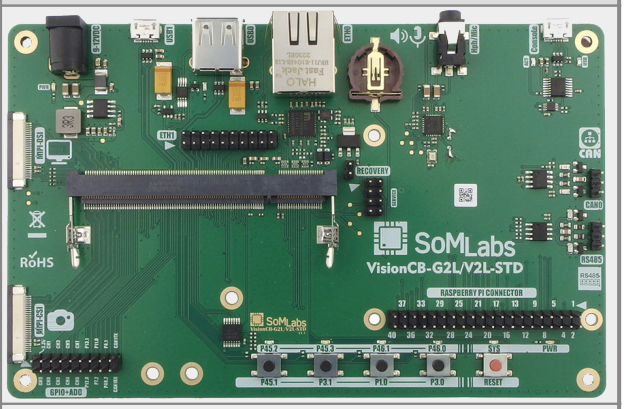
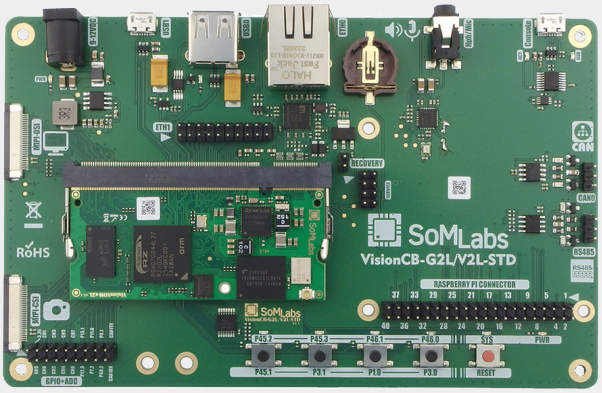
- Multimedia
- Video streaming
- Image inspection
- VisionAI gateway
- Doorbell systems
- EV chargers
- Smart agriculture gateways
- Industrial embedded Linux computer
- Home Appliances

- Home Automation – Smart Home
- Human-machine Interfaces (HMI)
- Point-of-sales (POS) terminals
- IoT gateways
- Machine vision equipment
- Robotics
- Fitness/outdoor equipment

Features

- Carrier Board compatible with the VisionSOM-G2L and VisionSOM-V2L families of modules based on dual core, heterogenous Renesas RZ/V2L and RZ/G2L application processors
- SoM Connector: SODIMM200
- Expansion Connectors:
  - ADC+GPIO connector 2x9 Pin Header (Male)
  - Raspberry Pi Compatible Connectors 2x20 Pin Header (Male)
  - Ethernet #1 (GMII) Connector Pin Header (Male)
- Communication Connectors:
  - 1x Ethernet 10/100/1000Mbit/s (RJ45)
  - 1x CAN (1x3 Pin Header, Male)
  - 1x RS-485 (1x3 Pin Header, Male)
  - 1x USB Host Type A connectors
  - 1x USB OTG Micro AB connector
  - 1x Console MicroUSB B connector
- Audio Interface:
  - Mini-jack 3.5mm (headphones + microphone)
- Display Interface:
  - 30-pin FFC/FPC MIPI-DSI (up to 4 lanes)
- Camera Interface:
  - 30-pin FFC/FPC MIPI-CSI2 (up to 4 lanes)
- User Interface:
  - 4+1 Pushbuttons
  - 4+2 LEDs
- External Power Supply 9-12V DC
- Temperature Range: 0 to +70°C
- Board Size: 160mm x 100mm x 21mm

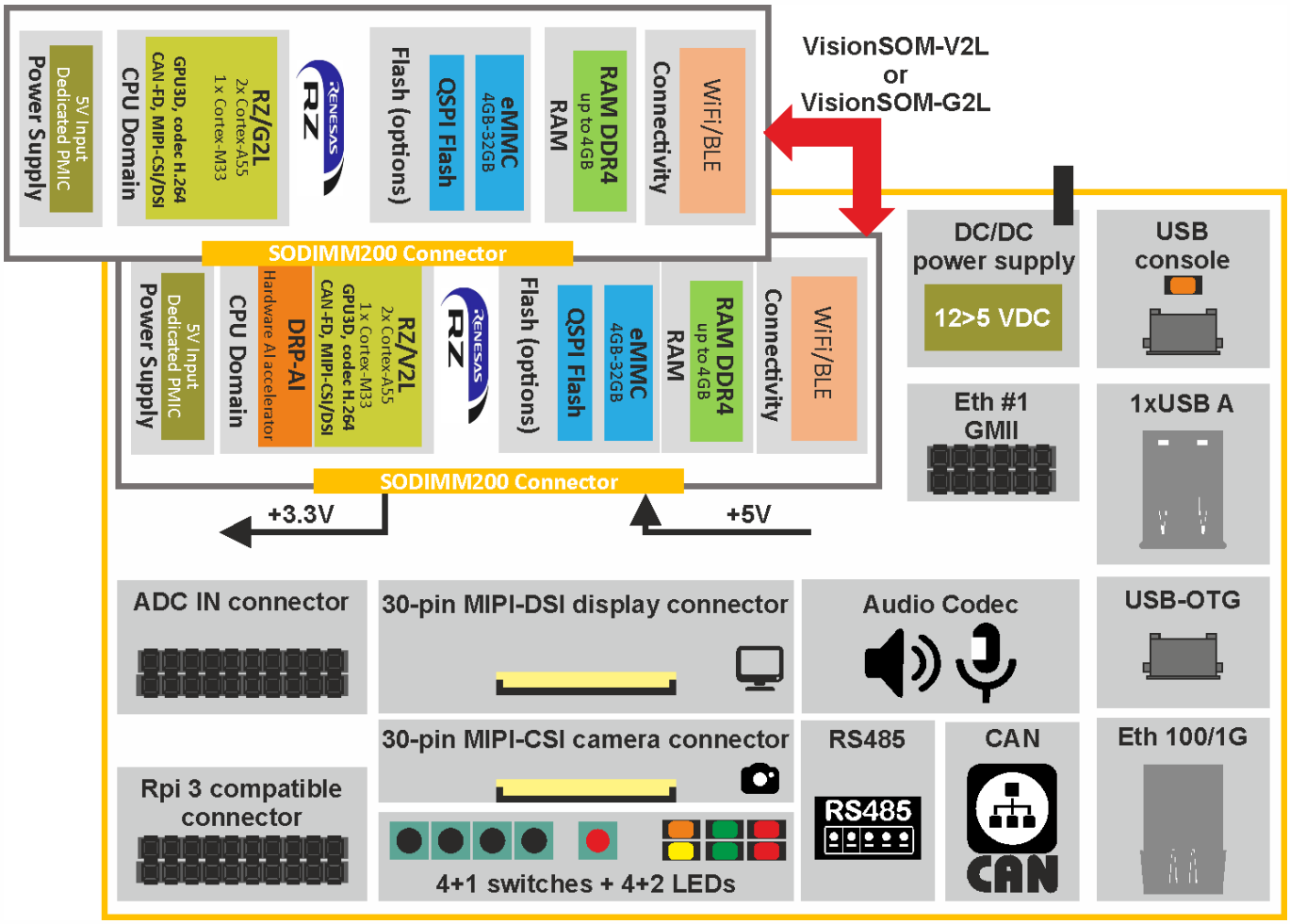
Pictures of VisionCB-x2L-STD v1.2 board

Version	Photo
VisionCB-x2L-STD v1.2 board only	
VisionCB-x2L-STD v1.2 with VisionSOM-x2L	

Ordering info

VisionCB-x2L-STD v1.2

Block Diagram

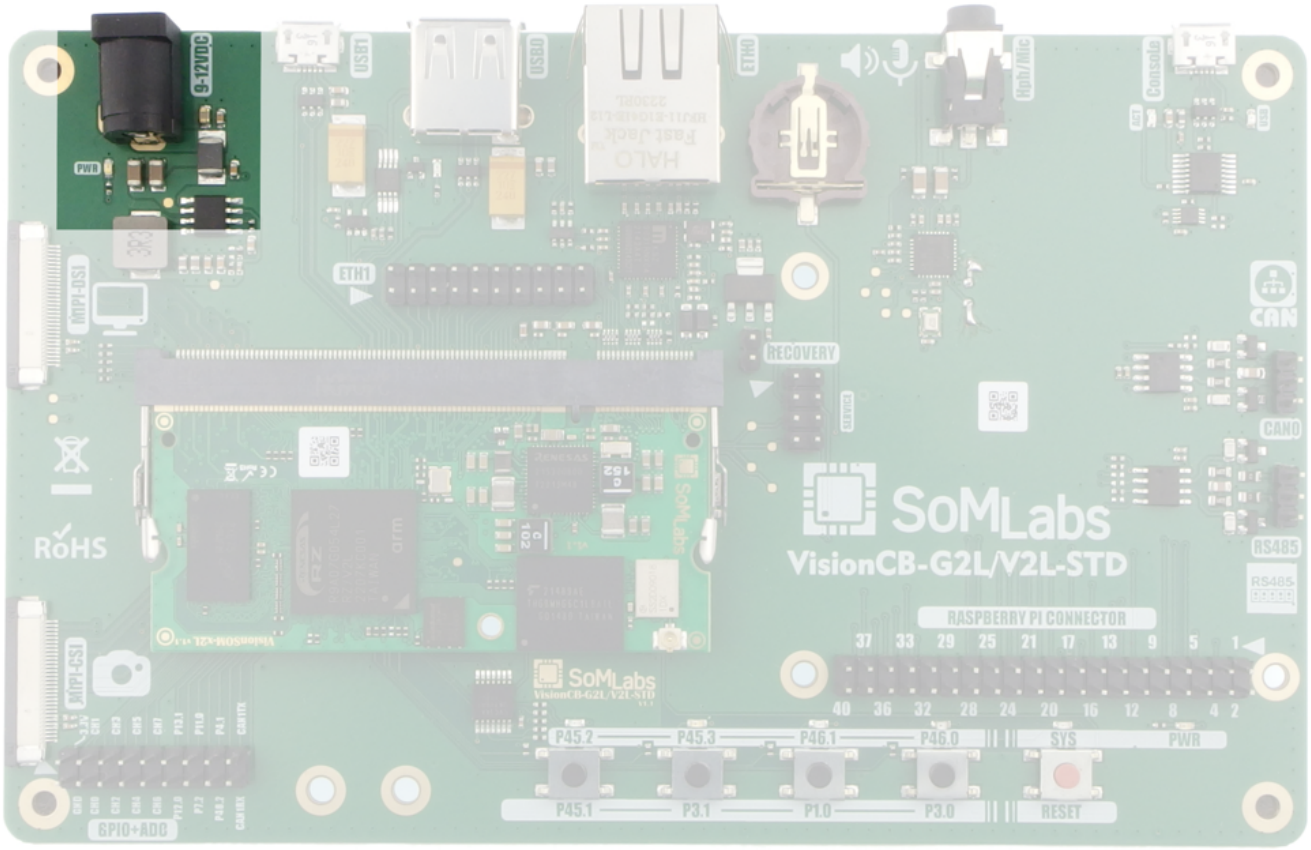


Electrical parameters

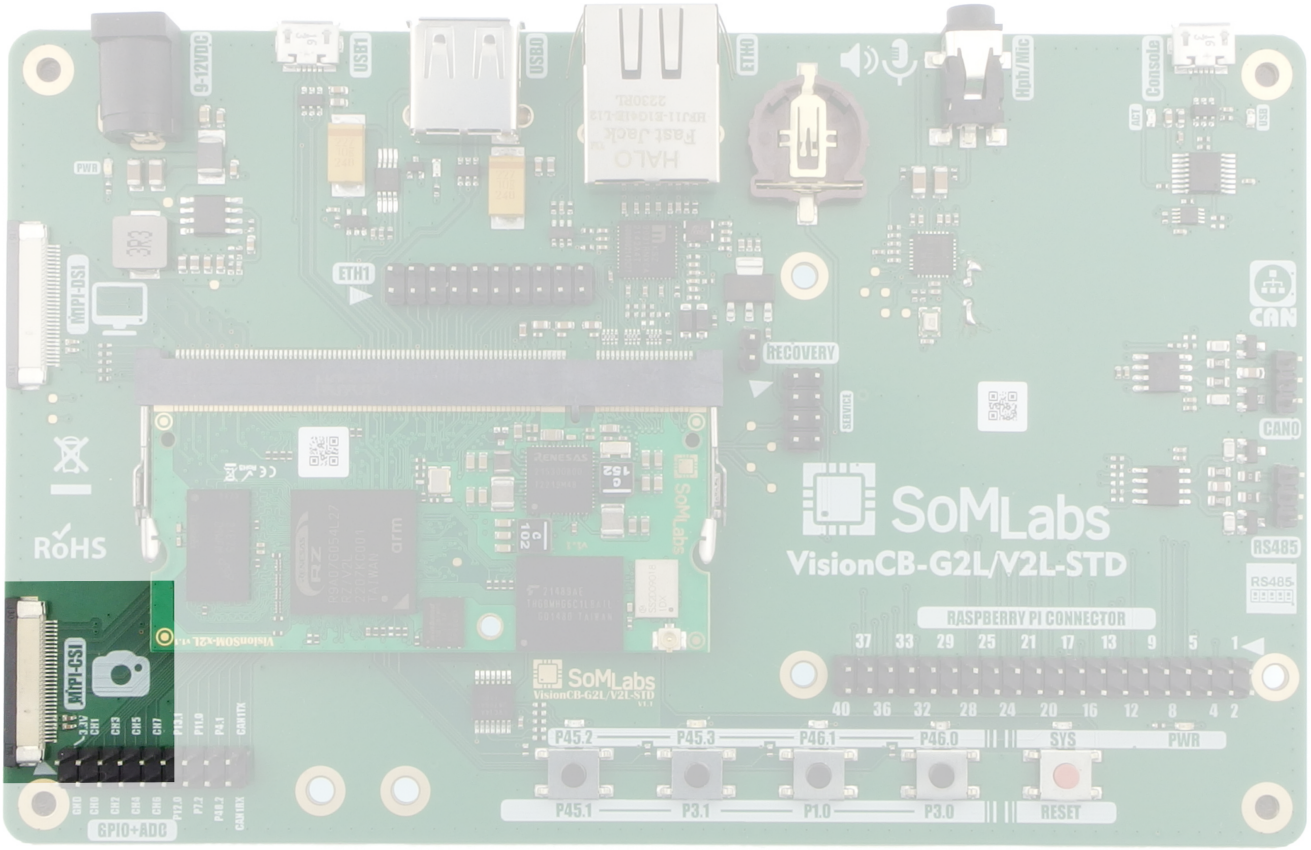
Parameter	Value			Units	Comment
	Min.	Typ.	Max.		
Power Supply	9.0	12.0	15.0	V	Positive pole on central connector of J200
Supply current	-	-	0.13	A	Excluding LCD, USB and antoher external loads
LCD/Camera Power Supply (logic)	3.25	3.3	3.35	V	-
LCD/Camera Power Supply (backlight and aux)	4.75	4.87	4.95	V	-
Arduino GPIO voltage		3.3		V	-

Power supply connector

The VisionCB-x2L-STD is equipped with external power source connector with pin diameter 2.5mm and hole diameter 6mm. The voltage of the external power source should be within the range 9-12 VDC.



Camera MIPI-CSI interface (FPC/FFC30, 0.5mm)

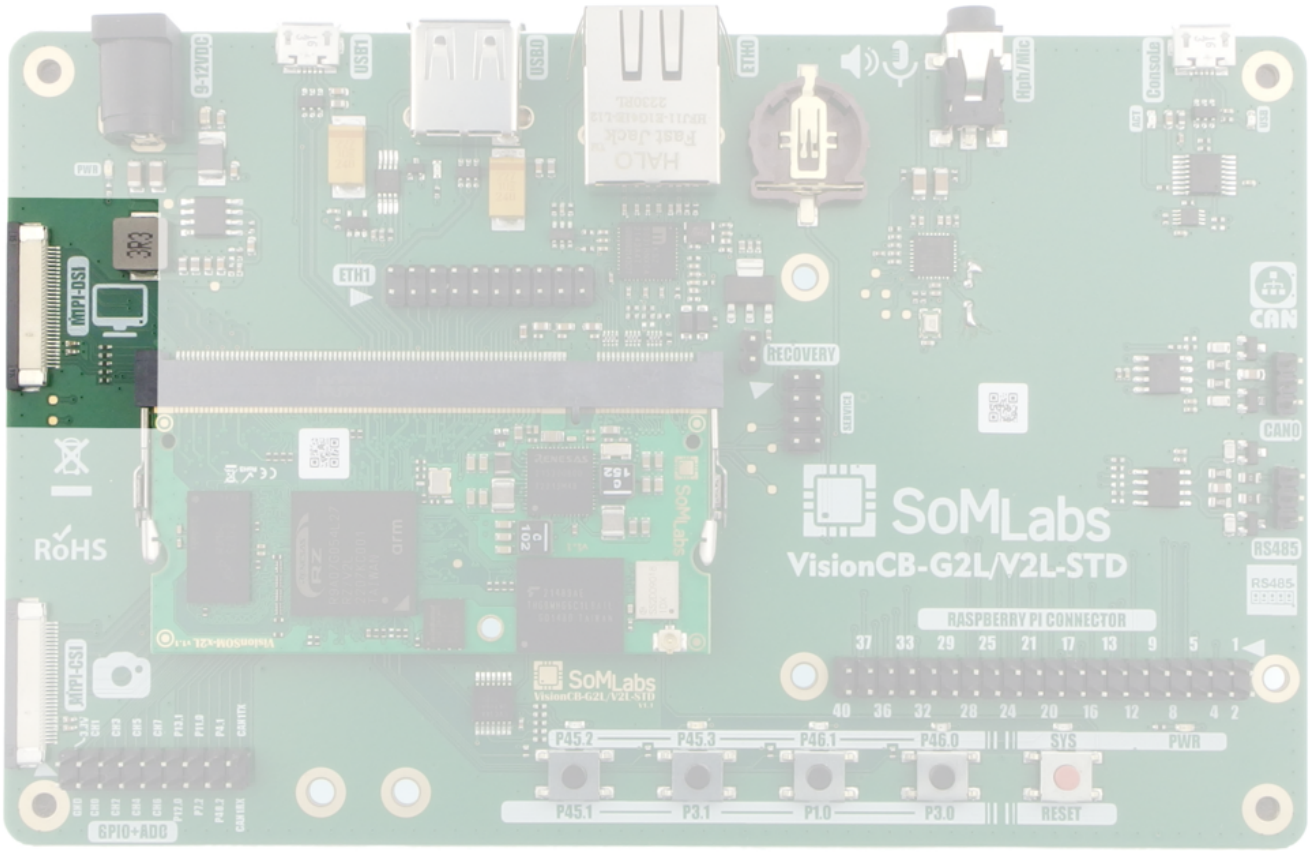


Pin	Signal	GPIO	Description
1	GND	-	-
2	CSI-CLK-P	-	-
3	CSI-CLK-P	-	-
4	GND	-	-
5	CSI-DATA0-P	-	-
6	CSI-DATA0-N	-	-
7	GND	-	-
8	CSI-DATA1-P	-	-
9	CSI-DATA1-N	-	-
10	GND	-	-
11	CSI-DATA2-P	-	-
12	CSI-DATA2-N	-	-
13	GND	-	-
14	CSI-DATA3-P	-	-
15	CSI-DATA3-N	-	-
16	GND	-	-
17	I2C1-SCL	RIIC1_SCL	Camera confguration I2C interface (3.3V), pull-uped with 2.2k
18	I2C1-SDA	RIIC1_SDA	Camera confguration I2C interface (3.3V), pull-uped with 2.2k
19	GND	-	-
20	CSI-GPIO0	P17-0	Auxiliary GPIO

21	CSI-GPIO1	P17-1	Auxiliary GPIO
22	-	-	-
23	GND	-	-
24	+3.3V	-	Power supply for external devices
25	+3.3V	-	Power supply for external devices
26	+5V	-	Power supply for external devices
27	+5V	-	Power supply for external devices
28	-	-	-
29	-	-	-
30	GND	-	-

Note:
1. The first pin of the MIPI-CSI connector is located in its upper part.

Display MIPI-DSI interface (FPC/FFC30, 0.5mm)

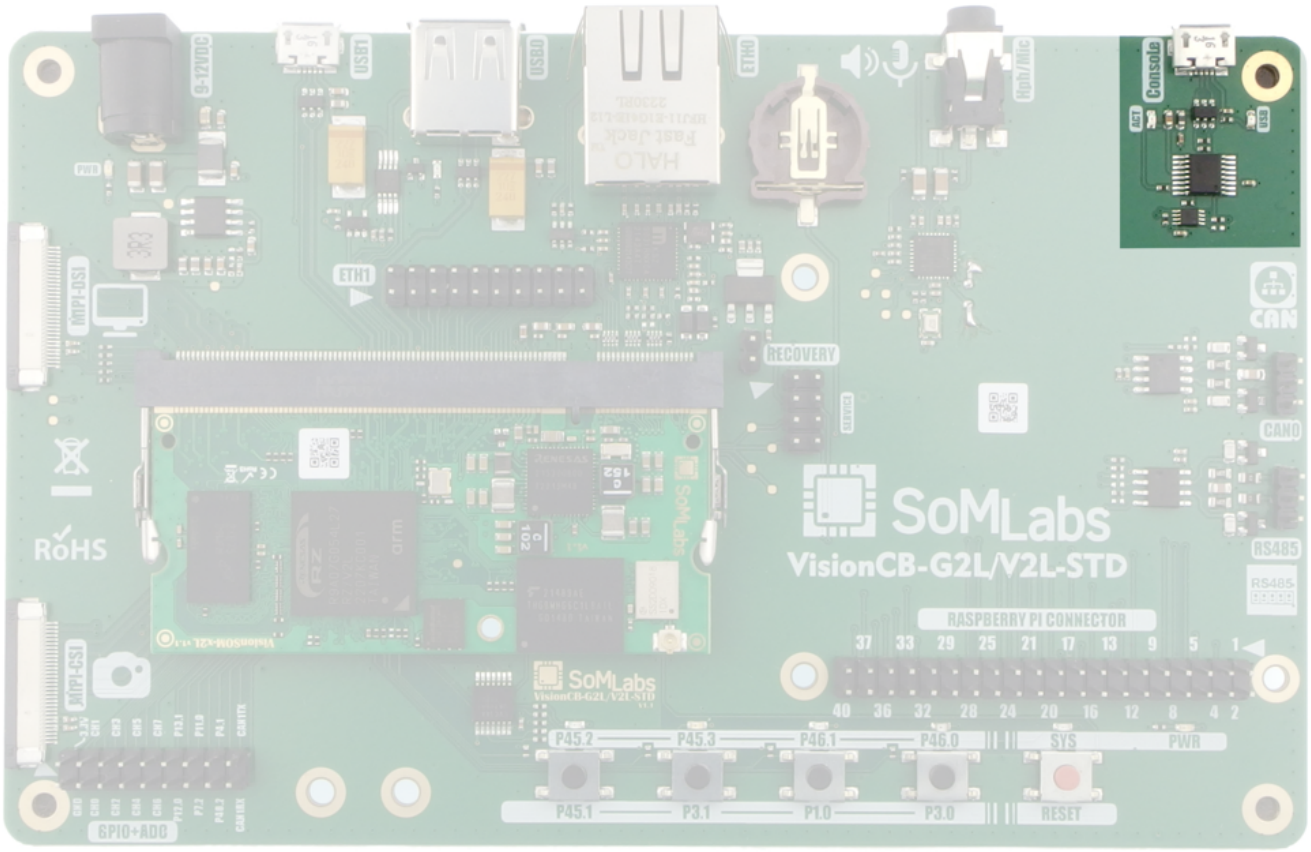


Pin	Signal	GPIO	Description
1	GND	-	
2	DSI-CLK-P	-	-
3	DSI-CLK-P	-	-
4	GND	-	-
5	DSI-DATA0-P	-	-
6	DSI-DATA0-N	-	-
7	GND	-	-
8	DSI-DATA1-P	-	-
9	DSI-DATA1-N	-	-
10	GND	-	-
11	DSI-DATA2-P	-	-
12	DSI-DATA2-N	-	-
13	GND	-	-
14	DSI-DATA3-P	-	-
15	DSI-DATA3-N	-	-
16	GND	-	-
17	I2C1-SCL	RIIC1_SCL	Display confguration I2C interface (3.3V), pull-uped with 2.2k
18	I2C1-SDA	RIIC1_SDA	Display confguration I2C interface (3.3V), pull-uped with 2.2k
19	GND	-	-
20	DISP-RST	P13-2	Optional display reset signal

21	TP-INT	P17-1	Optional touch-panel interrupt signal
22	TP-RST	P17-2	Optional touch-panel reset signal
23	GND	-	-
24	+3.3V	-	Power supply for external devices
25	+3.3V	-	Power supply for external devices
26	+5V	-	Power supply for external devices
27	+5V	-	Power supply for external devices
28	DSI-BL-PWM	P16-0	Optional PWM backlight signal
29	DSI-BL-EN	P16-1	Optional ENABLE backlight signal
30	GND	-	-

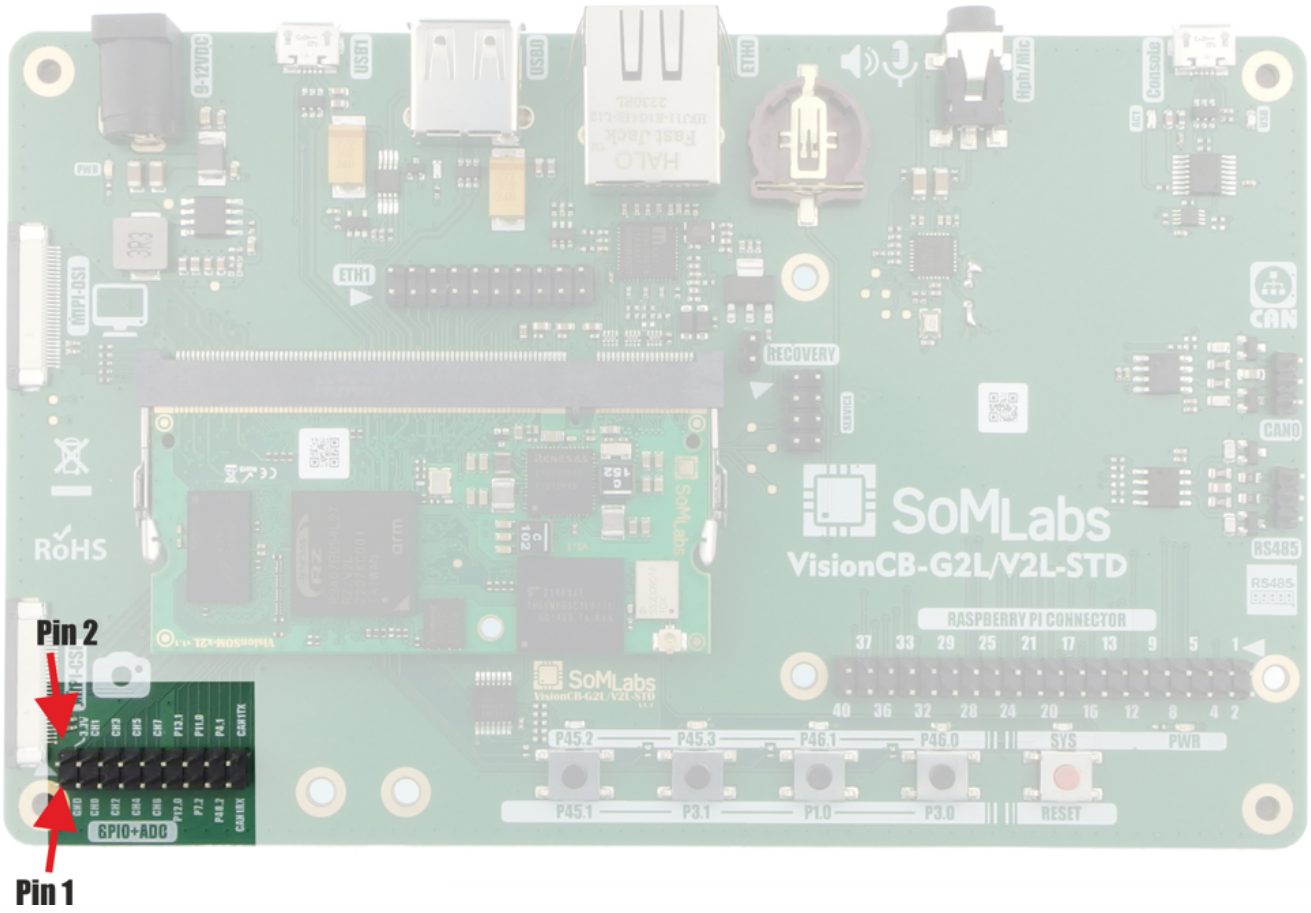
Note:
1. The first pin of the MIPI-DSI connector is located in its upper part.

USB Console Port



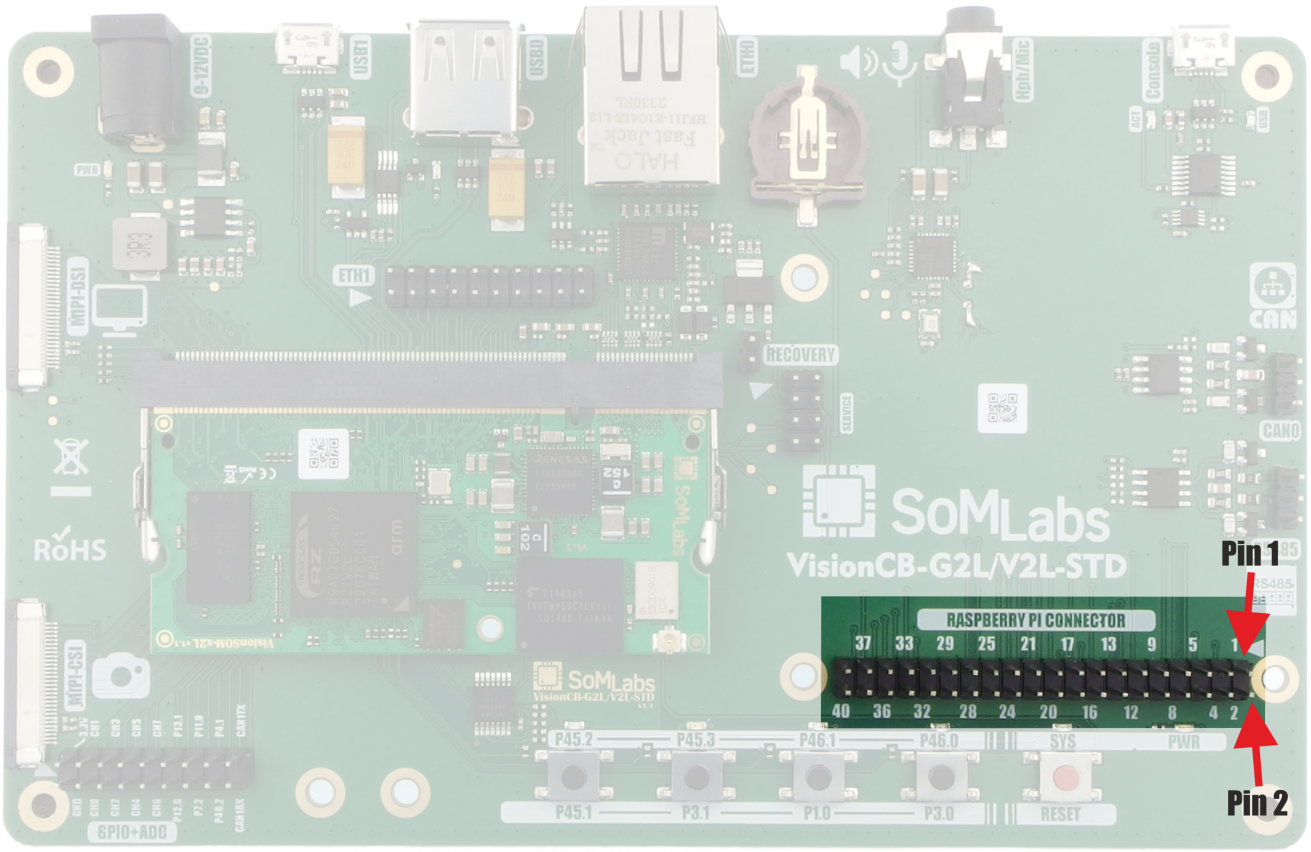
Console line	MPU signal	GPIO	Description
CONSOLE-TXD	UART0-RXD	P38-1	GPIO 3.3V voltage levels
CONSOLE-RXD	UART0-TXD	P38-0	GPIO 3.3V voltage levels

ADC + GPIO connector



Pin	Signal	GPIO	Description
1	GND	-	-
2	3.3V	-	-
3	ADC-CH0	ADC-CH0	Dedicated analog input, 12-bit ADC, max. 1.8V on input
4	ADC-CH1	ADC-CH1	Dedicated analog input, 12-bit ADC, max. 1.8V on input
5	ADC-CH2	ADC-CH2	Dedicated analog input, 12-bit ADC, max. 1.8V on input
6	ADC-CH3	ADC-CH3	Dedicated analog input, 12-bit ADC, max. 1.8V on input
7	ADC-CH4	ADC-CH4	Dedicated analog input, 12-bit ADC, max. 1.8V on input
8	ADC-CH5	ADC-CH5	Dedicated analog input, 12-bit ADC, max. 1.8V on input
9	ADC-CH6	ADC-CH6	Dedicated analog input, 12-bit ADC, max. 1.8V on input
10	ADC-CH7	ADC-CH7	Dedicated analog input, 12-bit ADC, max. 1.8V on input
11	P12-0	P12-0	GPIO 3.3V voltage levels
12	P13-1	P13-1	GPIO 3.3V voltage levels
13	P7-2	P7-2	GPIO 3.3V voltage levels
14	P11-0	P11-0	GPIO 3.3V voltage levels
15	P48-2	P48-2	GPIO 3.3V voltage levels
16	P4-1	P4-1	GPIO 3.3V voltage levels
17	CAN1-RX	P13-0	GPIO 3.3V voltage levels
18	CAN1-TX	P12-1	GPIO 3.3V voltage levels

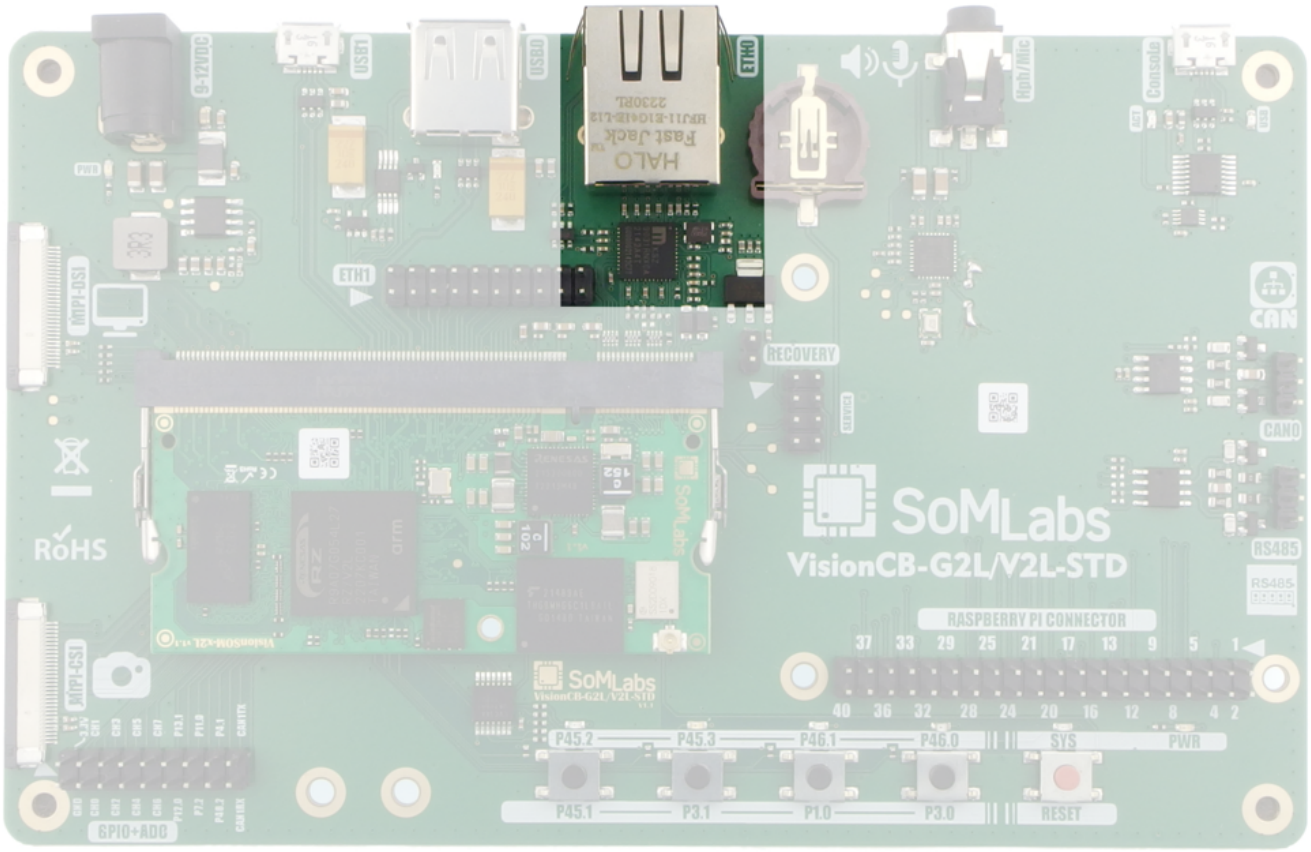
Raspberry Pi compatible I/O header



Pin	Signal	MPU signal	Description
1	3.3V	-	-
2	5.0V	-	-
3	I2C0-SDA	RIIC0_SDA	Dedicated I2C MPU line
4	5.0V	-	-
5	I2C0-SCL	RIIC0_SCL	Dedicated I2C MPU line
6	GND	-	-
7	P45-0	P45-0	GPIO 3.3V voltage levels
8	UART4-TXD	P2-0	GPIO 3.3V voltage levels
9	GND	-	-
10	UART4-RXD	P2-1	GPIO 3.3V voltage levels
11	P8-2	P8-2	GPIO 3.3V voltage levels
12	P15-0	P15-0	GPIO 3.3V voltage levels
13	P14-1	P14-1	GPIO 3.3V voltage levels
14	GND	-	-
15	P14-0	P14-0	GPIO 3.3V voltage levels
16	UART1-RXD	P40-0	GPIO 3.3V voltage levels
17	P11-1	P11-1	GPIO 3.3V voltage levels
18	UART1-TXD	P40-1	GPIO 3.3V voltage levels
19	SPI0-MOSI	P43-1	GPIO 3.3V voltage levels
20	GND	-	-

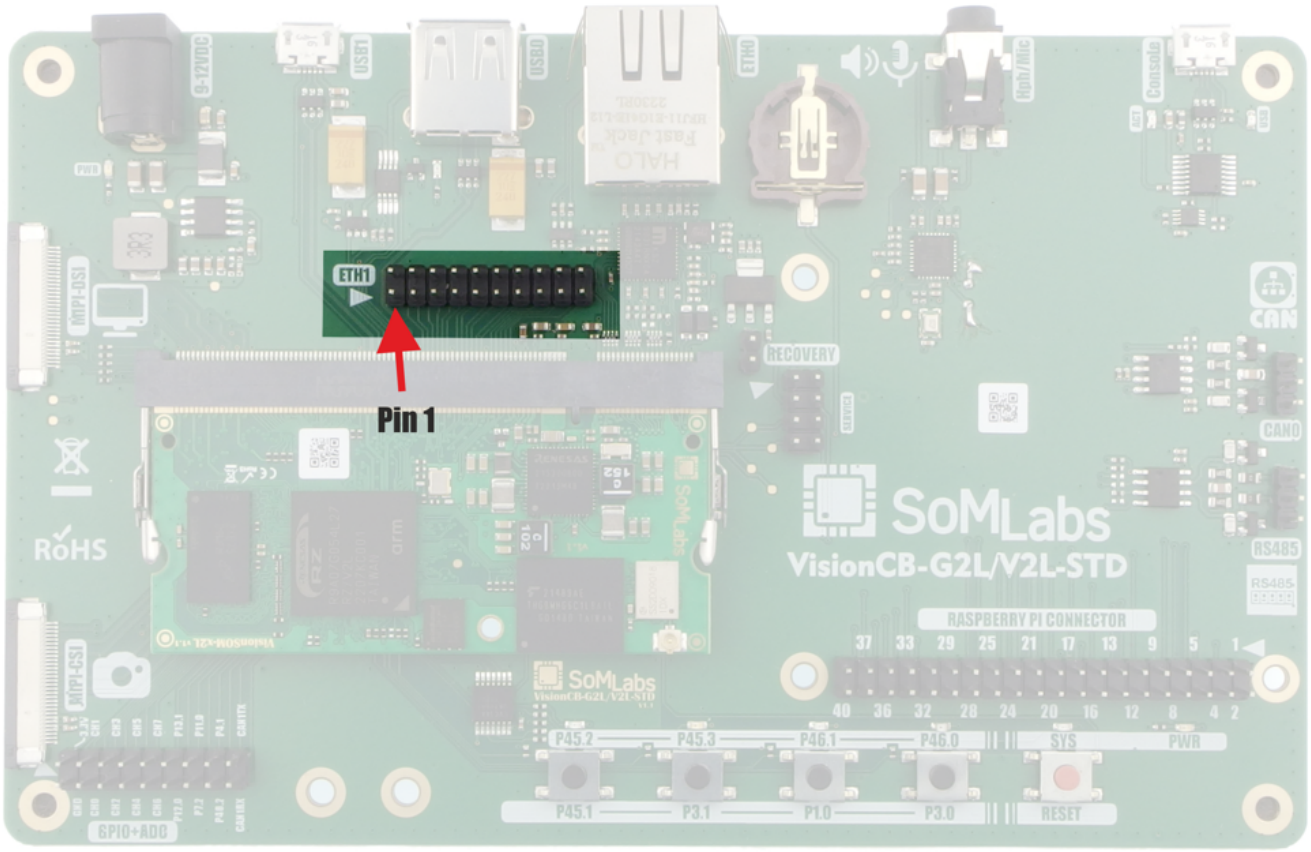
21	SPI0-MISO	P43-2	GPIO 3.3V voltage levels
22	P9-1	P9-1	GPIO 3.3V voltage levels
23	SPI0-CLK	P43-0	GPIO 3.3V voltage levels
24	SPI0-SSL	P43-3	GPIO 3.3V voltage levels
25	GND	-	-
26	P9-0	P9-0	GPIO 3.3V voltage levels
27	I2C3-SDA	P46-2	I2C interface used by MPU for SOM PMIC configuration
28	I2C3-SCL	P46-3	I2C interface used by MPU for SOM PMIC configuration
29	UART1-CTS	P41-0	GPIO 3.3V voltage levels
30	GND	-	-
31	UART1-RTS	P41-1	GPIO 3.3V voltage levels
32	P1-1	P1-1	GPIO 3.3V voltage levels
33	P10-1	P10-1	GPIO 3.3V voltage levels
34	GND	-	-
35	SPI1-MISO	P44-2	GPIO 3.3V voltage levels
36	SPI1-SSL	P44-3	GPIO 3.3V voltage levels
37	P10-0	P10-0	GPIO 3.3V voltage levels
38	SPI1-MOSI	P44-1	GPIO 3.3V voltage levels
39	GND	-	-
40	SPI1-CLK	P44-0	GPIO 3.3V voltage levels

GMII of ETH0 connection



Signal	MPU signal	Description
ET0-TXD0	ET0-TXD0	1.8V Power Domain, GPIO mode not allowed
ET0-TXD1	ET0-TXD1	1.8V Power Domain, GPIO mode not allowed
ET0-TXD2	ET0-TXD2	1.8V Power Domain, GPIO mode not allowed
ET0-TXD3	ET0-TXD3	1.8V Power Domain, GPIO mode not allowed
ET0-TXC	ET0-TXC	1.8V Power Domain, GPIO mode not allowed
ET0-TX-CTL	ET0-TX-CTL	1.8V Power Domain, GPIO mode not allowed
ET0-RXD0	ET0-RXD0	1.8V Power Domain, GPIO mode not allowed
ET0-RXD1	ET0-RXD1	1.8V Power Domain, GPIO mode not allowed
ET0-RXD2	ET0-RXD2	1.8V Power Domain, GPIO mode not allowed
ET0-RXD3	ET0-RXD3	1.8V Power Domain, GPIO mode not allowed
ET0-RXC	ET0-RXC	1.8V Power Domain, GPIO mode not allowed
ET0-RX-CTL	ET0-RX-CTL	1.8V Power Domain, GPIO mode not allowed
ET0-MDC	ET0-MDC	1.8V Power Domain, GPIO mode not allowed
ET0-MDIO	ET0-MDIO	1.8V Power Domain, GPIO mode not allowed
ET0-INT	P47-0	GPIO 3.3V voltage levels
ET0-PHY-RST	P47-1	GPIO 3.3V voltage levels

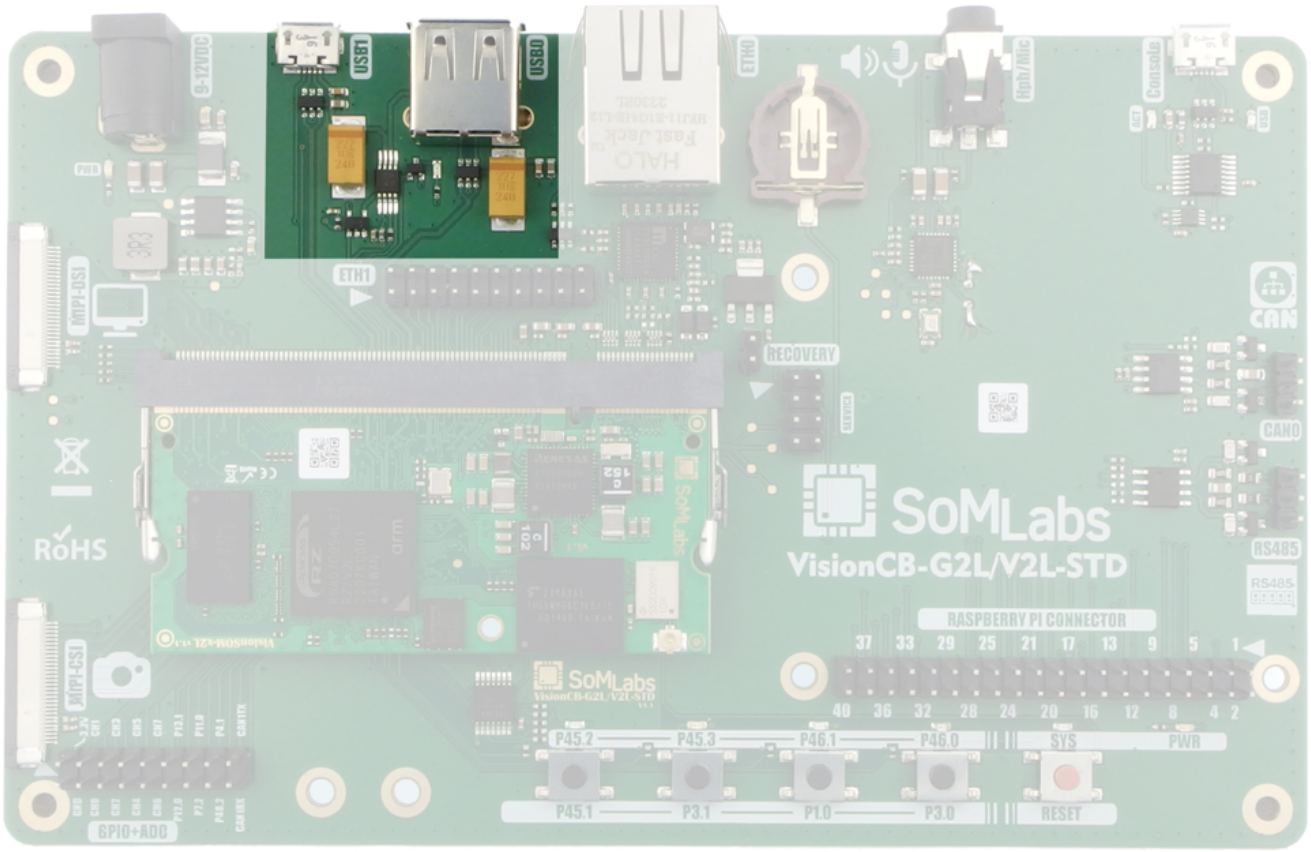
GMII of ETH1 connector



Pin	Signal	MPU signal	Description
1	3.3V	-	-
2	ET1-TXD0	P30-0	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
3	ET1-TXD1	P30-1	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
4	ET1-TXD2	P31-0	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
5	ET1-TXD3	P31-1	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
6	ET1-TXC	P29-0	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
7	ET1-TX-CTL	P29-1	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
8	ET1-RXD3	P36-0	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
9	ET1-RXD2	P35-1	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
10	ET1-RXD1	P35-0	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
11	ET1-RXD0	P34-1	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
12	ET1-RX-CTL	P34-0	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
13	ET1-RXC	P33-1	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
14	ET1-MDC	P37-0	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
15	ET1-MDIO	P37-1	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
16	ET1-INT	P47-2	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
17	ET1-PHY-RST	P47-3	1.8V or 3.3V Power Domain selected by ET1-VDD-SEL, GPIO allowed only for 3.3V.
18	ET1-VDD-SEL	-	Ethernet 1 (ET1) interface voltage selection: ET1-VDD-SEL='0' -> V=1.8V; ET1-VDD-SEL='1' or left open -> V=3.3V The line has internal pull-up.

19	GND	-	-
20	GND	-	-

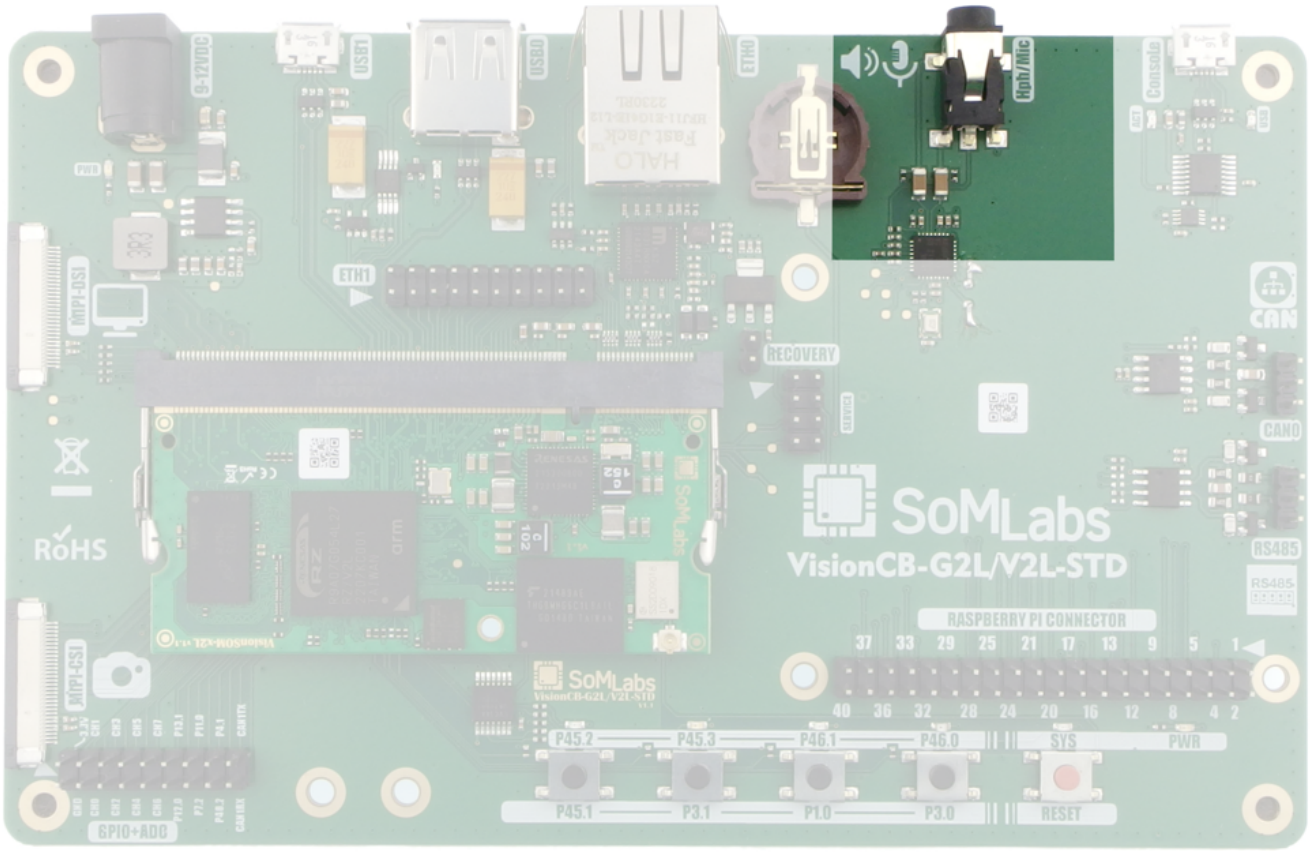
USB interfaces



Signal	MPU signal	Description
USB0-ID	P5-1	GPIO 3.3V voltage levels
USB0-EN	P4-0	GPIO 3.3V voltage levels
USB0-OC	P5-0	GPIO 3.3V voltage levels
USB1-EN	P8-0	GPIO 3.3V voltage levels
USB1-OC	P8-1	GPIO 3.3V voltage levels

Note:
1. USB0 is configured as host, USB1 channel is configured as USB-OTG.

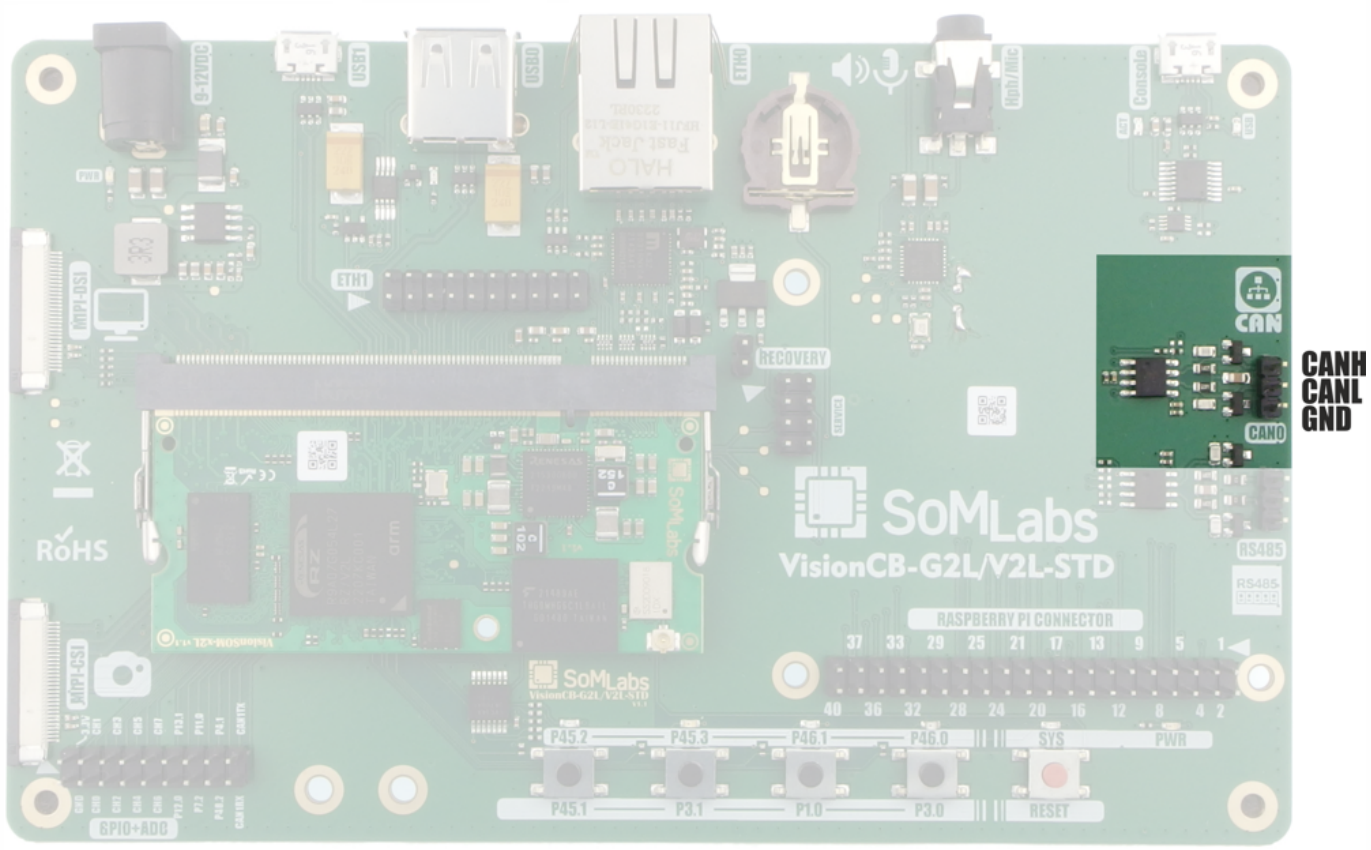
Audio codec



Signal	MPU signal	Description
SSI-MCLK	AUDIO_CLK1	GPIO 3.3V voltage levels
SSI0-BCK	P6-0	GPIO 3.3V voltage levels
SSI0-RCK	P6-1	GPIO 3.3V voltage levels
SSI0-TXD	P7-0	GPIO 3.3V voltage levels
SSI0-RXD	P7-1	GPIO 3.3V voltage levels

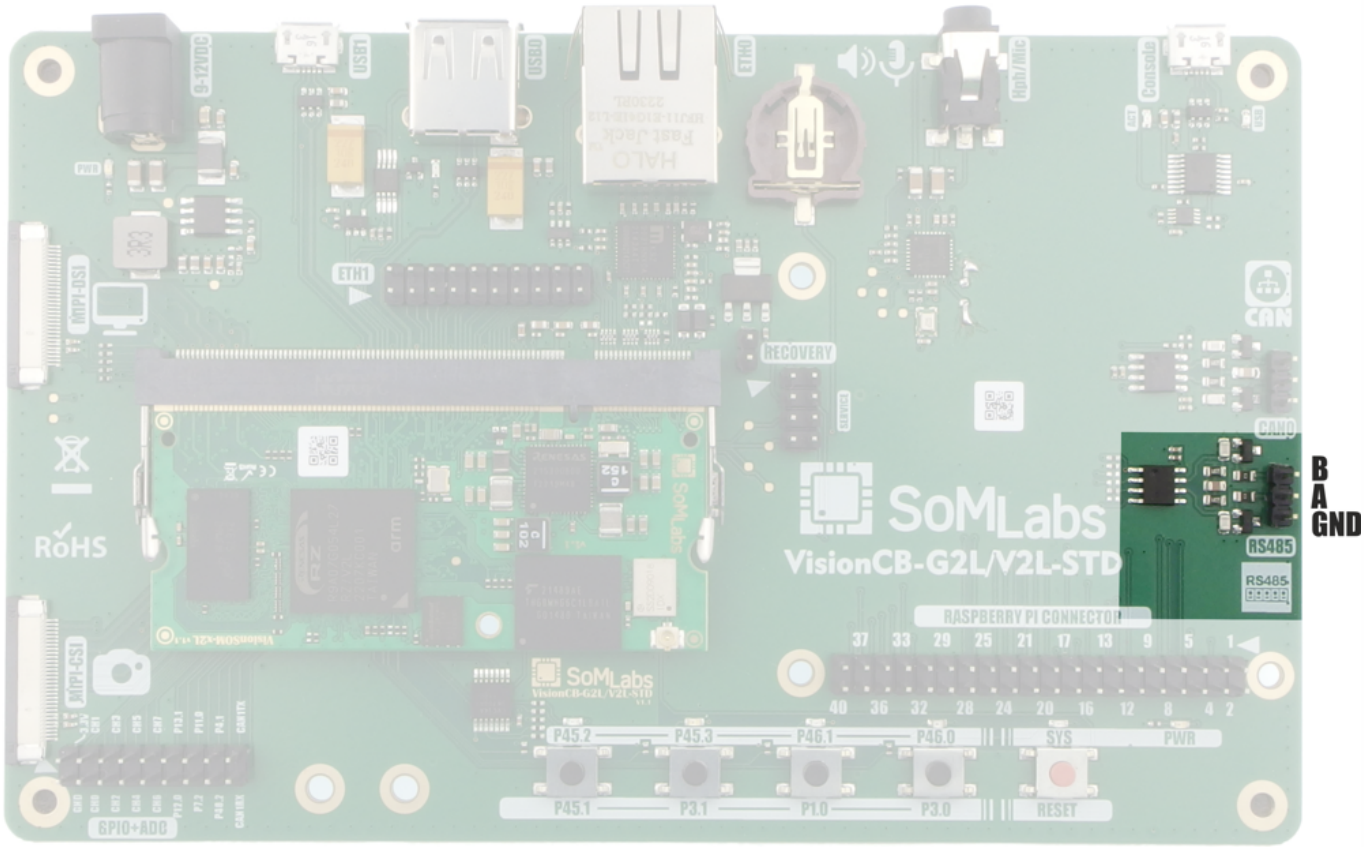
Note:
1. Audio codec is configured via I2C2 MPU interface.

CAN interface



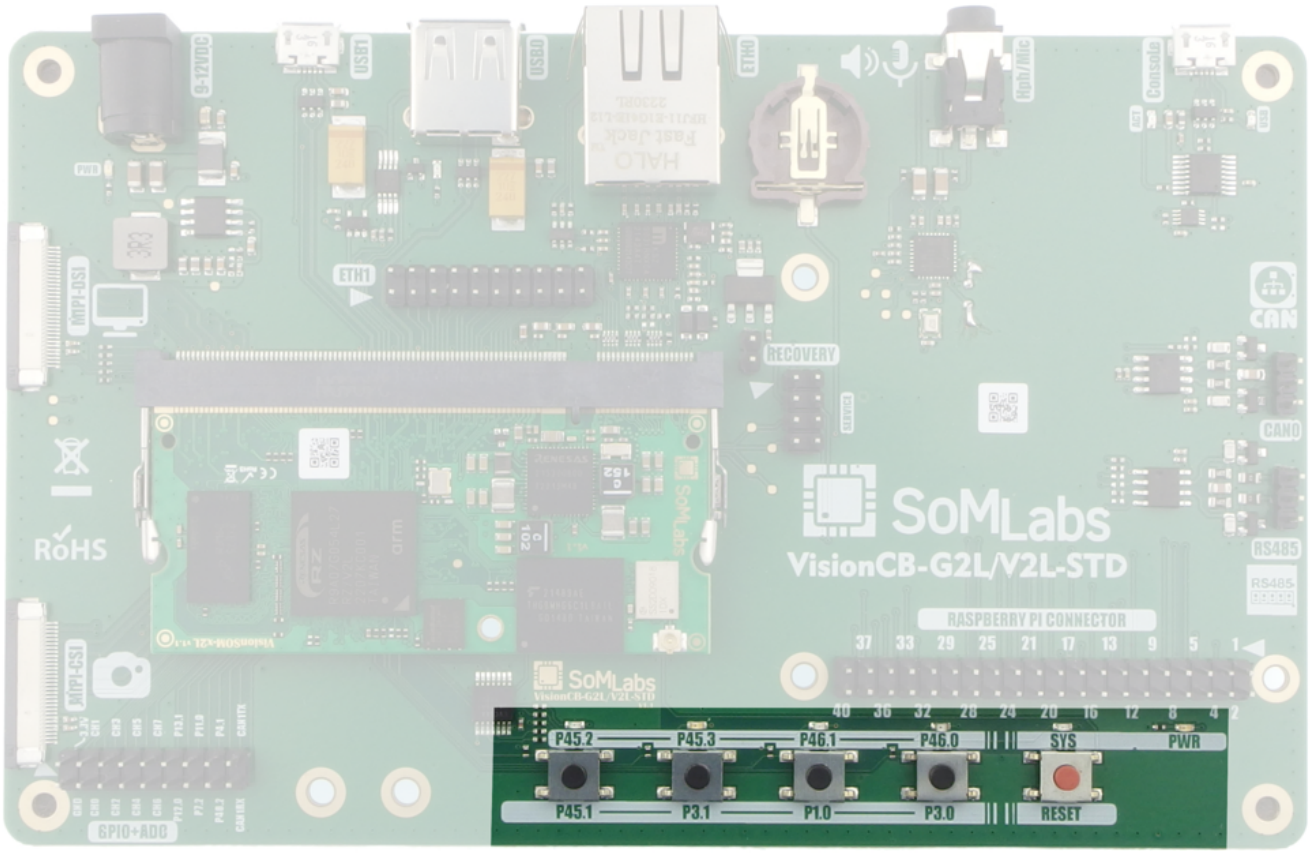
Signal	MPU signal	Description
CAN0-RX	P42-2	GPIO 3.3V voltage levels
CAN0-TX	P42-1	GPIO 3.3V voltage levels
CAN0-STB	P18-1	GPIO 3.3V voltage levels (STB line of MCP2542FD)

RS-485 interface



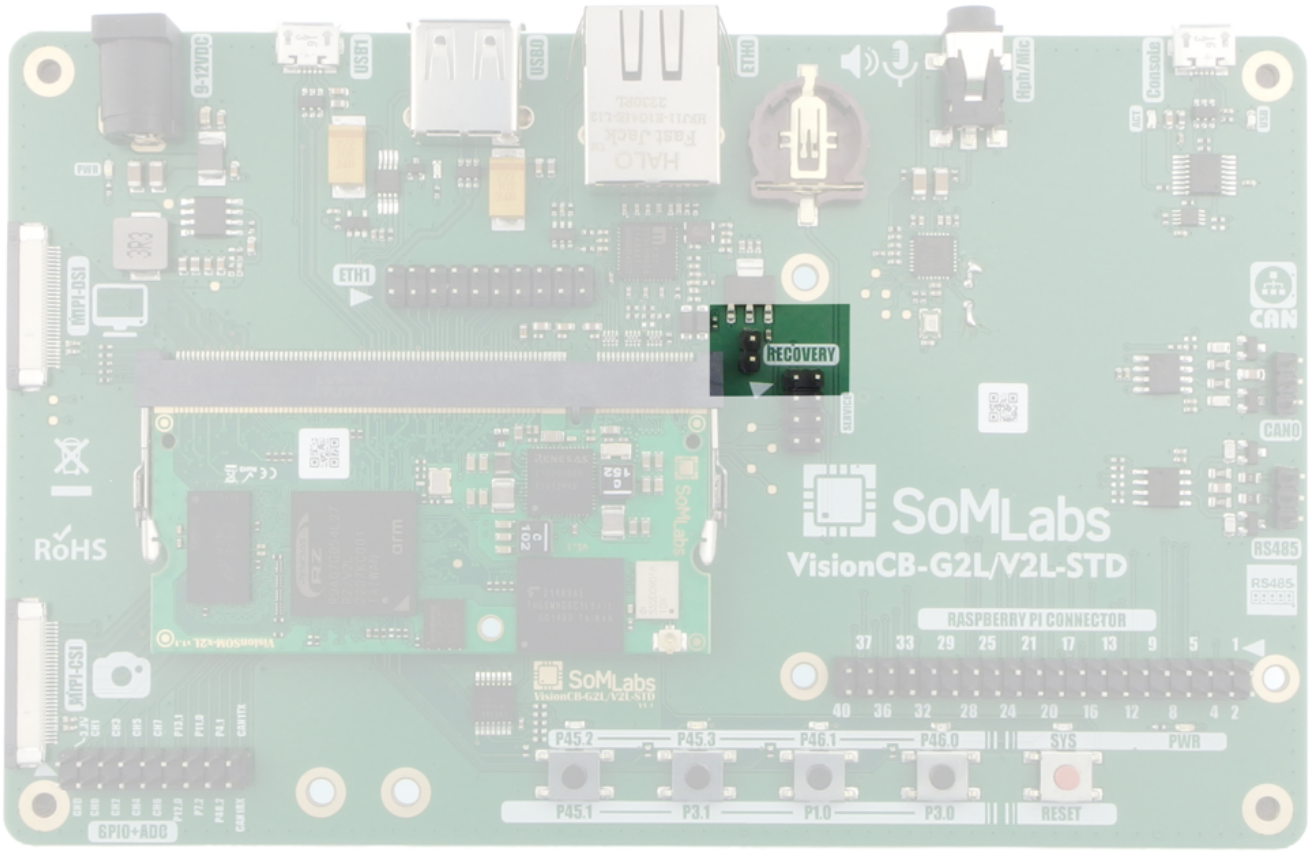
Signal	MPU signal	Description
UART3-RXD	P0-1	GPIO 3.3V voltage levels
UART3-TXD	P0-0	GPIO 3.3V voltage levels
RS485-RE	P18-0	GPIO 3.3V voltage levels In default configuration RS485-RE is connected to nRE and DE inputs of MAX3485
RS485-DE	P19-0	GPIO 3.3V voltage levels In default configuration this line is not used

User Interface (switches and LEDs)

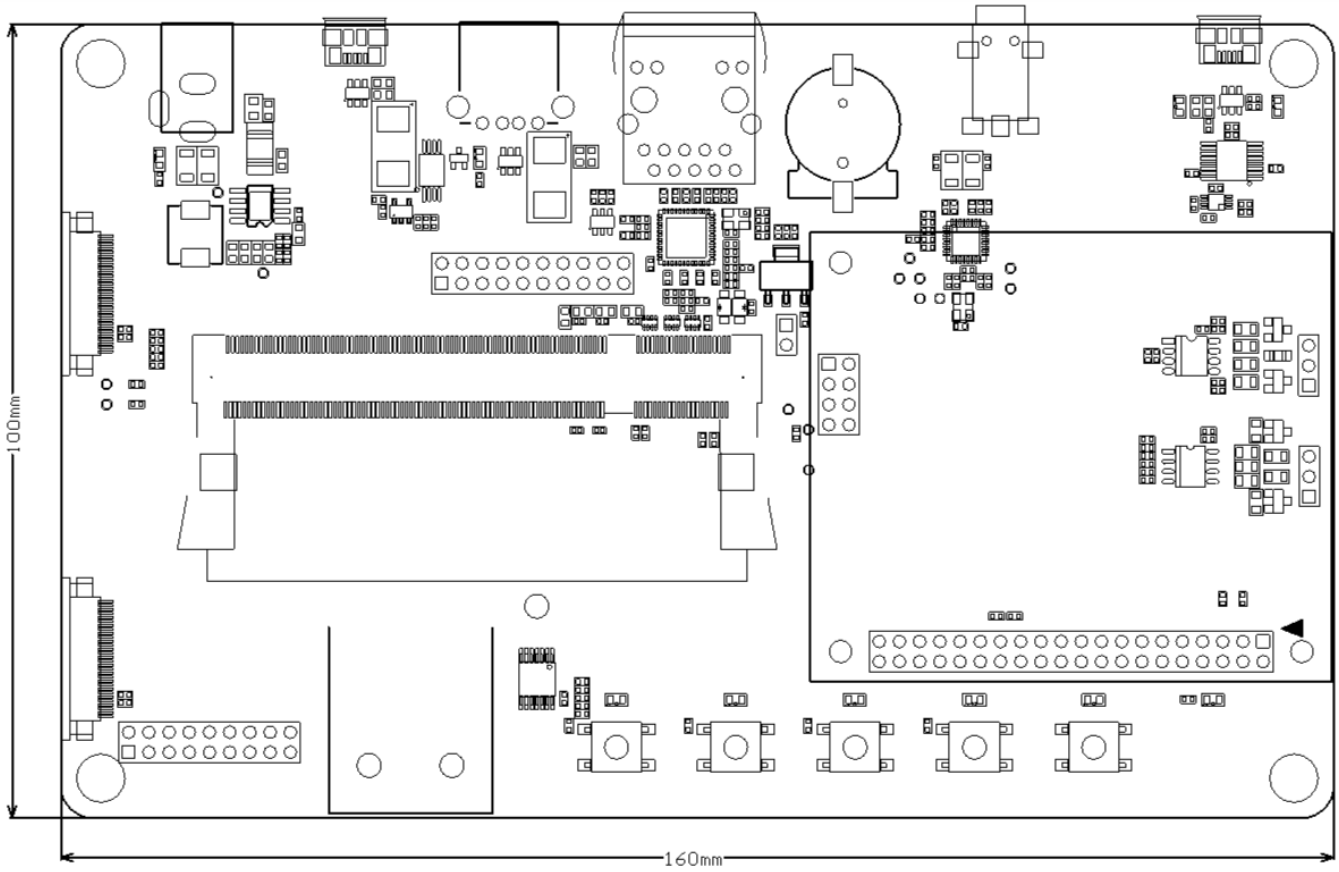


Signal	MPU signal	Description
User LEDs		
P45-2	P45-2	Inverted logic level
P45-3	P45-3	Inverted logic level
P46-0	P46-0	Inverted logic level
P46-1	P46-1	Inverted logic level
SYS-LED	P42-0	Inverted logic level
User switch		
P1-0	P1-0	Pushbutton, line pull-uped
P3-0	P3-0	Pushbutton, line pull-uped
P3-1	P3-1	Pushbutton, line pull-uped
P45-1	P45-1	Pushbutton, line pull-uped

RECOVERY jumper



Dimensions



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