VisionCB-8M-STD Datasheet and Pinout

Rev. 20210202104803

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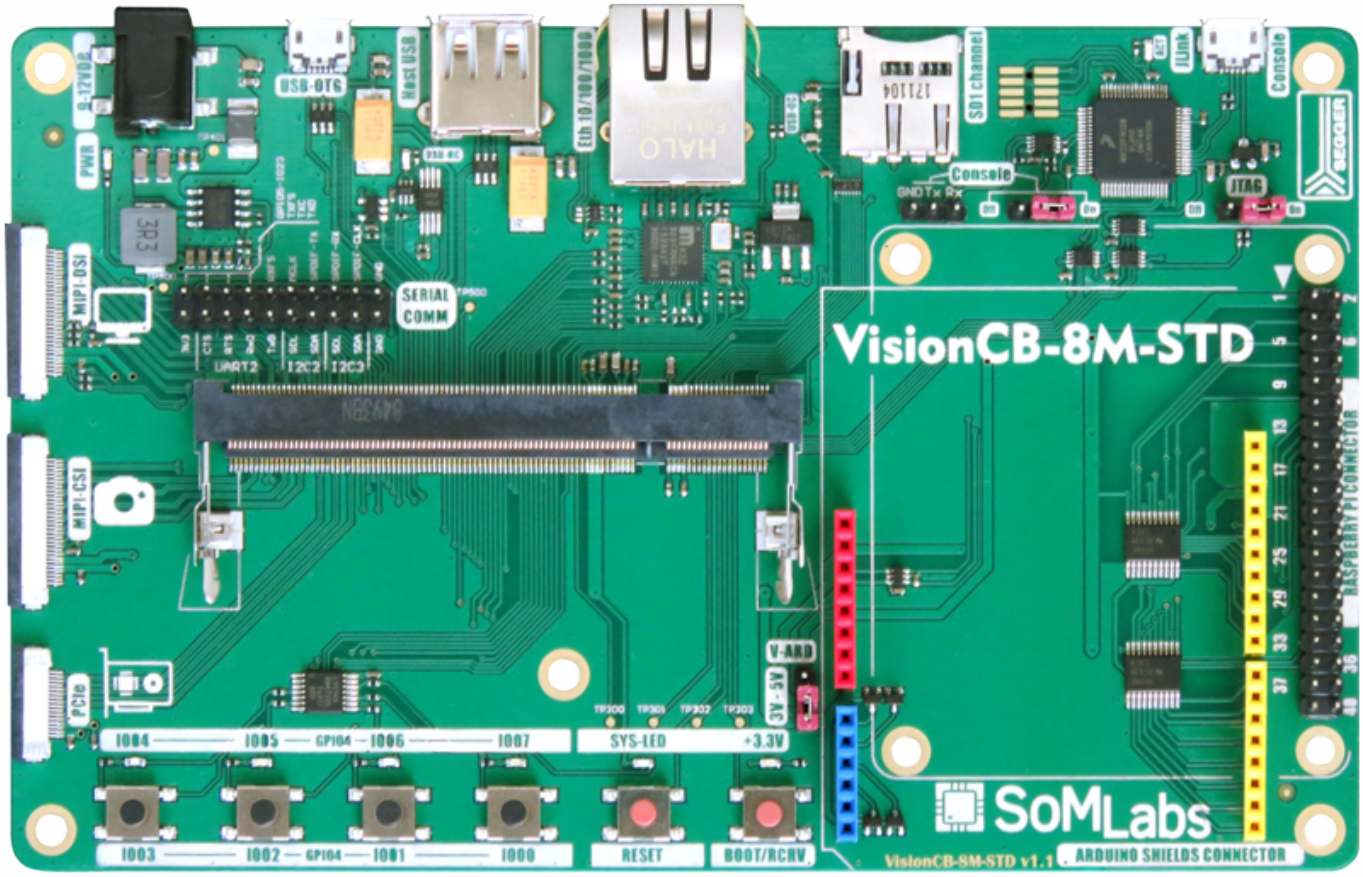
VisionCB-8M-STD v.1.1 Datasheet and Pinout

General description



VisionCB-8M-STD is a carrier board for the VisionSOM-8Mmini family of computer-on-modules which are powered by NXP SOC iMX8Mmini (quad core ARM Cortex-A53+ single Cortex-M4). A 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, PCIe, etc. A large variety of interfaces allows to use it as both a complete development platform or as a stand-alone end-product.
The carrier board connects with the SoM via a standard SODIMM connector.
VisionCB-8M-STD is equipped with Segger J-Link debugger and Linux serial console port on USB vCOM.

Applications

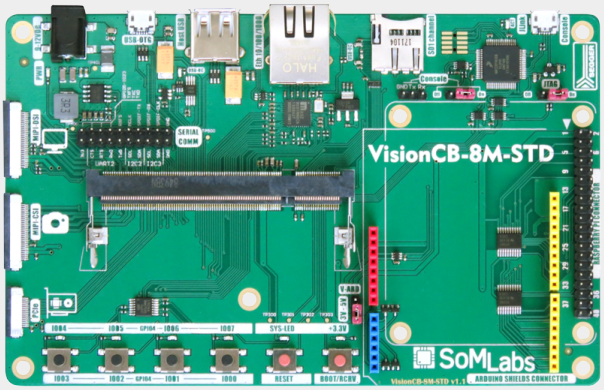
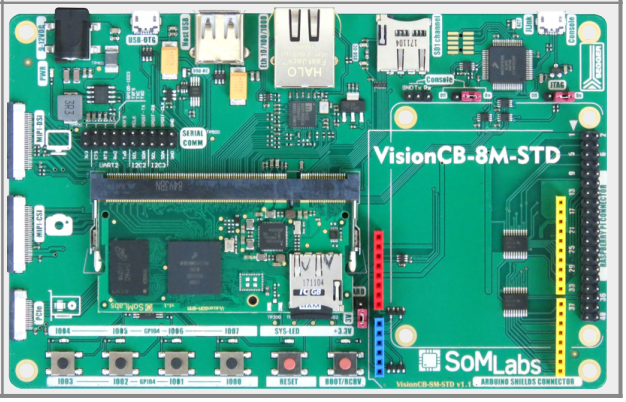
- Multimedia
- Video streaming
- Industrial embedded Linux computer
- Home Appliances
- Home Automation – Smart Home
- Human-machine Interfaces (HMI)
- Point-of-sales (POS) terminals
- Cash Register
- 2D barcode scanners and printers
- IoT gateways
- Residential getaways

- Machine vision equipment
- Robotics
- Fitness/outdoor equipment

Features

- Carrier Board (Base Board) compatible with the VisionSOM-8Mini family of modules based on quad core, heterogenous NXP iMX8Mmini application processors
- SoM Interface: SODIMM200
- Debug Interface: built-in Segger J-Link JTAG debugger
- Expansion Connectors:
    - Serial communication connector 2x10 Pin Header (Male)
    - Raspberry Pi compatible connectors 2x20 Pin Header (Male)
    - Arduino compatible connector
    - MicroSD card socket
- Communication Connectors:
    - PCIe (single lane, FPC16 connector)
    - 1x Ethernet 10/100/1000Mbit/s, RJ45
    - 1x USB Host Type A connectors
    - 1x USB OTG Micro AB connector
    - 1x Console MicroUSB B connector
- 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+2 Pushbuttons
    - 4+2 LEDs
- External Power Supply 9-12V DC
- Temperature Range: 0 to +70°C
- Board Size: 160mm x 100mm x 18mm

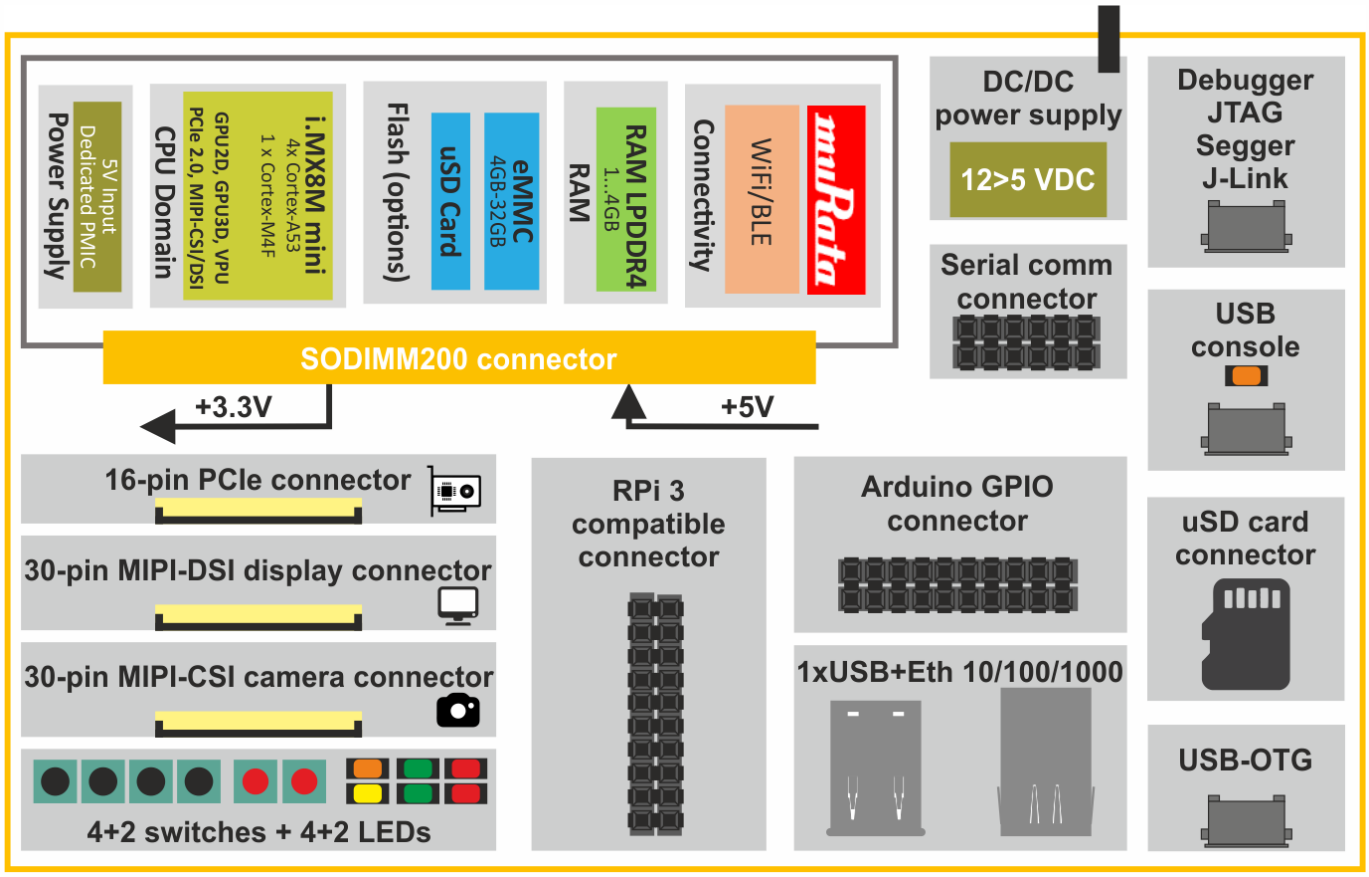
Pictures of VisionCB-8M-STD v1.1 board

Version	Photo
VisionCB-8M-STD v1.1 board only	
VisionCB-8M-STD v1.1 with VisionSOM-8Mmini	

Ordering info

VisionCB-8M-STD v1.1

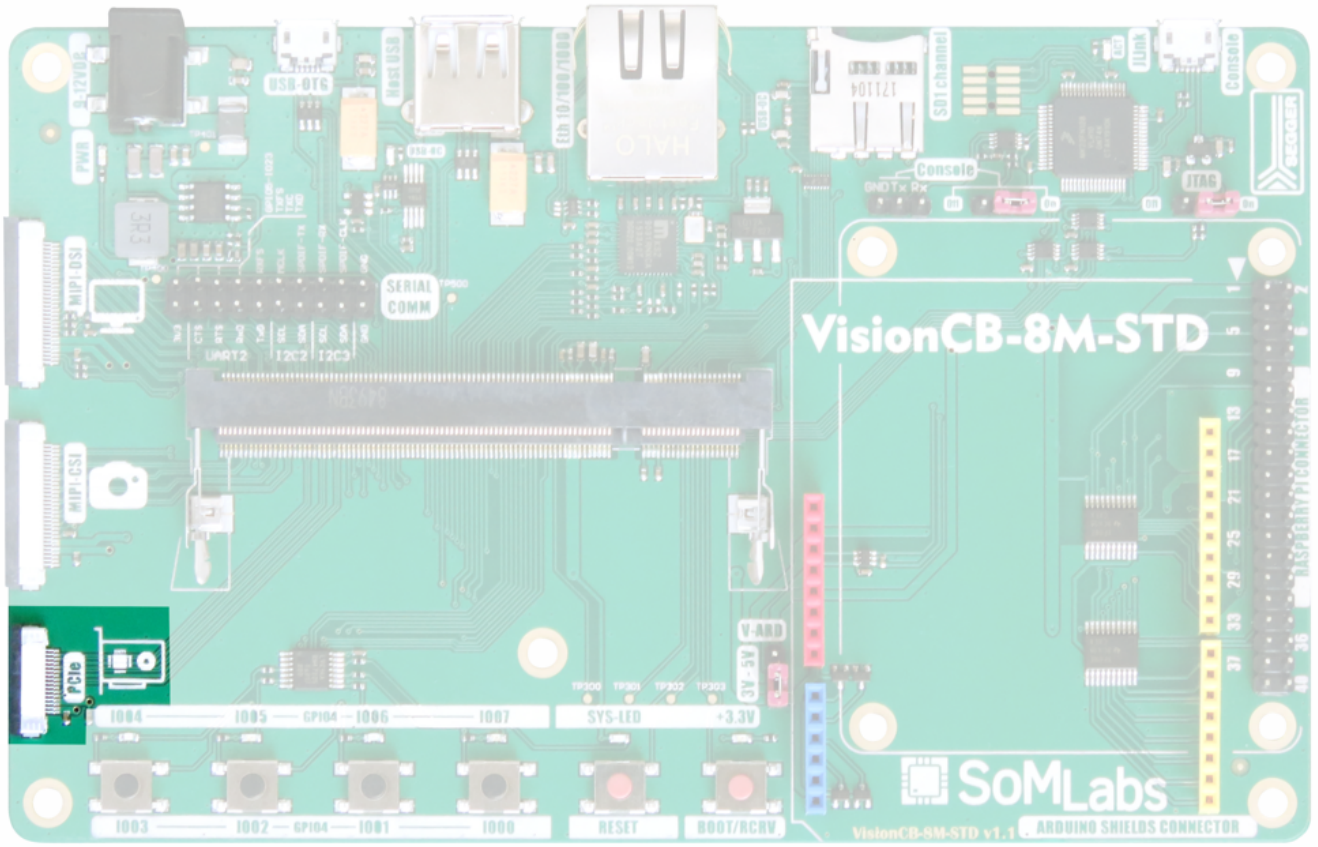
Block Diagram



Electrical parameters

Parameter	Value			Units	Comment
	Min.	Typ.	Max.		
Power Supply	9.0	12.0	15.0	V	Positive pole on central connector of J400
Supply current	-	-	0.12	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)	4.85	5	5.1	V	-
Arduino GPIO voltage		3.3/5		V	Selected by V-ARD jumper

PCIe interface (J303, FPC/FFC 0.5mm)

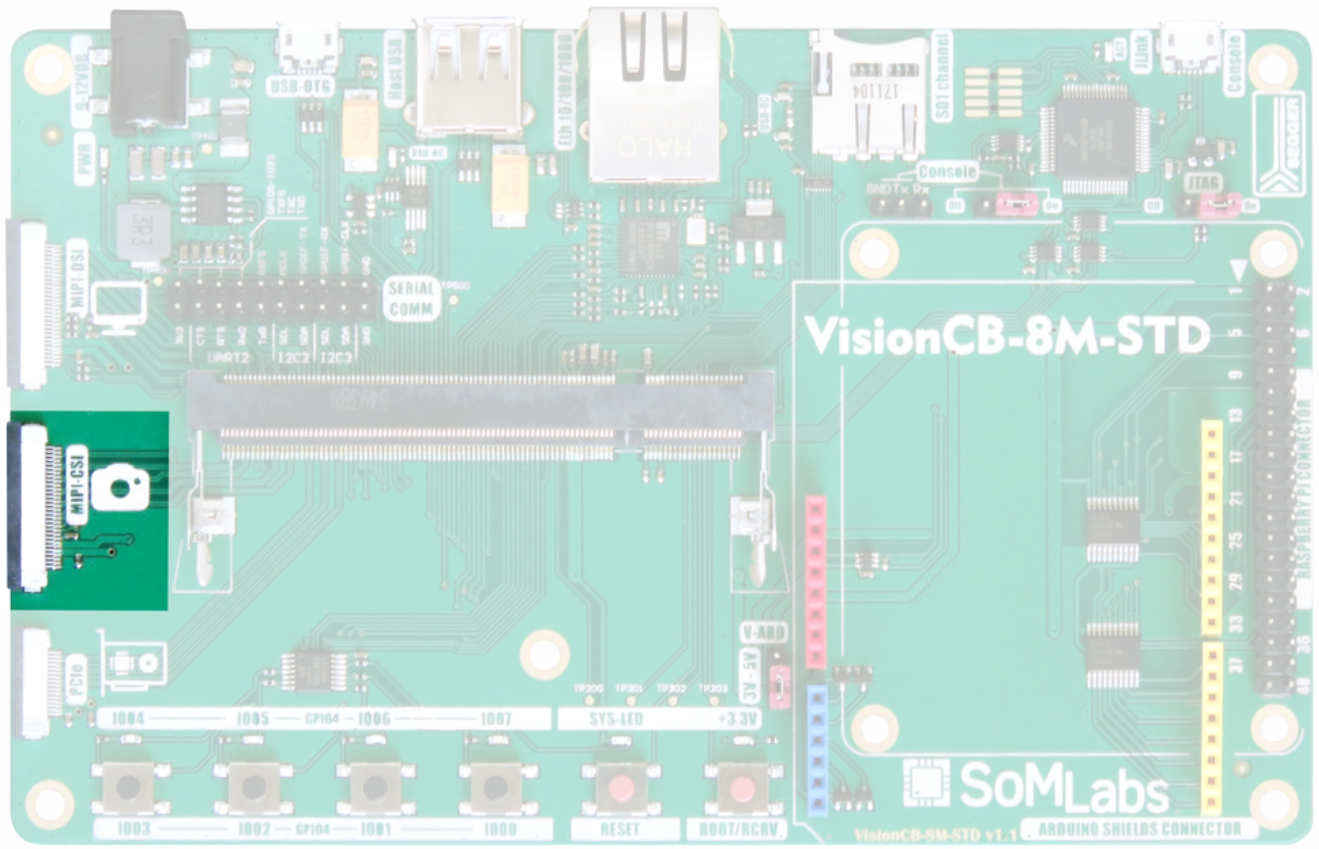


Pin	Signal	Description
1	GND	-
2	PCIE-RXN-P	100Ohm resistor in series
3	PCIE-RXN-N	100Ohm resistor in series
4	GND	-
5	PCIE-TXN-P	Separated with capacitor
6	PCIE-TXN-N	Separated with capacitor
7	GND	-
8	PCIE-CLK-P	Separated with capacitor
9	PCIE-CLK-N	Separated with capacitor
10	GND	-
11	I2C2-SCL	Configuration I2C interface (3.3V)
12	I2C2-SDA	Configuration I2C interface (3.3V)
13	+3.3V	Power supply for external devices
14	+3.3V	Power supply for external devices
15	+5V	Power supply for external devices
16	+5V	Power supply for external devices

Note:

1. 1st pin of J303 is at the top of the image.

Camera MIPI-CSI interface (J302, FPC/FFC 0.5mm)

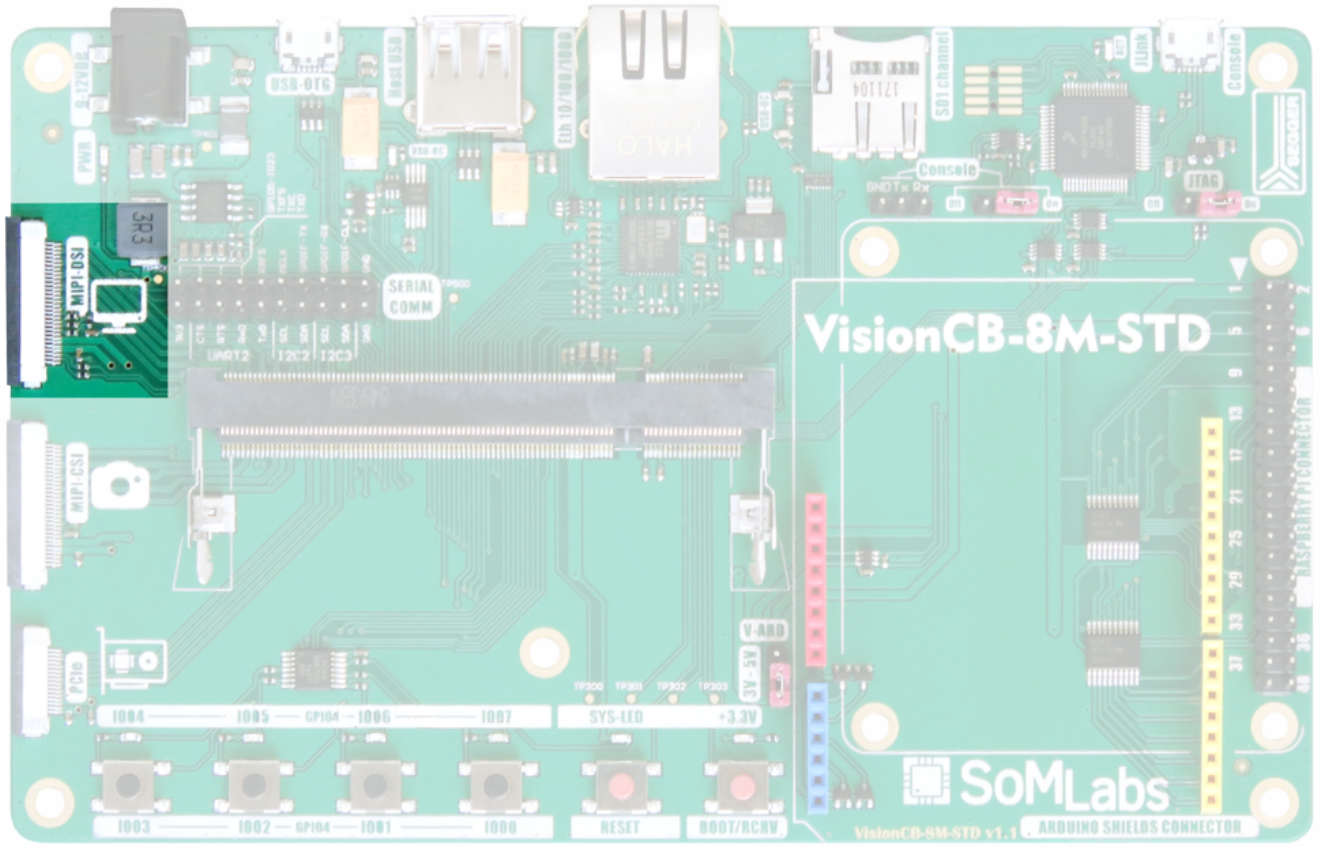


Pin	Signal	Description
1	GND	-
2	CSI-CLK-P	-
3	CSI-CLK-P	-
4	GND	-
5	CSI-DATA0-P	-
6	CSI-DATA0-N	-
7	GND	-
8	CSI-DATA1-P	-
9	CSI-DATA1-N	-
10	GND	-
11	CSI-DATA2-P	-
12	CSI-DATA2-N	-
13	GND	
14	CSI-DATA3-P	-
15	CSI-DATA3-N	-
16	GND	-
17	I2C2-SCL	Camera confguration I2C interface (3.3V)
18	I2C2-SDA	Camera confguration I2C interface (3.3V)
19	GND	-
20	SAI3-TXFS	Optional audio interface

21	SAI3-TXC	Optional audio interface
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. 1st pin of J302 connector is at the top of the image.

Display MIPI-DSI interface (J301, FPC/FFC 0.5mm)

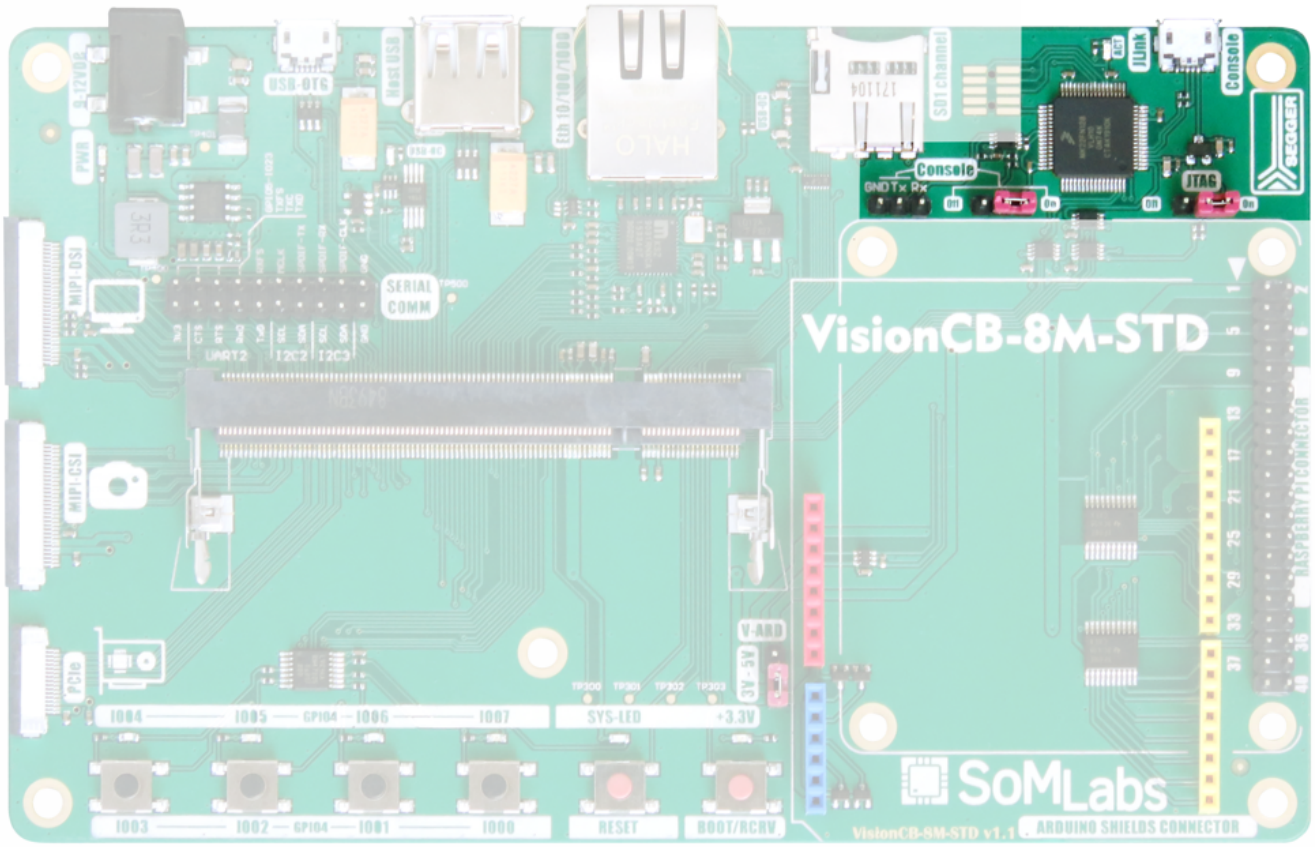


Pin	Signal	Description
1	GND	-
2	DSI-CLK-P	-
3	DSI-CLK-P	-
4	GND	-
5	DSI-DATA0-P	-
6	DSI-DATA0-N	-
7	GND	-
8	DSI-DATA1-P	-
9	DSI-DATA1-N	-
10	GND	-
11	DSI-DATA2-P	-
12	DSI-DATA2-N	-
13	GND	
14	DSI-DATA3-P	-
15	DSI-DATA3-N	-
16	GND	-
17	I2C2-SCL	Display confguration I2C interface (3.3V)
18	I2C2-SDA	Display confguration I2C interface (3.3V)
19	GND	-
20	SAI3-RXFS	Optional display reset signal

21	GPIO5-IO23	Optional touch-panel interrupt signal (with 47k pull-up)
22	SPDIF-TX	Optional touch-panel controller reset
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	SPDIF-RX	Optional backlight intensity PWM controller
29	SPDIF-CLK	Optional backlight enable
30	GND	-

Note:
1. 1st pin of J301 connector is at the top of the image.

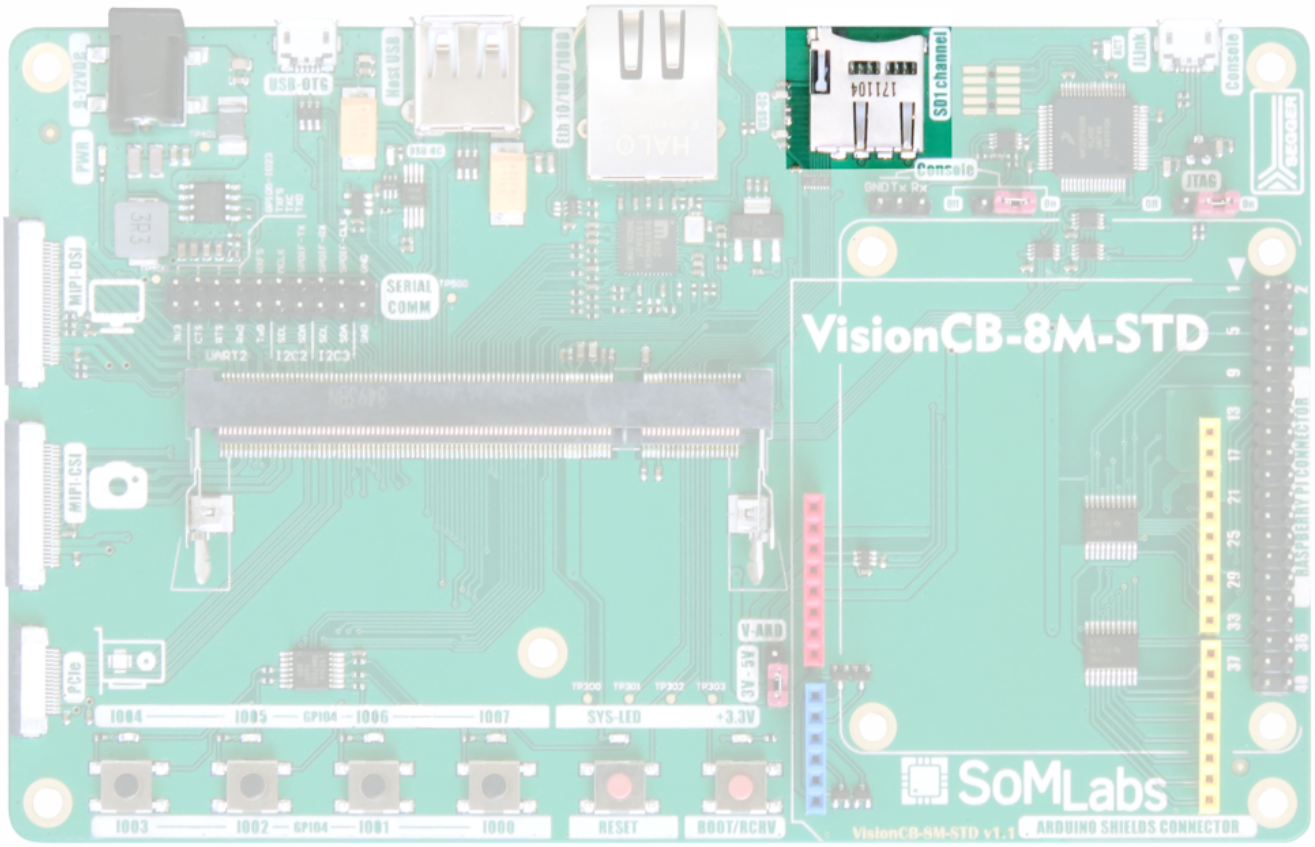
USB Console Port and Segger J-Link debugger



MPU Port	GPIO	Description
CONSOLE-TXD	UART4-TXD	Signal connected to J304 pin 2
CONSOLE-RXD	UART4-RXD	Signal connected to J304 pin 3

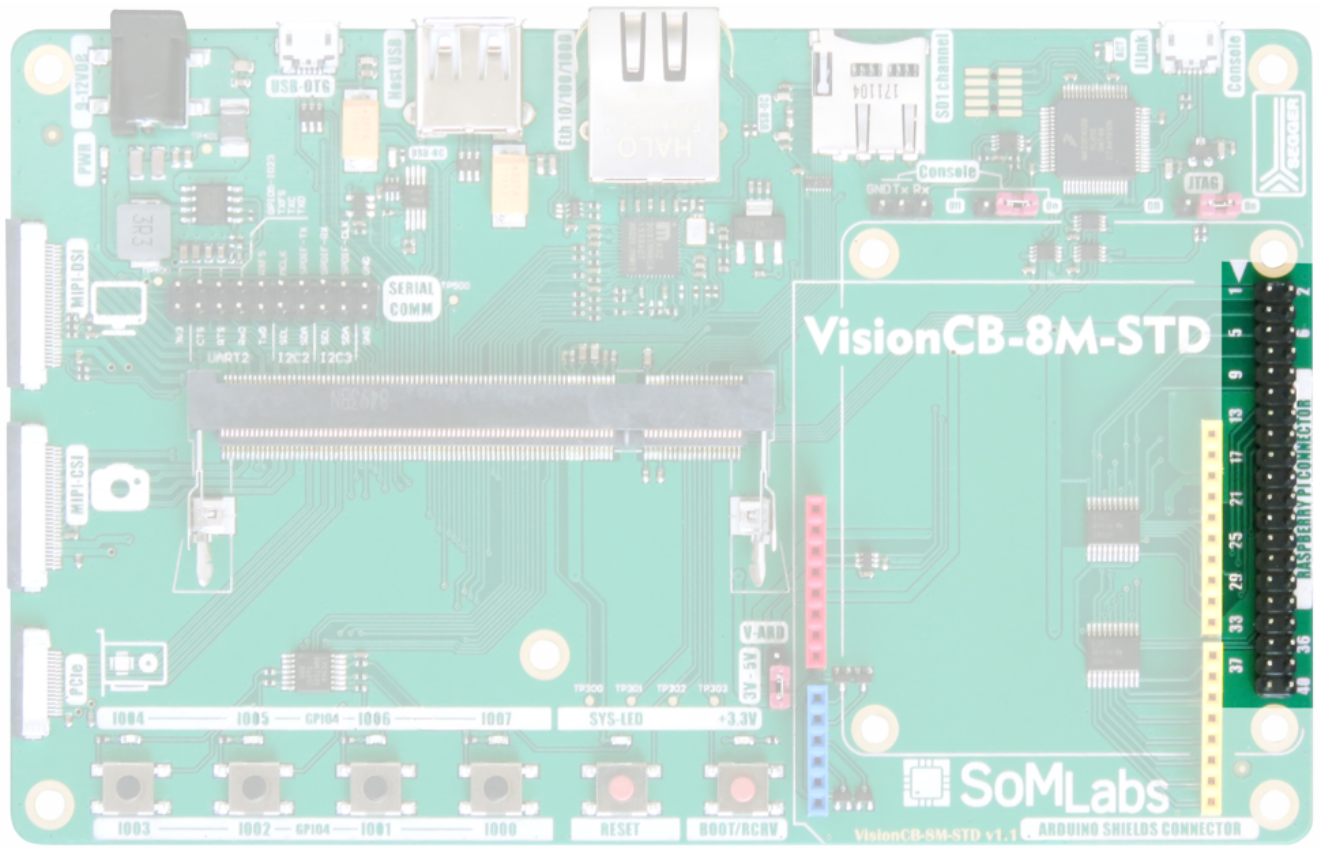
Notes:
1. Linux console port (UART4 in MPU) uses vCOM interface provided by built-in debugger Segger J-Link.
2. vCOM can be disconnected from MPU with JP801 (jumper CONSOLE in position ON or OFF).
3. Lines TXD and RXD of UART4 are easy to monitoring thanks to using J304 gold-pins.
4. Debug JTAG interface can be disconnected from MPU with JP800 (jumper JTAG in position ON or OFF).

MicroSD card interface (J308)



Connector pin	SD card signal	SOM pin
1	DATA2	SD1-DATA2
2	DATA3	SD1-DATA3
3	CMD	SD1-CMD
4	NVCC-SDIO	Voltage selected 1.8/3.3V by SD1 driver
5	CLK	SD1-CLK
6	GND	-
7	DATA0	SD1-DATA0
8	DATA1	SD1-DATA1
9	CARD-DETECT	SD1-CD

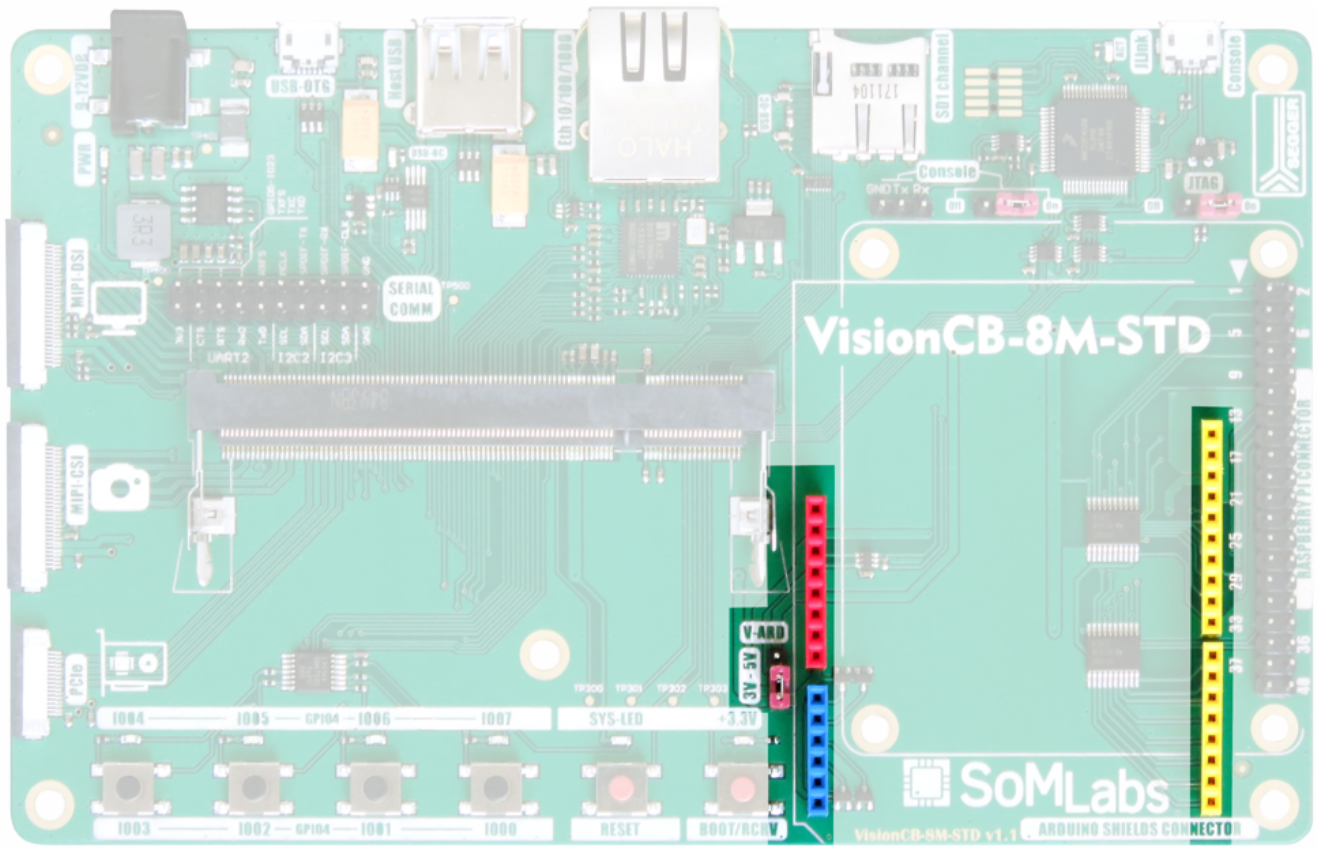
Raspberry Pi compatible I/O header



Pin	Default function name	Description
1	+3.3V	+3.3V generated by DC/DC built-in SOM (limited current load)
2	+5V	+5V generated by carrier board built-in DC/DC converter
3	I2C1-SDA	I2C1-SDA line
4	+5V	+5V generated by carrier board built-in DC/DC converter
5	I2C1-SDA	I2C1-SDA line
6	GND	-
7	GPIO4-IO09	Universal GPIO with 3.3V logic levels
8	UART3-TXD	Default: UART3 TXD line or universal GPIO with 3.3V logic levels
9	GND	-
10	UART3-RXD	Default: UART3 RXD line or universal GPIO with 3.3V logic levels
11	GPIO4-IO08	Universal GPIO with 3.3V logic levels
12	SPI2-CLK	Default: SPI2-CLK line or universal GPIO with 3.3V logic levels
13	-	-
14	GND	-
15	-	-
16	SPI2-MISO	Default: SPI2-MISO line or universal GPIO with 3.3V logic levels
17	+3.3V	+3.3V generated by DC/DC built-in SOM (limited current load)
18	SPI2-MOSI	Default: SPI2-MOSI line or universal GPIO with 3.3V logic levels
19	SPI1-MOSI	Default: SPI1-MOSI line or universal GPIO with 3.3V logic levels

20	GND	-
21	SPI1-MISO	Default: SPI1-MISO line or universal GPIO with 3.3V logic levels
22	SPI2-SS0	Default: SPI2-SS0 line or universal GPIO with 3.3V logic levels
23	SPI1-CLK	Default: SPI1-CLK line or universal GPIO with 3.3V logic levels
24	SPI1-SS0	Default: SPI1-SS0 line or universal GPIO with 3.3V logic levels
25	GND	-
26	GPIO-IO22	Universal GPIO with 3.3V logic levels
27	-	-
28	-	-
29	GPIO4-IO12	Universal GPIO with 3.3V logic levels
30	GND	-
31	GPIO4-IO13	Universal GPIO with 3.3V logic levels
32	GPIO4-IO20	Universal GPIO with 3.3V logic levels
33	GPIO4-IO14	Universal GPIO with 3.3V logic levels
34	GND	-
35	GPIO4-IO14	Universal GPIO with 3.3V logic levels
36	GPIO4-IO19	Universal GPIO with 3.3V logic levels
37	GPIO4-IO16	Universal GPIO with 3.3V logic levels
38	GPIO4-IO18	Universal GPIO with 3.3V logic levels
39	GND	-
40	GPIO4-IO17	Universal GPIO with 3.3V logic levels

Arduino Uno compatible I/O header

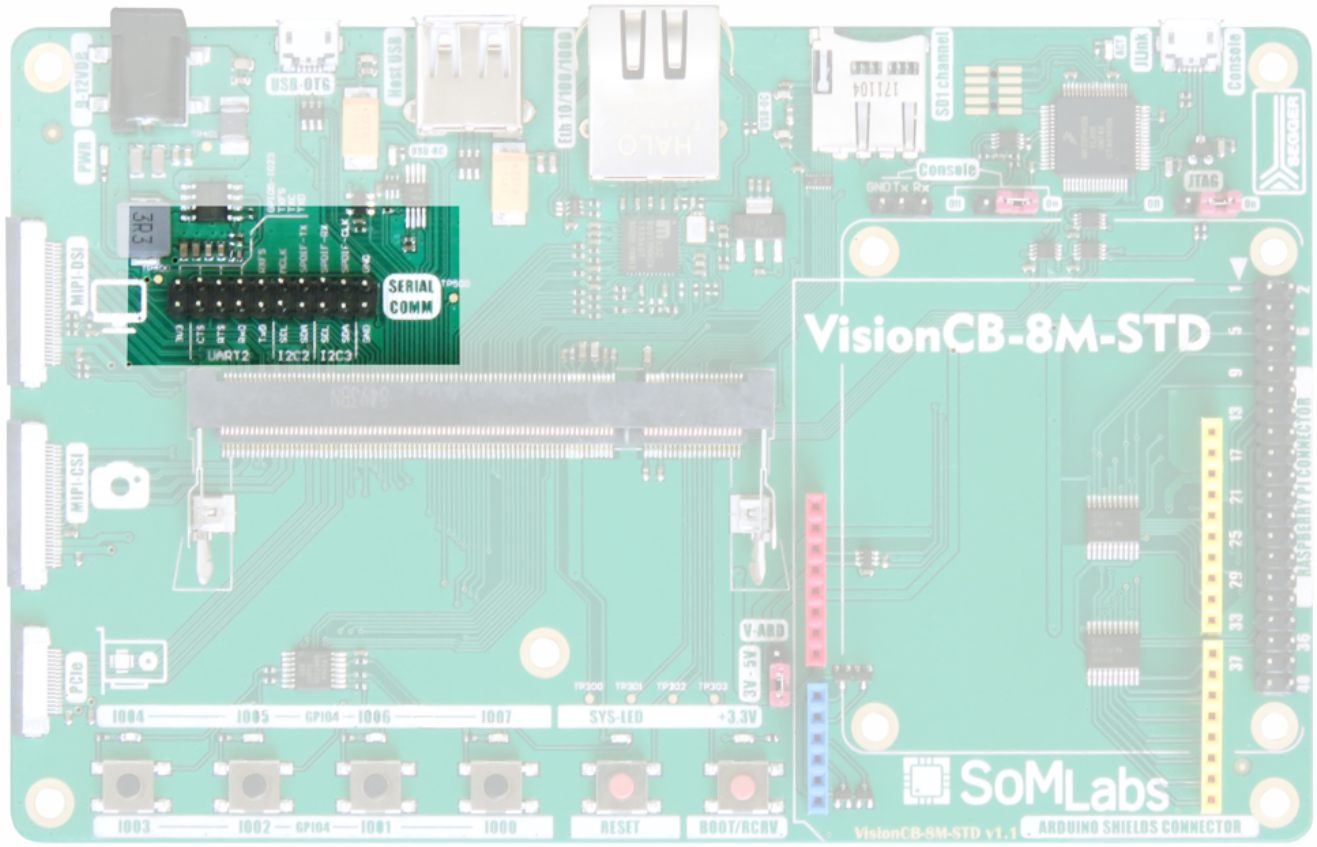


Pin	Arduino name	Default function name	Description
Power connector J700, red connector			
1	-	-	-
2	IOREF	VDD-ARDUINO-IO	Selected +3.3V or +5V (with V-ARD jumper).
3	RESET	POR-B	External reset input, active L.
4	3.3V	VCC-3V3	+3.3V generated by internal SOM LDO converter (limited load current).
5	5V	VCC-5V0	+5V generated by carrier board built-in DC/DC converter.
6	GND	GND	-
7	GND	GND	-
8	VIN	VCC-3V3	+3.3V generated by internal SOM LDO converter (limited load current).
Analog inputs connector J702, blue connector			
1	AIN0	-	Not internally connected.
2	AIN1	-	Not internally connected.
3	AIN2	-	Not internally connected.
4	AIN3	-	Not internally connected.
5	-	-	Not internally connected.
6	-	-	Not internally connected.
Digital I/Os connector J704, yellow connector			
1	DIO0	UART3-RXD	Default: UART3-RXD line or universal GPIO with 3.3/5V logic levels.
2	DIO1	UART3-TXD	Default: UART3-TXD line or universal GPIO with 3.3/5V logic levels.

3	DIO2	GPIO4-IO15	Universal GPIO with 3.3/5V logic levels.
4	DIO3	GPIO4-IO14	Universal GPIO with 3.3/5V logic levels.
5	DIO4	GPIO4-IO13	Universal GPIO with 3.3/5V logic levels.
6	DIO5	GPIO4-IO12	Universal GPIO with 3.3/5V logic levels.
7	DIO6	GPIO4-IO11	Universal GPIO with 3.3/5V logic levels.
8	DIO7	GPIO4-IO10	Universal GPIO with 3.3/5V logic levels.
Digital I/Os connector J703, yellow connector			
1	DIO8	GPIO4-IO08	Universal GPIO with 3.3/5V logic levels.
2	DIO9	GPIO4-IO09	Universal GPIO with 3.3/5V logic levels.
3	DIO10	SPI1-SS0	Default: SPI1-SS0 line or universal GPIO with 3.3/5V logic levels.
4	DIO11	SPI1-MOSI	Default: SPI1-MOSI line or universal GPIO with 3.3/5V logic levels.
5	DIO12	SPI1-MISO	Default: SPI1-MISO line or universal GPIO with 3.3/5V logic levels.
6	DIO13	SPI1-CLK	Default: SPI1-CLK line or universal GPIO with 3.3/5V logic levels.
7	GND	GND	-
8	AREF	VDD-ARDUINO-IO	+3.3V or +5V selected with V-ARD jumper.
9	DIO14	I2C1-SCL	Default: I2C1-SCL line or universal GPIO with 3.3/5V logic levels.
10	DIO15	I2C1-SDA	Default: I2C1-SDA line or universal GPIO with 3.3/5V logic levels.

Notes:
1. I/O logic levels are selected 3.3/5V with V-ARD jumper.
2. RESET line is 3.3 and 5V compatible.

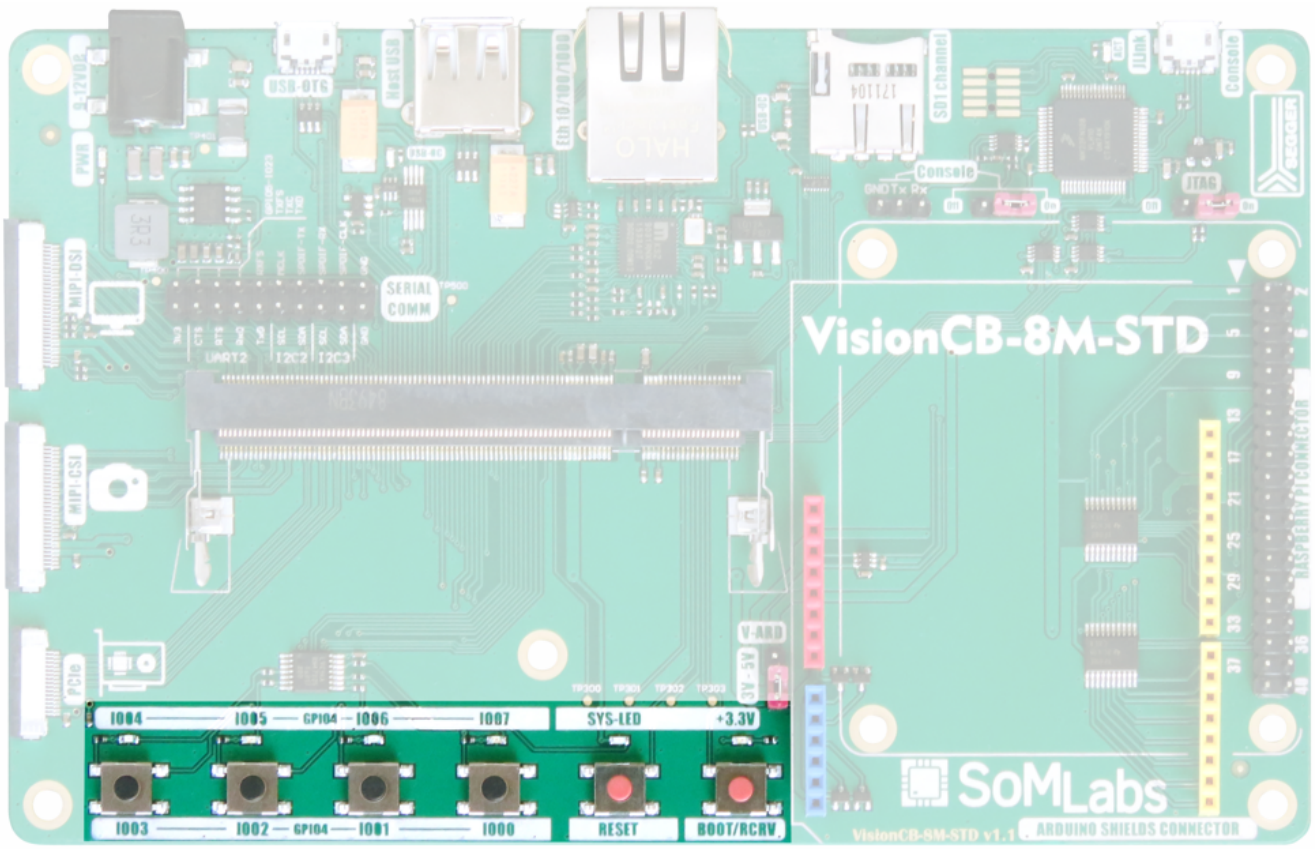
Serial Communication/GPIO header (J305)



Pin	Default function name	Description
1	+3.3V	+3.3V generated by DC/DC built-in SOM (limited current load)
2	GPIO5-IO23	Universal GPIO with 3.3V logic levels By default is connected to MIPI-DSI (J301) as touch-panel interrupt line (with 47k pull-up)
3	UART2-CTS	By default: UART2-CTS or universal GPIO with 3.3V logic levels
4	SAI3-TXFS	By default: SAI3-TXFS or universal GPIO with 3.3V logic levels Connected to MIPI-CSI (J302)
5	UART2-RTS	By default: UART2-RTS or universal GPIO with 3.3V logic levels
6	SAI3-TXC	By default: SAI3-TXC or universal GPIO with 3.3V logic levels Connected to MIPI-CSI (J302)
7	UART2-RXD	By default: UART2-RXD or universal GPIO with 3.3V logic levels
8	SAI3-TXD	By default: SAI3-TXD or universal GPIO with 3.3V logic levels
9	UART2-TXD	By default: UART2-TXD or universal GPIO with 3.3V logic levels
10	SAI3-RXFS	By default: SAI3-RXFS or universal GPIO with 3.3V logic levels By default is connected to MIPI-DSI (J301) as display module reset signal
11	I2C2-SCL	By default: I2C2-SCL or universal GPIO with 3.3V logic levels Default I2C port for PCIe (J303), MIPI-DSI (J301) and MIPI-CSI (J302)
12	SAI3-MCLK	By default: SAI3-MCLK or universal GPIO with 3.3V logic levels
13	I2C2-SDA	By default: I2C2-SDA or universal GPIO with 3.3V logic levels Default I2C port for PCIe (J303), MIPI-DSI (J301) and MIPI-CSI (J302)

14	SPDIF-TX	By default: SPDIC-TX or universal GPIO with 3.3V logic levels By default is connected to MIPI-DSI (J301) as touch-panel reset signal
15	I2C3-SCL	By default: I2C3-SCL or universal GPIO with 3.3V logic levels
16	SPDIF-RX	By default: I2C3-SCL or universal GPIO with 3.3V logic levels By default is connected to MIPI-DSI (J301) as display module PWM backlight control
17	I2C3-SDA	By default: I2C3-SDA or universal GPIO with 3.3V logic levels
18	SPDIF-CLK	By default: SPDIF-CLK or universal GPIO with 3.3V logic levels By default is connected to MIPI-DSI (J301) as display module on/off signal
19	GND	-
20	GND	-

User Interface (switches and LEDs)



User switches

Switch	GPIO	Description
S305 (black, most on the left)	GPIO4-IO03	47k pull-up
S304	GPIO4-IO02	47k pull-up
S303	GPIO4-IO01	47k pull-up
S302 (black, most on the right)	GPIO4-IO00	47k pull-up

System switches

Switch	Signal name	Description
S301 (left, red)	Reset	-
S300 (right, red)	BOOT-RECOVERY	-

User LEDs

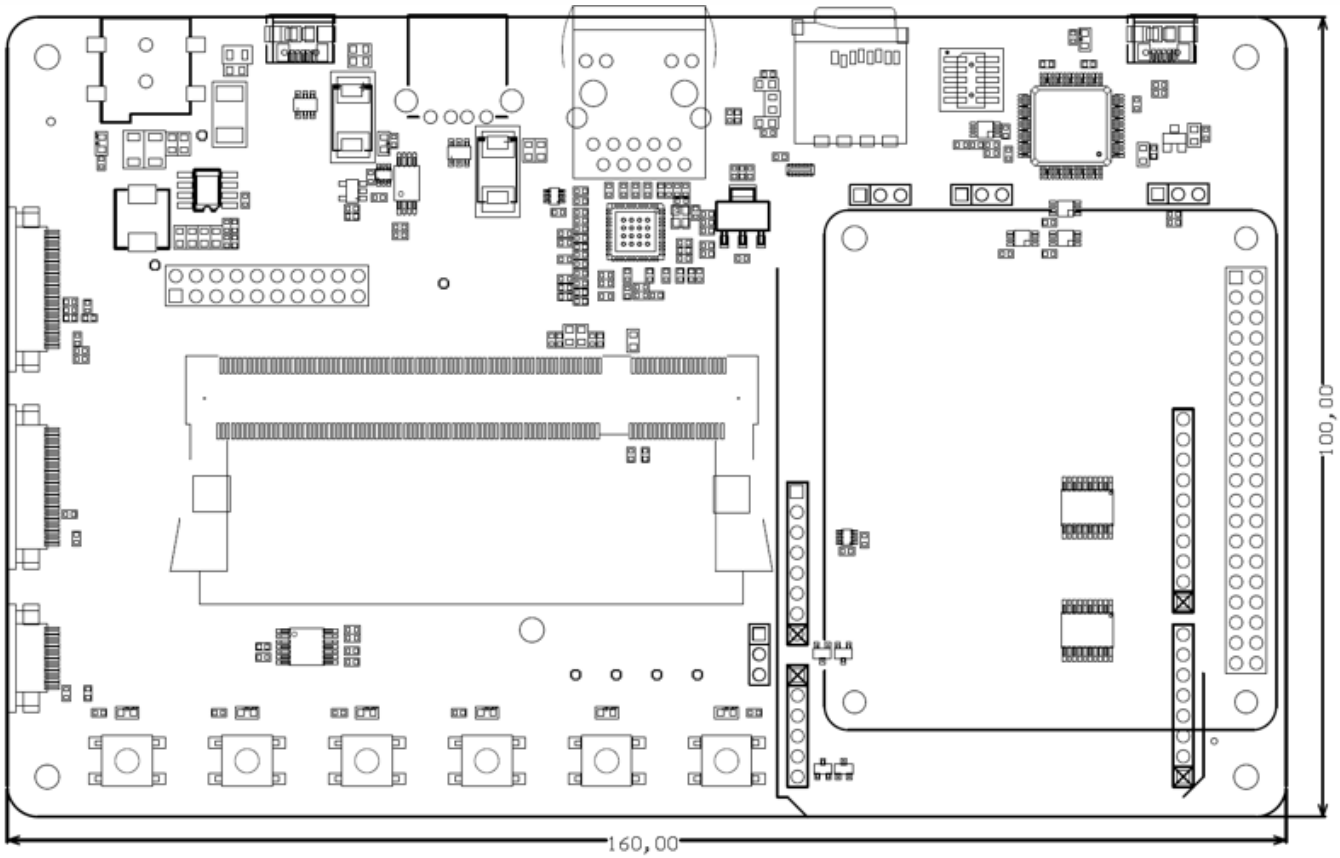
LED	GPIO	Description
D303 (most on the left)	GPIO4-IO04	User LED1, buffered with inverter
D302	GPIO4-IO05	User LED2, buffered with inverter

D301	GPIO4-IO06	User LED3, buffered with inverter
D300 (most on the right)	GPIO4-IO07	User LED4, buffered with inverter

System LEDs

LED	GPIO	Description
D304	SYS-LED	System function monitoring
D305	-	Power LED (3.3V)

Dimensions



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