MST3568XB PLUS

Motherboard User Manual

Revision: 1.0

Date: February 20, 2025

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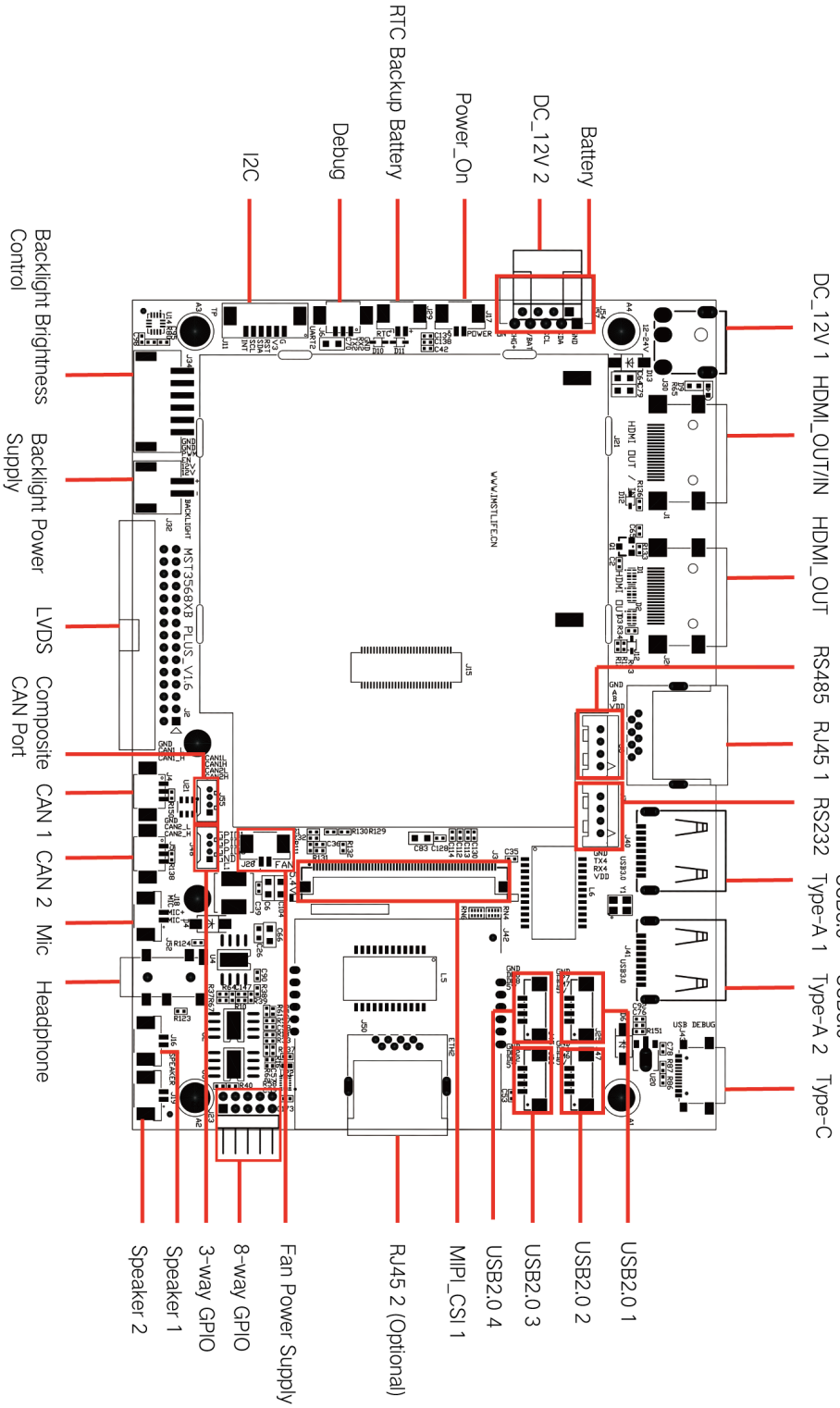
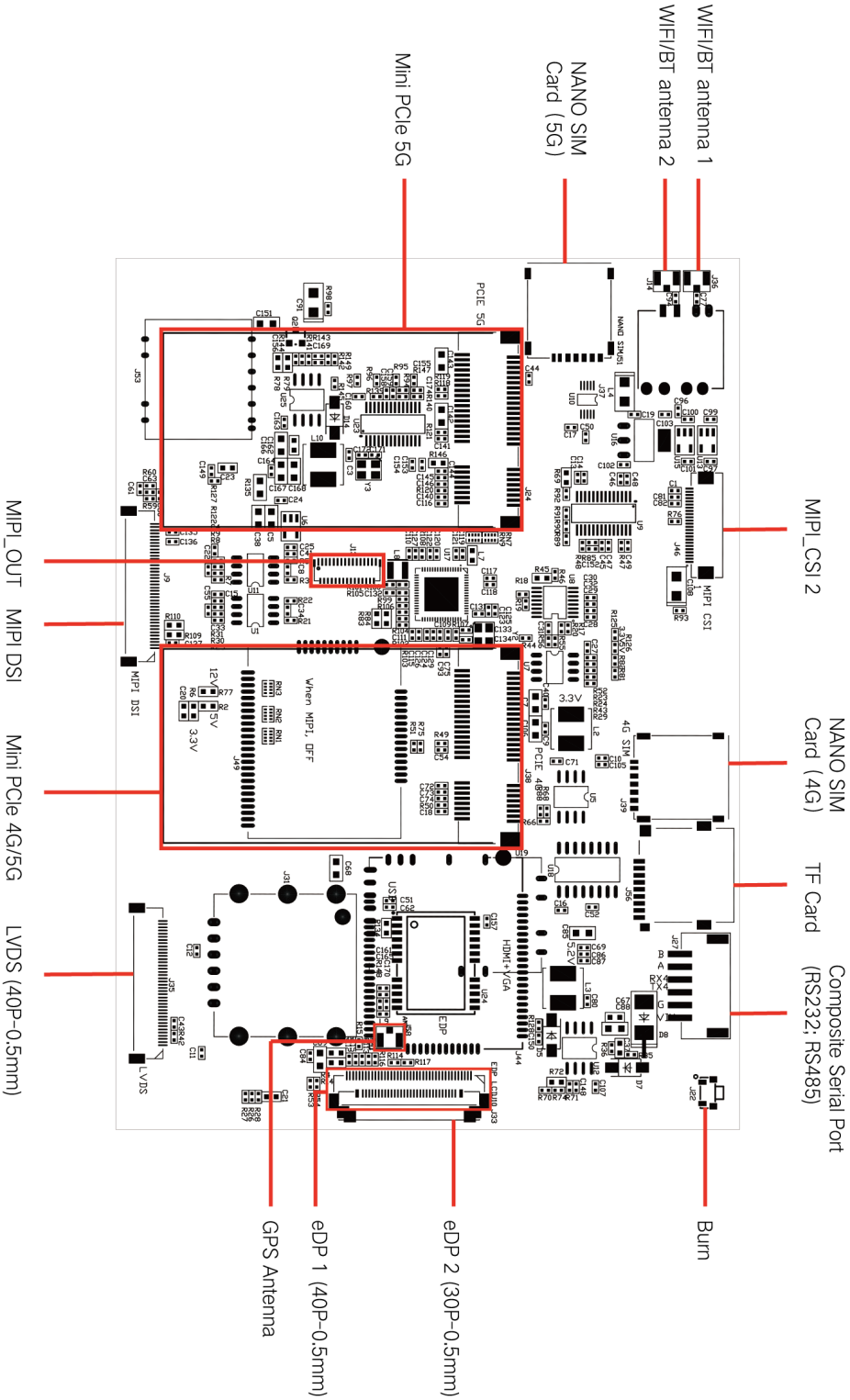
1 Interface Description

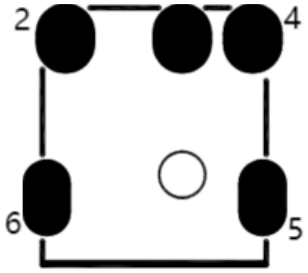
<Figure 1-1 Interface Description (Top)>



<Figure 1-2 Interface Description (Bottom)>

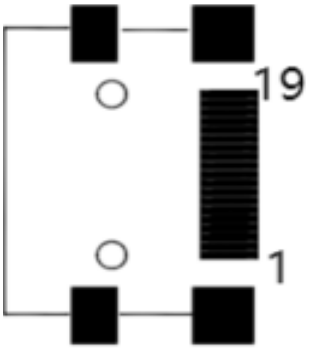


1.1 DC_12V 1



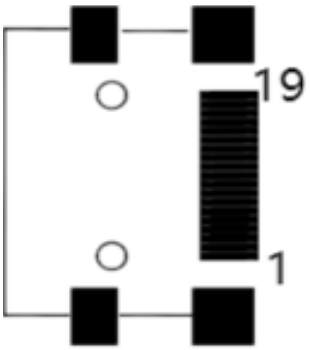
Pin Number	Pin Name	Description
2	GND	Ground
3	GND	Ground
4	VDD_IN	12V Power Supply
5	P_GND	Power Ground
6	P_GND	Power Ground

1.2 HDMI_OUT/IN



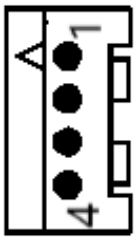
Pin Number	Pin Name	Pin Number	Pin Name
1	TX2P	11	GND
2	GND	12	TXCN
3	TX2N	13	NC
4	TX1P	14	NC
5	GND	15	HDMI_SCL
6	TX1N	16	HDMI_SDA
7	TX0P	17	GND
8	GND	18	VDD_HDMI
9	TX0N	19	HDMI_HPD
10	TXCP		

1.3 HDMI_OUT



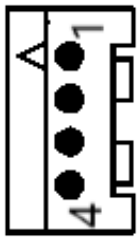
Pin Number	Pin Name	Pin Number	Pin Name
1	TX2P	11	GND
2	GND	12	TXCN
3	TX2N	13	NC
4	TX1P	14	NC
5	GND	15	HDMI_SCL
6	TX1N	16	HDMI_SDA
7	TX0P	17	GND
8	GND	18	VDD_HDMI
9	TX0N	19	HDMI_HPD
10	TXCP		

1.4 RS485



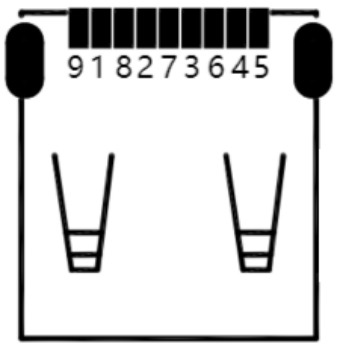
Pin	Description	Details
1	VDD_UART	5V/3.3V Power Supply
2	RS485 B/RXDU	RS485 Receive Data (configurable to RS232/TTL)
3	RS485 A/TXDU	RS485 Transmit Data (configurable to RS232/TTL)
4	GND	Ground

1.5 RS232



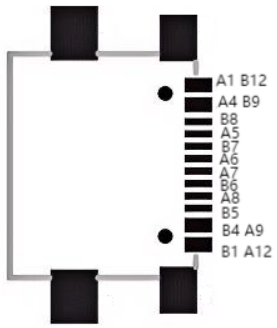
Pin	Description	Details
1	VDD_UART	5V/3.3V Power Supply
2	RXD4_232	RS232 Receive Data
3	TXD4_232	RS232 Transmit Data
4	GND	Ground

1.6 USB3.0 Type-A



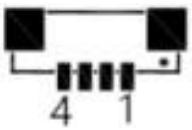
Pin Number	Pin Name	Description
1	VDD5_U	5V Power Supply
2	USB3_DM	USB3.0 Data - Negative
3	USB3_DP	USB3.0 Data - Positive
4	GND	Ground
5	USB3_SSRXN	USB3.0 Receive Data - Negative
6	USB3_SSRXP	USB3.0 Receive Data - Positive
7	GND	Ground
8	USB3_SSTXN	USB3.0 Transmit Data - Negative
9	USB3_SSTXP	USB3.0 Transmit Data - Positive

1.7 Type-C



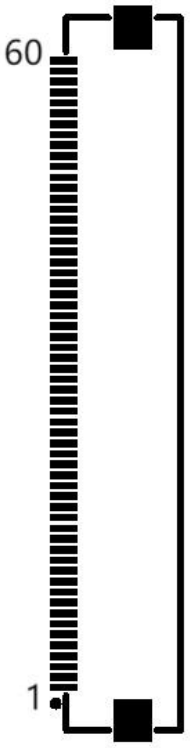
Pin Nubmer	Description	Pin Number	Description
A1 B12	GND	B1 A12	GND
A4 B9	VTYPEC	B4 A9	VTYPEC
A5	NC	B5	NC
A6	OTG_DP	B6	OTG_DP
A7	OTG_DM	B7	OTG_DM
A8	NC	B8	NC

1.8 USB2.0



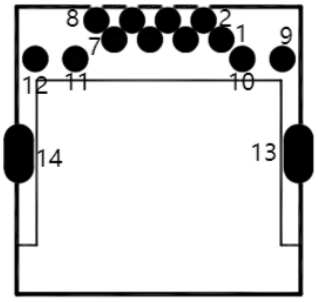
Pin Number	Pin Name	Description
1	VDD5	5V Power Supply
2	DM	Data - Negative
3	DP	Data - Positive
4	GND	Ground

1.9 MIPI CSI 1



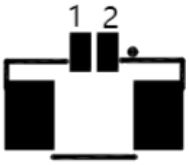
Pin Number	Description	Pin Number	Description
1	VDD_CORE	31	GND
2	VDD_CORE	32	MDIB1-
3	VDD_CORE	33	MDIB1+
4	VDD_CORE	34	MDIBXCP0-TX0N
5	VRTC33	35	MDIB0+
6	GND	36	GND
7	GND	37	HDMI_HPD
8	GND	38	HDMI_SDA
9	GND	39	HDMI_SCL
10	GPIO2	40	HDMI_CEC
11	GPIO1	41	TXCN
12	LCD_PWM	42	TXCP
13	GND	43	TX0N
14	MIPI_D0-	44	TX0P
15	MIPI_D0+	45	TX1N
16	MIPI_D1-	46	TX1P
17	MIPI_D1+	47	TX2N
18	MIPI_D2-	48	TX2P
19	MIPI_D2+	49	I2C_SDA_CAM
20	GND	50	I2C_SCL_CAM
21	MIPI_DC-	51	RX_D3N
22	MIPI_DC+	52	RX_D3P
23	MIPI_D3-	53	RX_CLKN
24	MIPI_D3+	54	RX_CLKP
25	CAN2_TX	55	RX_D2N
26	CAN2_RX	56	RX_D2P
27	MDIB3-	57	RX_D1N
28	MDIB3+	58	RX_D1P
29	MDIB2-	59	RX_D0N
30	MDIB2+	60	RX_D0P

1.10 RJ45



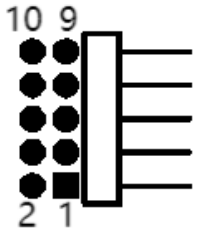
Pin Number	Pin Name	Pin Number	Pin Name
1	TX1+	7	TX4+
2	TX1-	8	TX4-
3	TX2+	9	LED_ACT
4	TX3+	10	VDD33
5	TX3-	11	GND
6	TX2-	12	LED_10_100

1.11 Fan Power Supply



Pin Number	Pin Name	Description
1	GND	Ground
2	VDD_IN	12V Power Supply

1.12 8-way GPIO



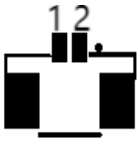
Pin	Description	Pin	Description
1	5V/3.3V	6	GPIO_4
2	GND	7	CPIO_5
3	GPIO_1	8	GPIO_6
4	GPIO_2	9	GPIO_7
5	GPIO_3	10	GPIO_8

1.13 3-way GPIO



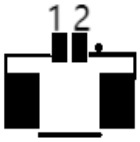
Pin	Description	Pin	Description
1	5V/3.3V	6	GPIO_4
2	GND	7	CPIO_5
3	GPIO_1	8	GPIO_6
4	GPIO_2	9	GPIO_7
5	GPIO_3	10	GPIO_8

1.14 Speaker 1



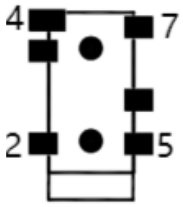
Pin Number	Pin Name	Description
1	OUTL+	Power Supply for Speaker Left Channel - Positive
2	OUTL-	Power Supply for Speaker Left Channel - Negative

1.15 Speaker 2



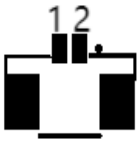
Pin Number	Pin Name	Description
1	OUTR+	Power Supply for Speaker Right Channel - Positive
2	OUTR-	Power Supply for Speaker Right Channel - Negative

1.16 Headphone



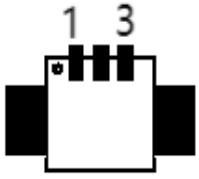
Pin Number	Pin Name	Pin Number	Pin Name
2	GND	5	GND
3	HPL	6	HPR
4	HPL	7	HPR

1.17 Mic



Pin Number	Pin Name	Description
1	MICIP	Mic Power Supply - Postive
2	MIC1N	Mic Power Supply - Negative

1.18 CAN



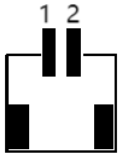
Pin	Description	Details
1	GND	Ground
2	CAN1_L	CAN Differential Output Signal Low
3	CAN1_H	CAN Differential Output Signal High

1.19 Composite CAN port



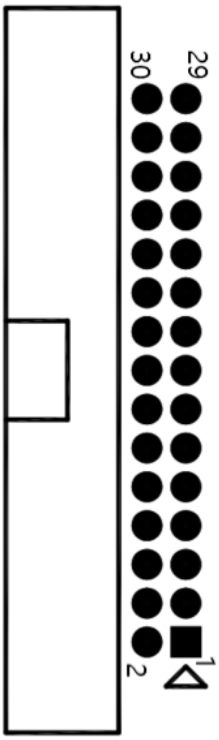
Pin Number	Pin Name	Description
1	CAN2_H	CAN Differential Output Signal High
2	CAN2_L	CAN Differential Output Signal Low
3	CAN1_H	CAN Differential Output Signal High
4	CAN1_L	CAN Differential Output Signal Low

1.20 Backlight Power Supply



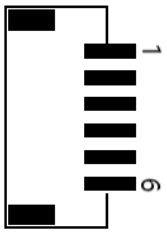
Pin Number	Pin Name	Description
1	LCD LED+	Backlight Power Supply - Positive
2	LCD LED-	Backlight Power Supply - Negative

1.21 LVDS



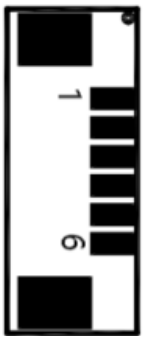
Pin Number	Pin Name	Pin Number	Pin Name
1	3.3V/5V/12V	16	OC+
2	3.3V/5V/12V	17	O3-
3	3.3V/5V/12V	18	O3+
4	GND	19	E0-
5	GND	20	E0+
6	GND	21	E1-
7	O0-	22	E1+
8	O0+	23	E2-
9	O1-	24	E2+
10	O1+	25	GND
11	O2-	26	GND
12	O2+	27	EC-
13	GND	28	EC+
14	GND	29	E3-
15	OC-	30	E3+

1.22 Backlight Brightness Control



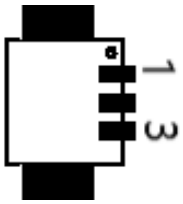
Pin Number	Pin Name	Description
1	GND	Ground
2	GND	Ground
3	LED_PWM	PWM Signal Input
4	VDD33	3.3V Power Supply
5	VIN_12V	12V Power Supply
6	VIN_12V	12V Power Supply

1.23 I2C



Pin Number	Pin Name	Description
1	GND	Ground
2	VDD33	3.3V Power Supply
3	RST	Reset Signal Output
4	SDA	I2C Data
5	SCL	I2C Clock
6	INT	Interrupt Signal Input

1.24 Debug



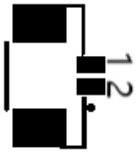
Pin Number	Pin Name	Description
1	GND	Ground
2	UART2_RXD	UART2 Receive Data
3	UART2_TXD	UART2 Transmit Data

1.25 RTC Backup Battery



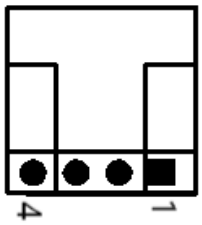
Pin Number	Pin Name	Description
1	VRTC33	3.3V Power Supply for RTC
2	GND	Ground

1.26 Power On



Pin Number	Pin Name	Description
1	GND	Ground
2	PMU_PWRON	PMU Power Control

1.27 DC_12V 2



Pin Number	Pin Name	Description
1	GND	Ground
2	GND	Ground
3	VDD_IN	12V Power Supply
4	VDD_IN	12V Power Supply

1.28 Battery



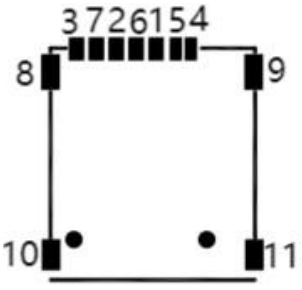
Pin Number	Pin Name	Description
1	GND	Ground
2	CTP_SDA	Data Signal
3	CTP_SCL	Clock Signal
4	VDD_IN	Power Input
5	VDD_IN	Power Input

1.29 MIPI_CSI 2



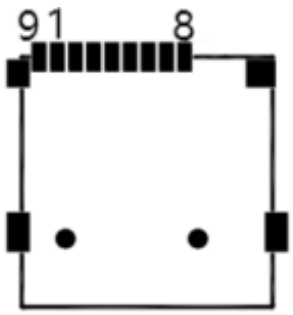
Pin Number	Pin Name	Pin Number	Pin Name
1	RX_D3N	13	GND
2	RX_D3P	14	CIF_CLKO
3	GND	15	GND
4	MIPI_NI_CLK-	16	CAM_RST
5	MIPI_NI_CLK+	17	I2C_SCL_CAM
6	GND	18	I2C_SDA_CAM
7	RX_D2N	19	VDD12_CAM
8	RX_D2P	20	VDD12_CAM
9	MIPI_N1_D1-	21	VDD18_CAM
10	MIPI_N1_D1+	22	VDD18_CAM
11	MIPI_N1_D0-	23	VDD28_CAM
12	MIPI_N1_D0+	24	VDD28_CAM

1.30 NANO_SIM (4G/5G)



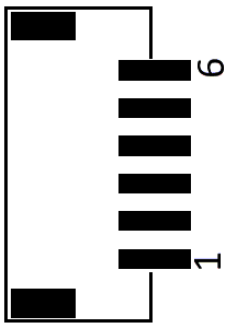
Pin Nubmer	Description	Pin Number	Description
1	USIM_PWR	6	NC
2	USIM_RST	7	USIM_DAT
3	USIM_CLK	8	GND
4	NC	9	GND
5	GND	10	GND

1.31 TF Card



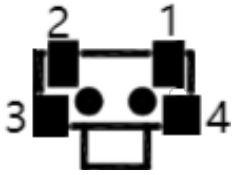
Pin Number	Pin Name	Pin Number	Pin Name
1	MSC0_D1	6	MSC0_CMD
2	MSC0_D0	7	MSC0_D3
3	GND	8	MSC0_D2
4	MSC0_CLK	9	SD_DET
5	VDD33_TF		

1.32 Composite Serial Port



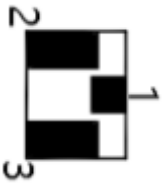
Pin Number	Pin Name	Description
1	VDD_IN	3.3V/5V Power Supply
2	GND	Ground
3	TXD4_232	RS232 Transmit Data
4	RXD4_232	RS232 Receive Data
5	485_A/TXDU	RS485 Transmit Data
6	485_B-RXDU	RS485 Receive Data

1.33 Burn



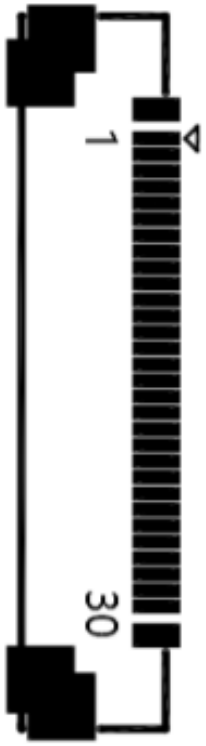
Pin Number	Pin Name	Description
1	ADKEYIN	Burn Key Press Signal Input
2	GND	Ground
3	GND	Ground
4	GND	Ground

1.34 GPS Antenna



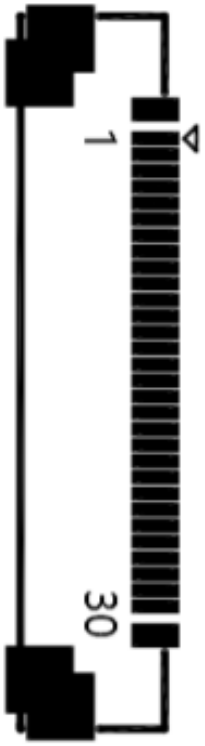
Pin Number	Pin Name	Description
1	ANT1	Antenna 1 Signal
2	GND	Ground
3	GND	Ground

1.35 eDP 1 (40P-0.5mm)



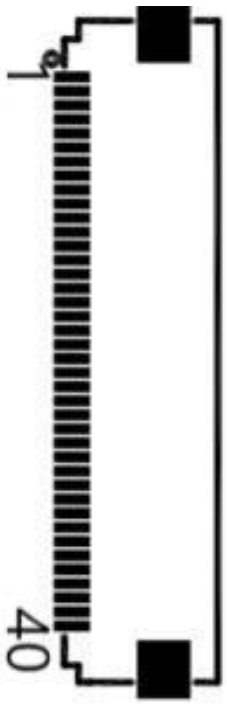
Pin Number	Pin Name	Pin Number	Pin Name
1	NC	21	VDD33
2	GND	22	GND
3	EDP_TX3N	23	VDD33
4	EDP_TX3P	24	GND
5	GND	25	GND
6	EDP_TX2N	26	GND
7	EDP_TX2P	27	NC
8	GND	28	GND
9	EDP_TX1N	29	GND
10	EDP_TX1P	30	GND
11	GND	31	GND
12	EDP_TX0N	32	VDD33
13	EDP_TX0P	33	LED_PWM
14	GND	34	NC
15	EDP_AUXP	35	NC
16	EDP_AUXN	36	VIN_12V
17	GND	37	VIN_12V
18	VDD33	38	VIN_12V
19	VDD33	39	VIN_12V
20	VDD33	40	VDDD33

1.36 eDP 2 (30P-0.5mm)



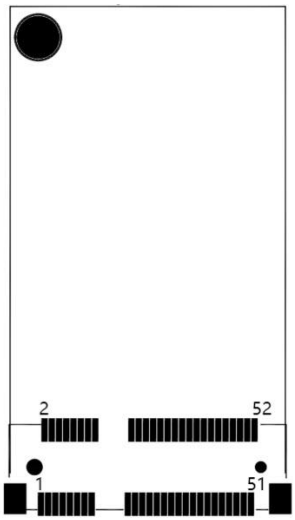
Pin Nuber	Pin Name	Pin Number	Pin Name
1	NC	16	GND
2	VIN_12V	17	NC
3	VIN_12V	18	3.3V
4	VIN_12V	19	3.3V
5	VIN_12V	20	GND
6	NC	21	EDP_AUXN
7	NC	22	EDP_AUXP
8	LED_PWM	23	GND
9	3.3V	24	EDP_TX0P
10	GND	25	EDP_TX0N
11	GND	26	GND
12	GND	27	EDP_TX1P
13	GND	28	EDP_TX1N
14	NC	29	GND
15	GND	30	NC

1.37 LVDS (40P-0.5mm)



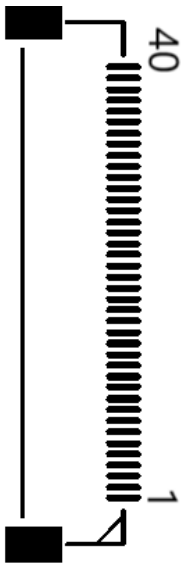
Pin Number	Pin Name	Pin Number	Pin Name
1	LCD_VCOM	21	O3+
2	VDD33	22	GND
3	VDD33	23	NC
4	NC	24	NC
5	LCD_RST	25	GND
6	VDD33	26	NC
7	GND	27	NC
8	O0-	28	GND
9	O0+	29	LCD_AVDD
10	GND	30	GND
11	O1-	31	LCD_LED-
12	O1+	32	LCD_LED-
13	GND	33	VDD33
14	O2-	34	GND
15	O2+	35	LCD_VGL
16	GND	36	GND
17	OC-	37	GND
18	OC+	38	LCD_VGH
19	GND	39	LCD_LED+
20	O3-	40	LCD_LED+

1.38 Mini PCIe 4G/5G



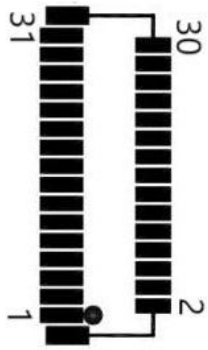
Pin Number	Pin Name	Pin Number	Pin Name
1	NC	27	GND
2	VDD33	28	NC
3	NC	29	GND
4	GND	30	NC
5	NC	31	NC
6	NC	32	NC
7	NC	33	NC
8	USIM_PWR	34	GND
9	GND	35	GND
10	USIM_DAT	36	DM2
11	NC	37	GND
12	USIM_CLK	38	DP2
13	NC	39	VDD33
14	USIM_RST	40	GND
15	GND	41	VDD33
16	NC	42	NC
17	NC	43	GND
18	GND	44	NC
19	NC	45	NC
20	NC	46	NC
21	GND	47	NC
22	4G_RST	48	NC
23	NC	49	NC
24	VDD33	50	GND
25	NC	51	NC
26	GND	52	VDD33

1.39 MIPI DSI



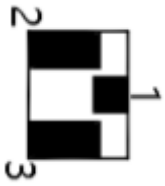
Pin Number	Pin Name	Pin Number	Pin Name
1	NC	21	O3+
2	VDD33	22	GND
3	VDD_MIPI	23	NC
4	GND	24	NC
5	MIPI_RST	25	GND
6	NC	26	NC
7	GND	27	NC
8	O0-	28	NC
9	O0+	29	NC
10	GND	30	GND
11	O1-	31	LCD_LED-
12	O1+	32	LCD_LED-
13	GND	33	NC
14	OC-	34	-5.5V
15	OC+	35	-5.5V
16	GND	36	NC
17	O2-	37	+5.5V
18	O2+	38	+5,5V
19	GND	39	LCD_LED+
20	O3-	40	LCE_LED+

1.40 MIPI_OUT



Pin Number	Pin Name	Pin Number	Pin Name
1	VDD33	18	MIPI_D1+
2	VDD33	19	GND
3	VDD18	20	MIPI_D2-
4	GND	21	MIPI_D2+
5	MIPI_RST	22	GND
6	NC	23	GND
7	GND	24	LCD_LED-
8	MIPI_D3-	25	LCD_LED-
9	MIPI_D3+	26	LCD_LED-
10	GND	27	LCD_LED-
11	MIPI_D0-	28	NC
12	MIPI_D0+	29	LCD_LED+
13	GND	30	LCD_LED+
14	MIPI_DC-	31	LCD_LED+
15	MIPI_DC+	32	GND
16	GND	33	GND
17	MIPI_D1-		

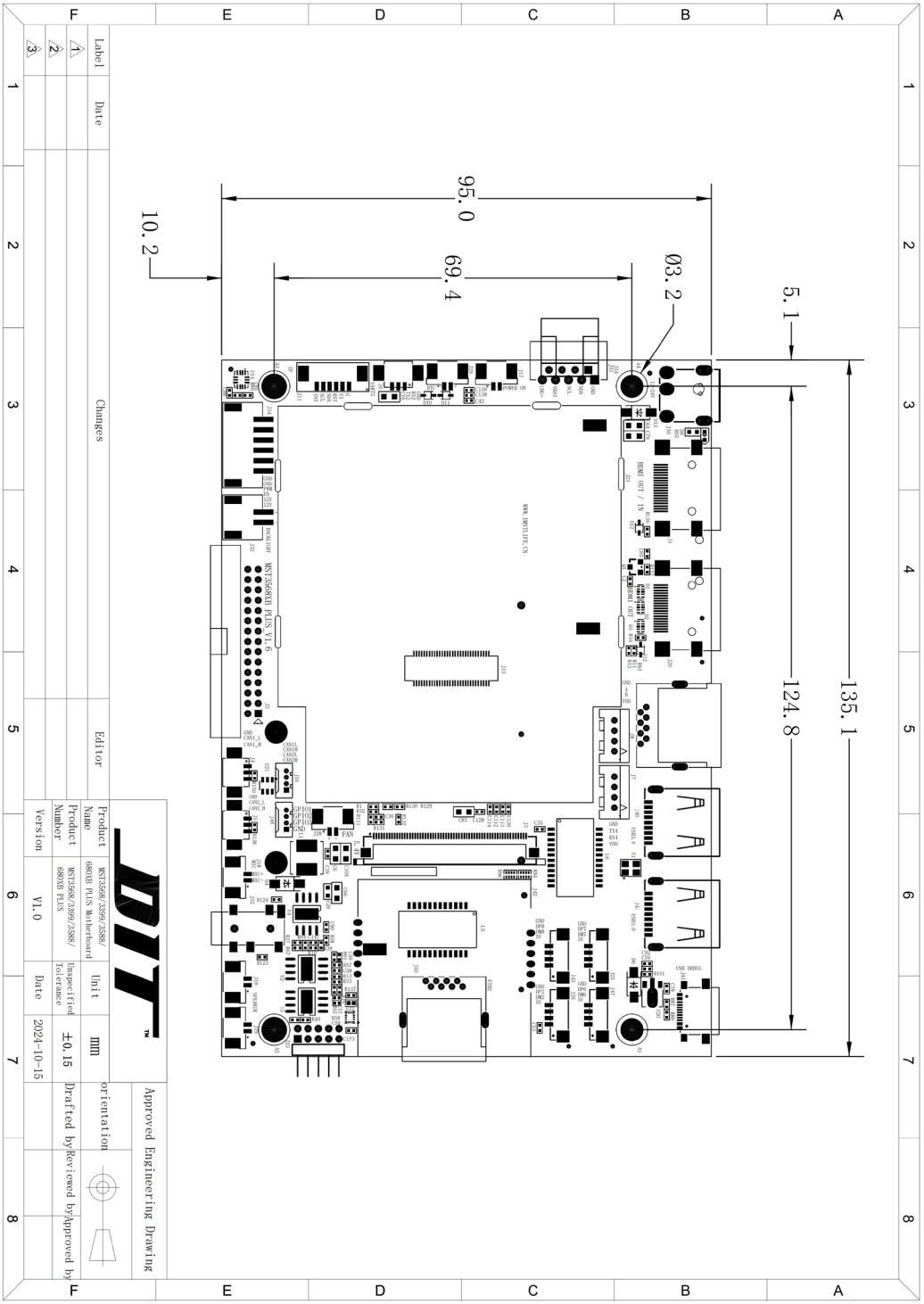
1.41 WIFI/BT Antenna



Pin Number	Pin Name	Description
1	ANT1	Antenna 1 Signal
2	GND	Ground
3	GND	Ground

2 Physical Dimension

<Figure 2-1 Physical Dimension>



3 Precautions

Please read and follow all these precautions before proceeding with the handling of your MST3568XB PLUS industrial motherboard.

3.1 Operating Conditions

- Acceptable temperature of the motherboard: 0°C to +50°C (in operation); -40°C to +70°C (idle).
- Relative Humidity: 10%-90%, no condensation.
- Regularly inspect the vents and fans to prevent motherboard damage caused by overheating.
- Do not operate in a flammable or explosive environment.
- Keep the product dry and clean to avoid performance degradation caused by dust and moisture.
- Do not operate in humid environments to avoid short circuit and electric shock hazards.

3.2 Powering On

- The interface connection cable should not be too long, or it may affect the signal quality.
- The communication module should be at least 5 mm away from the metal casing to avoid signal interference.
- Check whether the total power consumption of all connected peripherals is within the the acceptable range for the motherboard to operate properly.

3.3 Absolute Maximum Ratings

To avoid fires or excessive current surges, please consult the product specification for detailed information on absolute maximum ratings before connecting the product.

3.4 Current and Voltage Requirements

- When connecting to LCD, pay attention to the driving voltage and current requirements, and check the orientation of pin 1 of the screen connector.
- When connecting to LCD, pay attention to the backlight voltage and current requirements.
- When using external interfaces (USB, GPIO, serial port, I2C, SPI, HDMI, etc.) to connect devices, pay attention to whether the IO levels and currents of the external peripherals meet the specified requirements.

3.5 Product Repair

Any maintenance, adjustment, or part replacement must be carried out by authorized repair personnel from Display Innovation Technology. In case of suspected product failure, do not attempt to operate it and contact Display Innovation Technology for inspection.

3.6 Assembly and Shipment

- During the assembly of the whole machine, ensure to avoid twisting or applying excessive pressure on the motherboard to prevent deformation.

- Take anti-static precautions to avoid component damages due to slippage during transportation.

3.7 Disposal

Some substances contained in this product may be harmful to the environment or human health. Please Check with local health and sanitation agencies for ways to dispose of computer equipment properly.

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5 Technical Support

If you have any questions or needs in using this product or manual, please don't hesitate to contact with us.

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Hotline: +86 400-677-0968
Address: Room 1209-1216, Building B2, Desqin City Plaza, Yuhua District, Changsha

6 Revision History

<Table 6-1 Physical Dimension>

Version	Date	Details
V1.0	February 20, 2025	Initial release