TFT MODULE SPECIFICATION

RVT101HVNNWC00

RT1176 series 10.1” LCD TFT display datasheet
Rev. 1.0
2025-11-17

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ITEM	CONTENTS	UNIT
LCD Type	TFT/Transmissive/Normally Black/IPS	/
Size	10.1	Inch
Viewing Direction	Free	/
Outside Dimensions (W x H x D)	257.96 x 168.60 x 28.04	mm
Active Area (W x H)	216.96 x 135.60	mm
Pixel Pitch (W x H)	0.1695 x 0.1695	mm
Resolution	1280 (RGB) x 800	/
Brightness	800	cd/m^2
Color Depth	16.7 M	/
Pixel Arrangement	RGB Vertical Stripe	/
Driver IC of Board	MIMXRT1176DVM	/
External SDRAM	512(32bit)	Mbit
External Flash Memory	Octal flash 512 + SPI flash 32	Mbit
Supply Voltage for Module	6.5-36.0	V
With/Without Touch	With Projected Capacitive Touch Panel	/
CTP Driver	ILI2132A	/
Bonding Technology	Air Bonding	/
Weight	490	g

Note 1. RoHS3 compliant

Note 2. LCM weight tolerance: ± 5%.

1. REVISION RECORD

REV NO.	REV DATE	CONTENTS	REMARKS
1.0	2025-11-17	Initial release	

2. CONTENTS

3. MODULE CLASSIFICATION INFORMATION

RV	T	101	H	V	N	N	W	C	00
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.

NO.	PARAMETER	SYMBOL
1.	BRAND	RV – Riverdi
2.	PRODUCT TYPE	T – TFT Standard
3.	DISPLAY SIZE	101 – 10.1”
4.	MODEL SERIAL NO.	H – High Brightness, IPS
5.	RESOLUTION	V – 1280 x 800 px
6.	INTERFACE	N – RT1176
7.	FRAME	N – Without Mounting Metal Frame
8.	BACKLIGHT TYPE	W – LED White
9.	TOUCH PANEL	C – with Capacitive Touch Panel
10.	VERSION	00 – version

4. ASSEMBLY

4.1 uxTouch Assembly

uxTouch are LCD TFT displays with specially designed projected capacitive touch panels. uxTouch display can be mounted without any additional holes in the housing. Our standard uxTouch displays include double-sided adhesive tape (DST) to stick TFT easily to the housing.

uxTouch models with double-side adhesive tape can be mounted by fastening the glass to the housing.

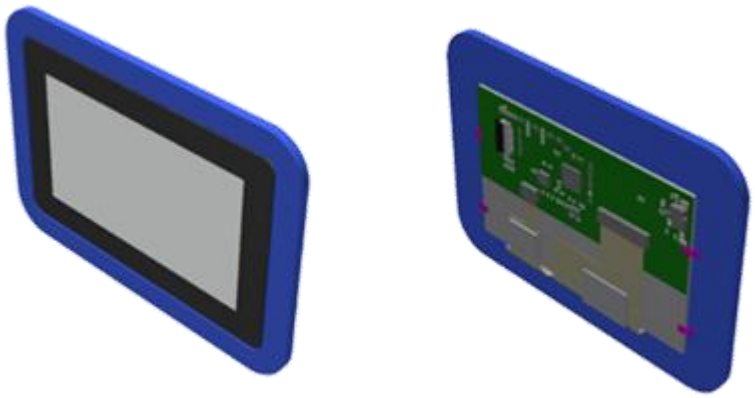
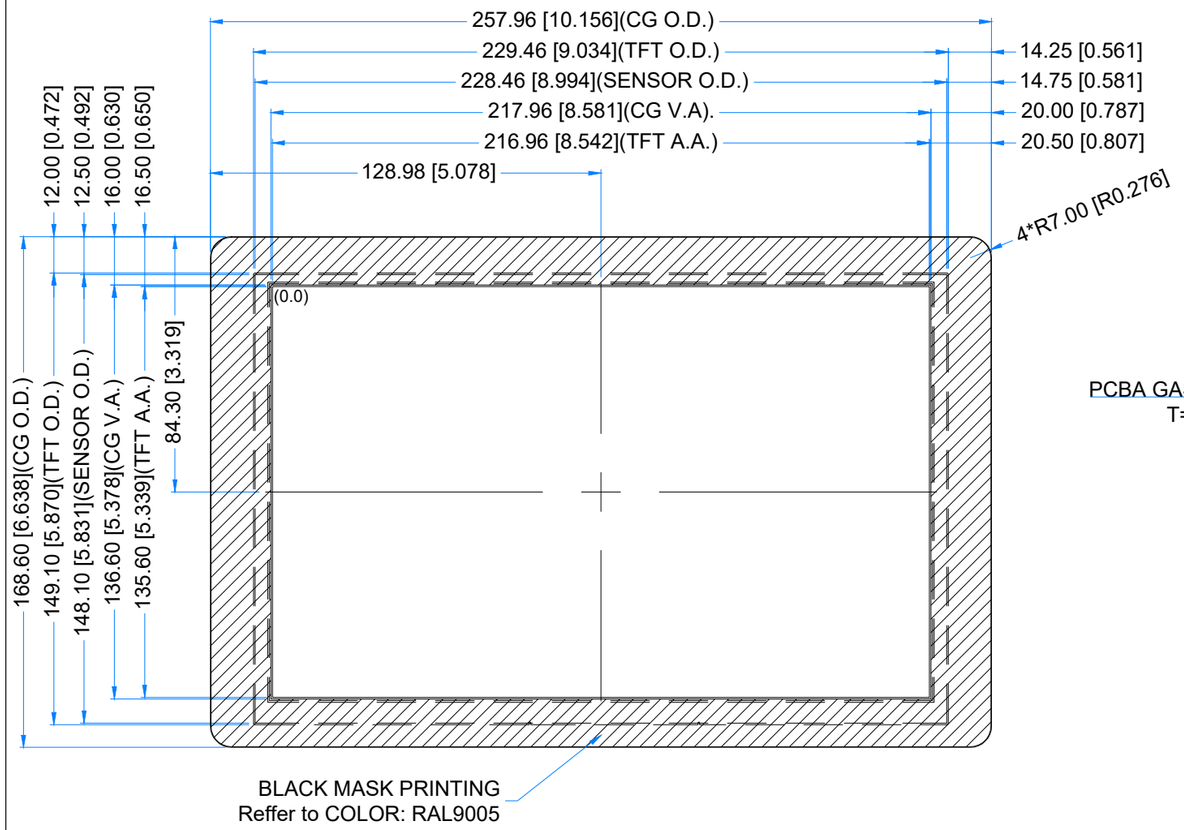
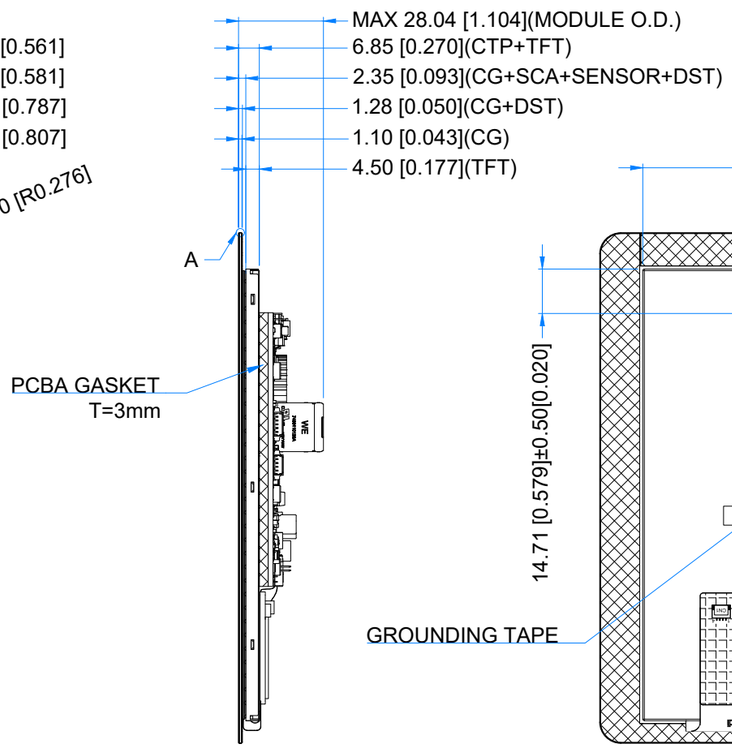
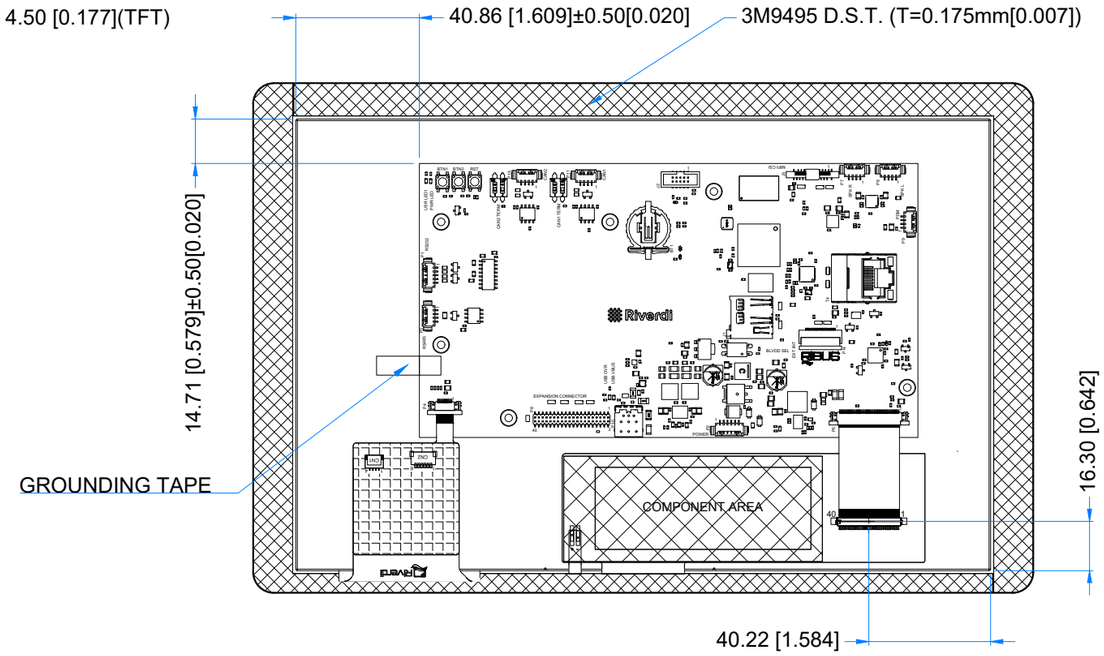


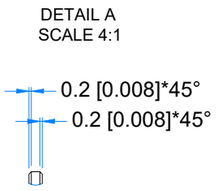
Figure 1. General view of the module

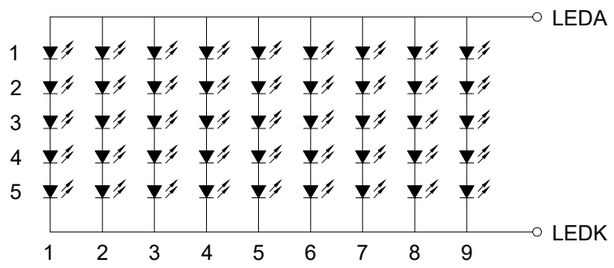
Revision:	Changes:	Date:
1.0	Initial Case	2025.11.17











LED Diagram Circuit

1.25 MM MOLEX CONNECTORS

NO.	TYPE	MATE WITH
P9 (PDM)	53261-0471	51021-0400
P6 (SPK L)	53261-0471	51021-0400
P7 (SPK R)	53261-0471	51021-0400
P11 (CAN1)	53261-0471	51021-0400
P15 (CAN2)	53261-0471	51021-0400
P1 (RS232)	53261-0571	51021-0500
P3 (RS485)	53261-0471	51021-0400
P2 (POWER)	53261-0671	51021-0600

1.27 MM PIN HEADER AND SOCKET

NO.	TYPE	MATE WITH
P8 (EXPANSION)	CH51402M100-0P	CBC1402D100 OR CBC1402M100-2P
J2 (JTAG)	20021521-00010T4LF	20021444-00010T4LF

LCD NOTES:
1. LCD TYPE: TRANSMISSIVE, NORMALLY BLACK, IPS
2. RESOLUTION: 1280x800
3. VIEWING ANGLE: FREE
4. MCU ON THE BOARD: MIMXRT1176DVM
5. EXTERNAL SDRAM SIZE: 512 Mbit
6. EXTERNAL FLASH SIZE: 512 Mbit Octal Flash + 32 Mbit SPI Flash
7. SUPPLY VOLTAGE FOR MODULE: 6.5V - 36.0V

TP NOTES:
1. TP STRUCTURE: G+G
2. CG THICKNESS: 1.10mm[0.043inch]
3. SURFACE HARDNESS: 7H
4. DRIVER IC: ILI2132A
5. INTERFACE: CONNECTED TO MCU VIA I2C

GENERAL NOTES:
1. MODULE SURFACE LUMINANCE:800 cd/m^2
2. ZERO BAD PIXELS FOR TFT
3. OPERATING TEMPERATURE: -20°C ~ 70°C
4. STORAGE TEMPERATURE: -30°C ~ 80°C
5. WITHOUT INDIVIDUAL TOLERANCE: ±0.3mm
6. RoHS3 COMPLIANT

PN: RVT101HVNNWC00

SN:

Riverdi

DRAWN:	M.Stabinski	2025.11.17	1:2.03	
CHECKED:	J.Teska-Adamiec	2025.11.17	[mm]	
APPR:	M.Wierzbowski	2025.11.17	ISO A3	P. 1 of 1

6. ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Supply Voltage for Module	V_{DD}	-0.5	38.0	V
Digital I/O signals voltage	-	-0.5	3.3	V
Operating Temperature	T_{OP}	-20	70	°C
Storage Temperature	T_{ST}	-30	80	°C
Storage Humidity (@ 25 ± 5°C)	H_{ST}	10	-	% RH
Operating Ambient Humidity (@ 25 ± 5°C)	H_{OP}	10	-	% RH

Note. The above are maximum values. If exceeded, they may cause permanent damage to the unit.

Most of the GPIOs support input voltages up to 3.6 V; please refer to the datasheet of MIMXRT1176DVMAB for detailed I/O voltage specifications.

7. ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage for Module	V_{DD}	6.5	12.0	36.0	V
Power Enable Voltage	V_{EN}	0	-	VDD_IN	V
Input Voltage „L” Level	V_{IH}	2.0	-	3.3	V
Input Voltage „H” Level	V_{IL}	0	-	0.8	V

PARAMETER	CONDITION	SYMBOL	MIN	TYP	MAX	UNIT
Current drawn from V_{DD}@6.5V	Power 'Enable' = '0'	I_{VDD}	-	65	-	uA
Current drawn from V_{DD}@12.0V			-	169	-	uA
Current drawn from V_{DD}@24.0V			-	403	-	uA
Current drawn from V_{DD}@36.0V			-	658	-	uA
Current drawn from V_{DD}@6.5V	Power 'Enable' = '1'	I_{VDD}	-	1375	-	mA
Current drawn from V_{DD}@12.0V			-	656	-	mA
Current drawn from V_{DD}@24.0V			-	326	-	mA
Current drawn from V_{DD}@36.0V			-	221	-	mA

Note.

POWER 'ENABLE' refers to pin 4, 'ENABLE' of the power input connector(P2).

POWER 'ENABLE' = '1' is when EN pin is floating or shorted to VDD_IN.

POWER 'ENABLE' = '0' is when EN pin is shorted to GND.

By default, POWER 'ENABLE' is set to "1".

8. BACKLIGHT ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	NOTE
Lifetime	-	-	50,000	-	hours	Note 1

Note. If LED is driven by high current, high ambient temperature and humidity condition, the lifetime of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating lifetime is estimated data.

9. ELECTRO-OPTICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT	RMK	NOTE
Response Time	Tr+Tf	θ=0° ø=0° Ta=25 °C	-	25	35	ms	FIG 2.	4, 7
Contrast Ratio	Cr		-	800	1000	---	FIG 3.	1, 7
Surface Luminance	Lv		-	800	-	cd/m2		2, 7
Viewing Angle Range	θ	ø = 90°	75	85	-	deg	FIG 4.	6
		ø = 270°	75	85	-	deg		
		ø = 0°	75	85	-	deg		
		ø = 180°	75	85	-	deg		
CIE (x, y) Chromaticity	Rx	θ=0° ø=0° Ta=25 °C	0.22	0.26	0.30	-	FIG 3.	5,7
	Ry		0.20	0.24	0.28	-		
	Gx		0.34	0.38	0.42	-		
	Gy		0.50	0.54	0.58	-		
	Bx		0.10	0.14	0.18	-		
	By		0.09	0.13	0.17	-		
	Wx		0.28	0.32	0.36	-		
	Wy		0.29	0.33	0.37	-		

Note 1. Contrast Ratio (CR) is defined mathematically as below, for more information see Figure 2.

$$\text{Contrast Ratio} = \frac{\text{Average Surface Luminance with all white pixels (P1, P2, P3, P4, P5)}}{\text{Average Surface Luminance with all black pixels (P1, P2, P3, P4, P5)}}$$

Note 2. Surface luminance is the LCD surface from the surface with all pixels displaying white. For more information see Figure 2.

Lv = Average Surface Luminance with all white pixels (P1, P2, P3, P4, P5)

Note 3. The uniformity in surface luminance δ WHITE is determined by measuring luminance at each test position 1 through 5, and then dividing the minimum luminance of 5 points luminance by maximum luminance of 5 points luminance. For more information see Figure 2.

$$\delta \text{ WHITE } = \frac{\text{Minimum Surface Luminance with all white pixels (P1, P2, P3, P4, P5)}}{\text{Maximum Surface Luminance with all white pixels (P1, P2, P3, P4, P5)}}$$

Note 4. Response time is the time required for the display to transition from white to black (Rise Time, Tr) and from black to white (Decay Time, Tf). For additional information see Figure 1. The test equipment is BM-7A.

Note 5. CIE (x, y) chromaticity, the x, y value is determined by measuring luminance at each test position 1 through 5, and then make average value.

Note 6. For TFT module, viewing angle is the angle at which the contrast ratio is greater 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to LCD surface. For more information see Figure 3.

Note 7. Viewing angle is measured at the center point of the LCD by CONOSCOPE (ergo-80). For response time testing, the testing data is based on BM-7A. Instruments for Contrast Ratio, Surface Luminance, Luminance Uniformity, Chromaticity the test data is based on SR-3A.

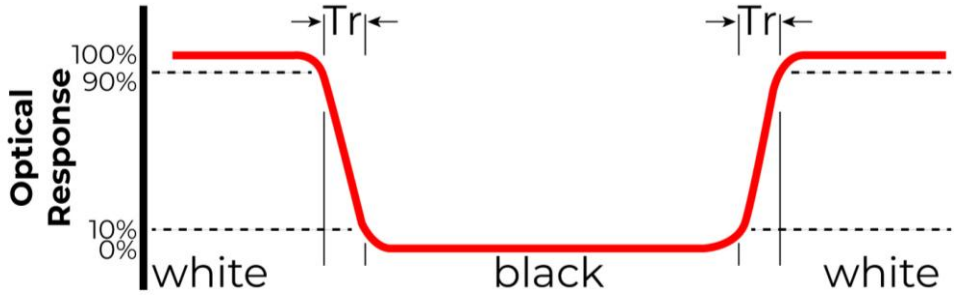
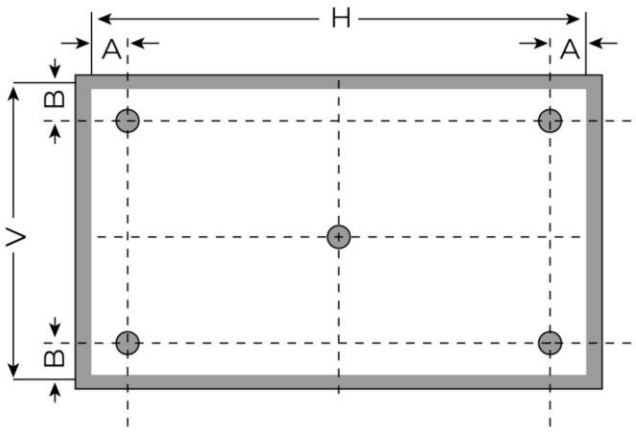


Figure 2. The definition of response time



A: 5mm

B: 5mm

H, V: Active Area

Light spot size ∅=5mm, 500mm distance from the LCD surface to detector lens.

Measurement instrument is SR-3A

Figure 3. Measuring method for Contrast ratio, surface luminance, Luminance uniformity, CIE (x, y) chromaticity

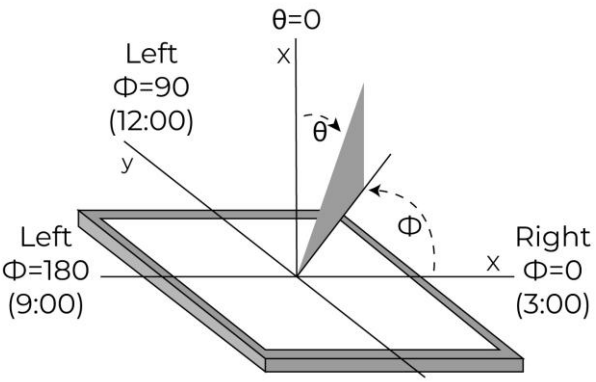
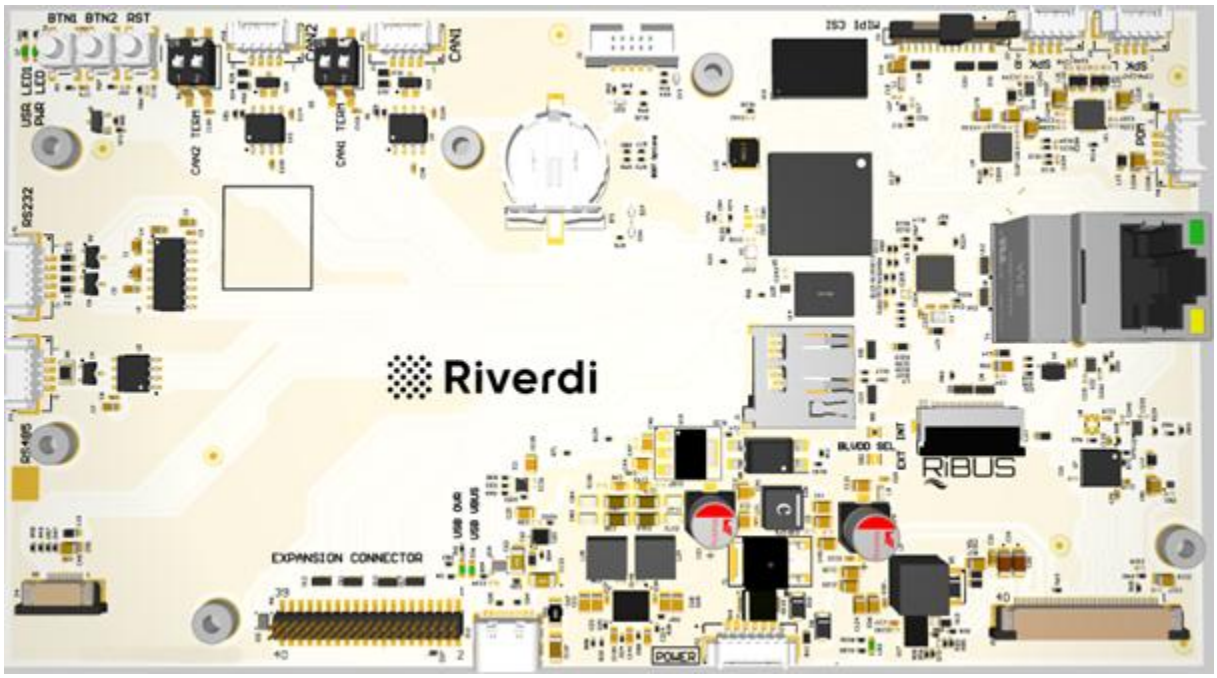


Figure 4. The definition of viewing angle

10. INTERFACES DESCRIPTION

10.1 PCB overview



10.2 Power supply interface (P2)

PIN	SYMBOL	DESCRIPTION
1	VDD_IN	Power supply input; 6.5V-36.0V
2	VDD_IN	Power supply input; 6.5V-36.0V
3	VDD_IN	Power supply input; 6.5V-36.0V
4	PWR_EN	Enable/Disable power supply
5	GND	Ground
6	GND	Ground

Note. Matched Riverdi accessory RVA-0106-1.25FF

10.3 USB-C interface (P10)

Standard USB 2.0 with type C connector.

10.4 Expansion connector – P8

I/O/P	PIN	No.	No.	PIN	I/O/P
P	VCC_+5V	1	2	VCC_+3.3V	P
P	VCC_+5V	3	4	VCC_+3.3V	P
-	NC	5	6	GND	P
p	GND	7	8	DAC1_OUT1 (analog output)	O
I/O	GPIO_AD_13	9	10	NC	-
I/O	GPIO_AD_08	11	12	NC	-
I/O	I2C6_SCL	13	14	NC	-
I/O	I2C6_SDA	15	16	NC	-
P	GND	17	18	GND	P
I/O	LPSPI4_SDI	19	20	GPI0_AD_06	I/O
I/O	LPSPI4_SDO	21	22	GPIO_AD_26	I/O
I/O	LPSPI4_SCK	23	24	NC	-
I/O	LPUART1_TXD	25	26	NC	-
I/O	LPUART1_RXD	27	28	GND	P
I/O	LPSPI4_PCS0	29	30	NC	-
I/O	CTP_INT	31	32	NC	-
I/O	GPIO_AD_34	33	34	I2C_SDA	I/O
-	NC	35	36	I2C_SCL	I/O
-	NC	37	38	NC	-
I/O	OTG2_C_D_N	39	40	OTG2_C_D_P	I/O

10.5 RS485 – P3

PIN	SYMBOL	DESCRIPTION	NOTE
1	VCC	Power supply	
2	A	RS485 differential line A (Data+)	
3	B	RS485 differential line B (Data-)	
4	GND	Ground	

Note. Matched Riverdi accessory RVA-0104-1.25FF

10.6 RS232 – P1

PIN	SYMBOL	DESCRIPTION	NOTE
1	GND	Ground	
2	TXD	RS232 transmit data	
3	RXD	RS232 receive data	
4	RTS	Request to send (output)	
5	CTS	Clear to send (input)	

Note. Max available power for connected speaker 3W (4Ω).

Note 2. Matched Riverdi accessory RVA-0105-1.25FF

10.7 CAN1/CAN2 – P11/P15

PIN	SYMBOL	DESCRIPTION	NOTE
1	GND	Ground	
2	CANH	CAN bus high line	
3	CANL	CAN bus low line	
4	VDD_IN	Power supply	

Note. Matched Riverdi accessory RVA-0104-1.25FF

10.8 JTAG – J2

PIN	SYMBOL	DESCRIPTION	NOTE
1	VREF	Power supply VREF	
2	JTAG_TMS	JTAG TMS/SWDIO	
3	GND	Ground	
4	JTAG_TCK	JTAG TCK/SWDCLK	
5	GND	Ground	
6	JTAG_TDO	JTAG TDO	
7	NC	Not connected	
8	JTAG_TDI	JTAG TDI	
9	GND	Ground	
10	JTAG_nTRST	JTAG nRST	

10.9 MIPI CSI – J3

PIN	SYMBOL	DESCRIPTION	NOTE
1	GND	Ground	
2	CAM0_D0_N	MIPI CSI Data lane 0 (-)	
3	CAM0_D0_P	MIPI CSI Data lane 0 (+)	
4	GND	Ground	
5	CAM0_D1_N	MIPI CSI Data lane 1 (-)	
6	CAM0_D1_P	MIPI CSI Data lane 1 (+)	
7	GND	Ground	
8	CAM0_C_N	MIPI CSI Clock lane (-)	
9	CAM0_C_P	MIPI CSI Clock lane (+)	
10-16	GND	Ground	

17	C_GPIO	Camera GPIO	
18	GND	Ground	
19	GND	Ground	
20	SCL_CAM	I2C clock to camera	
21	SDA_CAM	I2C data to/from camera	
22	3V3_CAM	Camera power	

10.10 SPK R/SPK L – P7/P6

PIN	SYMBOL	DESCRIPTION	NOTE
1	AGND	Ground	
2	OUTR-/OUTL-	Right/left speaker negative output	
3	OUTR+/OUTL+	Right/left speaker positive output	
4	AGND	Ground	

Note. Matched Riverdi accessory RVA-0104-1.25FF

10.11 PDM – P9

PIN	SYMBOL	DESCRIPTION	NOTE
1	VDD	Power supply 3.3V	
2	GPIO1	PDM CLK	
3	GPIO2	PDM Data	
4	GND	Ground	

Note. Matched Riverdi accessory RVA-0104-1.25FF

10.12 Ethernet – T4

RJ45 1GB LAN

10.13 RiBUS – P14

PIN	SYMBOL	DESCRIPTION	NOTE
1	VDD	Power supply	
2	GND	Ground	
3	SPI_SCLK	SPI SCK signal	
4	MISO/ IO.1	SPI MISO signal / SPI Quad mode: SPI data line 1	
5	MOSI/ IO.0	SPI MOSI signal / SPI Quad mode: SPI data line 0	
6	CS	SPI chips select signal	
7	INT	Interrupt signal from device to the system, Active Low, internally 47k Pull UP	
8	RST/PD	Reset / Power down signal, Active Low, Internally Pulled UP 47k	
9	GPIO.0	GPIO.0	
10	DISP_AUDIO	Display audio in/out	
11	GPIO.1/IO.2	SPI Single/Dual mode: General purpose IO0. QSPI mode: SPI data line 2	
12	NC	Not connected	
13	NC	Not connected	
14	NC	Not connected	
15	NC	Not connected	
16	NC	Not connected	
17	BLVDD	Backlight power supply	
18	BLVDD	Backlight power supply	
19	BLGND	Backlight Ground, internally connected to GND	
20	BLGND	Backlight Ground, internally connected to GND	

Note. Matched Riverdi accessory FFC0520150.

11. DISPLAY SPECIFICATION

The TFT of the module applies Riverdi high brightness, IPS, 10.1” LVDS: RVT101HVLNWC00
The supported resolution of the display in this module is 1280*800.
For detailed information, please refer to datasheet of display.

12. CAPACITIVE TOUCH SCREEN PANEL SPECIFICATIONS

12.1 Mechanical characteristics

DESCRIPTION	SPECIFICATION	REMARK
Touch Panel Size	10.1 inch	aTouch
Outline Dimension of CTP	228.46 mm x 148.10 mm	
Product Thickness	2.35 mm	
Glass Thickness	1.1 mm	
CTP View Area	217.96 mm x 136.60 mm	
Sensor Active Area	216.96 mm x 135.60 mm	
Surface Hardness	7H	

12.2 Electrical characteristics

DESCRIPTION	SPECIFICATION	REMARK
Linearity	+/-1.5mm	
Controller	ILI2132A	
Resolution	1280 x 800	

13. INSPECTION

Standard acceptance/rejection criteria for TFT module according to document available here.

14. RELIABILITY TEST

NO.	TEST ITEM	TEST CONDITION	NOTE
1	High Temperature Storage	80°C/120 hours	Note 1
2	Low Temperature Storage	-30°C/120 hours	
3	High Temperature Operating	70°C/120 hours	
4	Low Temperature Operating	-20°C/120 hours	
5	High Temperature and High Humidity	40℃, 90%RH, 120Hrs	
6	Thermal Cycling Test (No operation)	-20℃ for 30min, 70℃ for 30 min. 100 cycles. Then test at room temperature after 1 hour	Note 2
7	Vibration Test	Frequency: 10 ÷ 55 Hz. Stroke: 1.5 mm. Sweep: 10Hz ÷ 55Hz ÷ 10 Hz. 2 hours for each direction of X, Y, Z (Total 6 hours)	

Note 1. Sample quantity for each test item is 5 ÷ 10 pcs.

Note 2. The device is kept at room temperature for 2 hours prior to starting the test

15. LEGAL INFORMATION

CE marking is usually obligatory only for a complete end product. Riverdi display modules are semi-finished goods which are used as inputs to become part of the finished products.

Therefore, Riverdi display modules are not CE marked.

This is not a standalone product. It was designed as an electronic component. It needs integration with a whole system to be fully functional.

Riverdi grants the guarantee for the proper operation of the goods for a period of 12 months from the date of possession of the goods. If in a consequence of this guaranteed execution the customer has received the defects-free item as replacement for the defective item, the effectiveness period of this guarantee shall start anew from the moment the customer receives the defects-free item.

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