TFT MODULE SPECIFICATION

RVT70HSMNWCA0 V1.1A

IPS MIPI 7.0” display datasheet
Rev. 1.0
2026-07-20

Riverdi Sp. z o.o.
Nowy Swiat 36
80-299 Gdansk, Poland
VAT ID: PL5842767153
Registration number (KRS): 0000923967

+48 587 703 116
Office hours: 9:00 to 17:30 CET (Mon-Fri)
contact@riverdi.com
riverdi.com

ITEM	CONTENTS	UNIT
LCD Type	TFT/Transmissive/Normally black/IPS	/
Size	7.0	Inch
Viewing Direction	Free	/
Outside Dimensions (W x H x D)	164.90 x 100.00 x 8.21	mm
Active Area (W x H)	154.21 x 85.92	mm
Pixel Pitch (W x H)	0.1506 x 0.1432	mm
Resolution	1024 (RGB) x 600	/
Brightness	800	cd/m^2
LCD Interface Type	MIPI	/
Color Depth	16.7 M	/
Pixel Arrangement	RGB Vertical Stripe	/
LCD Driver	EK79007AD3+EK73217BCGA	/
With/Without Touch	With Capacitive Touch Panel	/
CTP IC	ILI2132A	/
LCD Input Voltage	3.3	V
Weight	TBD	g

Note 1. RoHS3 compliant

Note 2. LCM weight tolerance: ± 5%.

1. REVISION RECORD

REV NO.	REV DATE	CONTENTS	REMARKS
1.0	2026-07-20	Initial release	

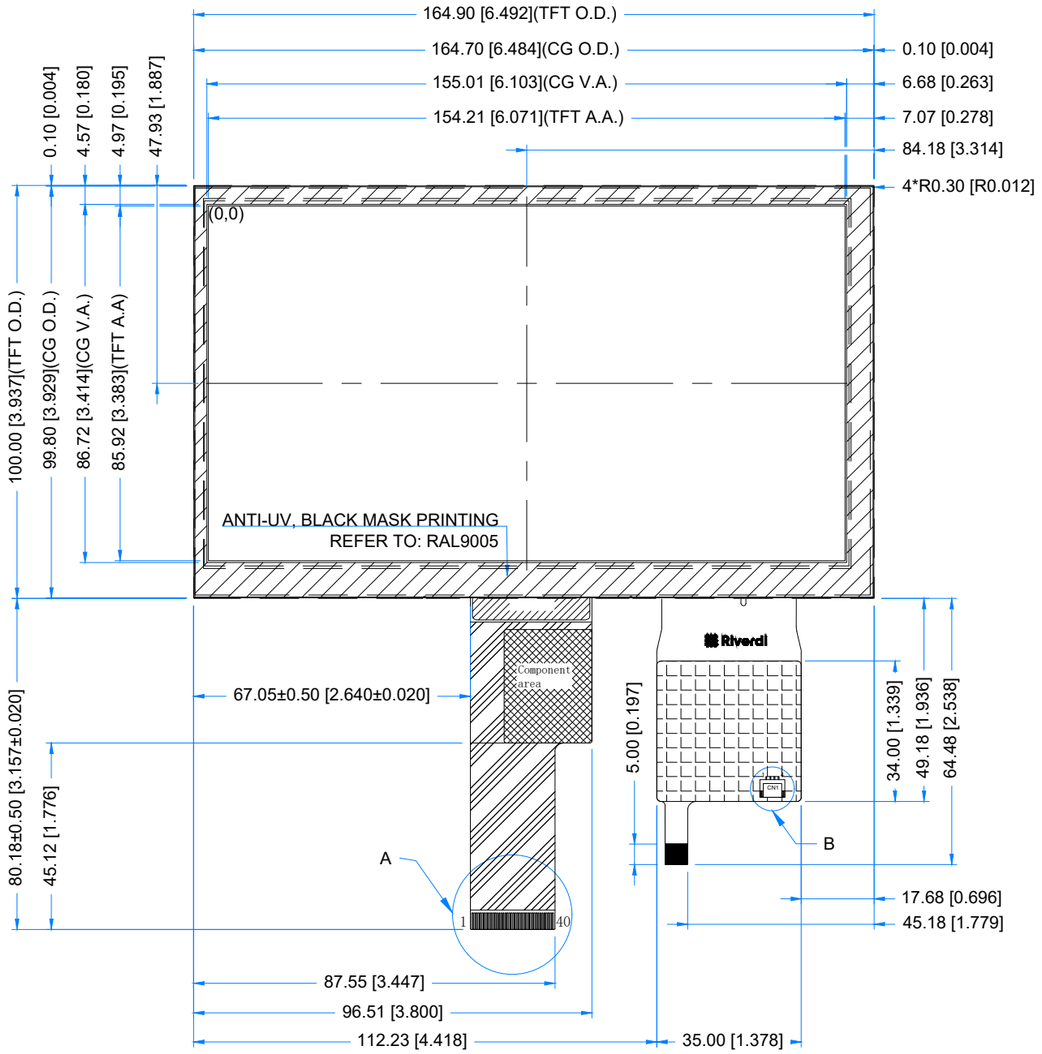
2. CONTENTS

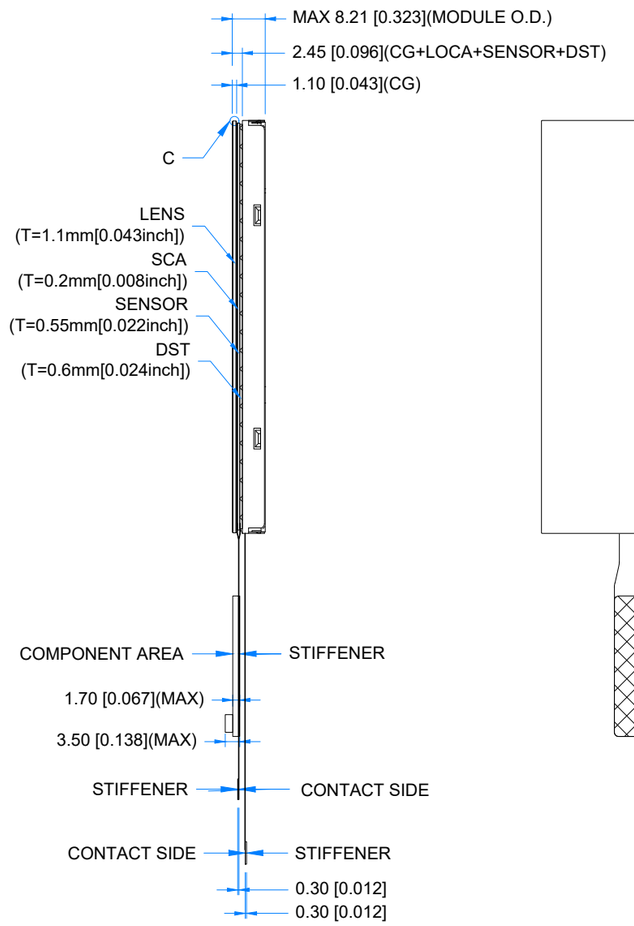
3. MODULE CLASSIFICATION INFORMATION

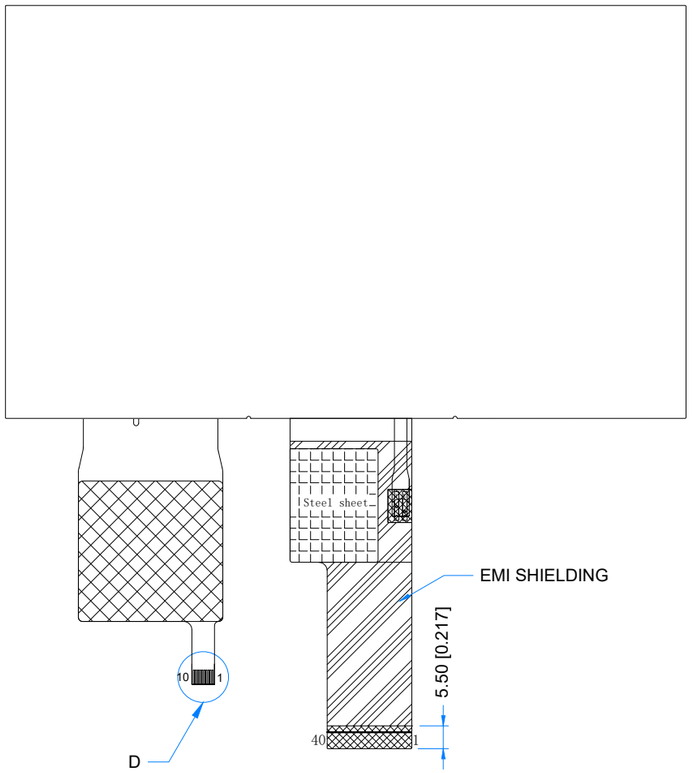
RV	T	70	H	S	M	N	W	C	A0	V1.1A
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.

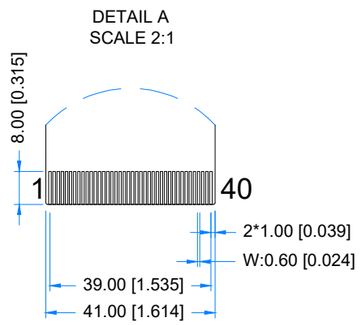
NO.	PARAMETER	SYMBOL
1.	BRAND	RV – Riverdi
2.	PRODUCT TYPE	T – TFT Standard
3.	DISPLAY SIZE	70 – 7.0”
4.	MODEL SERIAL NO.	H – High Brightness, IPS
5.	RESOLUTION	S – 1024 x 600 px
6.	INTERFACE	M – MIPI
7.	FRAME	N – Without Mounting Metal Frame
8.	BACKLIGHT TYPE	W – LED White
9.	TOUCH PANEL	C – With Capacitive Touch Panel
10.	VERSION	A0 – aTouch
11.	MODULE REVISION	V1.1A

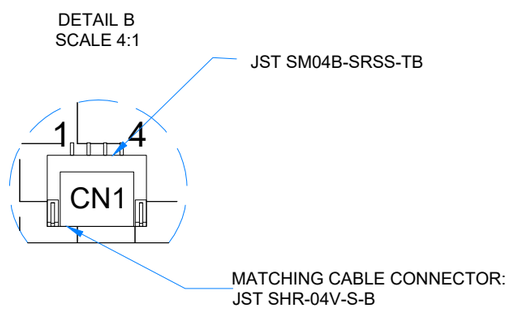
Revision:	Changes:	Date:
1.0	Initial Case	2026.03.19

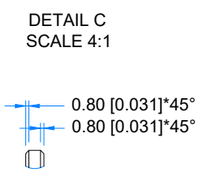


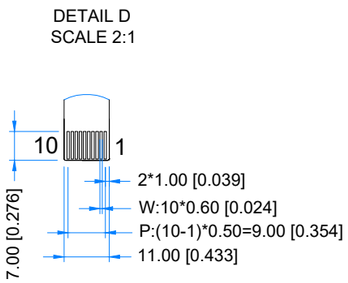


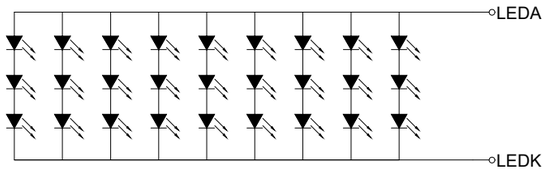












LED Diagram Circuit

TFT NOTES:
1. LCD TYPE: TRANSMISSIVE, NORMALLY BLACK,IPS
2. RESOLUTION: 1024x600
3. VIEWING ANGLE: FREE
4. IC CONTROLLER: EK79007AD3+EK73217BCGA
5. OPERATING VOLTAGE: 3.3V
6. INTERFACE: MIPI
7. BACKLIGHT: 27 LEDS WHITE, Vf = 8.4V-10.2V, If = 270mA

TP NOTES:
1. TP STRUCTURE: G+G
2. CG THICKNESS: 1.10 mm
3. DRIVER IC: ILI2132A
4. INTERFACE: USB /I2C
5. OPERATING VOLTAGE: 3.3V(CTP I2C); 5.0V(CTP USB)

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

PN: RVT70HSMNWCA0 V1.1A				
SN:				
DRAWN:	M.Stabinski	2026.03.19	1:1.49	
CHECKED:	M.Wierzbowski	2026.03.19	[mm]	
APPR:	M.Wierzbowski	2026.03.19	ISO A3	P. 1 of 1

5. ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT	REMARK
Analog supply voltage	V_{CI}	-0.3	+3.6	V	-
Backlight forward current	I_F	-	30		For each serial LED
Operating Temperature	T_{OP}	-20	70	°C	-
Storage Temperature	T_{ST}	-30	80	°C	-

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

6. ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Supply Voltage for Module	V_{DD}	3.0	3.3	3.6	V	-
Current drawn from module	I_{VDD}	90	110	120	mA	-
Logic Input Signal Voltage	V_{IH}	0.7*VDD	-	VDD	V	
	V_{IL}	0	-	0.3*VDD	V	
Touch Panel Supply Current	I_{CTP}	-	98	-	mA	Measured average current, touch panel active

7. TOUCH PANEL CHARACTERISTICS

PARAMETER	SYMBOL	VALUE	REMARK
Touch panel interface	-	I^2C	
I^2C 7-bit slave address	$ADDR_{7\text{-}bit}$	0x41	Standard I^2C address format
I^2C write address	$ADDR_W$	0x82	8-bit address format
I^2C read address	$ADDR_R$	0x83	8-bit address format

8. BACKLIGHT ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	NOTE
Backlight Driving Voltage	V_F	8.4	9.0	10.2	V	Notes 1, 2
Backlight Driving Current	I_F	-	270	-	mA	
Backlight Power Consumption	W_{BL}	-	2430	-	mW	
Backlight Lifetime	-	-	50.000	-	hours	Note 3

Note: The “Operating lifetime” is defined as the module brightness decrease to 50% original brightness at Ta=25 ℃ and IF=270 mA. The LED lifetime could be decreased if operating IF is larger than 270 mA. 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	-	28	45	ms	FIG 1.	4, 7
Contrast Ratio	Cr		600	800	-	---	FIG 2.	1, 7
Surface Luminance	Lv		-	800	-	cd/m2		2, 7
Uniformity	U	-	70	75	-	%	FIG 2.	3
Viewing Angle Range	θ	ø = 90°	80	85	-	deg	FIG 3.	6
		ø = 270°	80	85	-	deg		
		ø = 0°	80	85	-	deg		
		ø = 180°	80	85	-	deg		
CIE (x, y) Chromaticity	Rx	θ=0° ø=0° Ta=25 °C	0.581	0.611	0.641	-	FIG 2.	5,7
	Ry		0.295	0.325	0.355	-		
	Gx		0.306	0.336	0.366	-		
	Gy		0.513	0.543	0.573	-		
	Bx		0.118	0.148	0.178	-		
	By		0.127	0.157	0.187	-		
	Wx		0.291	0.321	0.351	-		
	Wy		0.315	0.345	0.375	-		
NTSC ratio	-		40	47	-	%		

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.

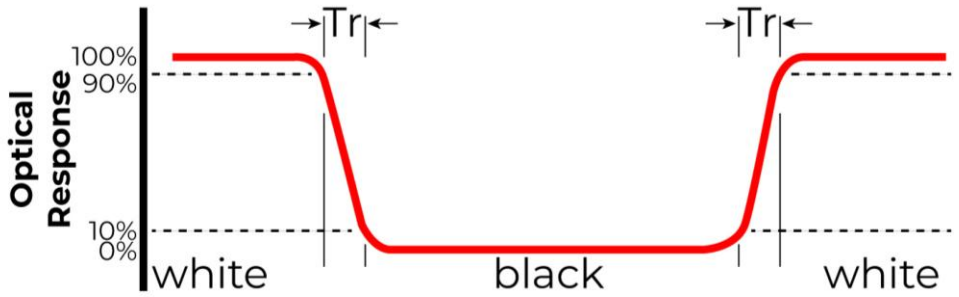
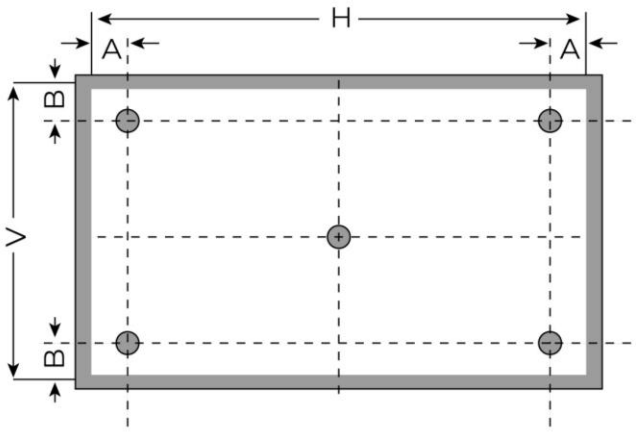


Figure 1. The definition of response time



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

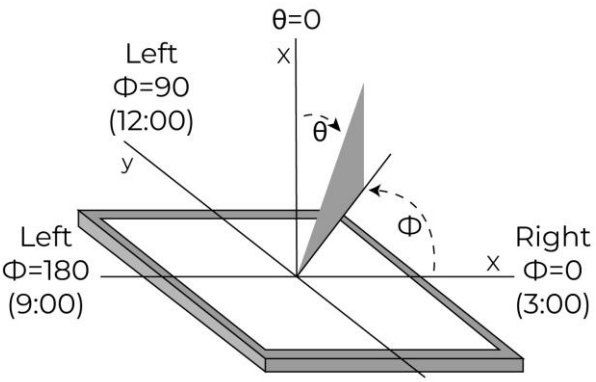


Figure 3. The definition of viewing angle

10. INTERFACES DESCRIPTION

10.1 TFT ASSIGNMENT

PIN	SYMBOL	I/O	DESCRIPTION
1	NC	-	No connection
2-3	VDD	P	Power for digital circuit
4	NC	-	No connection
5	RESET	-	Global reset pin
6	STBYB	P	Standby mode, Normally pulled high
7	GND	P	Ground
8	MIPI_D0N	I	MIPI-DSI Data differential signal input pins (Data lane 0)
9	MIPI_D0N	I	MIPI-DSI Data differential signal input pins (Data lane 0)
10	GND	P	Ground
11	MIPI_D1N	I	MIPI-DSI Data differential signal input pins (Data lane 1)
12	MIPI_D1N	I	MIPI-DSI Data differential signal input pins (Data lane 1)
13	GND	P	Ground
14	MIPI_D2N	I	MIPI-DSI Data differential signal input pins (Data lane 2)
15	MIPI_D2N	I	MIPI-DSI Data differential signal input pins (Data lane 2)
16	GND	P	Ground
17	MIPI_DCLK0N	I	MIPI-DSI CLOCK differential signal input pins
18	MIPI_DCLK0P	I	MIPI-DSI CLOCK differential signal input pins
19	GND	P	Ground
20	MIPI_D3N	I	MIPI-DSI Data differential signal input pins (Data lane 3)
21	MIPI_D3P	I	MIPI-DSI Data differential signal input pins (Data lane 3)
22	GND	P	Ground

23-24	NC	-	No connection
25	GND	P	Ground
26-29	NC	-	No connection
30	GND	P	Ground
31-32	LED-	P	LED Cathode
33	L/R	I	Horizontal Inversion
34	U/D	I	Vertical Inversion
35-38	NC	-	No connection
39-40	LED+	P	LED Anode

Note. U/D R/L Function description

SETTING OF SCAN CONTROL INPUT		SCANNING DIRECTION
U/D	L/R	
GND	DVDD	Up to down, left to right
DVDD	GND	Down to up, right to left
GND	GND	Up to down, right to left
DVDD	DVDD	Down to up, left to right

10.2 Touch Panel Connector

PIN	SYMBOL	DESCRIPTION
1	USB_GND	USB Ground
2	USB_VDD	USB Power for CTP, 5.0V
3	USB_D-	USB Data signal-
4	USB_D+	USB Data signal+
5	I2C_GND	I2C Ground

6	I2C_VDD	I2C Power for CTP 3.3V
7	I2C_RST	I2C Reset pin, active low
8	I2C_SCL	I2C Clock input
9	I2C_INT	I2C Interrupt signal from CTP, active low
10	I2C_SDA	I2C Data signal

10.3 CN1 assignment

PIN	SYMBOL	DESCRIPTION
1	USB_VDD	USB_Power for CTP, DC 5.0V
2	USB_D-	USB_Data signal -
3	USB_D+	USB_Data signal +
4	USB_GND	USB_Ground

11. TIMING CHART

11.1 Timing Characteristic

11.1.1 DE Mode

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
DCLK frequency @Frame rate=60HZ	fclk	40.8	51.2	67.2	MHz
Horizontal display area	Thd		1024		DCLK
HSYNC period time	Th	1114	1344	1400	DCLK
HSYNC blanking	Thb+thfp	90	320	376	DCLK
Vertical display area	Tvd		600		H
VSYNC period time	Tv	610	635	800	H
VSYNC blanking	Tvb+tvfp	10	35	200	H

11.1.2 HV Mode (Horizontal input timing)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
DCLK frequency @Frame rate=60Hz	Fclk	44.9	51.2	63	MHz
Horizontal display area	Thd		1024		DCLK
1 Horizontal line	Th	1200	1344	1400	DCLK
HSYNC Pulse Width	Thpw	1	-	140	DCLK
HSYNC back porch	Thbp	160	160	160	DCLK
HSYNC front porch	Thfp	16	160	216	DCLK

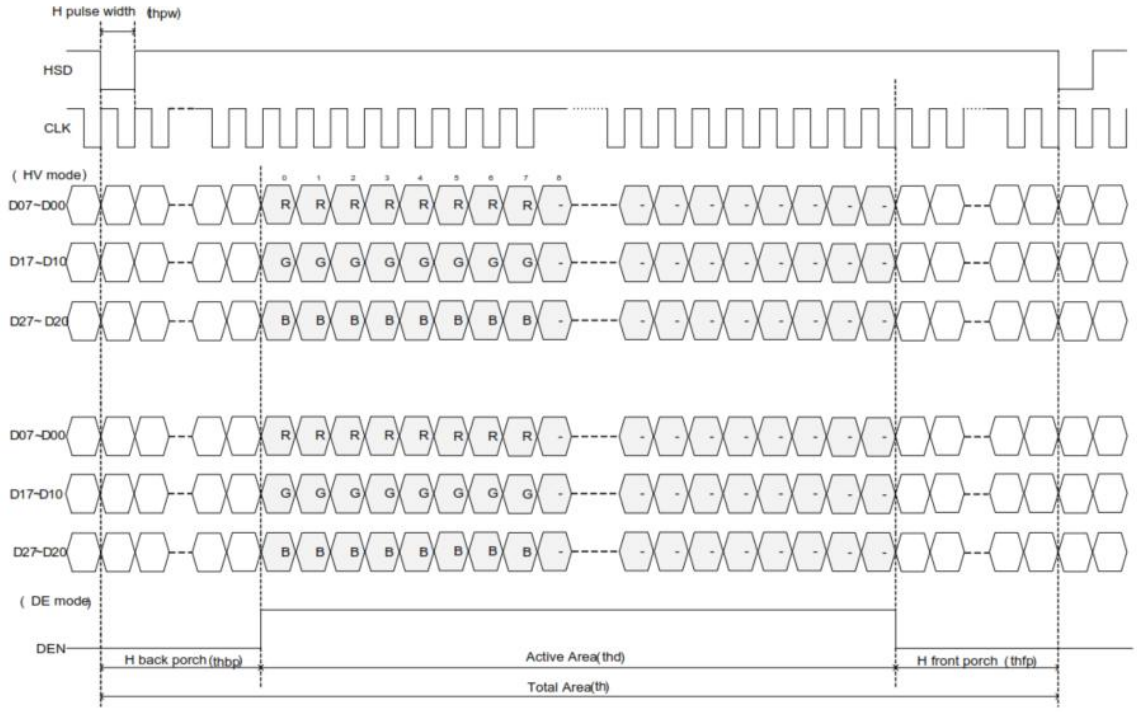
11.1.3 HV Mode (Vertical input timing)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Vertical display area	Tvd		600		H
1 VSYNC period time	Tv	624	635	750	H

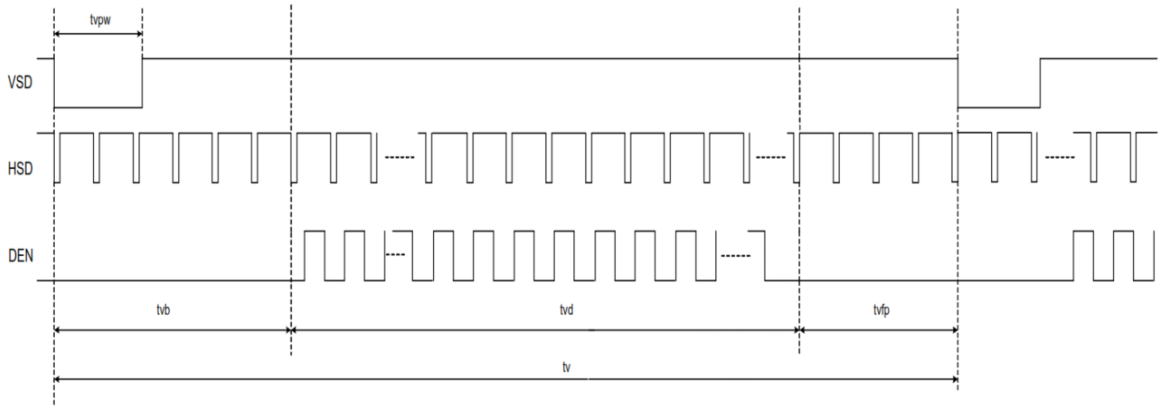
VSYNC Pulse Width	Tvpw	1	-	20	H
VSYNC back porch	Tvbp	23	23	23	H
VSYNC front porch	Tvfp	1	12	127	H

11.2 Input timing diagram

Horizontal input timing



Vertical input timing

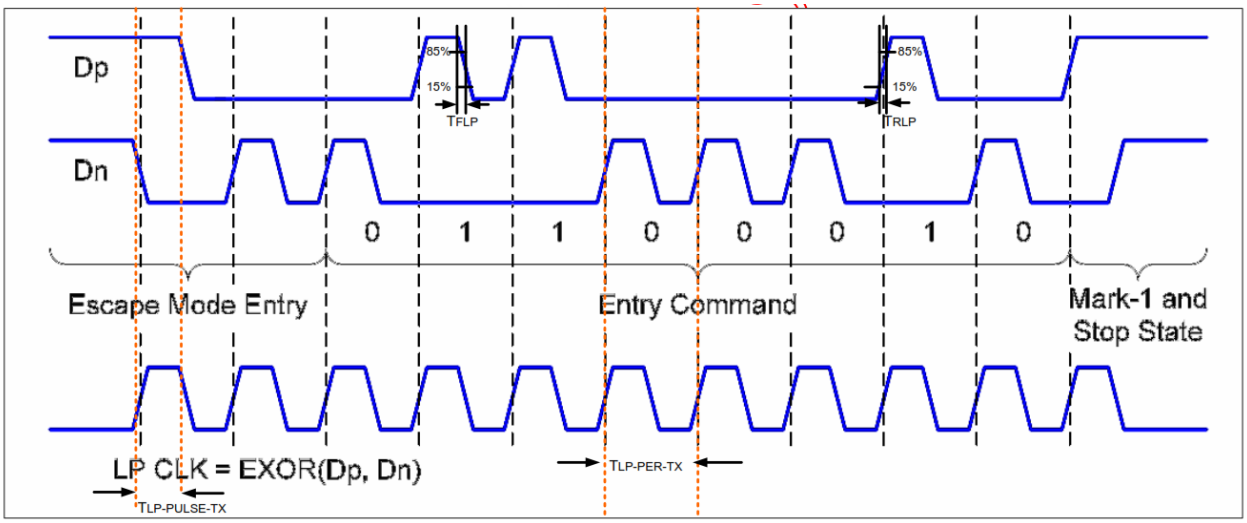


11.3 MIPI-DSI timings

The MIPI display we are using is together with THS_ZERO time. Unfortunately, Driver MIPI does not meet the minimum value allowed by the MIPI standard. If the THS_ZERO time is in the lower range, the Driver may not initialize correctly. This results in "jumping" of the image. For correct operation of the display, it is necessary to modify the THS_ZERO parameter in the DSI-PHY controller. The default value of THS_ZERO should be changed to a value of about 213 ns.

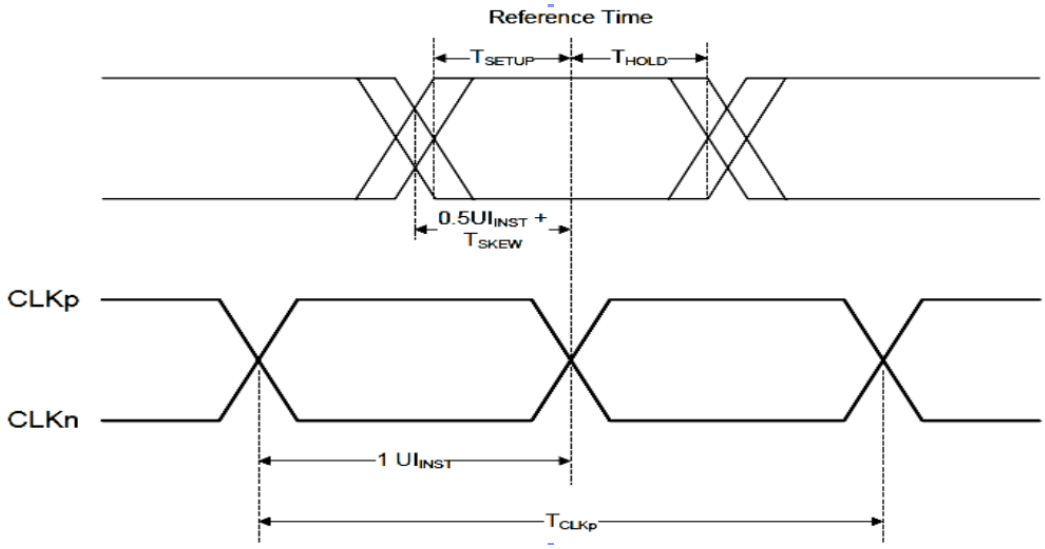
11.4 Low power transmitter AC characteristic

PARAMETER		SYMBOL	MIN	TYP	MAX	UNIT
15%~85% rising time and falling time		T_{RLP}/T_{FLP}	-	-	25	ns
30%~85% rising time and falling time		T_{REOT}	-	-	35	
Pulse width of LP exclusive -OR clock	First LP EXOR clock pulse after STOP state or LAST pulse before stop state	$T_{LP-PULSE-TX}$	40	-	-	
	All other pulses		20	-	-	
Period of the LP EXOR clock		$T_{LP-PER-TX}$	90	-	-	mV/ns
Slew Rate @CLOAD =0pF		$\delta V / \delta t_{SR}$	30	-	500	
Slew Rate @CLOAD =5pF			30	-	200	
Slew Rate @CLOAD =20pF			30	-	150	
Slew Rate @CLOAD =70pF			30	-	100	
Load Capacitance		T_{RLP}	-	-	70	pF



11.5 High speed transmission

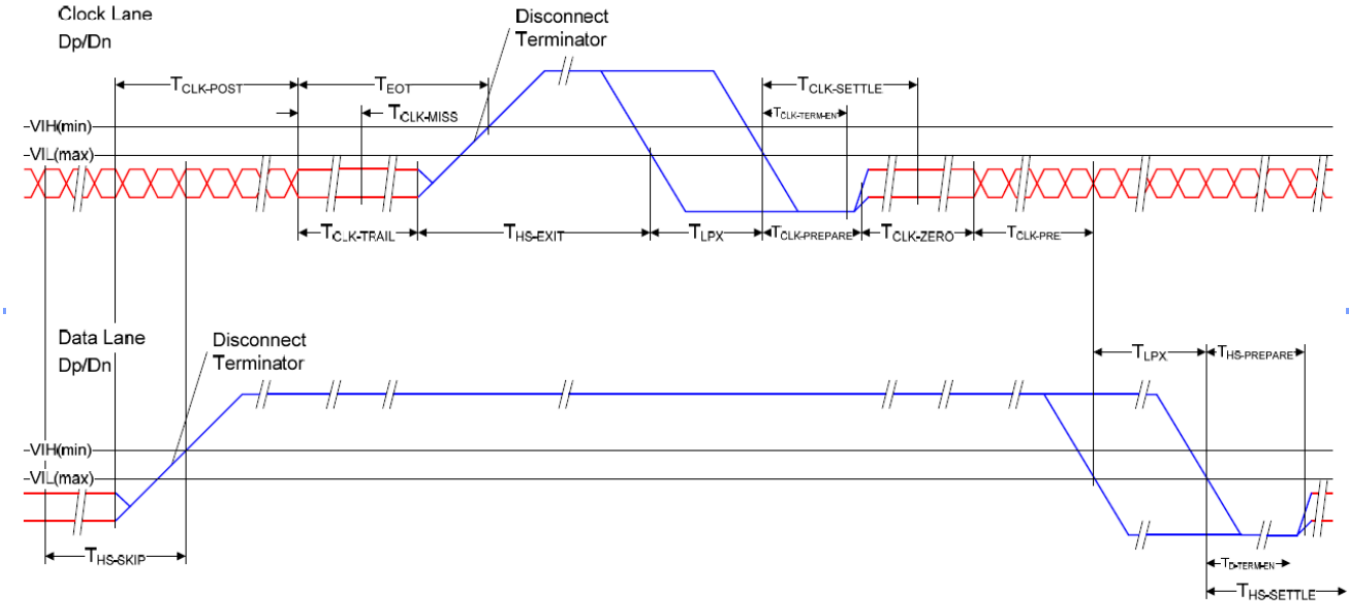
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
UI instantaneous	UI_{INST}	2	-	12.5	ns
Data to Clock Skew (measured at transmitter)	$T_{SKEW(TX)}$	-0.15	-	0.15	UI_{INST}
Data to Clock Setup time (Measured at receiver)	$T_{SETUP(RX)}$	0.15	-	-	
Data to Clock Hold time (Measured at receiver)	$T_{HOLD(RX)}$	0.15	-		
20%~80% rising time and falling time	T_R,T_F	150	-	-	ps



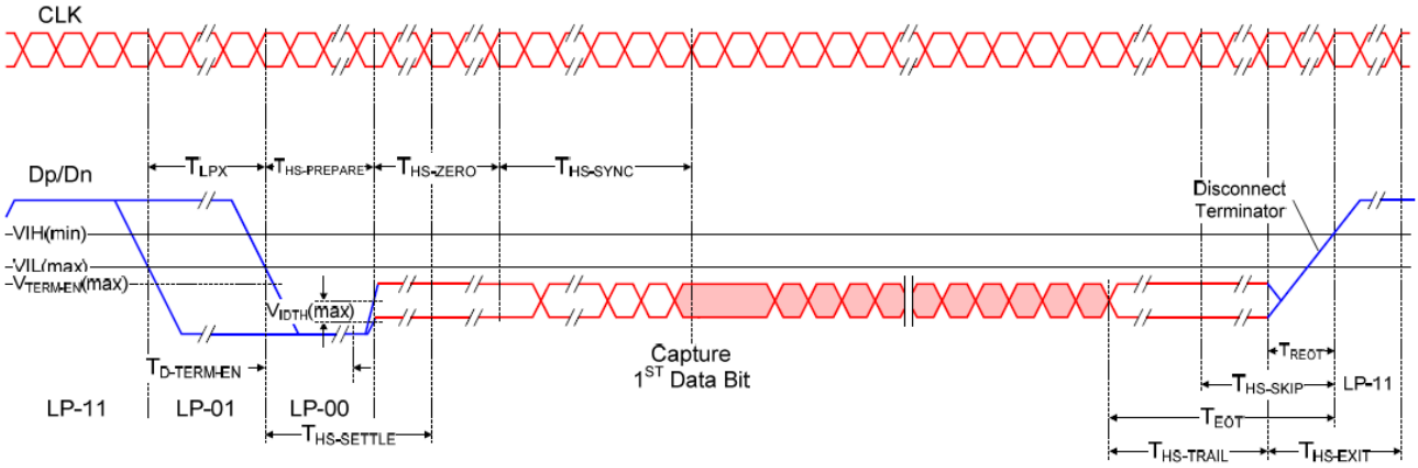
11.6 High speed clock transmission

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Time that the transmitter shall continue sending HS clock after the last associated Data Lane has transitioned to LP mode	$T_{CLK-POST}$	60+52UI	-	-	ns
Detection time that the clock has stopped toggling	$T_{CLK-MISS}$	-	-	60	
Time to drive LP-00 to prepare for HS clock transmission	$T_{CLK-PREPARE}$	38	-	95	
Minimum lead HS-0 drive period before starting clock	$T_{CLK-PREPARE+}$ $T_{CLK-ZERO}$	300	-	-	
Time to enable Clock Lane receiver line termination measured from when Dn cross $V_{IL,MAX}$	$T_{HS-TERM-EN}$	-	-	38	
Minimum time that the HS clock must be prior to any associated data lane beginning the transmission from LP to HS mode	$T_{CLK-PRE}$	8	-	-	UI

Time to drive HS differential state after last payload clock bit of a HS transmission burst	$T_{CLK-TRAIL}$	60	-	-	ns



11.7 High speed data transmission in bursts



12. INITIALIZATION CODE

```
DCS_Short_Write_NP(0x01); //Software Reset
Delay (120);
Generic_Short_Write_1P(0xB2,0x70); //Set Channels  2LANE:0x50; 3LANE:0x60; 4LANE:0x70
Generic_Short_Write_1P(0x80,0x4B); //Set Gamma voltage
Generic_Short_Write_1P(0x81,0xFF); //Set Gamma voltage
Generic_Short_Write_1P(0x82,0x1A); //Set Gamma voltage
Generic_Short_Write_1P(0x83,0x88); //Set Gamma voltage
Generic_Short_Write_1P(0x84,0x8F); //Set Gamma voltage
Generic_Short_Write_1P(0x85,0x35); //Set Gamma voltage
Generic_Short_Write_1P(0x86,0xB0); //Set Gamma voltage
DCS_Short_Write_NP(0x11); //Exit Sleep Mode
Delay (120);
DCS_Short_Write_NP(0x29); //Display on; 0x28 is display off
Delay (20);
```

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	A,B,C,D,E
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	+60℃, 90%RH, 120hrs	
6	Thermal Cycling Test (No operation)	-20℃/30 min ~ +70℃/30 min for a total 10 cycles, Start with cold temperature and end with high temperature.	A,B,C,D,E
7	Vibration Test	Sweep:10Hz~55Hz~10Hz 2G 2 hours for each direction of X. Y. Z. (6 hours for total)	A,B,C,D,E
8	Package Vibration Test	Random Vibration : 0.015G*G/Hz from 5-200HZ, -6dB/Octave from 200-500HZ 2 hours for each direction of X. Y. Z. (6 hours for total)	A,B,C,D,E
9	Package Drop Test	Height: 60 cm 1 corner, 3 edges, 6 surfaces	A,B,C,D,E
10	ESD	Contact=+/-4KV, Air=+/-8KV,(R=330R,C=150pF), 1 sec,9point,10times/point;	A,B,C,D,E

Notes

A. LCM each function is OK.
B. LCM appearance inspection without abnormalities (Including scratch, damage, corrosion and serious deformation)
C. LCM brightness above the Min. value of Spec.
D. Luminance uniformity above the Min. value of Spec.
E. Color chromaticity within tolerance range.

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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16. CONTACT

Your Success is Our Priority

Stuck on a technical challenge? Need expert guidance?

Our dedicated support team is just a message away.

Contact us at
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We're here to ensure your project's success, every step of the way!