



TFT MODULE SPECIFICATION

RVT50HQHNWN00 V2.0A

HB, IPS, HDMI 5.0" display datasheet
Rev. 1.0
2026-08-02

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ITEM	CONTENTS	UNIT
LCD Type	TFT/Transmissive/Normally black/IPS	/
Size	5.0	Inch
Viewing Direction	Free	/
Outside Dimensions (W x H x D)	120.70 x 75.80 x 19.61	mm
Active Area (W x H)	108.00 x 64.80	mm
Pixel Pitch (W x H)	0.135 x 0.135	mm
Resolution	800 x 480 (RGB)	/
Brightness	1000	cd/m ²
Video Interface	HDMI	/
Color Depth	16.7 M	/
Pixel Arrangement	RGB Vertical Stripe	/
Controller of the Main Board	TFP401APZPR	/
With/Without Touch	Without Touch Panel	/
Power Supply	Power Jack (DC 7.0-36.0V), USB-C (5.0V)	V
Weight	TBD	g

Note 1. RoHS3 compliant

Note 2. LCM weight tolerance: $\pm 5\%$.

1. REVISION RECORD

REV NO.	REV DATE	CONTENTS	REMARKS
1.0	2026-08-02	Initial release	

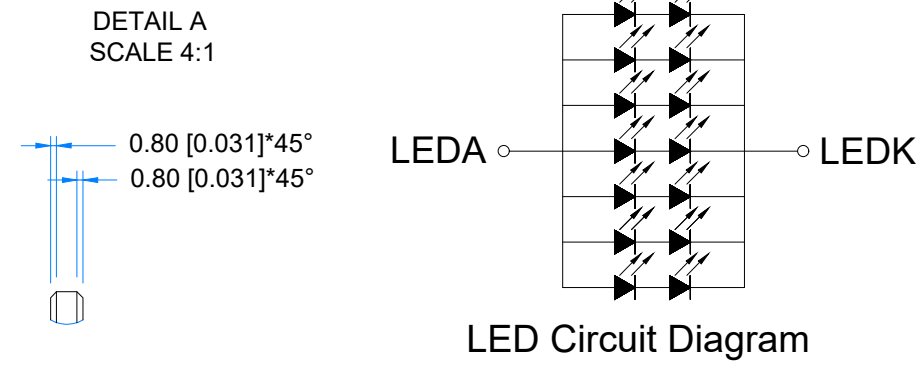
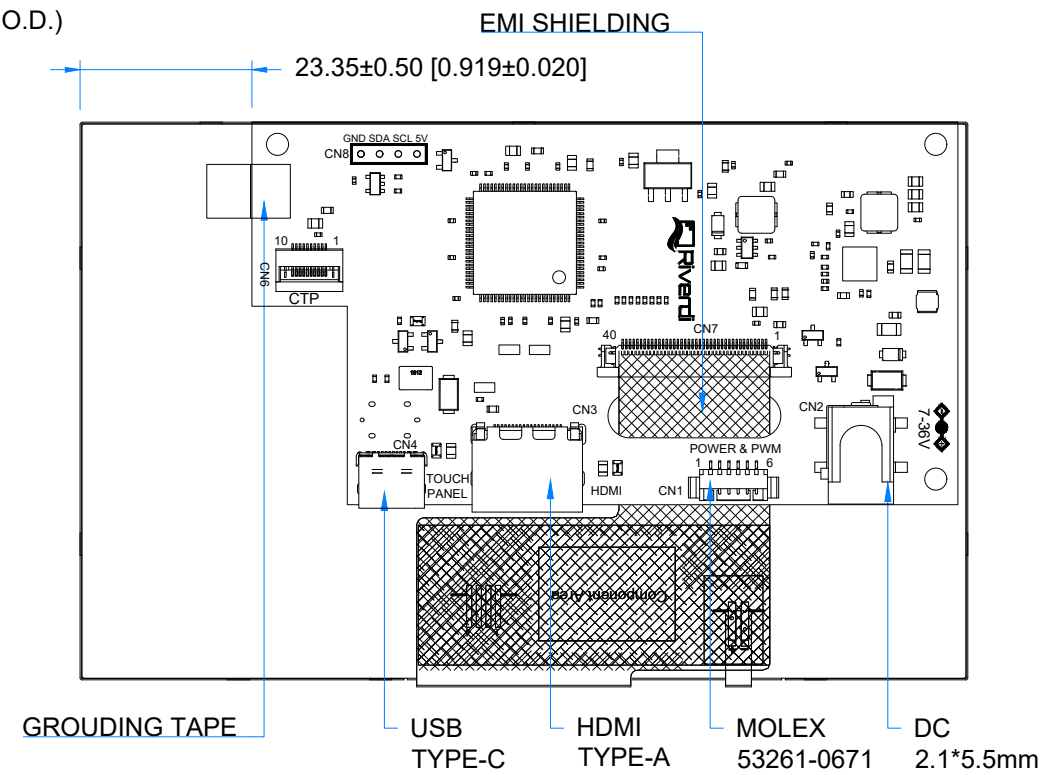
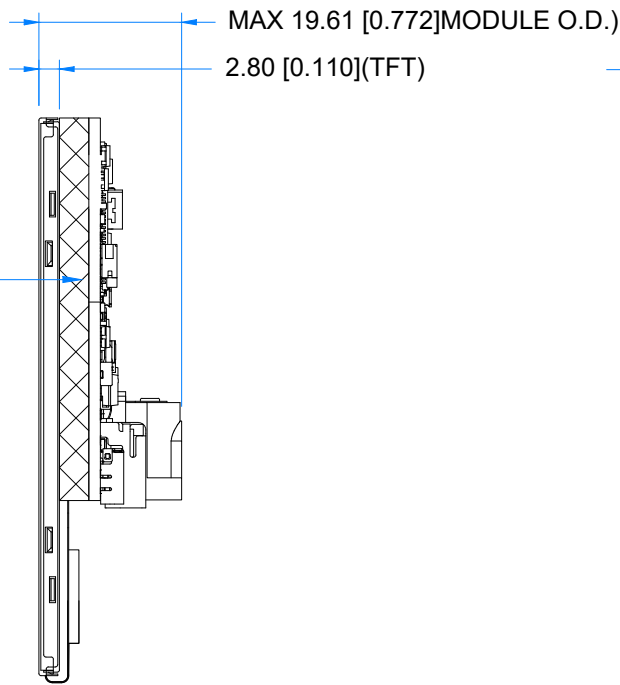
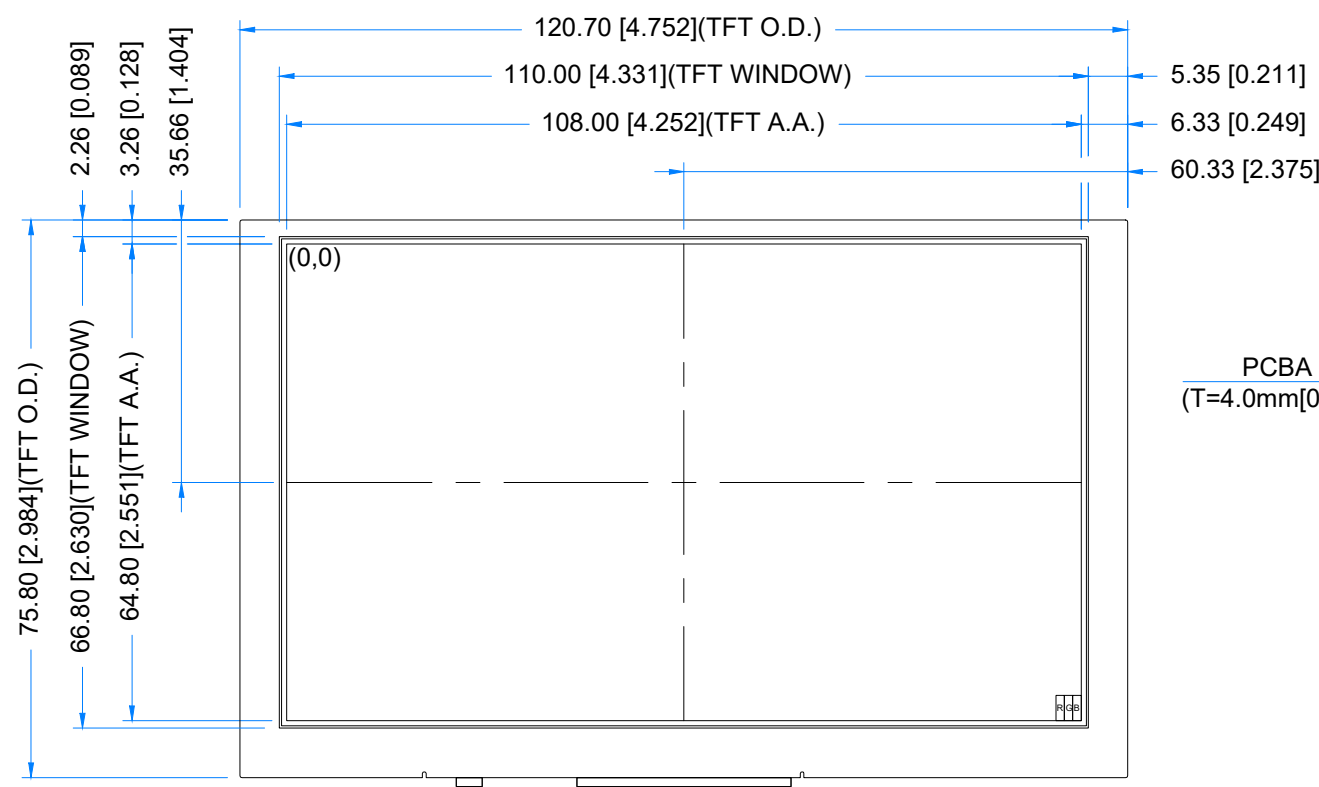
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3. MODULE CLASSIFICATION INFORMATION

RV	T	50	H	Q	H	N	W	N	00	V2.0A
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	50 – 5.0”
4.	MODEL SERIAL NO.	H – High Brightness, IPS
5.	RESOLUTION	Q – 800 x 480 px
6.	INTERFACE	H – HDMI
7.	FRAME	N – Without Mounting Metal Frame
8.	BACKLIGHT TYPE	W – LED White
9.	TOUCH PANEL	N – Without Touch Panel
10.	VERSION	00 – version
11.	MODULE REVISION	V2.0A



TFT NOTES:

1. LCD TYPE: TRANSMISSIVE, NORMALLY BLACK, IPS
2. RESOLUTION: 800x480
3. VIEWING ANGLE: FREE
4. CONTROLLER IC OF MAIN BOARD: TFP401APZPR
5. VIDEO INTERFACE: HDMI
6. POWER SUPPLY: POWER JACK (7.0-36.0V); USB-C.

GENERAL NOTES:

1. SURFACE LUMINANCE: 800cd/m²
2. OPERATING TEMPERATURE: -20°C ~ 70°C
3. STORAGE TEMPERATURE: -30°C ~ 80°C
4. WITHOUT INDIVIDUAL TOLERANCE: ±0.3mm
5. RoHS COMPLIANT

5. ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Supply Voltage DC Jack	V_{DD}	-0.5	36.0	V
Supply Voltage USB-C	$V_{DD-USB-C}$	0	5.5	
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 DC Jack	V_{DD}	7.0	12.0	36.0	V	Note 1
Supply Voltage USB-C	$V_{DD-USB-C}$	4.7	5.0	5.5	V	Note 2
PWM Logic Input Voltage	Low voltage	I_{VILPWM}	0	-	0.4	V
	High voltage	I_{VIHPWM}	1	-	V_{DD}	V
EN Logic Input Voltage	Low voltage	I_{VILEN}	0	-	1.2	V
	High voltage	I_{VILEN}	1.35	-	V_{DD}	V
PWM Frequency		1	10	100	kHz	

Note 1. The module can be powered via DC jack or CN1 (POWER&PWM) or USB-C

The VDD pin of CN1 is connected directly to the DC jack. Please do not power the module via DC Jack and CN1 at the same time.

Note 2. When DC jack and USB-C (or CN1 and USB-C) are both powered, DC jack (or CN1) is the main power supply.

PARAMETER	SYMBOL	BL 0%	BL 50%	BL 100%	UNIT	REMARK
Current Drawn from VDD When VEN is active high	I_{VDD}	230	350	500	mA	VDD=7.0V
		145	220	300		VDD=12.0V
		90	130	170		VDD=24.0V
		75	100	130		VDD=36.0V
Current Drawn from VDD when VEN is low	I_{VDD}	-	0.65	-	mA	VDD=7.0V
		-	1.20	-		VDD=12.0V
		-	2.60	-		VDD=24.0V
		-	3.90	-		VDD=36.0V
Current drawn from VDDUSBC	$I_{VDD-USB-C}$	260	410	630	mA	Note 3

7. BACKLIGHT ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	NOTE
Backlight Power Consumption	W_{BL}	-	1680	-	mW	
Backlight Lifetime	-	-	50,000	-	hours	Note 3

Note 1. Operating life means the period in which the LED brightness goes down to 50% of the initial brightness. Typical operating lifetime is the estimated parameter.

8. ELECTRO-OPTICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT	RMK	NOTE
Response Time	Tr+Tf	$\theta=0^\circ$ $\phi=0^\circ$ Ta=25 °C	-	30	40	ms	FIG 2.	4, 7
Contrast Ratio	Cr		800	1000	-	---	FIG 3.	1, 7
Surface Luminance	Lv		-	1000	-	cd/m ²		2, 7
Uniformity	U	-	75	80	-	%	FIG 3.	3
Viewing Angle Range	θ	$\phi = 90^\circ$	70	80	-	deg	FIG 4.	6
		$\phi = 270^\circ$	70	80	-	deg		
		$\phi = 0^\circ$	70	80	-	deg		
		$\phi = 180^\circ$	70	80	-	deg		
CIE (x, y) Chromaticity	Rx	$\theta=0^\circ$ $\phi=0^\circ$ Ta=25 °C	0.285	0.315	0.345	-	FIG 3.	5,7
	Ry		0.311	0.341	0.371	-		
	Gx		0.54	0.584	0.614	-		
	Gy		0.320	0.350	0.380	-		
	Bx		0.335	0.365	0.395	-		
	By		0.542	0.572	0.602	-		
	Wx		0.125	0.155	0.185	-		
	Wy		0.85	0.115	0.145	-		

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.

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

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, T_r) and from black to white (Decay Time, T_f). 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.

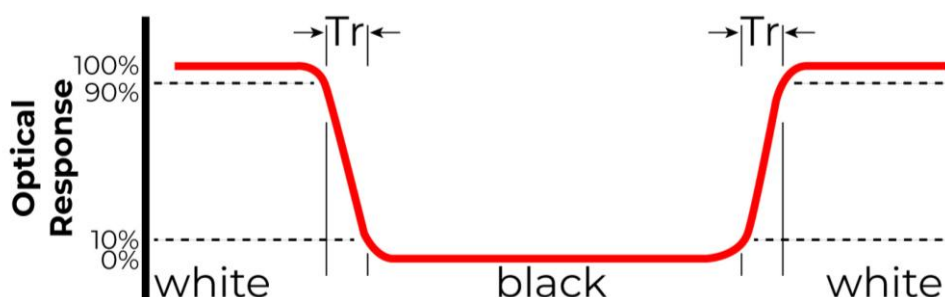


Figure 2. The definition of response time

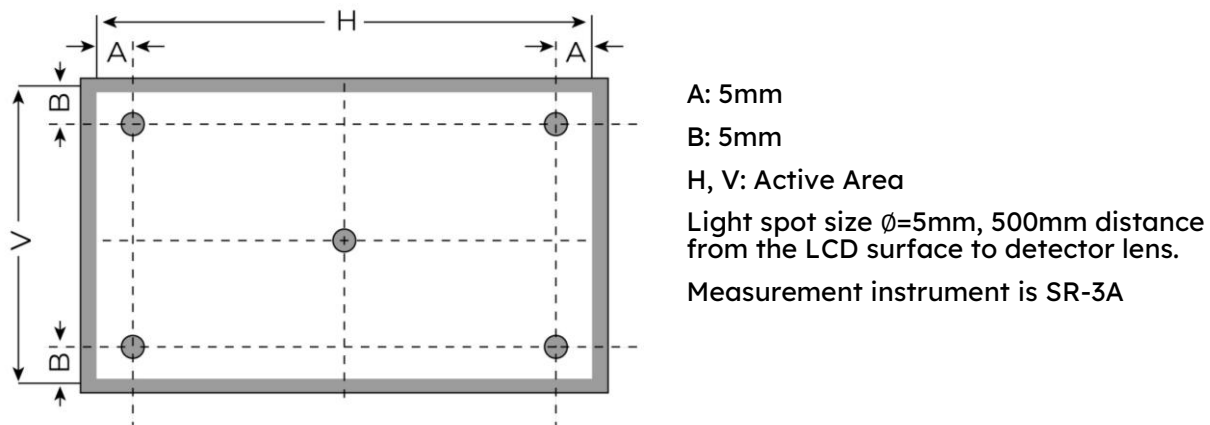


Figure 3. Measuring method for Contrast ratio, surface luminance, Luminance uniformity, CIE (x, y) chromaticity

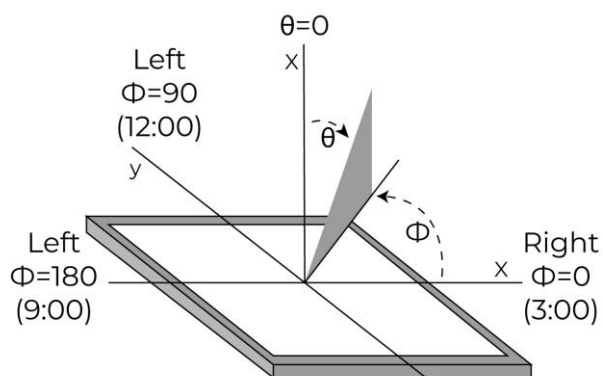


Figure 4. The definition of viewing angle

9. INTERFACES DESCRIPTION

9.1 DC JACK

The DC jack power connector features 5.5 mm OD; 2.1mm ID. The input voltage ranges from 7.0V to 36.0V.

9.2 BACKLIGHT PWM & POWER

PIN	SYMBOL	DESCRIPTION	Note
1	VDD	Power supply (7.0V- 36.0 V)	Note 1
2	VDD	Power supply (7.0V- 36.0 V)	Note 1
3	PWM	PWM input	Note 2
4	EN	Power enable, active high (Default pulled up to VDD)	Note 3
5	GND	Ground	
6	GND	Ground	

Note 1. Alternative power supply.

Note 2. 100% PWM duty cycle (logic 1) corresponds to maximum brightness

0% PWM duty cycle (logic 0) corresponds to minimum brightness

Note 3. The module can't be switched off via EN pin if USB-C is the only power input.

Note 4. Matched Riverdi power supply cable: RVA-0106M-1.25FF-1.

9.3 HDMI

PIN	SYMBOL	DESCRIPTION
1	TMDS Data 2+	TMDS differential signal 2+
2	TMDS Data2 Shield	Data2 shielding ground
3	TMDS Data 2-	TMDS differential signal 2-
4	TMDS Data 1+	TMDS differential signal 1+
5	TMDS Data1 Shield	Data1 shielding ground
6	TMDS Data 1-	TMDS differential signal 1-
7	TMDS Data 0+	TMDS differential signal 0+
8	TMDS Data 0 Shield	Data0 shielding ground
9	TMDS Data 0-	TMDS differential signal 0-
10	TMDS Data Clock+	TMDS differential signal Clock+
11	TMDS Data Shield	Clock shielding ground
12	TMDS Data Clock-	TMDS differential signal Clock-
13	CEC	Electronic protocol CEC
14	NC	No Connection
15	SCL	I ² C clock Line
16	SDA	I ² C data Line
17	DDC/CEC GND	Data display channel
18	+5V	HDMI 5V
19	Hot Plug Detect	Hot plug Detect

This is a HDMI signal source connector.

The horizontal HDMI is mounted by default. If you need to change it to the vertical HDMI connector, please contact: contact@riverdi.com

9.4 USB-C

PIN	SYMBOL	DESCRIPTION
A1/B12	USB_GND	USB_ Ground
A4/B9	V_BUS	V_Bus Power; 5V
A5	CC1	Configuration channel
A6	DP1	USB differential pair, position 1, positive
A7	DN1	USB differential pair, position 1, negative
A8	SBU1	Sideband use
B5	CC2	Configuration channel
B6	DP2	USB differential pair, position 2, positive
B7	DN2	USB differential pair, position 2, negative
B8	SBU2	Configuration channel
A9/B4	V_BUS	V_Bus Power; 5V
A12/B1	USB_GND	USB_Ground

Despite the function of connecting touch panel, USB-C connector can also be used as a power supply. However, the module can't be switched off via EN pin if USB-C is the only power input. The horizontal USB-C connector (CN4) is mounted by default. Vertical USB-C connector can be mounted through CN5. If you need to change the type of USB-C connector, please contact: contact@riverdi.com

10. INSPECTION

Standard acceptance/rejection criteria for TFT module according to document available [here](#).

11. 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°C , 90%RH, 120hrs	
6	Thermal Cycling Test (No operation)	-20°C /30 min ~ +70°C /30 min for a total 5 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
8	Package Drop Test	Height: 60 cm 1 corner, 3 edges, 6 surfaces	A,B,C,D,E
9	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.

12. 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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We're here to ensure your project's success, every step of the way!