



产 品 规 格 书
PRODUCT SPECIFICATION

产品名称 (Model Name) TFT-LCD Module 产品型号 (Part Number) STI27FHD01-ELED20			
项目 (Item)	拟制 (Prepared)	审核 (Checked)	批准 (Approved)
签名 (Signature)			
日期 (Date)			
备注 (Note)			
客户 (Customer):			
签名 (Signature):			
日期 (Date):			

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V.1	2018/02/27		外形尺寸缩小	

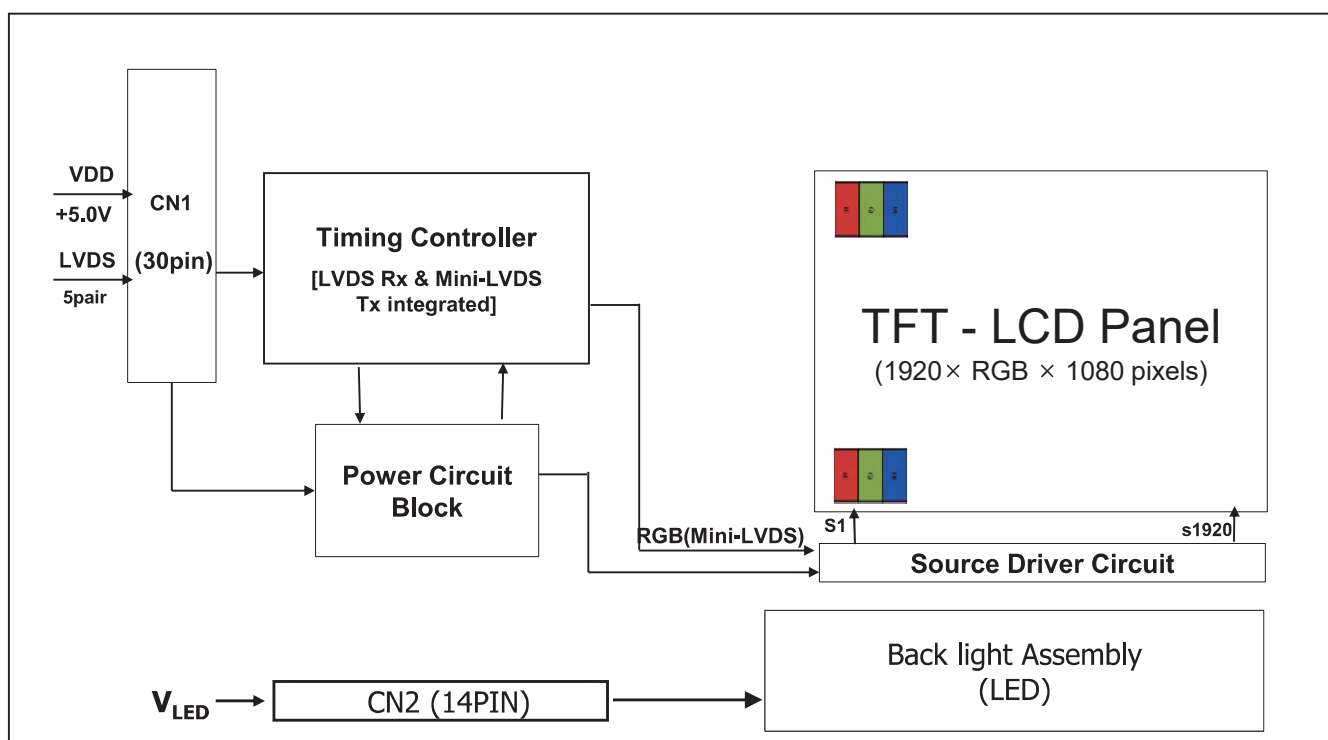
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1.0 GENERAL DESCRIPTION

1.1 Introduction

STI27FHD01-ELED20 is a color active matrix TFT LCD module using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. This module has a 27 inch diagonally measured active area with FHD resolutions (1920 horizontal by 1080 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this module can display 16.7M colors. The TFT-LCD panel used for this module is adapted for a low reflection and higher color type.



1.2 Features

- LVDS Interface with 2 pixel / clock
6-bit (Hi-FRC) color depth, display 16.7M B colors
- Compatible with Color Gamut 72%@NTSC(CIE 1931) and 83%@NTSC(CIE 1976)
- High luminance and contrast ratio, low reflection and wide viewing angle
- DE (Data Enable) only
- RoHS/Halogen Free
- Gamma Correction
- Reverse type

1.3 Application

- Desktop Type of PC & Workstation Use
- Slim-Size Display for Stand-alone Monitor
- Display Terminals for Control System
- Monitors for Process Controller

1.4 General Specification

The followings are general specifications at the model STI27FHD01-ELED20.

<Table 1. General Specifications>

Items	Specification	Unit	Note
Active Screen Size	27"	inch	
Number of Pixels	1920 X 1080	Pixel	
Display Area	597.888 (H) x 336.312 (V)	mm	
Pixel Pitch	0.3114 (H) x 0.3114 (V)	mm	
Bezel Opening	600.0(H) x 338.4(V)	mm	
Outline Dimension	628.0(H) x 364.4(V) x 18.5(D)	mm	
Display Colors	8-bit, 16.7 M colors	Colors	
Display Operation Mode	Normally Black		
Pixel Arrangement	RGB vertical stripe		
Luminance, White	2000 (Center 1 point, Typ.)	cd/m ²	
Power Consumption	Total = 80.0 (Typ.)	W	LCD Open Cell = 3.2 W(Typ.) Backlight = 76.8 W(Typ.)
Surface Treatment	Anti-Glare, 3H		Haze= 25%
Viewing Angle (CR>10)	+89/-89(H), +89/-89(V) Typ.		(CR≥10)

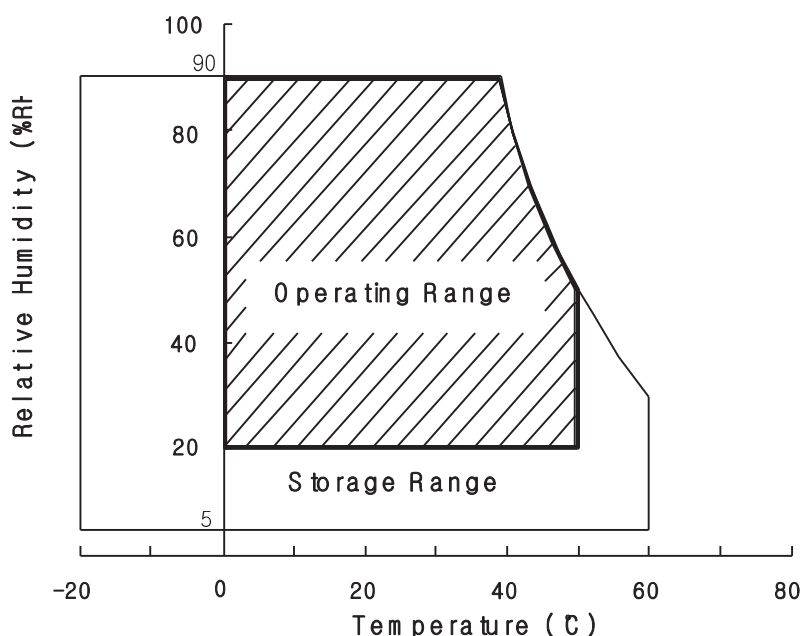
2.0 ABSOLUTE MAXIMUM RATINGS

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and current values are listed in Table 2.

< Table 2. Absolute Maximum Ratings > [VSS=GND=0V]

Parameter	Symbol	Min.	Max.	Unit	Remarks
Power Supply Voltage	V_{DD}	GND-0.3	6	V	Ta = 25 °C
Logic Supply Voltage	V_{IN}	VSS-0.3	$V_{DD}+0.3$	V	
Operating Temperature	T_{OP}	0	+50	°C	1)
Storage Temperature	T_{ST}	-20	+60	°C	1)

Note : 1) Temperature and relative humidity range are shown in the figure below.
Wet bulb temperature should be 39 °C max. and no condensation of water.



3.0 ELECTRICAL SPECIFICATIONS

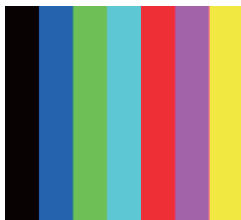
3.1 Electrical Specifications

< Table 3. Open Cell Electrical specifications >

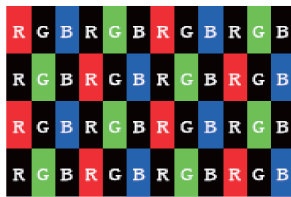
[Ta = 25 ± 2 °C]

Parameter		Min.	Typ.	Max.	Unit	Remarks
Power Supply Voltage	V _{DD}	4.5	5	5.5	V	Note1
Power Supply Current	I _{DD}	-	640	960	mA	
In-Rush Current	I _{RUSH}	-	-	4.0	A	Note 2
Permissible Input Ripple Voltage	V _{RF}	-	-	400	mV	Note1,3
High Level Differential Input Threshold Voltage	V _{IH}	+100	-	+300	mV	
Low Level Differential Input Threshold Voltage	V _{IL}	-300	-	-100	mV	
Differential input voltage	V _{ID}	200	-	600	mV	
Differential input common mode voltage	V _{cm}	1.0	1.2	1.5		V _{IH} =100mV, V _{IL} =-100mV
Power Consumption	P _D	-	3.2	5.3	W	

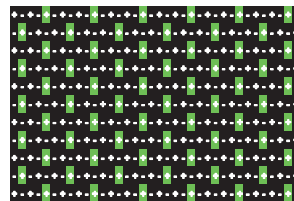
- Notes : 1. The supply voltage is measured and specified at the interface connector of LCM.
The current draw and power consumption specified is for VDD=5.0V, Frame rate=75Hz
Clock frequency = 74.3 MHz. Test Pattern of power supply current
a) Typ : Color Test
b) Max : Skip Subpixel255
c) Flicker Pattern



(a)



(b)



(c)

2. Duration of rush current is about 2 ms and rising time of VDD is 520 μs ± 20 %
3. Ripple Voltage should be covered by Input voltage Spec.
4. Calculated value for reference (Input pins*VPIN × IPIN) excluding inverter loss.

3.2 Backlight Specifications

Ta = 25 ± 2 °C

Parameter			Symbol	Values			Unit	notes
				Min	Typ	Max		
LED Driver :								
Power Supply Input Voltage			VBL	21.6	24.0	26.4	Vdc	1
Power Supply Input Current			IBL	-	3.20		A	1
Power Supply Input Current (In-Rush)			In-rush	-	-	(TBD)	A	VBL = 24.0V ExtV _{BR-B} = 100% 3
Power Consumption			PBL	-	76.8		W	1
Input Voltage for Control System Signals	On/Off	On	V on	2.5	-	5.5	Vdc	On Duty 5
		Off	V off	-0.3	0.0	0.5	Vdc	
	Brightness Adjust		ExtV _{BR-B}	30	-	100	%	
				30	-	100	%	
	ExtV _{BR-B} Frequency		f _{PWM}	500	-	1500	Hz	HIGH : on duty LOW : off duty
	Pulse Duty Level (PWM)		High Level	2.5	-	5.5	Vdc	
			Low Level	0.0	-	0.5	Vdc	
	LED :							
Life Time				30,000	50,000		Hrs	2

notes :

1. Electrical characteristics are determined after the unit has been 'ON' and stable for approximately 60 minutes at 25±2°C. The specified current and power consumption are under the typical supply Input voltage 24V and VBR (ExtV_{BR-B} : 100%), it is total power consumption.
2. The life time (MTTF) is determined as the time which luminance of the LED is 50% compared to that of initial value at the typical LED current (ExtV_{BR-B} : 100%) on condition of continuous operating in LCM state at 25±2°C.
3. The duration of rush current is about 200ms. This duration is applied to LED on time.
4. Even though inrush current is over the specified value, there is no problem if I²T spec of fuse is satisfied. ExtV_{BR-B} signal have to input available duty range and sequence.
5. After Driver ON signal is applied, ExtV_{BR-B} should be sustained from 30% to 100% more than 500ms. After that, ExtV_{BR-B} 30% and 100% is possible

4. Optical Specification

Optical characteristics are determined after the unit has been 'ON' and stable in a dark environment at $25 \pm 2^\circ\text{C}$. The values are specified at 50cm from the LCD surface at a viewing angle of Φ and θ equal to 0° . FIG. 1 shows additional information concerning the measurement equipment and method.

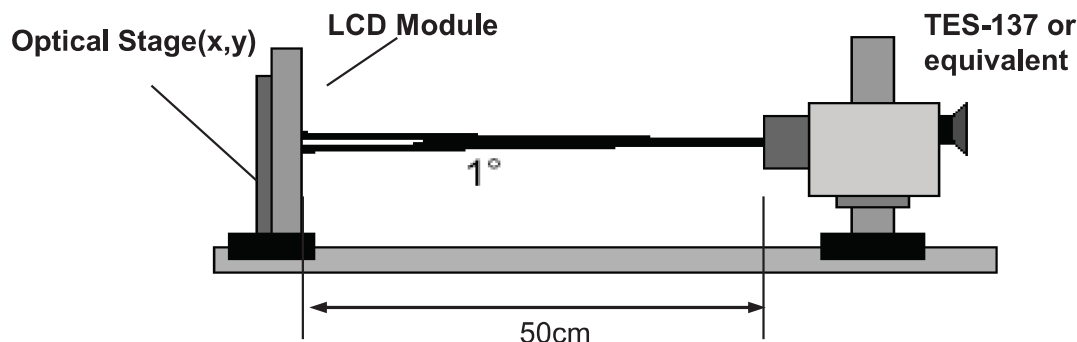


FIG. 1 Optical Characteristic Measurement Equipment and Method

$T_a = 25 \pm 2^\circ\text{C}$, $V_{\text{LCD}} = 12.0\text{V}$, $f_v = 60\text{Hz}$, $D_{\text{clk}} = 74.25\text{MHz}$,
EXTVBR-B = 100% Back Light : LGD B/L

Table 10. OPTICAL CHARACTERISTICS

Parameter		Symbol	Values			Unit	Notes
			Min.	Typ.	Max		
Contrast Ratio		CR	700	1000	--		1,2
Surface Luminance (White)		$L_{\text{WH}}(2\text{D})$	1800	2000	--	cd/m^2	1,3
		$L_{\text{WH}}(3\text{D})$			-		
Luminance Variation		$\delta_{\text{WHITE}}(9\text{P})$	--	--	-		1,4
Response Time (G to G)		T_y	--	14	--	ms	5
Color Gamut		NTSC		80		%	1,6
Color Coordinates							6
	Red	R_x	Typ.-0.03	0.640	Typ.+0.03		
		R_y		0.340			
	Green	G_x		0.296			
		G_y		0.622			
	Blue	B_x		0.152			
		B_y		0.053			
	White	W_x					
		W_y					
Viewing Angle							5
2D	x axis, right($\phi=0^\circ$)	θ_r	--	89	--	degree	
	x axis, left($\phi=180^\circ$)	θ_l	--	89	--	degree	
	y axis, up($\phi=90^\circ$)	θ_u	--	89	--	degree	
	y axis, down ($\phi=270^\circ$)	θ_d	--	89	--	degree	
3D	y axis, up	θ_u				degree	
	y axis, down	θ_d				degree	
3D cross talk (middle)		--					

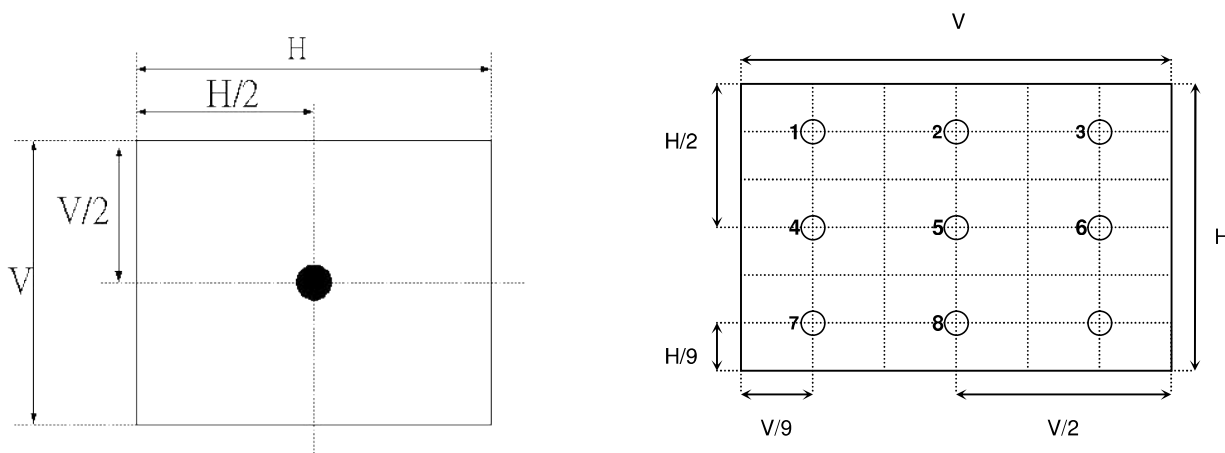
Note:

1. Contrast Ratio (CR) is defined mathematically as:

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance of } L_{\text{on5}}}{\text{Surface Luminance of } L_{\text{off5}}}$$

2. Surface luminance is luminance value at point 5 across the LCD surface 50cm from the surface with all pixels displaying white. From more information see FIG 2. When LED input $V_{\text{DDB}} = 24\text{V}$, $I_{\text{DDB}} = 3.00$, $L_{\text{WH}} = L_{\text{on5}}$ where L_{on5} is the luminance with all pixels displaying white at center 5 location.

FIG. 2 Luminance



3. The variation in surface luminance, δWHITE is defined (center of Screen) as:

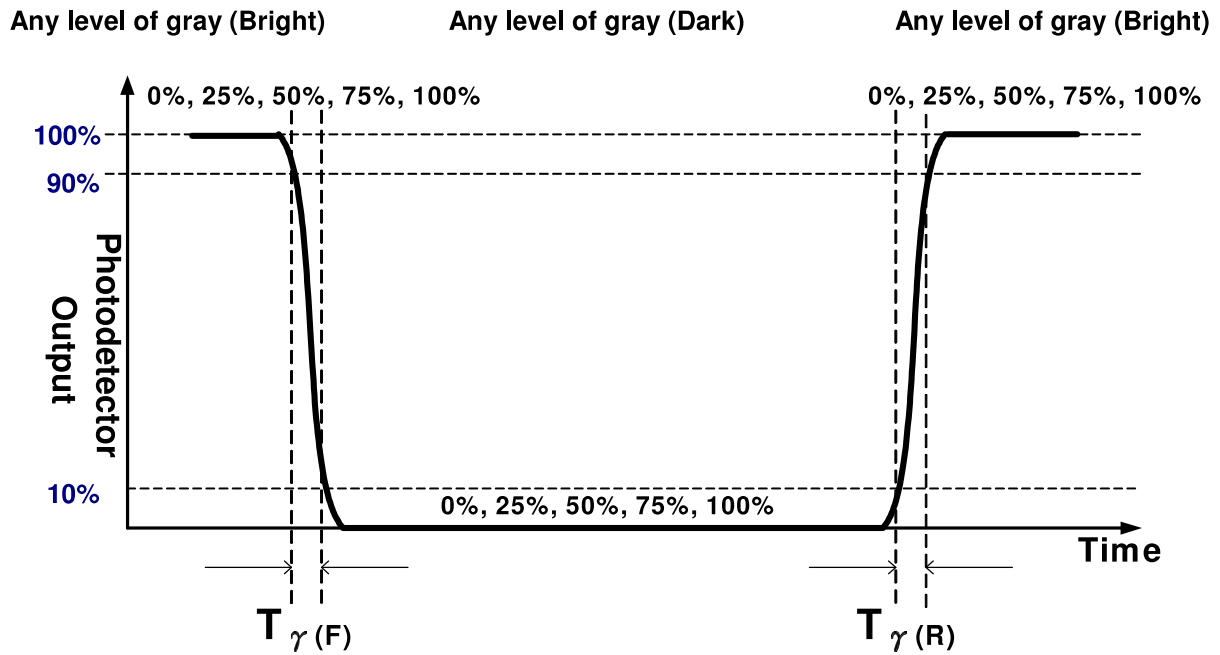
$$\delta\text{WHITE(9P)} = \frac{\text{Maximum}(L_{\text{on1}}, L_{\text{on2}}, \dots, L_{\text{on9}})}{\text{Minimum}(L_{\text{on1}}, L_{\text{on2}}, \dots, L_{\text{on9}})}$$

4. Response time T_γ is the average time required for display transition by switching the input signal for five luminance ratio (0%,25%,50%,75%,100% brightness matrix) and is based on $F_v=60\text{Hz}$ to optimize.

Measured		Target				
Response Time		0%	25%	50%	75%	100%
Start	0%		0% to 25%	0% to 50%	0% to 75%	0% to 100%
	25%	25% to 0%		25% to 50%	25% to 75%	25% to 100%
	50%	50% to 0%	50% to 25%		50% to 75%	50% to 100%
	75%	75% to 0%	75% to 25%	75% to 50%		75% to 100%
	100%	100% to 0%	100% to 25%	100% to 50%	100% to 75%	

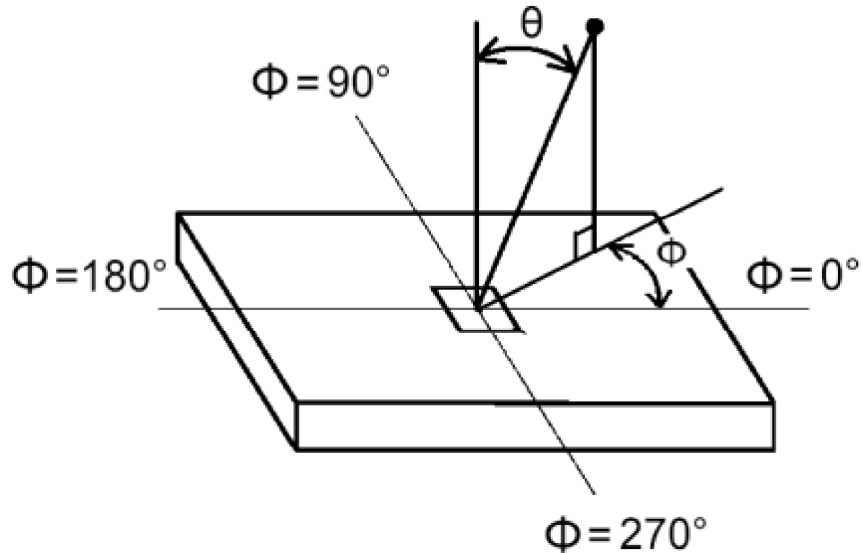
T_γ is determined by 10% to 90% brightness difference of rising or falling period. (As illustrated)

The response time is defined as the following figure and shall be measured by switching the input signal for “any level of grey(bright)” and “any level of grey(dark)”.



5. Viewing angle is the angle at which the contrast ratio is greater than 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 the LCD surface. For more information see FIG3.

FIG.3 Viewing Angle



6. Definition of Transmittance (T%):

$$\text{Transmittance} = \frac{\text{Luminance of LCD module}}{\text{Luminance of backlight}} * 100\%$$

During transmittance measurement, the backlight of LCD module contains no brightness enhancement film. Two diffuser sheets which diffuse the light source uniformly are suggested to use for transmittance measurement.

5.0 INTERFACE CONNECTION.

5.1 Electrical Interface Connection

- CN1 Module Side Connector : MSBKT2407P30HC

Pin No	Symbol	Function	Remark
1	RXO0N	Negative LVDS differential data input	
2	RXO0P	Positive LVDS differential data input	
3	RXO1N	Negative LVDS differential data input	
4	RXO1P	Positive LVDS differential data input	
5	RXO2N	Negative LVDS differential data input	
6	RXO2P	Positive LVDS differential data input	
7	BIST	BIST	
8	RXOCN-	Negative LVDS differential clock input	
9	RXOCP	Positive LVDS differential clock input	
10	RXO3N	Negative LVDS differential data input	
11	RXO3P	Positive LVDS differential data input	
12	RXE0N	Negative LVDS differential data input	
13	RXE0P	Positive LVDS differential data input	
14	GND	Ground	
15	RXE1N	Negative LVDS differential data input	
16	RXE1P	Positive LVDS differential data input	
17	GND	Ground	
18	RXE2N	Negative LVDS differential data input	
19	RXE2P	Positive LVDS differential data input	
20	RXECN	Negative LVDS differential clock input	
21	RXECP	Positive LVDS differential clock input	
22	RXE3N	Negative LVDS differential data input	
23	RXE3P	Positive LVDS differential data input	
24	GND	Ground	
25	SDA	I2C Data (For VCOM tuning)	
26	SCL	I2C Clock (For VCOM tuning)	
27	NC	NC	
28	VIN	Power Supply 5V	
29	VIN	Power Supply 5V	
30	VIN	Power Supply 5V	

5.2 LVDS Interface (Tx; THC63LVDF83A or Equivalent)

	Input Signal	Transmitter		Interface		HR230WU-400 (CN11)	Remark
		Pin No.	Pin No.	System (Tx)	TFT-LCD (Rx)	Pin No.	
L V D S	OR0	51	48 47	OUT0- OUT0+	RX00- RX00+	1 2	
	OR1	52					
	OR2	54					
	OR3	55					
	OR4	56					
	OR5	3					
	OG0	4					
	OG1	6	46 45	OUT1- OUT1+	RX01- RX01+	3 4	
	OG2	7					
	OG3	11					
	OG4	12					
	OG5	14					
	OB0	15					
	OB1	19					
	OB2	20	42 41	OUT2+	RX02- RX02+	5 6	
	OB3	22					
	OB4	23					
	OB5	24					
	Hsync	27					
	Vsync	28					
	DE	30					
	MCLK	31	40 39	CLK OUT- CLK OUT+	RX0 CLK- RX0 CLK+	8 9	
	OR6	50	38 37	OUT3- OUT3+	RX03- RX03+	10 11	
	OR7	2					
	OG6	8					
	OG7	10					
	OB6	16					
	OB7	18					
	RSVD	25					

Note: The order of even data is same with old data.

5.3 Backlight Interface Connection

CN2:Input terminal

PH2.0-6(2.0mmX14)

PIN #	Symbol	Description
1	V _{DDB}	Operating Voltage Supply, +24V DC Regulated
2	V _{DDB}	Operating Voltage Supply, +24V DC Regulated
3	V _{DDB}	Operating Voltage Supply, +24V DC Regulated
4	V _{DDB}	Operating Voltage Supply, +24V DC Regulated
5	V _{DDB}	Operating Voltage Supply, +24V DC Regulated
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	GND	Ground
10	GND	Ground
11		Not connect
12	VBLON	BL On-Off: High (2.5~5.5V) for BL on , Low/Open (0~0.5V) for BL off
13	VDIM (note 1)	Internal PWM Dimming High (5.5V/100% Duty) for 100% Lum; <NC; when external PWM>
14	PDIM (note 1)	<NC; when internal PWM>

Note (1) PWM dimming function is included internal PWM and external PWM. Internal PWM: input voltage 0 (GND) ~5.5V to pin 13th, and duty ratio of output voltage/current of inverter is from 30% to 100%. When use pin 13th to control backlight luminance, the pin 14th will be NC .

6.0 SIGNAL TIMING SPECIFICATION

6.1 The YZ270CD01-DE15 is operated by the DE only.

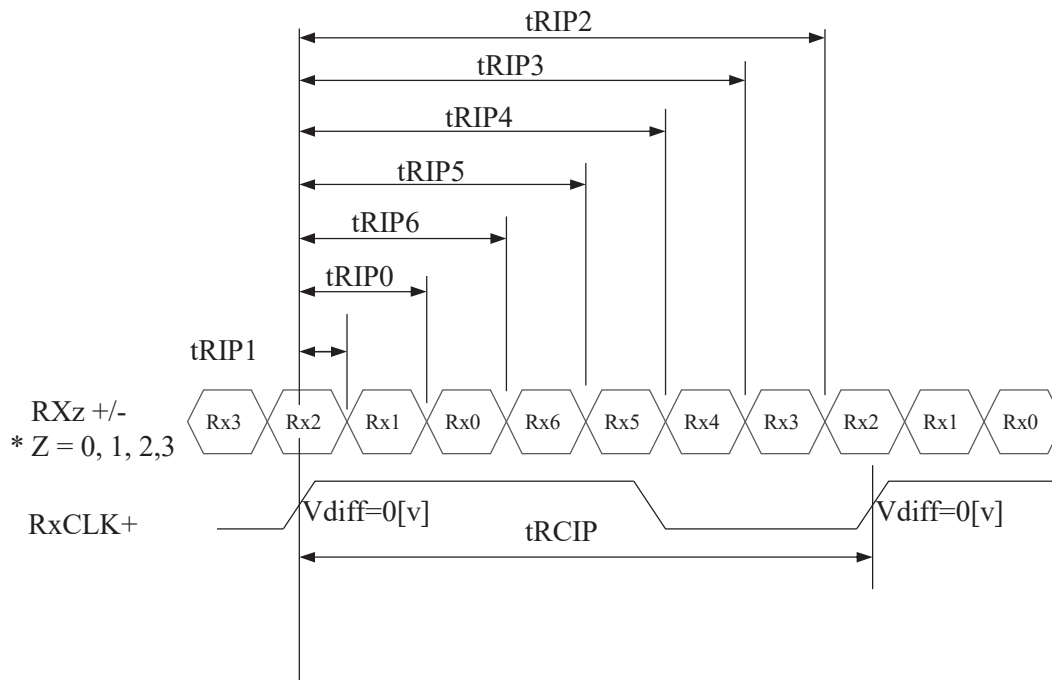
Item	Symbols		Min	Typ	Max	Unit	Note
DCLK	Period	tCLK	10	13.45	25	ns	
	Frequency	fCLK	40	74.3	100	MHz	
Hsync	Period	tHP	1050	1100	1120	tCLK	
	Horizontal Valid	tHV	960	960	960	tCLK	
	Horizontal Blank	tHB	90	140	192	tCLK	tWH+tHBP+tHFP
	Frequency	fH	38	67.5	89.29	KHz	
	Width	tWH	16	32	48	tCLK	
	Horizontal Back Porch	tHBP	32	48	64		
	Horizontal Front Porch	tHFP	42	60	80		
Vsync	Period	tVP	1110	1126	1251	tHP	
	Vertical Valid	tVV	1080	1080	1080	tHP	
	Vertical Blank	tVB	30	45	171	tHP	tWV+tVBP+tVFP
	Frequency	fV	50	60	75	Hz	
	Width	tWV	2	4	16	tHP	
	Vertical Back Porch	tVBP	5	8	32	tHP	
	Vertical Front Porch	tVFP	23	33	123	tHP	
LVDS Receiver clock	Input spread spectrum ratio	SSr	-3%	-	+3%	%	

6.2 LVDS Rx Interface Timing Parameter

The specification of the LVDS Rx interface timing parameter is shown in Table 7.

<Table 7. LVDS Rx Interface Timing Specification>

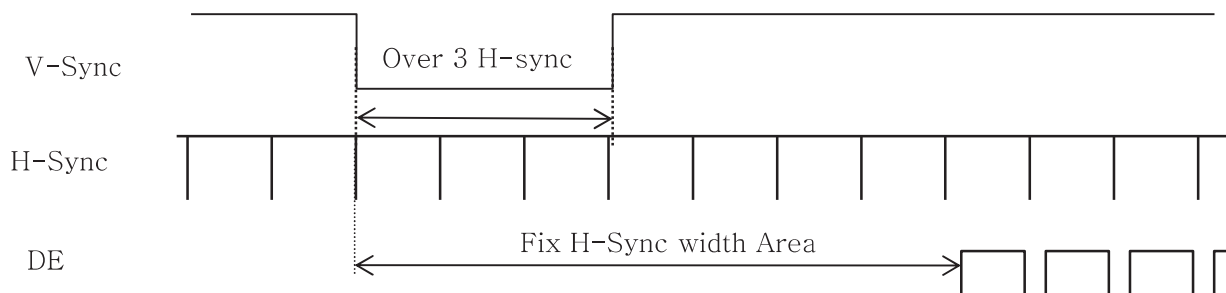
Item	Symbol	Min	Typ	Max	Unit	Remark
CLKIN Period	tRCIP	11.9	12.9	15.6	nsec	
Input Data 0	tRIP1	-0.4	0.0	+0.4	nsec	
Input Data 1	tRIP0	tRCIP/7-0.4	tRCIP/7	tRCIP/7+0.4	nsec	
Input Data 2	tRIP6	$2 \times \text{tRCIP}/7 - 0.4$	$2 \times \text{tRCIP}/7$	$2 \times \text{tRCIP}/7 + 0.4$	nsec	
Input Data 3	tRIP5	$3 \times \text{tRCIP}/7 - 0.4$	$3 \times \text{tRCIP}/7$	$3 \times \text{tRCIP}/7 + 0.4$	nsec	
Input Data 4	tRIP4	$4 \times \text{tRCIP}/7 - 0.4$	$4 \times \text{tRCIP}/7$	$4 \times \text{tRCIP}/7 + 0.4$	nsec	
Input Data 5	tRIP3	$5 \times \text{tRCIP}/7 - 0.4$	$5 \times \text{tRCIP}/7$	$5 \times \text{tRCIP}/7 + 0.4$	nsec	
Input Data 6	tRIP2	$6 \times \text{tRCIP}/7 - 0.4$	$6 \times \text{tRCIP}/7$	$6 \times \text{tRCIP}/7 + 0.4$	nsec	



* $V_{diff} = (RXz+) - (RXz-), \dots, (RXCLK+) - (RXCLK-)$

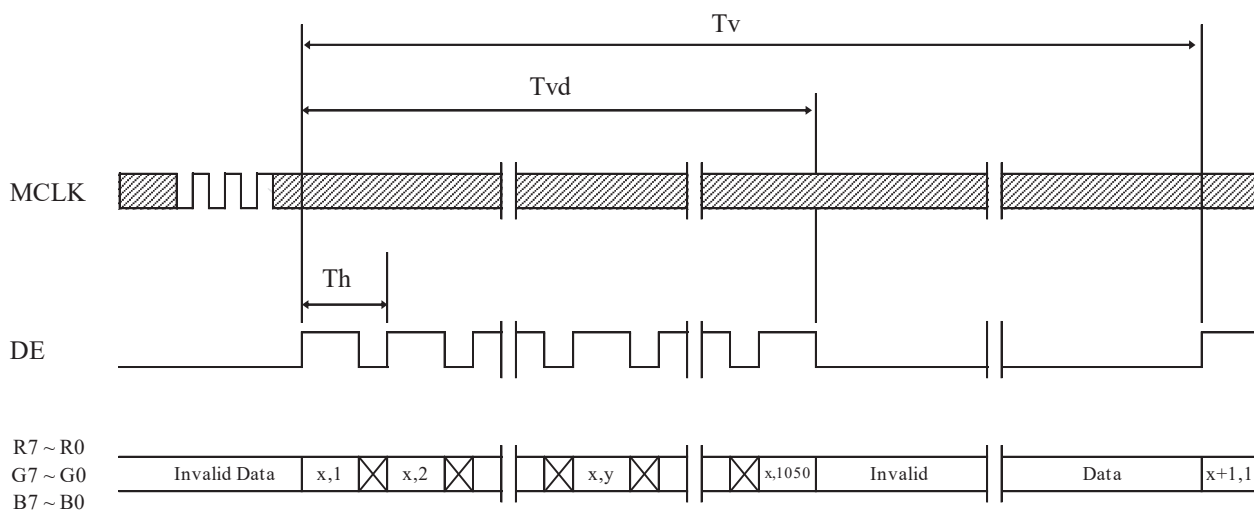
7.0 SIGNAL TIMING WAVEFORMS OF INTERFACE SIGNAL

7.1 Sync Timing Waveforms

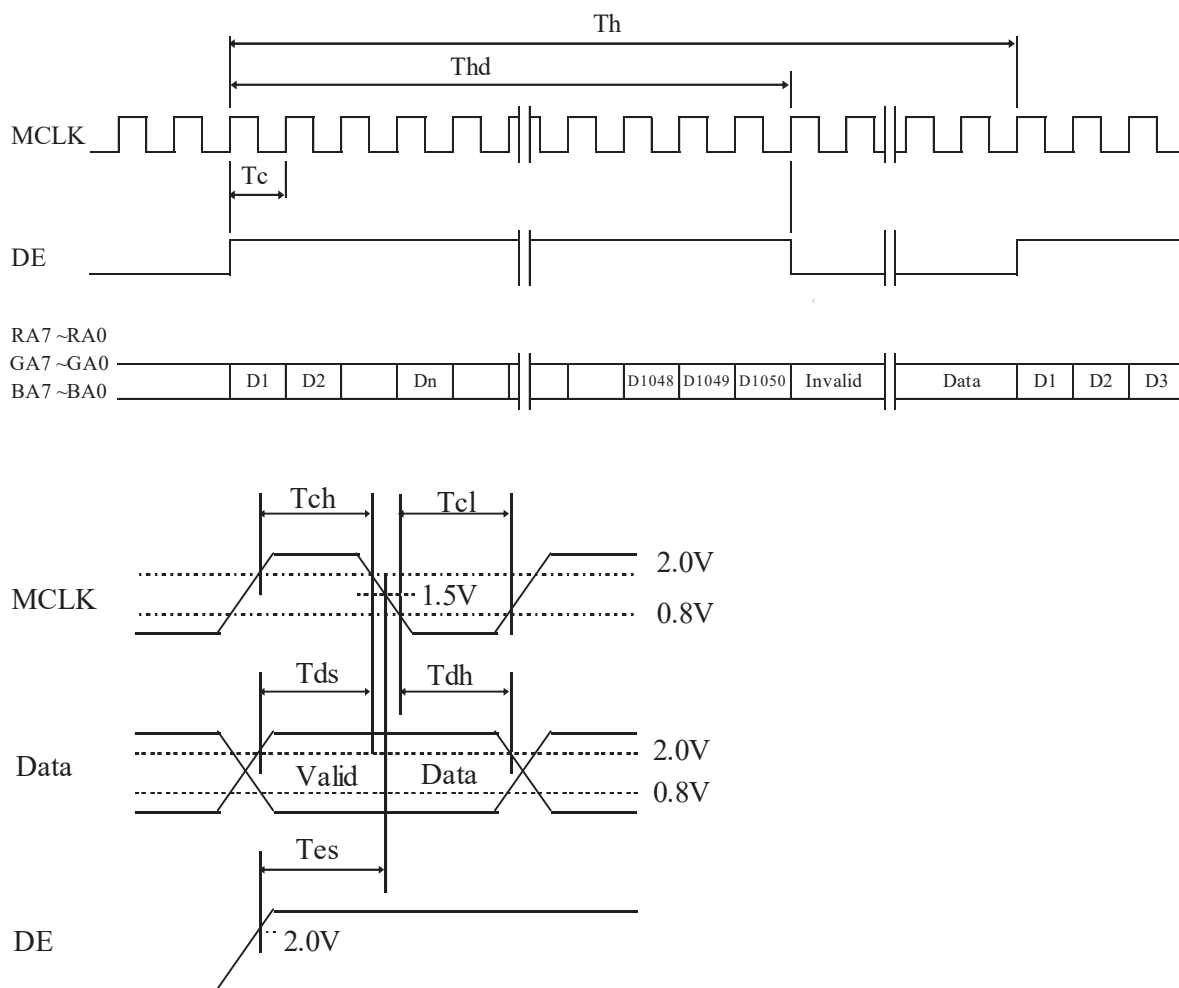


- 1) Need over 3 H-sync during V-Sync Low
- 2) Fix H-Sync width from V-Sync falling edge to first rising edge

7.2 Vertical Timing Waveforms



7.3 Horizontal Timing Waveforms

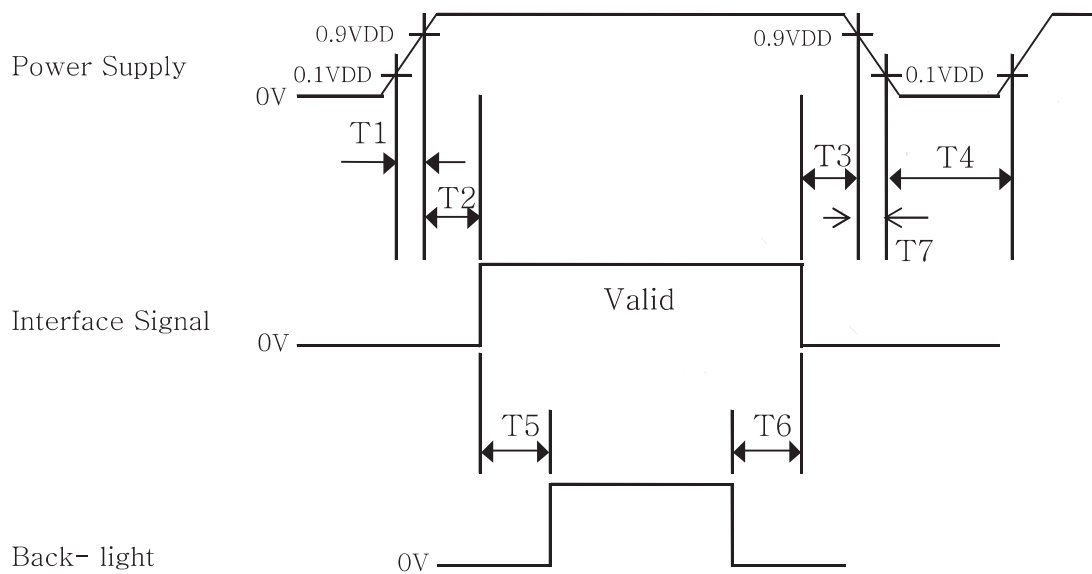


8.0 INPUT SIGNALS, BASIC DISPLAY COLORS & GRAY SCALE OF COLORS

Color & Gray Scale		RED DATA								GREEN DATA								BLUE DATA							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale of RED	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	↑																							
	▽	↓																							
	Brighter	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	▽	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale of GREEN	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Darker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	△																	↑							
	▽																	↓							
	Brighter	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0
	▽	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Gray Scale of BLUE	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Darker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	△									↑								↑							
	▽									↓								↓							
	Brighter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1
	▽	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
Gray Scale of WHITE	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	Darker	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
	△	↑								↑								↑							
	▽	↓								↓								↓							
	Brighter	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1
	▽	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

9.0 POWER SEQUENCE

To prevent a latch-up or DC operation of the LCD module, the power on/off sequence shall be as shown in below



- $0.5 \text{ ms} \leq T1 \leq 10 \text{ ms}$
- $0 \leq T2 \leq 50 \text{ ms}$
- $0 \leq T3 \leq 50 \text{ ms}$
- $1 \text{ sec} \leq T4$
- $200 \text{ ms} \leq T5$
- $200 \text{ ms} \leq T6$

Notes:

1. When the power supply VDD is 0V, keep the level of input signals on the low or keep high impedance.
2. Do not keep the interface signal high impedance when power is on.
3. Back Light must be turn on after power for logic and interface signal are valid.
4. T7 decreases smoothly, there is none re-bouncing voltage.

10.0 MECHANICAL CHARACTERISTICS

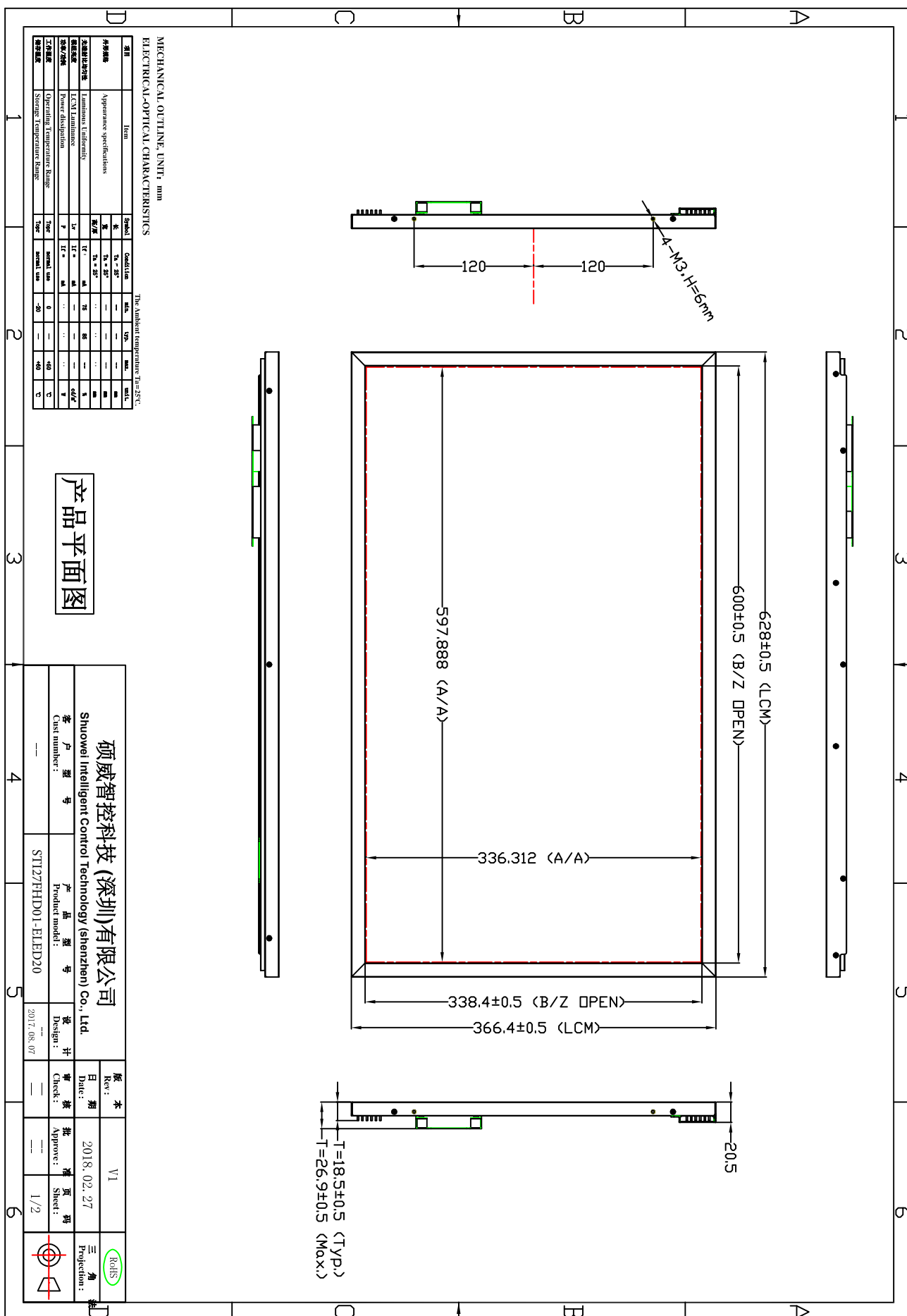
10.1 Dimensional Requirements

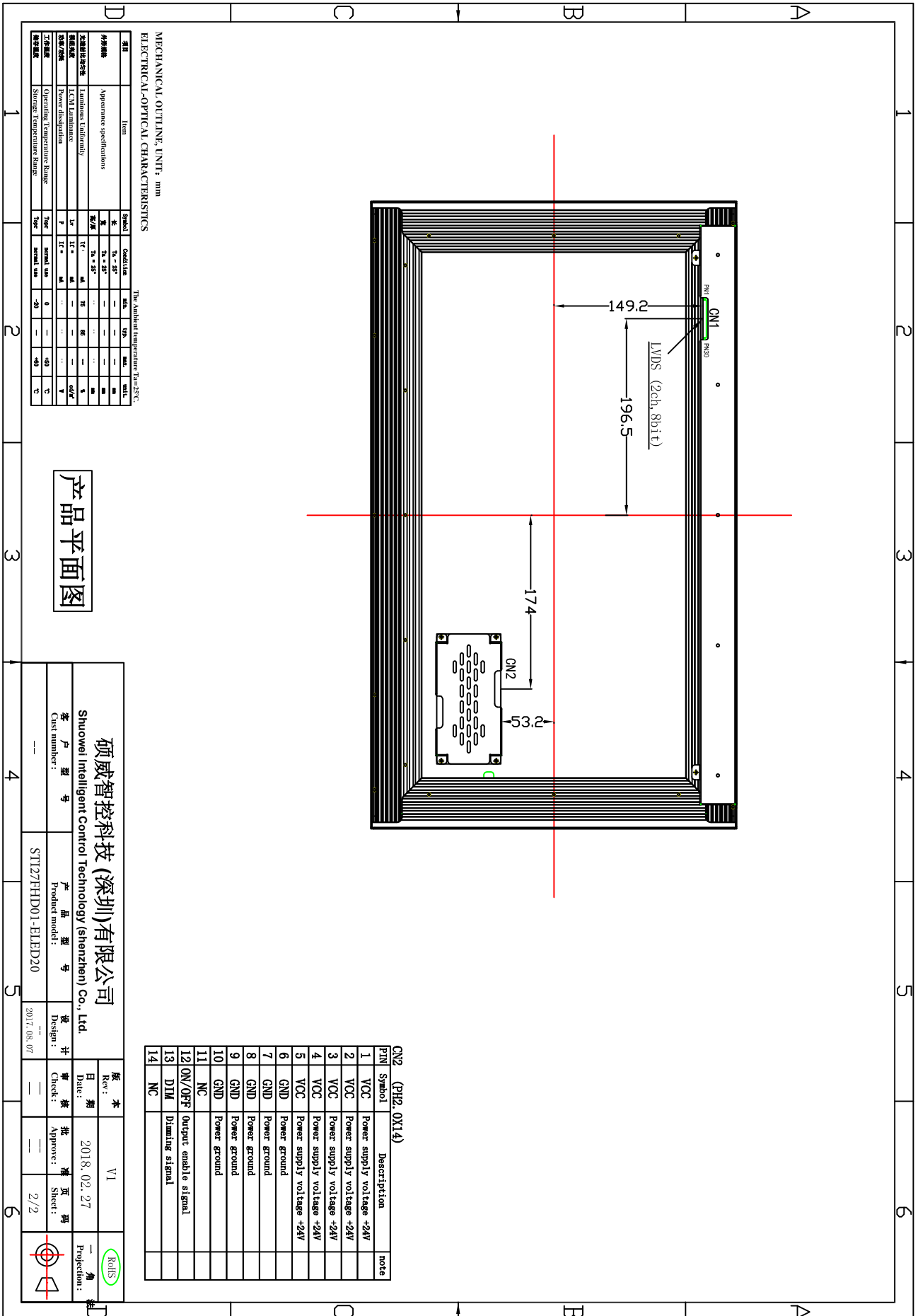
FIGURE 6 (located in Appendix) shows mechanical outlines for the model YZ270CD01-DE15. Other parameters are shown in Table 8.

<Table 8. Dimensional Parameters>

Item	Value	
Outline Dimension	Horizontal	628.0 mm
	Vertical	366.4 mm
	Depth	18.5 mm(Typ.),26.9mm(Max.)
Bezel Area	Horizontal	600.0 mm
	Vertical	338.4 mm
Active Display Area	Horizontal	597.888 mm
	Vertical	336.312 mm
Weight	3.75 Kg(Typ.), 3.85 Kg(Max.)	

Note : Please refer to a mechanical drawing in terms of tolerance at the next page.





11.0 RELIABILITY TEST

The Reliability test items and its conditions are shown in below.

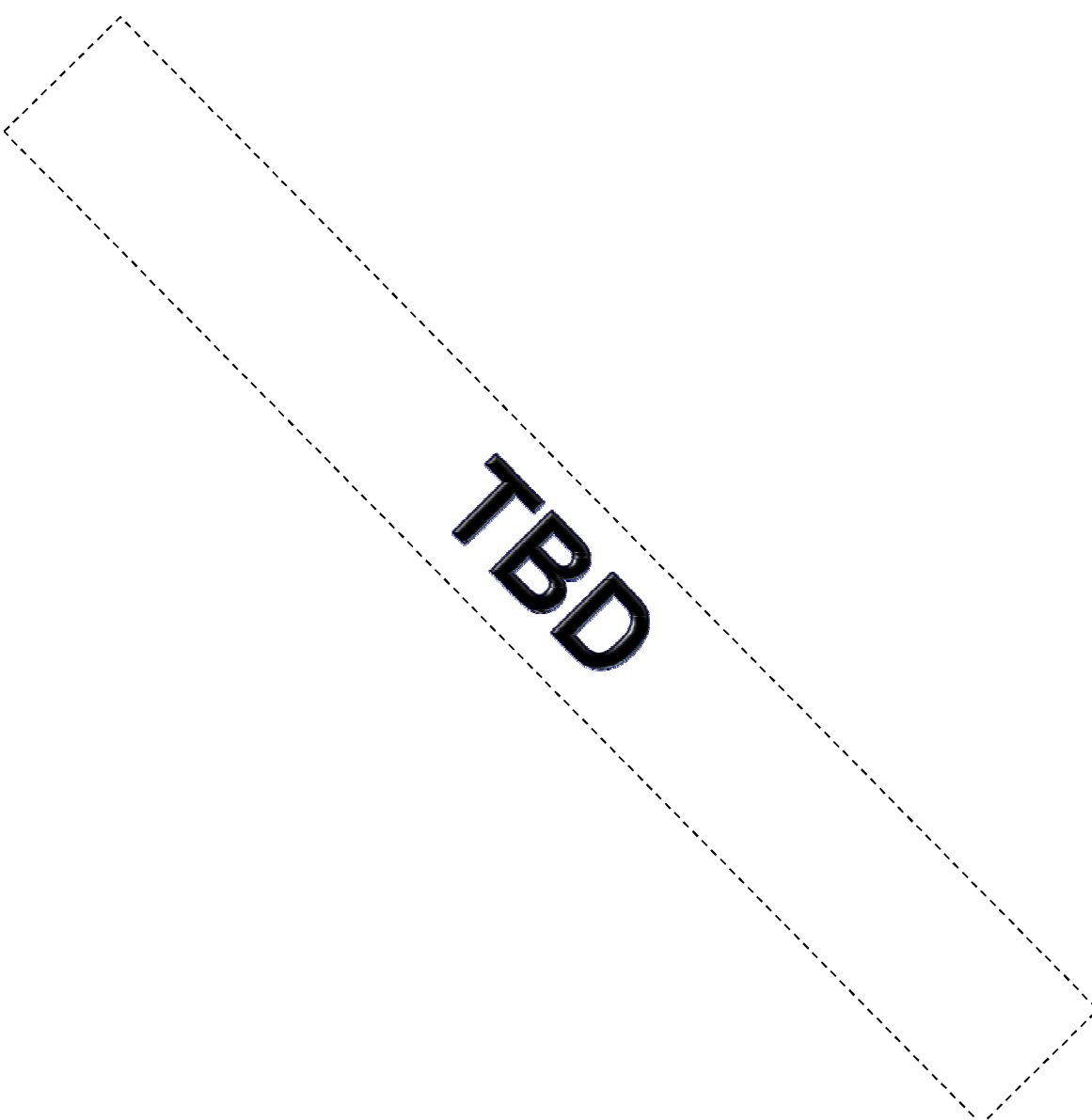
<Table 9 Reliability Test Parameters >

No	Test Items	Conditions
1	High temperature storage test	Ta = 60 °C, 240 hrs
2	Low temperature storage test	Ta = -20 °C, 240 hrs
3	High temperature & high humidity operation test	Ta = 50 °C, 80%RH, 240hrs
4	High temperature operation test	Ta = 50 °C, 240hrs
5	Low temperature operation test	Ta = 0 °C, 240hrs
6	Thermal shock	Ta = -20 °C ↔ 60 °C (0.5 hr), 100 cycle
7	Vibration test (non-operating)	Frequency Random, 10 ~ 300 Hz, 30 min/Axis Gravity / AMP 1.5 Grms Period X, Y, Z 30 min
8	Electro-static discharge test	Air : 150 pF, 330Ω, 15 KV Contact : 150 pF, 330Ω, 8 KV

12.0 HANDLING & CAUTIONS

- (1) Cautions when taking out the module
 - Pick the pouch only, when taking out module from a shipping package.
- (2) Cautions for handling the module
 - As the electrostatic discharges may break the LCD module, handle the LCD module with care. Peel a protection sheet off from the LCD panel surface as slowly as possible.
 - As the LCD panel and back - light element are made from fragile glass material, impulse and pressure to the LCD module should be avoided.
 - As the surface of the polarizer is very soft and easily scratched, use a soft dry cloth without chemicals for cleaning.
 - Do not pull the interface connector in or out while the LCD module is operating.
 - Put the module display side down on a flat horizontal plane.
 - Handle connectors and cables with care.
- (3) Cautions for the operation
 - When the module is operating, do not lose CLK, ENAB signals. If any one of these signals is lost, the LCD panel would be damaged.
 - Obey the supply voltage sequence. If wrong sequence is applied, the module would be damaged.
- (4) Cautions for the atmosphere
 - Dew drop atmosphere should be avoided.
 - Do not store and/or operate the LCD module in a high temperature and/or humidity atmosphere. Storage in an electro-conductive polymer packing pouch and under relatively low temperature atmosphere is recommended.
- (5) Cautions for the module characteristics
 - Do not apply fixed pattern data signal to the LCD module at product aging.
 - Applying fixed pattern for a long time may cause image sticking.
- (6) Other cautions
 - Do not disassemble and/or re-assemble LCD module.
 - Do not re-adjust variable resistor or switch etc.
 - When returning the module for repair or etc., Please pack the module not to be broken. We recommend to use the original shipping packages.

13.0 PRODUCT SERIAL NUMBER



TBD

14.0 Packing

14.1 Packing Order

- a) Package quantity in one Pallet : 5 pcs
- b) Pallet Size : 740 mm(L) X 230 mm(W) X 480 mm(H)