宇华国际科技有限公司

YuHua INT,L Technology Co., LIMITED

SPECIFICATION FOR LCD MODULE

Customer : _____

Product Model: YH070BS4002

Sample code: _____

Designed by	Checked by	Approved by

Final Approval by Customer

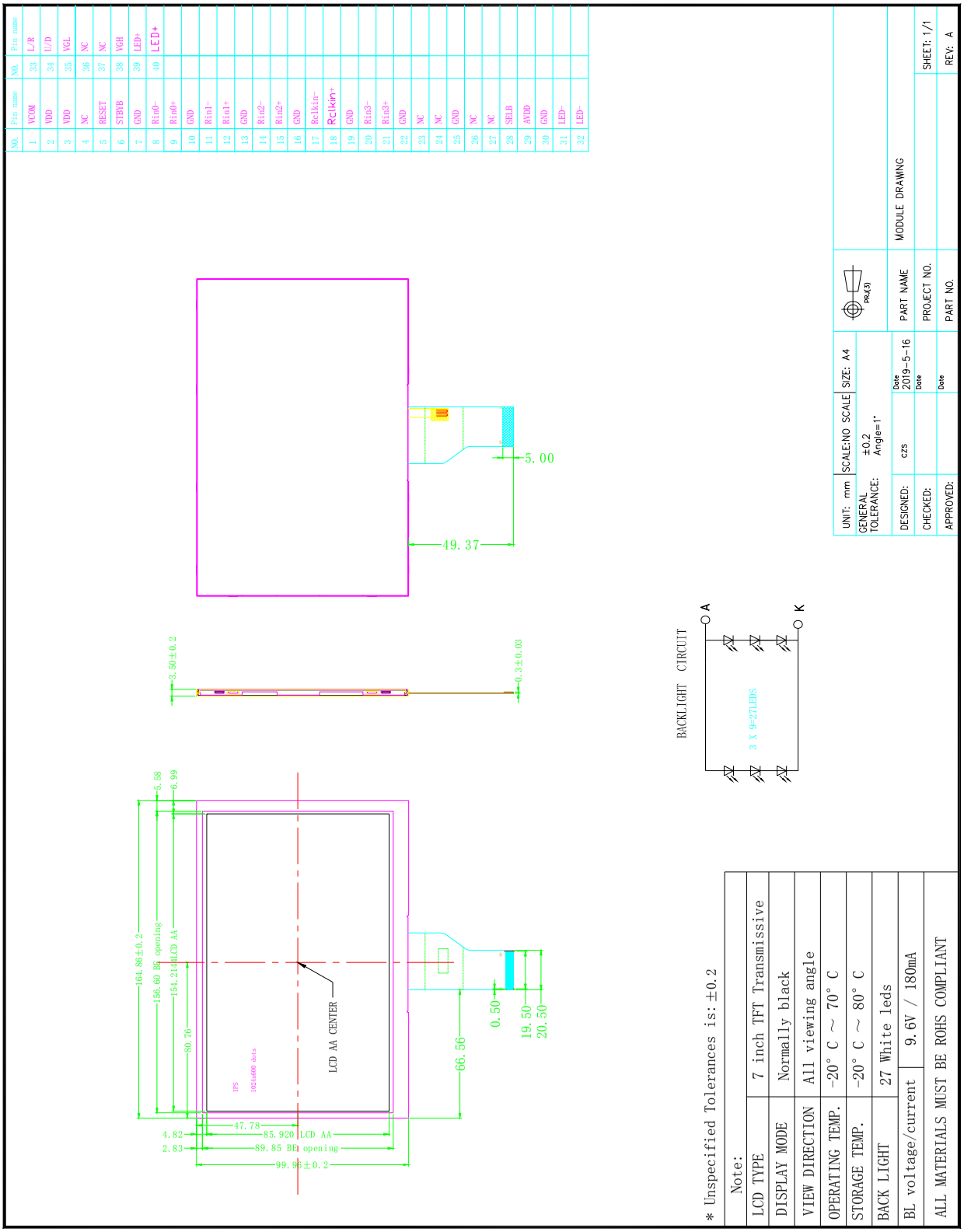
☐ **LCM Machinery OK** Checked By _____ ☐ **LCM Display OK** Checked By _____	☐ **LCM OK** ☐ **NG，Problem survey:** Approved By _____

※The specification of "TBD" should refer to the measured value of sample . If there is difference between the design specification and measured value, we naturally shall negotiate and agree to solution with customer.

1. PHYSICAL DATA

Item	Contents	Unit
LCD type	TFT TRANSMISSIVE	---
Viewing direction	All	o'clock
Module size (W×H×T)	165 × 100 × 3.5	mm^3
Active area(W×H)	154.2144×85.92	mm^2
Number of dots(W×H)	1024(RGB) × 600	dots
Pixel Pitch(W×H))	0.1506×0.1432	mm
Driver IC	HX8282	---
Colors	16.7M	---
Backlight Type	27 white leds 9.6V /180mA	---
Interface Type	LVDS	---

2. Mechanical Dimension



3. Pin Descriptions

Pin No.	Symbol	Functional	Notes
1	VCOM	Common Voltage	
2~3	VDD	Power Supply for digital circuit	
4	NC	No connection	
5	RESET	Global reset pin	
6	STBYB	Standby mode, Normally pulled high	
7	GND	Ground	
8	Rin0-	-LVDS differential data input	
9	Rin0+	+LVDS differential data input	
10	GND	Ground	
11	Rin1-	-LVDS differential data input	
12	Rin1+	+LVDS differential data input	
13	GND	Ground	
14	Rin2-	-LVDS differential data input	
15	Rin2+	+LVDS differential data input	
16	GND	Ground	
17	RclkIN-	-LVDS differential clock input	
18	RclkIN+	+LVDS differential clock input	
19	GND	Ground	
20	Rin3-	-LVDS differential data input	
21	Rin3+	+LVDS differential data input	
22	GND	Ground	
23-24	NC	No connection	
25	GND	Ground	
26	NC	No connection	
27	NC	No connection	
28	SELB	6bot/8bit mode select ， L=8 BIT ， H=6BIT	
29	AVDD	Power for Analog Circuit	
30	GND	Ground	
31-32	LED-	LED Cathode	
33	L/R	Horizontal inversion	
34	U/D	Vertical inversion	
35	VGL	Gate OFF Voltage	
36	NC	No connection	
37	NC		
38	VGH	Gatr ON Voltage	
39-40	LED+	LED Anode	

4. OPERATION SPECIFICATION

4.1 Absolute maximum ratings

Parameter	Symbol	Min	Max	Unit
Power supply1	V_{DD}	-0.5	+3.96	V
Power supply2	Avdd	-0.5	+13.8	V
Operating temperature	T_{OPR}	-10	50	℃
Storage temperature	T_{STG}	-20	60	℃

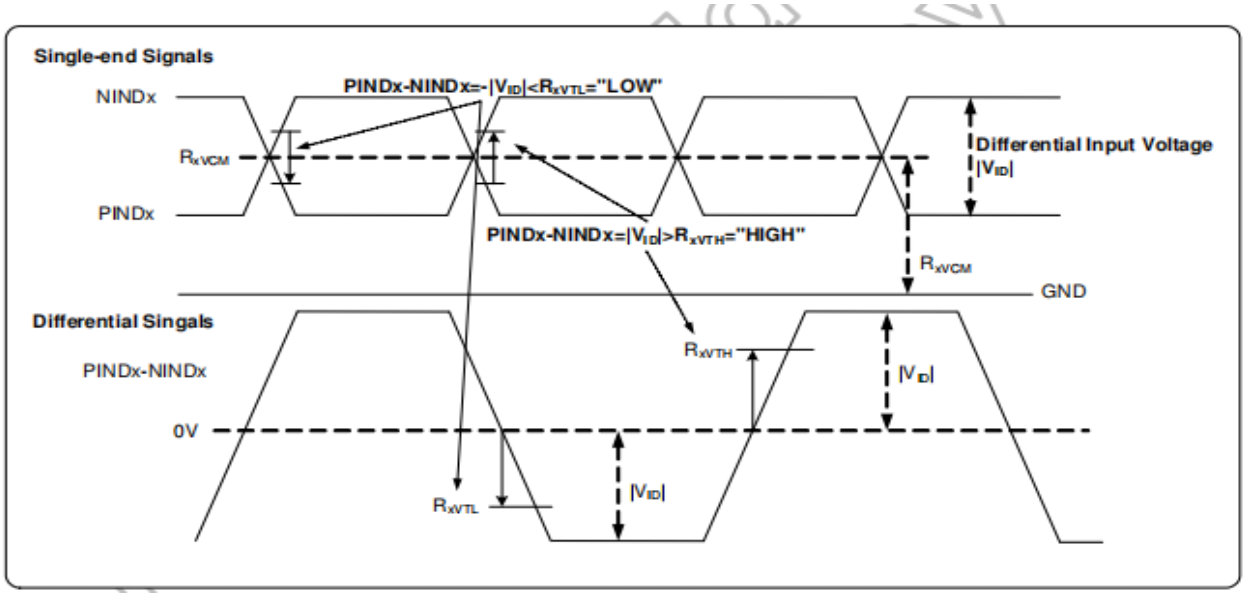
4.2 Input voltage

VGH	18V
VGL	-6V
AVDD	9.6V
VCOM	3.2V +/-0.1

Note: Please adjust Vcom to make the flicker level be minimum

5. DCELECTRICALCHARACTERISTICS

Parameter	Symbol	Spec. Min.	Typ.	Max.	Unit	Condition
Differential input high Threshold voltage	R_{XVTH}	-	-	+0.1	V	R_{XVCM}=1.2V
Differential input low threshold voltage	R_{XVTL}	-0.1	-	-	V	
Input voltage range (singled-end)	R_{XVIN}	0	-	VDD-1.2+ $\|V_{ID}\|/2$	V	-
Differential input common Mode voltage	R_{XVCM}	$\|V_{ID}\|/2$	-	VDD-1.2	V	-
Differential input voltage	$\| V_{ID} \|$	0.2	-	0.6	V	-
Differential input leakage Current	RV_{Xiiz}	-10	-	+10	µA	-
LVDS Digital Operating Current	Iddlvds	-	15	30	mA	Fclk=65MHz, VDD=3.3V
LVDS Digital Stand-by Current	Istlvds	-	10	50	µA	Clock & all Functions are stopped



6. LVDS MODE DATA INPUT FORMAT

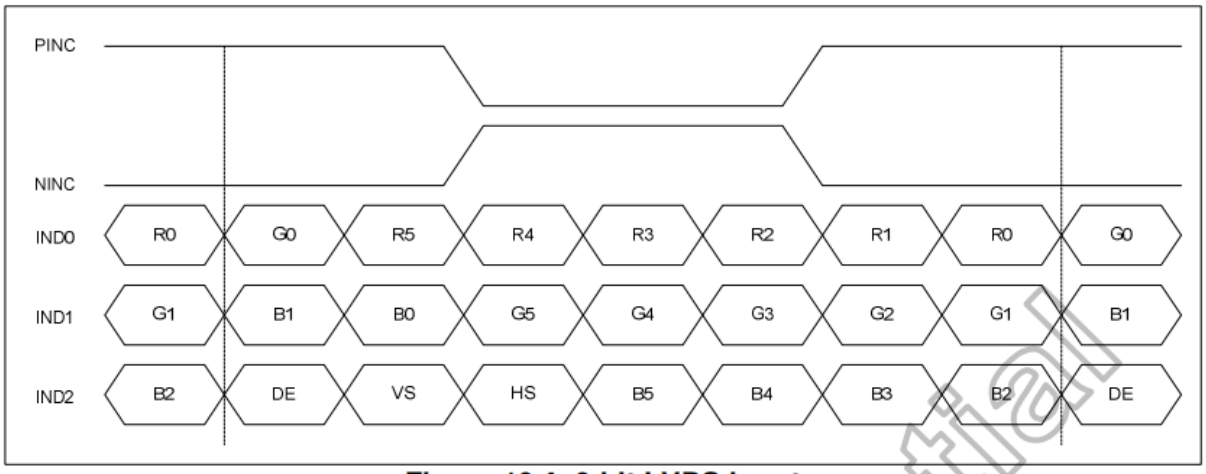


Figure 10.4: 6-bit LVDS input

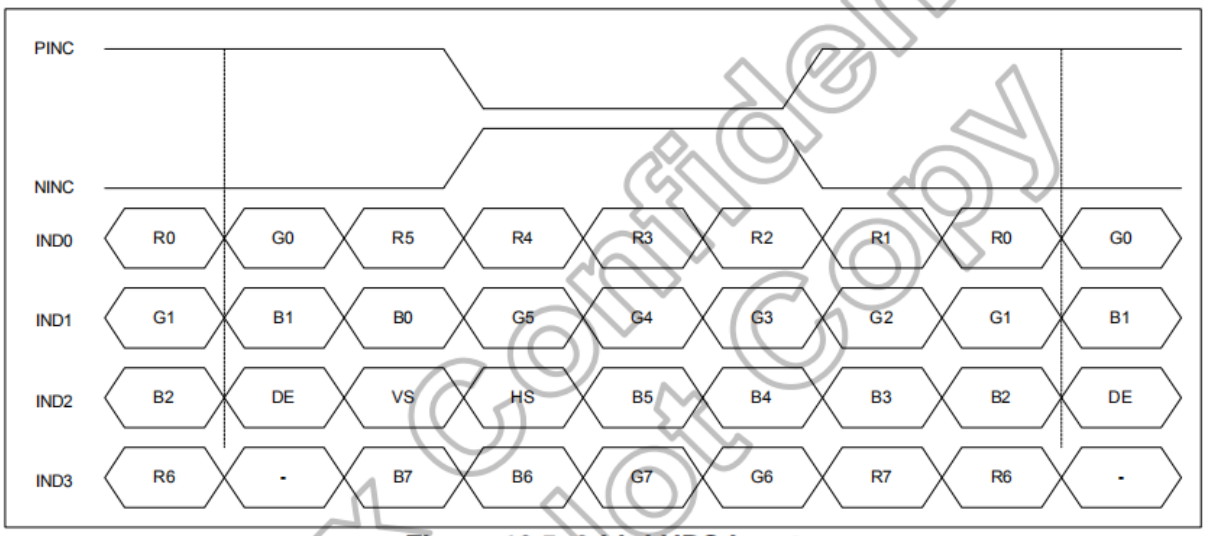


Figure 10.5: 8-bit LVDS Input

7. Backlight Characteristic

Item	Symbol	Min	Typical	Max	Unit
LED module Forward voltage	**V_{LED}**	**--**	**9.3**	**9.6**	**V**
LED module current	**I_{LED}**	**--**	**180**	**--**	**mA**
L/G Surface Luminance ★1	**L_S**	**--**	**TBD**	**--**	mcd
LCM Surface brightness uniform ★2	**L_D**	**80**	**--**	**--**	%

★ 1 Test condition is:

(a) Center point on active area.

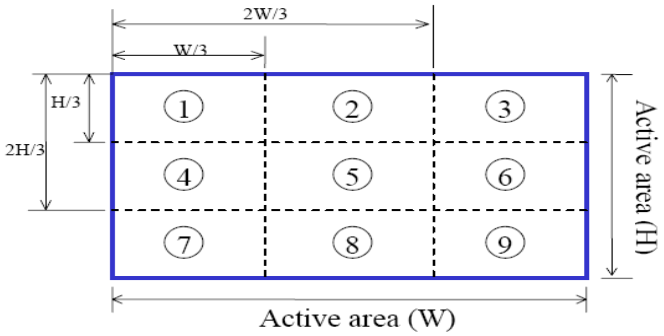
(b)Best Contrast.

★2 Uniform measure condition:

(1)Measure 9 point. Measure location show below;

(2)Uniform=(Min. brightness /Max. brightness)*100%

(3)Best Contrast.



8. Electro-optical Characteristics

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing angle range	Hor.	φ 3	CR≥10	80	85		Deg.	
		φ 9		80	85		Deg.	
	Ver.	θ 12		80	85		Deg.	
		θ 6		80	85		Deg.	
Color gamut(C light)					50		%	
Contrast ratio		T(%)	φ 0°	600	800			
Response Time		T_{RT}	Temp=25° C		25	40	ms	

9. Reliability

9.1 MTBF

The LCD module shall be designed to meet a minimum MTBF value of 50000 hours with normal

9.2 Test condition

NO.	ITEM	CONDITION	CRITERION
1	High Temperature Non-Operating Test	80℃*120Hrs	No Defect Of Operational Function In Room Temperature Are Allowable
2	Low Temperature Non-Operating Test	-20℃*120Hrs	
3	High Temperature/Humidity Non Operating Test	60℃*75%RH*120Hrs	
4	High Temperature Operating Test	70℃*120Hrs	
5	Low Temperature Operating Test	-20℃*120Hrs	
6	Thermal Shock Test	-20℃(30Min)-70℃(30Min)*10CYCLES	

Notes:

1. Judgments should be made after exposure in room temperature for two hours.
2. The distill water is used for the high temperature/humidity test.
3. The sample above is individually for every reliability tests condition.

10. Inspection standards

1.AQL(Acceptable Quality Level

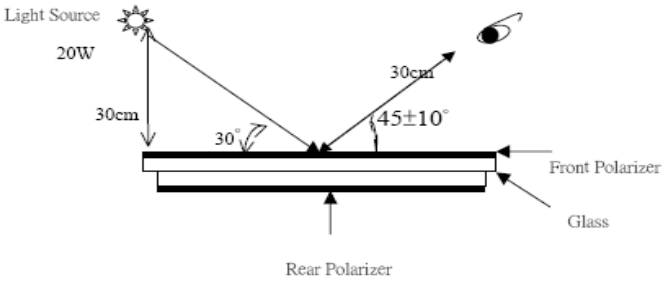
AQL of major and minor defect.

	MAJOR DEFECT	MINOR DEFECT
AQL	0.65	1.5

2. Basic conditions for inspection

The LCM face to us, in normal environment, the lux is 1000±200.(Darkroom's lux: 100±50),About an angle of incidence 30,a distance of 30 cm with an angle of 45 degree to check the products without uncovering the film!

(As shown below)



11. **Precautions for using LCD modules**.

11.1 Safety

(1)Do mot swallow any liquid crystal ,even if there is no proof that liquid crystal is poisonous.
(2)If the LCD panel breaks, be careful not to get liquid crystal to touch your skin.
(3)If skin is exposed to liquid crystal, wash the area thoroughly with alcohol or soap.

11.2 Storage Conditions

(4)Store the panel or module in a dark place where the temperature is 23±5℃and the humidity is below 45±20%RH.
(5)Store in anti-static electricity container.
(6)Store in clean environment, free from dust, active gas, and solvent.
(7)Do not place the module near organics solvents or corrosive gases.
(8))Do not crush, shake, or jolt the module.

11.3Handling Precautions

(9)Avoid static electricity, which can damage the CMOS LSI.
(10)The polarizing plate of the display is very fragile, please handle if very carefully.
(11)Do not give external shock.
(12)DO mot apply excessive force on the surface.
(13)Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate.
(14)Do not use ketonics solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.
(15)Do not operate it above the absolute maximum rating.
(16)Do not remove the panel or frame from the module.

11.4 Warranty

The period is within twelve months since the date of shipping out under normal using and storage conditions.