Product

產品規格書

產品型號：SL103HIS30WU

PRODUCT NO. : **SL103HIS30WU**
VERSION : **Ver 1.0**
ISSUED DATE : **2024-07-28**

This module uses ROHS material

FOR CUSTOMER : _____

□ : APPROVAL FOR SPECIFICATION
■ : APPROVAL FOR SAMPLE

DATE	APPROVED BY

Solonic :

Presented by	Reviewed by	Organized by

Note:

1.Solonic Technology Co.,Ltd. reserves the right to make changes without futher notice to any products hereinto improve reliability, function or design.

1. GENERAL DESCRIPTION

1.1 DESCRIPTION

SL103HIS30WU is a transmissive type color active matrix TFT (Thin Film Transistor) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT-LCD module (TFT-LCD panel, driver IC and FPC), a back-light unit and. The resolution of 720*1920 pixels.

1.2 GENERAL INFORMATION

Items	Specification	Unit	Note
Display mode	TFT Transmissive, Positive, NW,	-	-
LCM outline size	256.75(H) x 107.18(V) x 6.6(T)	mm	Note (1)(2)
Active area	243.648(H)x91.368(V)	mm	-
Number of pixels	720x1920	pixels	-
Pixel arrangement	RGB stripe	-	-
Pixel size	0.1269(H)x0.1269(V)	mm	-
Display color	16.7M	color	-
Viewing direction	ALL	-	-
Data interface	MIPI+TP(In-Cell)	-	
Touch Channel (T*R)	16 x 45		
Backlight	9 White LEDs In Series 3 Parallels	-	
Weight	TBD	g	

Notes:

(1) Touch panel and back-light unit are included.

(2) FPC no included. (Refer to the module outline dimension for further information). Please see module specification drawing in Page14 for more details.

2. ELECTRICAL CHARACTERISTICS

2.1 LCM DC CHARACTERISTICS

(Ta=25±2°C)

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply Voltage 1	DVDD	-	1.8V	-	V	
Power Supply Voltage 2	AVDD	9	10.4	12	V	
Power Supply Voltage 3	VGH	-	-	-	V	
Power Supply Voltage 4	VGL	-	-	-	V	
Power Supply Voltage 5	VCOM	-	-	-	V	Note 1
Current Consumption	I_{DD}	-	40	-	mA	Normal mode
	$I_{DD-SLEEP}$		2		mA	Sleep mode
Input voltage “L” Level	V_{IL}	GND	-	0.3VDD1	V	DVDD=3.0~3.6
Input voltage “H” Level	V_{IH}	0.7VDD1	-	VDD1	V	
Output voltage “L” Level	V_{oL}	0	-	0.2VDD1	V	I_{OL}=1mA
Output voltage “H” Level	V_{oH}	0.8VDD1	-	VDD1	V	I_{OH}=-1mA

Note:

(1) vcom must be adjusted to optimize display qulity_flicker pattern.

2.2 BACK-LIGHT UNIT CHARACTERISTICS

The back-light system is an edge-lighting type with 27 white LEDs. The characteristics of the back-light are shown in the following tables.

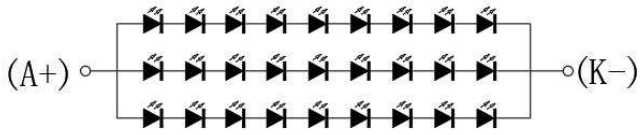
(Ta=25±2°C)

Characteristics	Symbol	Condition	Min.	Type	Max.	Unit	Notes
Forward Voltage	Vf	I_L=150mA	--	27	29	V	-
Forward current	I_L		--	150	--	mA	-
LED life time	--	I_L=150mA	20,000	30,000	--	Hr	Note 1

Note:

(1) The “LED life time” is defined as the module brightness decrease to 50% of original brightness at I_L=150mA. The LED life time could be decreased if operating I_L is larger than 150mA.

Backlight circuit diagram shown in below:



3. OPTICAL CHARACTERISTICS

The following items are measured under stable conditions. The optical characteristics should be measured in a dark room.
Measuring equipment: BM-5AS, BM-7, EZ-Contrast.

(Ta=25±2°C)

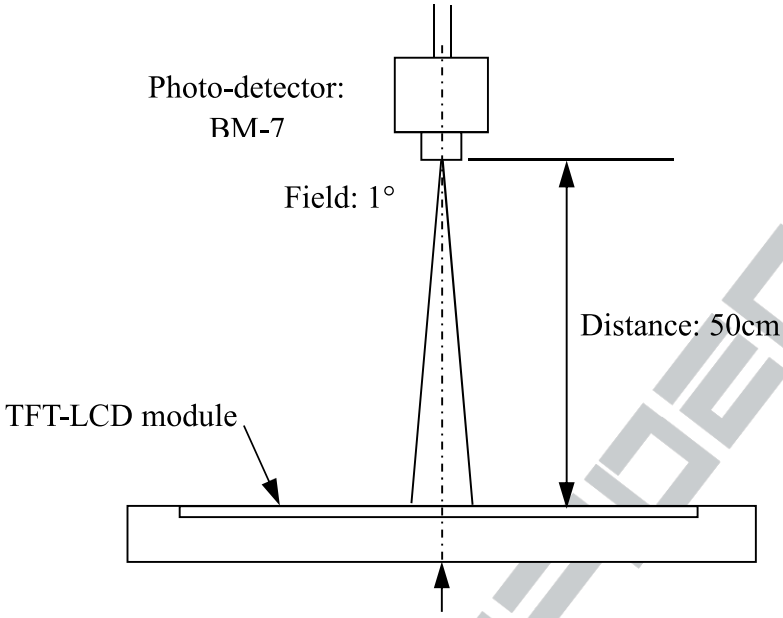
Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast Ratio (Center point)		C/R	-	800	1000	-	-	BM-7 Note(2)
Luminance of white (Center point)		L_W	B/L on	500	600	-	cd/m^2	BM-7
Luminance uniformity		U_W	θ = 0. Normal viewing angle B/L On Note(1)	75	80	-	%	BM-7 Note(3)
Response Time		Tr + Tf		-	30	40	ms	BM-5AS Note(4)
Color Chromaticity (CIE 1931)	White	W_X		-	-	-	-	BM-7 Note(5)
		W_X		-	-	-		
	Red	R_X		-0.04	0.652	+0.04		
		R_Y		-0.04	0.326	+0.04		
	Green	G_X		-0.04	0.284	+0.04		
		G_y		-0.04	0.579	+0.04		
	Blue	B_X		-0.04	0.137	+0.04		
		B_Y		-0.04	0.085	+0.04		
Viewing Angle	Hor.	θ_L	C/R≥10	-	85	-	Deg	EZ Contrast Note(6)
		θ_R		-	85	-		
	Ver.	θ_u		-	85	-		
		θ_D		-	85	-		
Optima View Direction			ALL					Note(7)

* This condition will be changed by the evaluation circumstance. If product is exposed to high temperatures for extended time, there is a possibility of the polarizer film damage which could degrade the optical characteristics.

Notes:

(1) Test Equipment Setup: After stabilizing and leaving the panel alone at a given temperature for 30min, the measurement should be executed. Measurement should be executed in a stable,

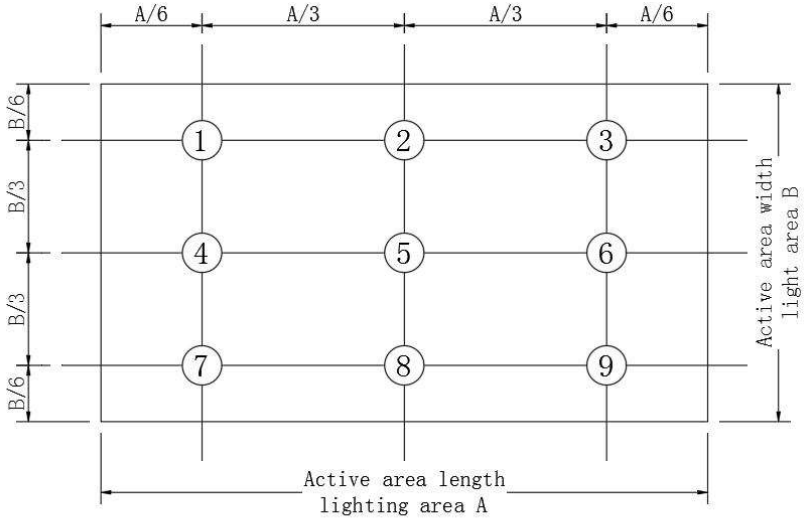
windless, and dark room 30min after lighting the back-light. This should be measured in the center of screen.



(2) Definition of Contrast Ratio (CR):

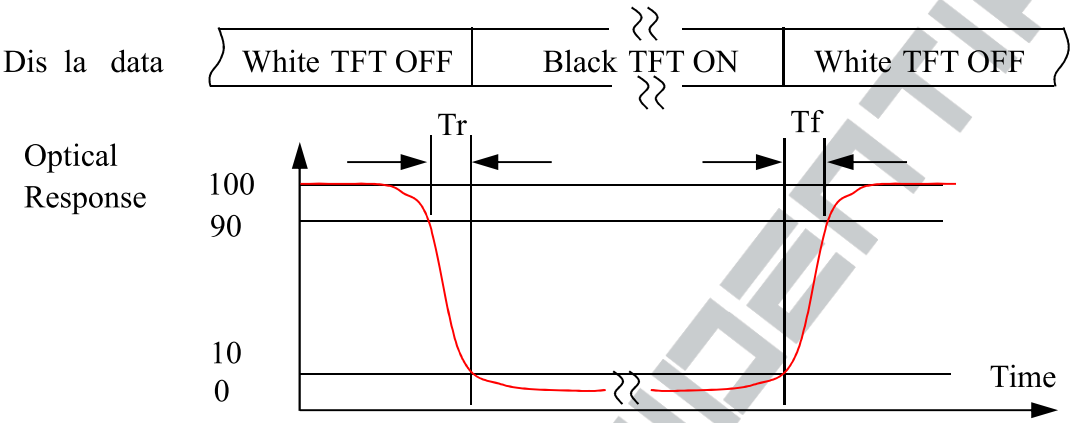
$$\text{Contrast Ratio (CR)} = \frac{\text{Luminance measured when LCD on the “white” state}}{\text{Luminance measured when LCD on the “black” state}}$$

(3) Definition of Luminance Uniformity: Active area is divided into 9 measuring areas (Shown in below), every measuring point is placed at the center of each measuring area.

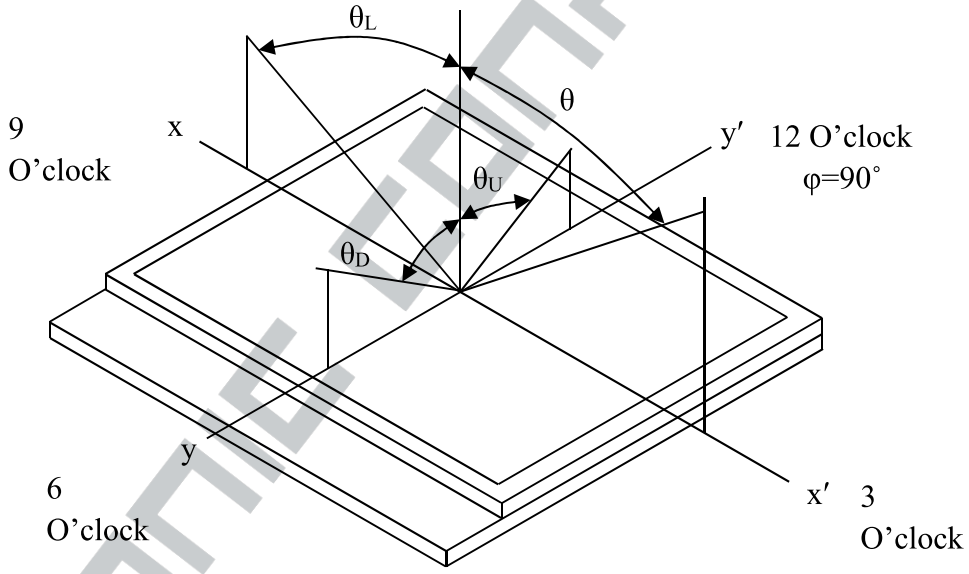


$$\Delta\text{Uniformity} = \frac{\textbf{Minimum Luminance of 9points}}{\textbf{Maximum Luminance of 9points}} * 100\%$$

(4) Definition of Response time: Sum of Tr and Tf.



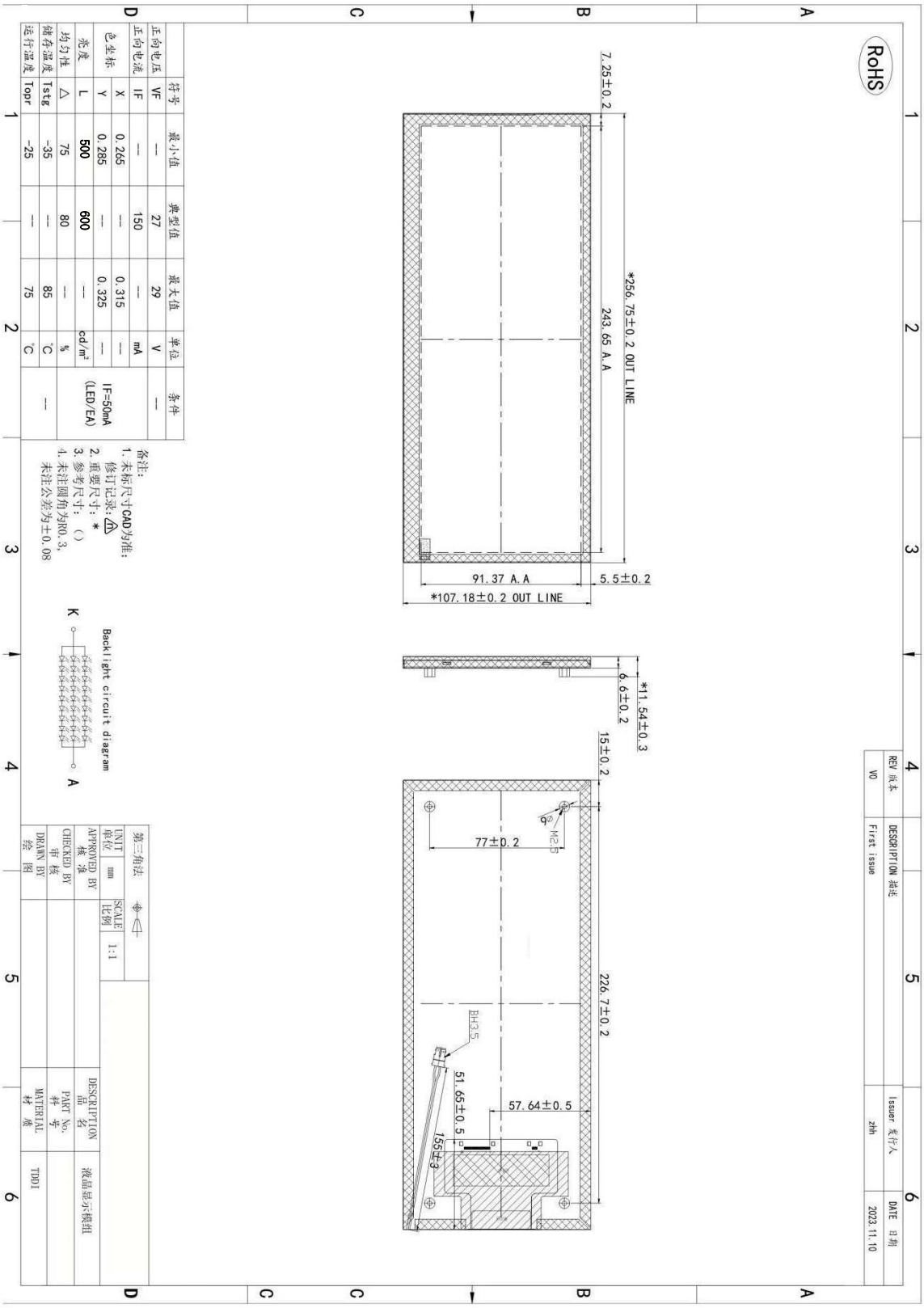
(5) Definition of Viewing Angle: The viewing angle range that the CR≥10.



(6) Definition of Color Chromaticity (CIE 1931)
Color coordinate of white & red, green, blue at center point.

(7) The different Rubbing Direction will cause the different optima view direction.

4. MODULE OUTLINE DIMENSION



	符号	最小值	典型值	最大值	单位	条件
正向电压	VF	—	27	29	V	—
正向电流	IF	—	150	—	mA	
色坐标	X	0.265	—	0.315	—	
	Y	0.285	—	0.325	—	
亮度	L	500	600	—	cd/m²	IF=50mA (LED/EA)
均匀性	△	75	80	—	%	
储存温度	Tstg	-35	—	85	℃	—
运行温度	Topr	-25	—	75	℃	

5. MODULE INTERFACE DESCRIPTION

5.1 LCM

No.	Symbol	I/O	Function
1	VCOM	P	VCOM buffer in
2	VDD	P	Power supply for digital circuits
3	VDD	P	Power supply for digital circuits
4	NC	-	No Connection
5	RESET	I	Device reset signa
6	STBYB	I	Standby mode.
7	GND	P	Ground
8	D0N	I/O	High speed interface data differential signal input/output pins.
9	D0P	I/O	High speed interface data differential signal input/output pins.
10	GND	P	Ground
11	D1N	I	High speed interface data differential signal input pins
12	D1P	I	High speed interface data differential signal input pins
13	GND	P	Ground
14	CLKN	I	High speed interface CLOCK differential signal input pins.
15	CLKP	I	High speed interface CLOCK differential signal input pins.
16	GND	P	Ground
17	D2N	I	High speed interface data differential signal input pins
18	D2P	I	High speed interface data differential signal input pins
19	GND	P	Ground
20	D3N	I	High speed interface data differential signal input pins
21	D3P	I	High speed interface data differential signal input pins
22	GND	P	Ground
23	NC	-	No Connection
24	AVDD	P	Power supply for analog circuits
25	NC	-	No Connection
26	VGL	P	Negative power for TFT
27	NC	-	No Connection
28	VGH	P	Positive power fot TFT
29	NC	-	No Connection
30	GND	P	Ground

5.2 TP

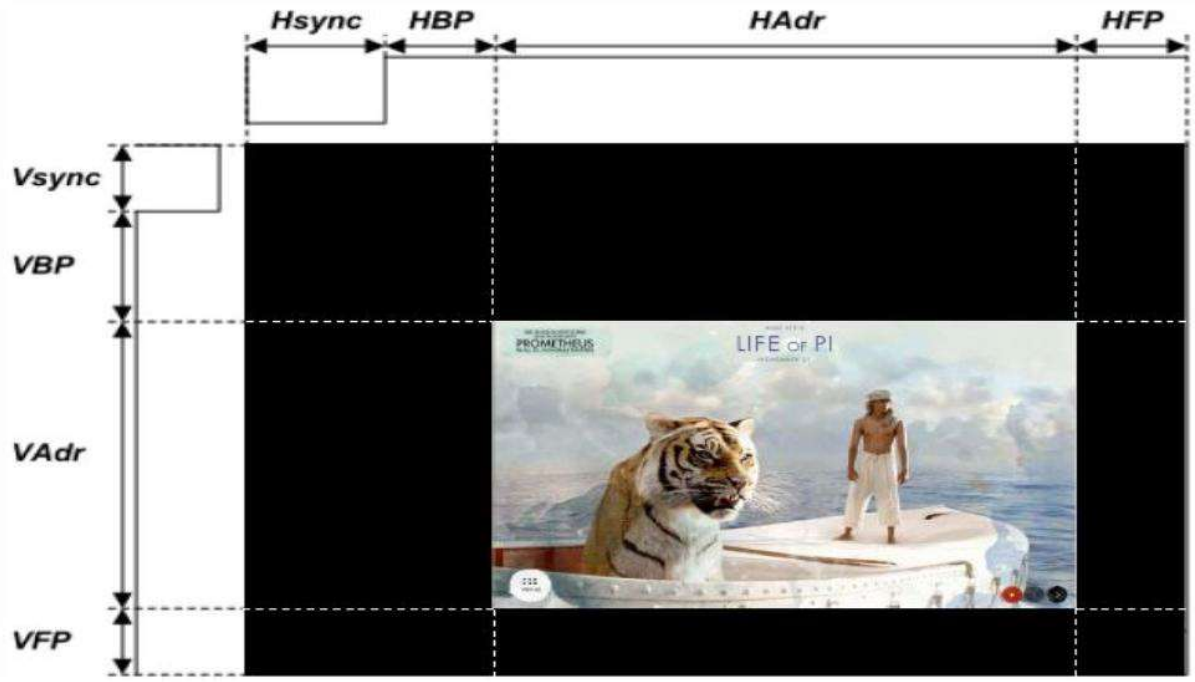
NO.	PIN
1	TP_SCL
2	TP_SDA
3	TP_INT
4	GND
5	TP_VCC
6	TP_RESET

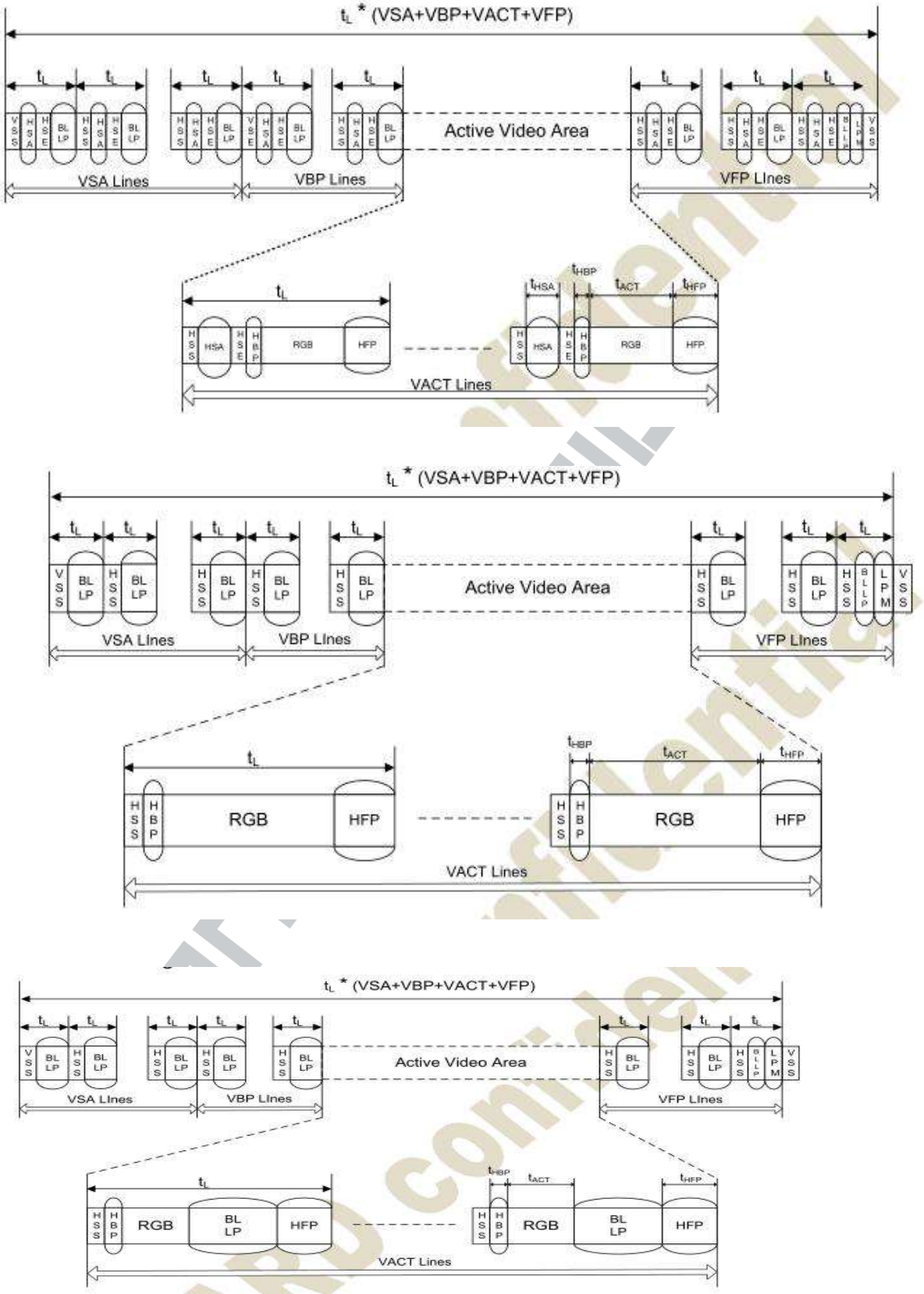
6. REFERENCE APPLICATION CIRCUIT

Please consult our technical department for detail information.

7. TIMINGS FOR MIPI Interface

7.1 Timing Waveform





7.2 Power on/off

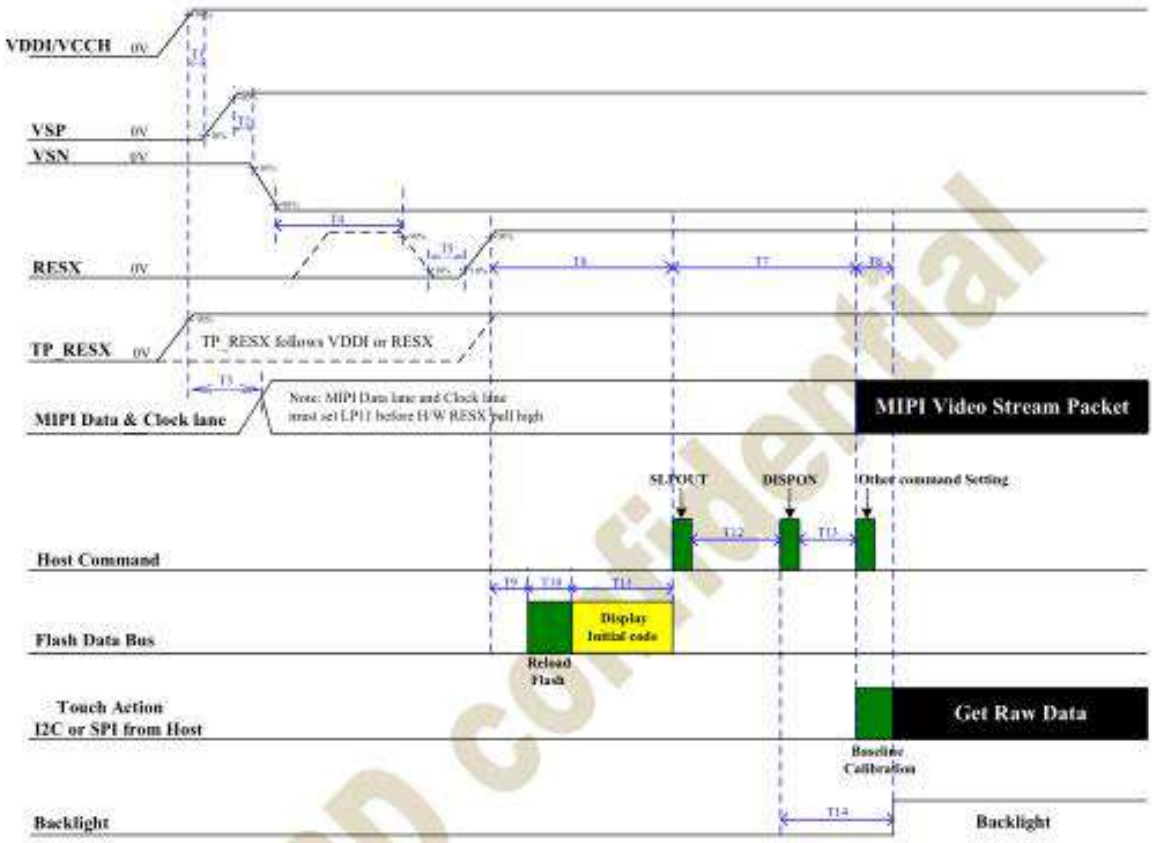


Figure 8.1: Power on sequence by FW

Symbol	Description	Min	Max	Unit	Note
T1	VDD1 to VSP	1	-	ms	
T2	VSP to VSN	1	-	ms	
T3	VDD1 to MIPI Lane	1	-	ms	
T4	Power Ready to Global Reset	1	-	ms	
T5	Global Reset Keep Low	15	-	us	TP Reset is the same
T6	Global Reset to Sleep Out	155	-	ms	
T7	Video Stream Start and Host TP Data Bus Active	140	-	ms	
T8	AP Start to Get Raw Data	30	-	ms	
T9	Reset to Flash Reload	-	5	ms	
T10	Flash Reload Time	-	50	ms	Default: 6MHz
T11	Display initial code by FW	-	100	ms	
T12	Sleep Out to Display On	10	-	ms	
T13	Display On to IC Ready	20	-	ms	
T14	Display On Command to BL On time	40	-	ms	

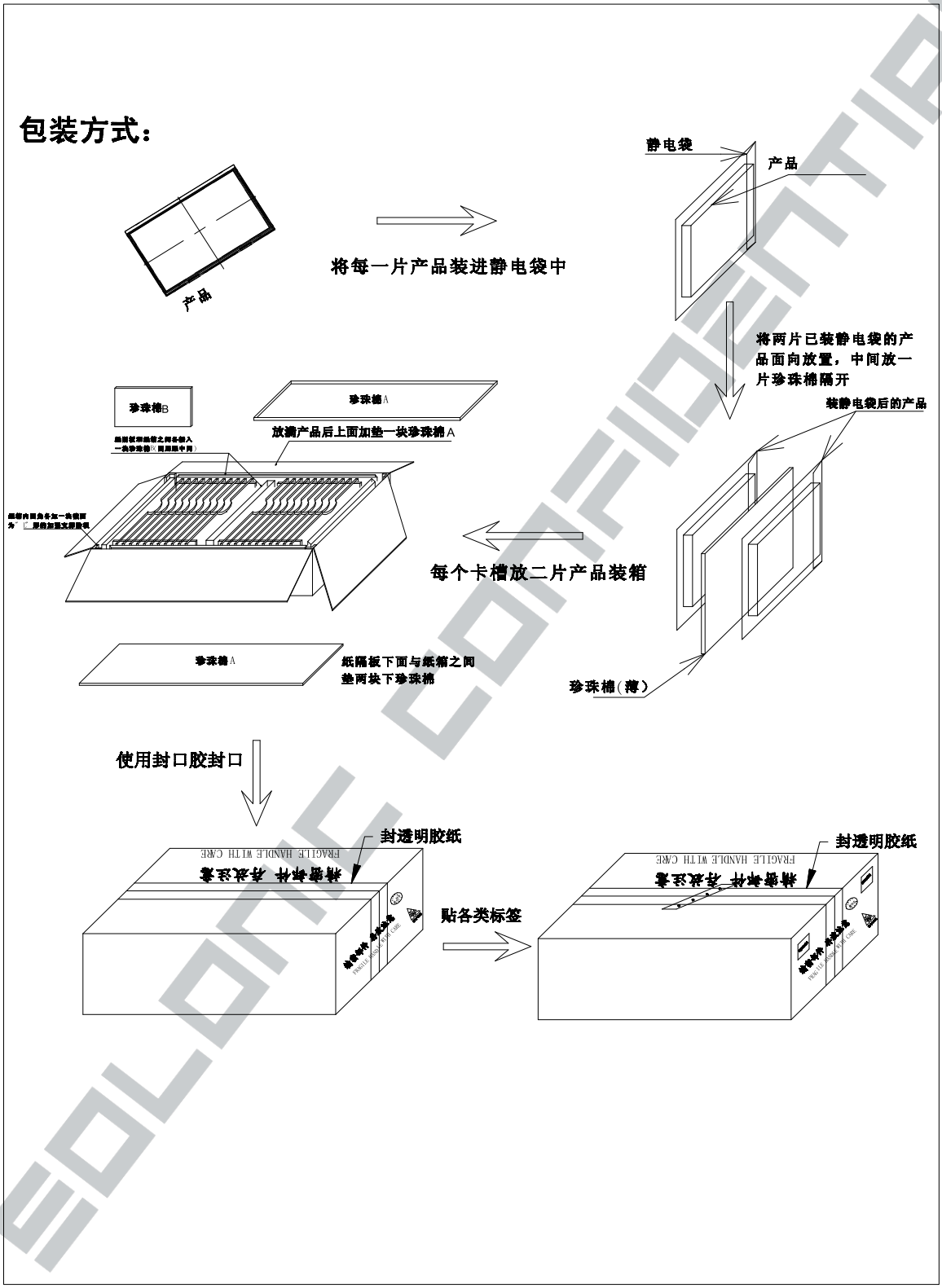
8. RELIABILITY TEST CONDITIONS

No.	Item	Conditions	Remark
1	High Temperature Storage	Ta=+85°C, 240hrs	-
2	Low Temperature Storage	Ta=-35°C, 240hrs	-
3	High Temperature Operation	Ta=+75°C, 240hrs	-
4	Low Temperature Operation	Ta=-25°C, 240hrs	-
5	High Temperature and High Humidity (Operating)	Ta=+60°C, 90%RH, 240hrs	-

Note: (1) All tests above are practiced at module type.

(2) There is no display function NG issue occurred, all the cosmetic specification is judged before the reliability stress.

9. PACKING SPECIFICATION



TFT 模组检验标准

1. 目的

A.明确模组的检验标准，防止不良品流入客户端。

B.便于与客户沟通。

2. 适用范围

适用于本公司所有**TFT** LCD 屏的模组。

3. 检验条件与环境

3.1 检验环境条件(Enplanation):

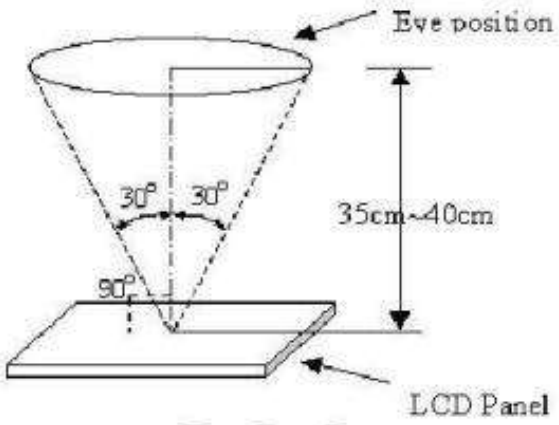
A.温度: 23±5 ℃；

B.湿度：55±10%RH.

C.外观检查光照：光照约300--500Lux;

D.点亮检查光照：光照约200--250Lux;

3.2 检测条件：



A.目视距离：35-40cm；

B.外观检验角度：±30°；

C.点亮检验角度：±30°。

3.3 抽样条件

A．批量：单次运送的单一机种之数量；

B．抽样计划:MIL-STD-105E 的一般检验水准II 级，正常检验、单次抽样。

AQL:主要缺点（Maj）0.65，次要缺点（Min）1.5；

(注：客户特殊要求除外)。

3.4 主要缺陷和次要缺陷的分类如下：

3.4.1 主要缺陷(Maj)：主要缺陷是指造成产品丧失使用性能的缺陷。如下：

A．显示异常: 产品不能正常显示；

B. 线缺陷；

C. 整个模组有严重的变形或者损坏；

D. 玻璃破片；

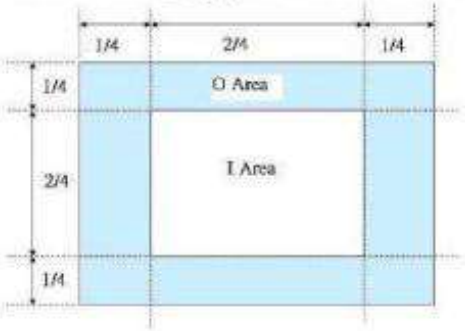
3.4.2 次要缺陷(Min): 次要缺陷是指不造成产品使用性能丧失的缺陷或难以发现的外观缺陷（不影响使用）。

A. 玻璃带点；

B. 玻璃刮伤、凹痕、周边色差、漏光；

C．背光异物；
D. 铁框折痕、划伤、生锈、缝隙≥0.6mm；
E．玻璃保护膜刮伤、脏污、汽泡；
F 漏贴 PASS、产品标签。
3.5 作业注意事项：
3.5.1 检验前先戴好手指套及静电手环；
3.5.2 检验作业时不可有配戴戒指、手表等手饰，物料要小心轻放,以免造成破损、脏污等；
3.5.3 开包装后注意密封包装防潮防湿保存.
3.6 检测画面及区域定义：
A. 检测画面: 全白,全黑, 全红, 全绿, 全蓝画面.
B. 内部区域(I)与外部区域(O)的定义:
I: Inner display area 中心區域
O: Outer display area 非中心區域

Note-1：I/O 區定義/ I/O Area Definition



4.检验标准
4.1 外观检

项目	判定标准	分类
玻璃破裂	不允许	Maj
玻璃漏液	不允许	Maj
玻璃破角	影响线路、性能不可有	Maj
FPC	破损、折伤、短路、金手指偏位等影响性能不可有	Maj

铁框缝隙＞0.65mm	不可有	Min
漏贴PASS、产品标签	≤1/10000	Min
成品尺寸与产品规格书不符	不允许	Maj

4.2 点亮（电性）检查

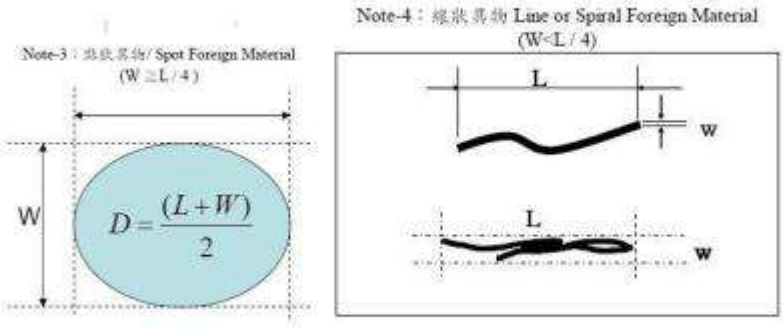
项目	判定标准		分类	
屏的规格	I 区	O 区	总数	Min
亮点	N≤0	N≤2	N≤2	Min
暗点	N≤0	N≤2	N≤2	Min
异物	N≤0	N≤2	N≤2	Min
两连点	N≤0	N≤1	N≤1	Min
总数	N≤0	N≤2	N≤2	Min
亮点带点比例	95:5			
三连点、并列点	不允许			Min
亮线	不允许			Maj

FOG 玻璃点	D≤0.2mm	忽略不计	Min
	0.2mm<D≤0.3mm	N≤2	
	D≥0.3mm	不允许	

FOG 偏异（线状）	0.05mm<W≤0.1mm，L≤5mm	N≤2	Min
	W>0.1mm 或L >5mm	不允许	
FOG 偏异（点状）	D≤0.2mm	忽略不计	Min
	0.2mm<D≤0.3mm	N≤2	
	D>0.3mm	不允许	
FOG 压痕（气泡）	D≤0.2mm	忽略不计	Min
	0.2mm<D≤0.3mm	N≤2	
	D>0.3mm	不允许	

接上页的点亮（电性）检查：

	判定标准		分类
Mura	6%ND 不可見(但若有 LIMUT SAMPLE,參照SAMPLE) 判定基準以灰階畫面50%.		Min
B/L 不良(異物黑點白點)	D≤0.2mm	忽略不计	Min
	0.2mm<D≤0.3mm	N≤2	Min
	D>0.3mm	不允许	Min
B/L 不良(異物黑點白點)	W<0.05 mm	不计	Min
	0.05 mm≦W≦0.1 mm L≦5 mm	N≤2	Min
	W>0.1或 L>5mm	不允许	Min
微小亮点透过 ND 过滤6%仍可视计为点缺陷（全黑画面和50%灰阶检查）。			
忽略不计点请分散插箱，不可集中放在一起			



（如下图 1）

1.3 连续点的定义

两点连续	三点连续	两点连续	三点连续	两点连续	两点连续
■ ■	■ ■ ■	■■	■■■	□■ ■□	■□ □■

5.包装及标识

包装方式与相关标识依客人要求，在客人没作明确要求时，依我司标准确定。