深圳市华阳显示有限公司

Shenzhen Huayang Display Co. , Ltd.

SPECIFICATION

FOR

HD101HC9881-31

Customer Confirmation column

Approved by: _____Dept.:_____Data:_____

Please return one of the copies of the specification with your signature to us within two weeks after you receive this document.If it is not returned,we will assume that you agree to the entire contents of this specification document.

Specification

Design:_____Check:_____Approval:_____

联系方式： 王小姐 13827421865
地址：深圳市光明区合水口社区第五工业区3楼
网址：http://www.szyhxs.com

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1.0 Features

The Display model HD101HC9881-31 is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT LCD panel, a driving circuit, and a backlight system. This TFT LCD has a 10.1 inch diagonally measured active display area with 800*1280 pixels.

2.0 Mechanical Specifications

ITEM	STANDARD VALUES	UNITS
LCD type	10.1"	Inch
Pixel arrangement	800（RGB）×1280	Pixels
Outline Dimension	143×228.6×2.5	mm
Display area	135.36(H)×216.58(V)	mm
Pixel Pitch	0.1692 ×0.1692	mm
Display Mode	Normally Black	--
Viewing Direction	IPS	--
Number of Color	16.7M	--
Interface	MIPI	--
LCM Luminance	280	cd/㎡

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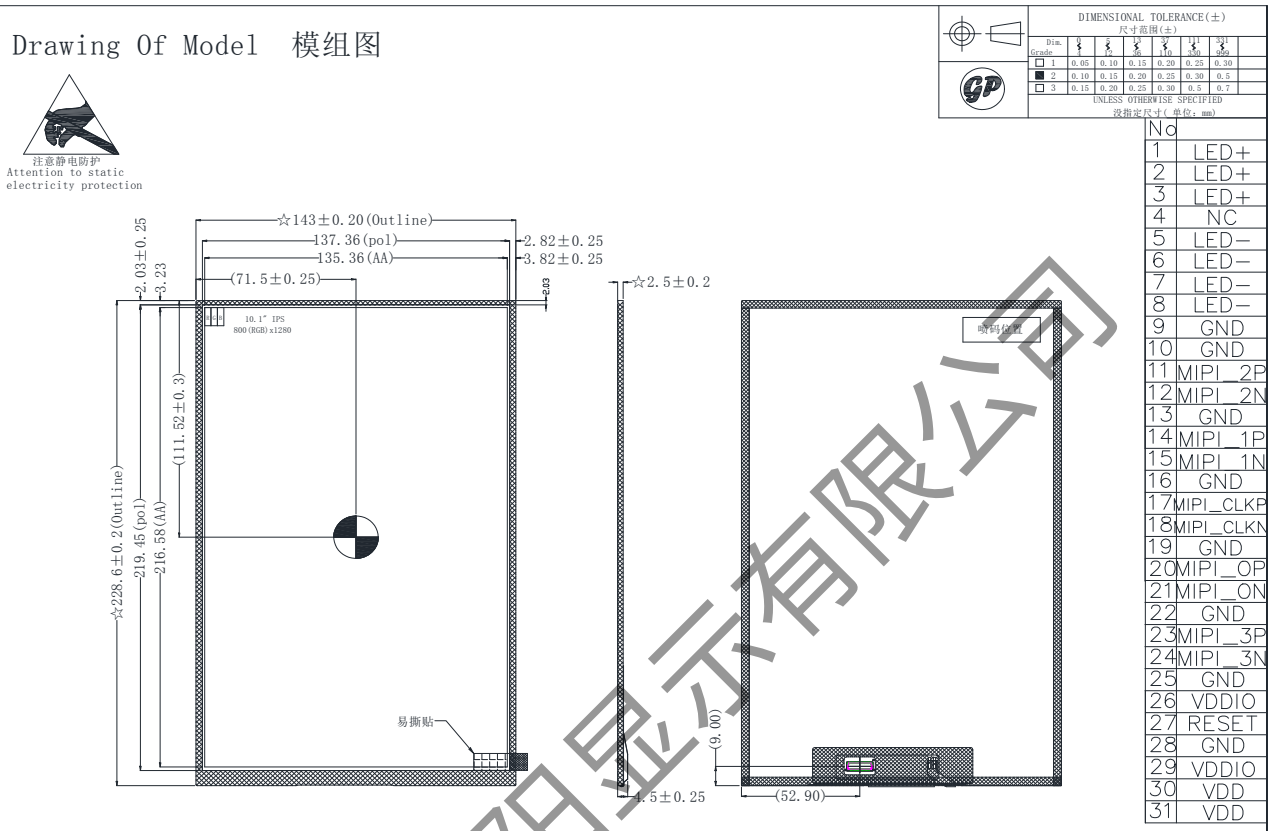
3.0 Dimensional Diagram

Drawing Of Model 模组图



DIMENSIONAL TOLERANCE(±) 尺寸范围(±)

Dim. Grade	0 ~ 3	3 ~ 6	6 ~ 30	30 ~ 120	120 ~ 400	400 ~ 1000
1	0.05	0.10	0.15	0.20	0.25	0.30
2	0.10	0.15	0.20	0.25	0.30	0.5
3	0.15	0.20	0.25	0.30	0.5	0.7

UNLESS OTHERWISE SPECIFIED 没指定尺寸(单位: mm)

No	
1	LED+
2	LED+
3	LED+
4	NC
5	LED−
6	LED−
7	LED−
8	LED−
9	GND
10	GND
11	MIPI_2P
12	MIPI_2N
13	GND
14	MIPI_1P
15	MIPI_1N
16	GND
17	MIPI_CLKP
18	MIPI_CLKN
19	GND
20	MIPI_0P
21	MIPI_0N
22	GND
23	MIPI_3P
24	MIPI_3N
25	GND
26	VDDIO
27	RESET
28	GND
29	VDDIO
30	VDD
31	VDD

备注：带“☆”为重要尺寸，重点测量，（）内尺寸为参考尺寸，不做测量
表示修改处 ✎

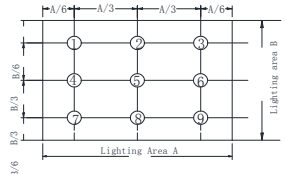
修改	日期	修订人	变更原因	内 容
A0			——	新增规格

ELECTRICAL/OPRICAL CHARACTERISTICS AT Ta=25℃

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Center Luminous Intensity	Iv	250	280		cd/㎡	IF=180mA(中心点)
LCM coordinaies	X	0.260	0.310	0.360		IF=180mA
	Y	0.350	0.400	0.450		
Forward Voltage	VF	9.0	9.9	10.5	V	IF=180mA
Reverse Current	IR			50	uA	VR=10V,※1
Luminous Tolerance	Iv-m	75	80		%	(min/max)*100

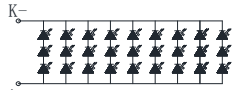
ABSOLUTE MAXIMUM RATINGS AT Ta=25℃

PARAMETER	SYMBOL	SPECIFICATION	UNITS	REMARK
Power Dissipation	Pd	1890	mW	※27
Peak Forward Current	IFP	180	mA	※1
ReverseVoltage	VR	5	V	※1
Operaring Temperature	TOPR	-10°C TO+50°C	°C	
Storage Temperature	TSTG	-20°C TO+60°C	°C	



测试仪器：K-8

※1. Internal Circuit Diagram



CURRENT IF=180mA

REVSION 版 本	A0	☑ 正式规格 ☐ 临时规格	REVISER 修订人	MODEL NO 产品料号	APPROVED BY 核 准	CHECKED BY 审 核	DRAWN BY 绘 图
DATE 日 期	2019-12-03						
PAGE 页 码	4/6						

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4.0 Interface Pin Function

Pin No	Symbol	Function
1	LED+	LED Anode
2	LED+	LED Anode
3	LED+	LED Anode
4	NC	No Connection
5	LED-	LED Cathode
6	LED-	LED Cathode
7	LED-	LED Cathode
8	LED-	LED Cathode
9	GND	Ground
10	GND	Ground
11	MIPI_D2P	DSI Data differential signal input pins. (Data lane2)
12	MIPI_D2N	DSI Data differential signal input pins. (Data lane2)
13	GND	Ground
14	MIPI_D1P	DSI Data differential signal input pins. (Data lane1)
15	MIPI_D1N	DSI Data differential signal input pins. (Data lane1)
16	GND	Ground
17	MIPI-CLK P	DSI CLOCK differential signal input pins
18	MIPI-CLK N	DSI CLOCK differential signal input pins
19	GND	Ground
20	MIPI_D0P	DSI Data differential signal input pins. (Data lane0)
21	MIPI_D0N	DSI Data differential signal input pins. (Data lane0)
22	GND	Ground
23	MIPI_D3P	DSI Data differential signal input pins. (Data lane3)
24	MIPI_D3N	DSI Data differential signal input pins. (Data lane3)
25	GND	Ground
26	VDDIO	Power supply (3.3V or 1.8V)
27	RSTB	Global reset pin(same as VDDIO)
28	GND	Ground
29	VDDIO	Power supply (3.3V or 1.8V)
30	VDD	Power supply (3.3V)
31	VDD	Power supply (3.3V)

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4.0 Absolute Maximum Ratings

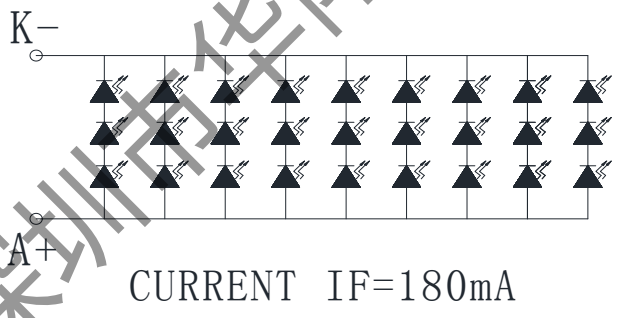
ITEM	SYMBOL	MIN.	TYP.	MAX.	UNITS
Supply Voltage	VDD	2.8	3.3	3.6	V
Analog Power Supply Voltage	VDDIO	1.75	1.8	3.3	V

5.0 Backlight & LED Characteristics

VSS = 0V, Ta =25℃

Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
Supply Voltage	VF	9.0	9.9	10.5	V	IF= 180mA
Supply Current	IF		180	-	mA	-
Reverse Current	IR	-	-	10	uA	VR= 5V/PCS
Power dissipation	PD	-	1890	-	mW	
Luminous Intensity For LCM	IV	250	280	-	cd/m^2	IF= 20mA
Uniformity For LCM	-	70	80	-	%	IF= 20mA
Life Time	-	50000	-	-	Hr	IF= 20mA

Internal Circuit Diagram



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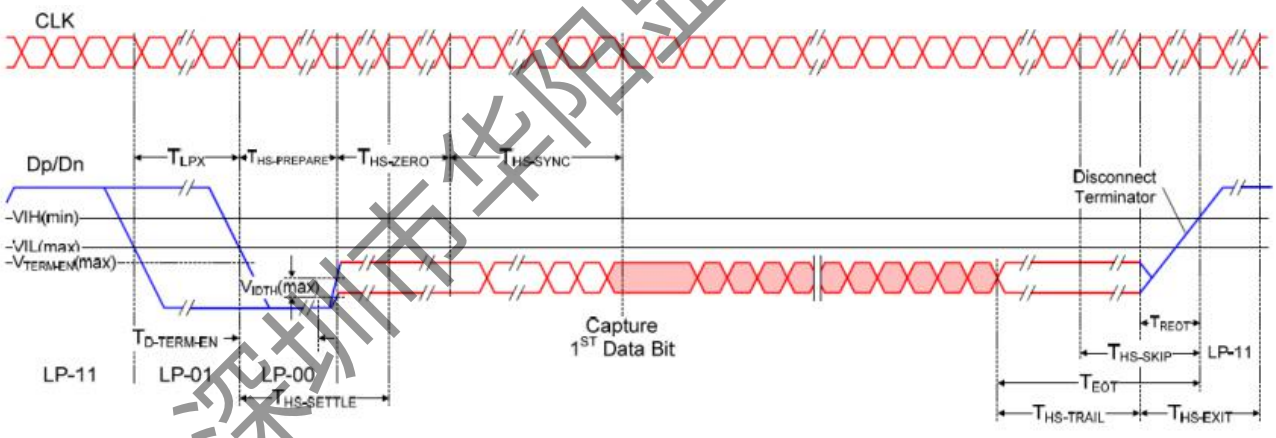
6.0. Timing Characteristics

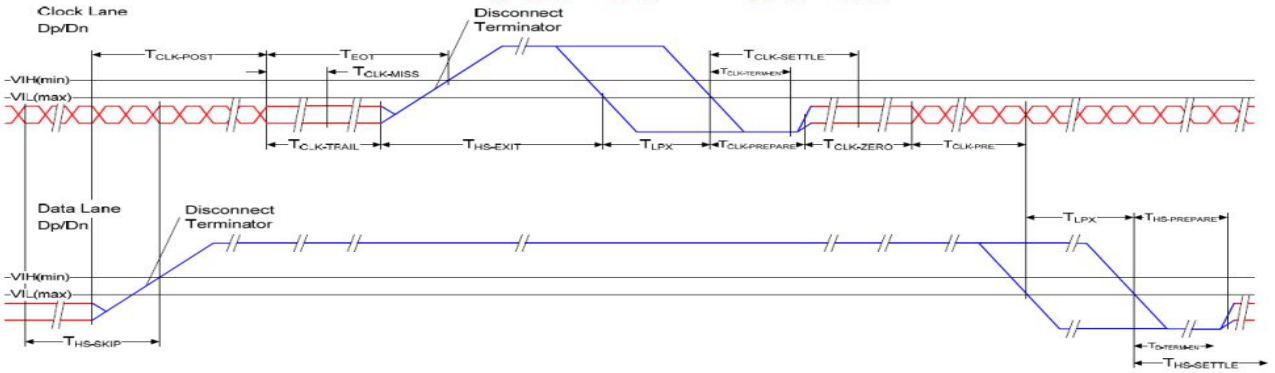
6.1 AC Timing Timing Diagram

Parameter	Description	Min	Typ	Max	UNIT
$T_{CLK-POST}$	Time that the transmitter continues to send HS clock after the last associated Data Lane has transitioned to LP Mode.	60 + 52*UI	-	-	ns
$T_{CLK-PRE}$	Time that the HS clock shall be driven by the transmitter prior to any associated Data Lane beginning the transition from LP to HS mode.	8*UI	-	-	ns
$T_{CLK-PREPARE}$	Time that the transmitter drives the Clock Lane LP-00 Line state immediately before the HS-0 Line state starting the HS transmission.	38	-	95	ns
$T_{CLK-PREPARE}$ + $T_{CLK-ZERO}$	$T_{CLK-PREPARE}$ + time that the transmitter drives the HS-0 state prior to starting the Clock.	300	-	-	ns
$T_{CLK-TERM-EN}$	Time for the Clock Lane receiver to enable the HS line termination.	-	-	38	ns
$T_{CLK-TRAIL}$	Time that the transmitter drives the HS-0 state after the last payload clock bit of a HS transmission burst.	60	-	-	ns
$T_{HS-EXIT}$	Time that the transmitter drives LP-11 following a HS burst.	100	-	-	ns

High Speed Clock Transmission



High Speed Data Transmission in Bursts



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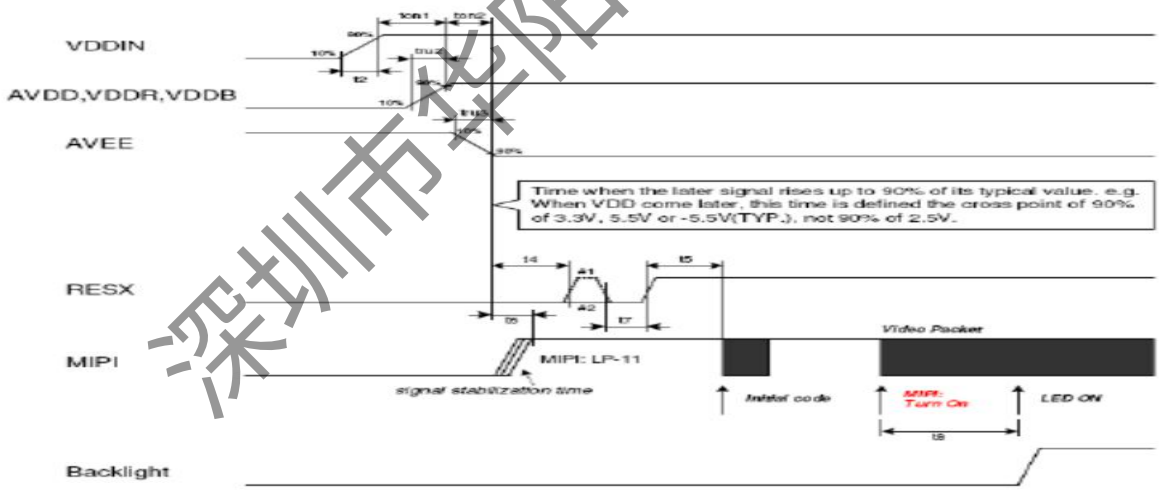
6.2 Parallel RGB Input Timing Table

Item		Symbol	Min.	Typ.	Max.	Unit
DCLK Frequency		Fclk	-	67.3	-	MHz
Hsync	Period Time	Th	-	854	-	DCLK
	Display Period	Thdisp		800		DCLK
	Back Porch	Thbp	5	18	-	DCLK
	Front Porch	Thfp	5	18	-	DCLK
	Pulse Width	Thw	6	18	-	DCLK
Vsync	Period Time	Tv	-	1314	-	H
	Display Period	Tvdisp		1280		H
	Back Porch	Tvbp	2	10	-	H
	Front Porch	Tvfp	4	20	-	H
	Pulse Width	Tvw	2	4	-	H

7.0 Power On/Off Sequence

7.1 Power On Sequence



Note 1: Unless otherwise specified, timings herein show cross point at 50% of signal/power level.
Note 2: This power-on sequence is based on adding schottky diode on VGLX pin to ground.
Note 3: Reset signal H to L to H (#1) is better than only L to H (#2).

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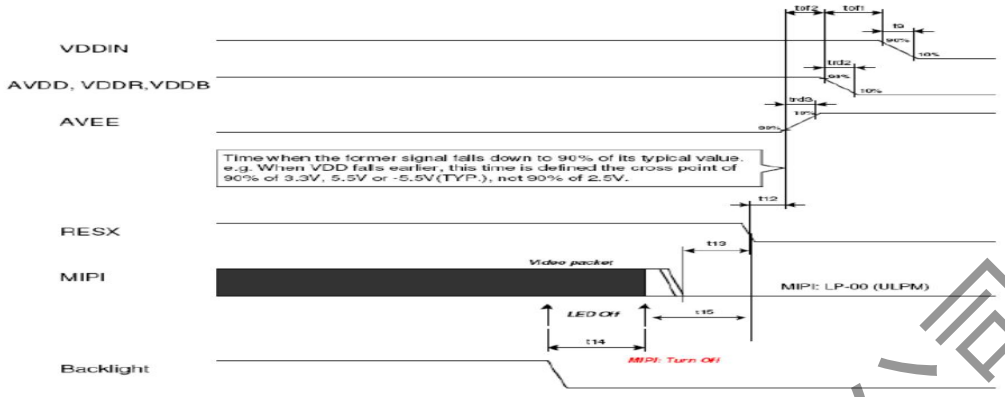
7.2 Power Off Sequence



8.0 Reliability

NO.	Test Item	Test condition	Criterion
1	High Temperature Storage	60℃±2℃ 96H Restore 2H at 25℃ Power off	
2	Low Temperature Storage	-10℃±2℃ 96H Restore 2H at 25℃ Power off	
3	High Temperature Operation	50℃±2℃ 96H Restore 2H at 25℃ Power on	
4	Low Temperature Operation	0℃±2℃ 96H Restore 2H at 25℃ Power on	
5	High Temperature & Humidity Operation	40℃±2℃ 90%RH 96H Power on	
6	Temperature Cycle	-10℃←→60℃ 30min 30min after 10cycle, Restore 2H at 25℃ Power off	Aftertesting,cosmetic and electrical defects should not happen.
7	Vibration Test	10Hz~45Hz, 100m/s2, 120min	
8	Shock Test	Half-sinewave,300m/s2,11ms	
9	Drop Test(package state)	800mm, concrete floor,1corner, 3edges, 6 sides each time	1.After testing, cosmetic and electrical defects should not happen. 2.the product should remain at initial place 3.Product uncovered or package broken is not permitted.
10	Electro Static Discharge Test (non-operation)	150pF，330Ω，Contact:±4KV,Air:±8KV Measure point :LCD glass and metal bezel	IEC61000-4-2 ： 2001 GB/T17626.2-2006

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		200pF，0Ω，±200V contact test Measure point :IF connector pins	

9.0 INSPECTION STANDARDS

9.1 Purpose

This incoming inspection standard shall be applied to TFT-LCD supplied by M Z to its customer.

9.2 Scope

This inspection standard contains Cosmetic Specifications and Electrical Specifications.

9.3 Classification of defects

9.3.1 Major defect.

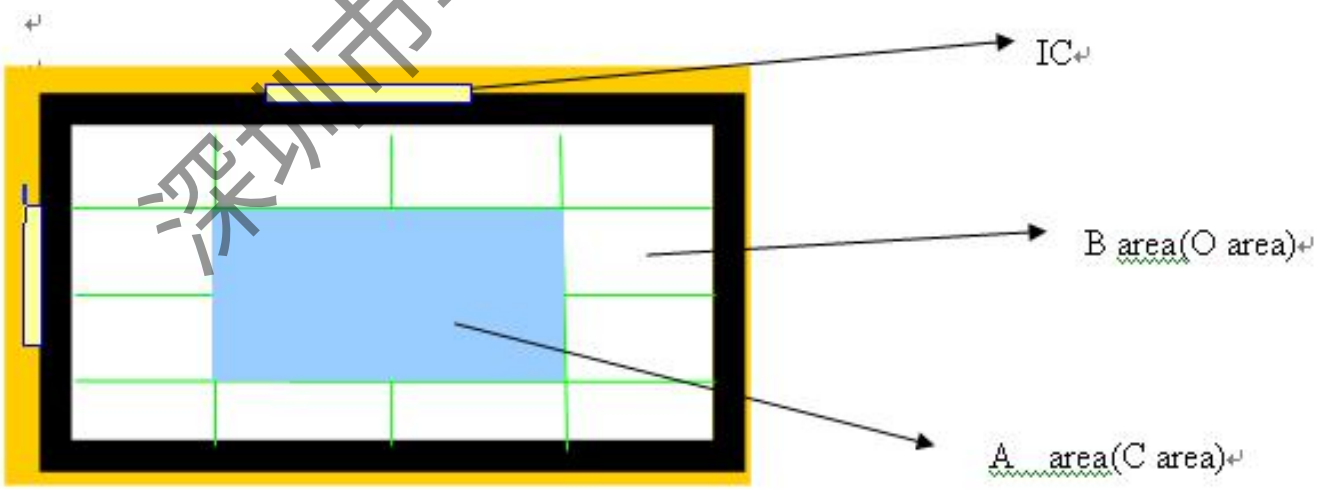
The major defect is a defect that is likely to result in product failure or reduction in Product's intended usage.

9.3.2 Minor defect.

The minor defect is a defect that has little bearing on the effective use or Operation of the product.

9.4 Definition

9.4.1 Display area definition



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9.5 Inspection conditions is as follows

9.5.1 Viewing distance is approximately 35-40 cm

9.5.2 Viewing angle is normal to the LCD panel as 45°

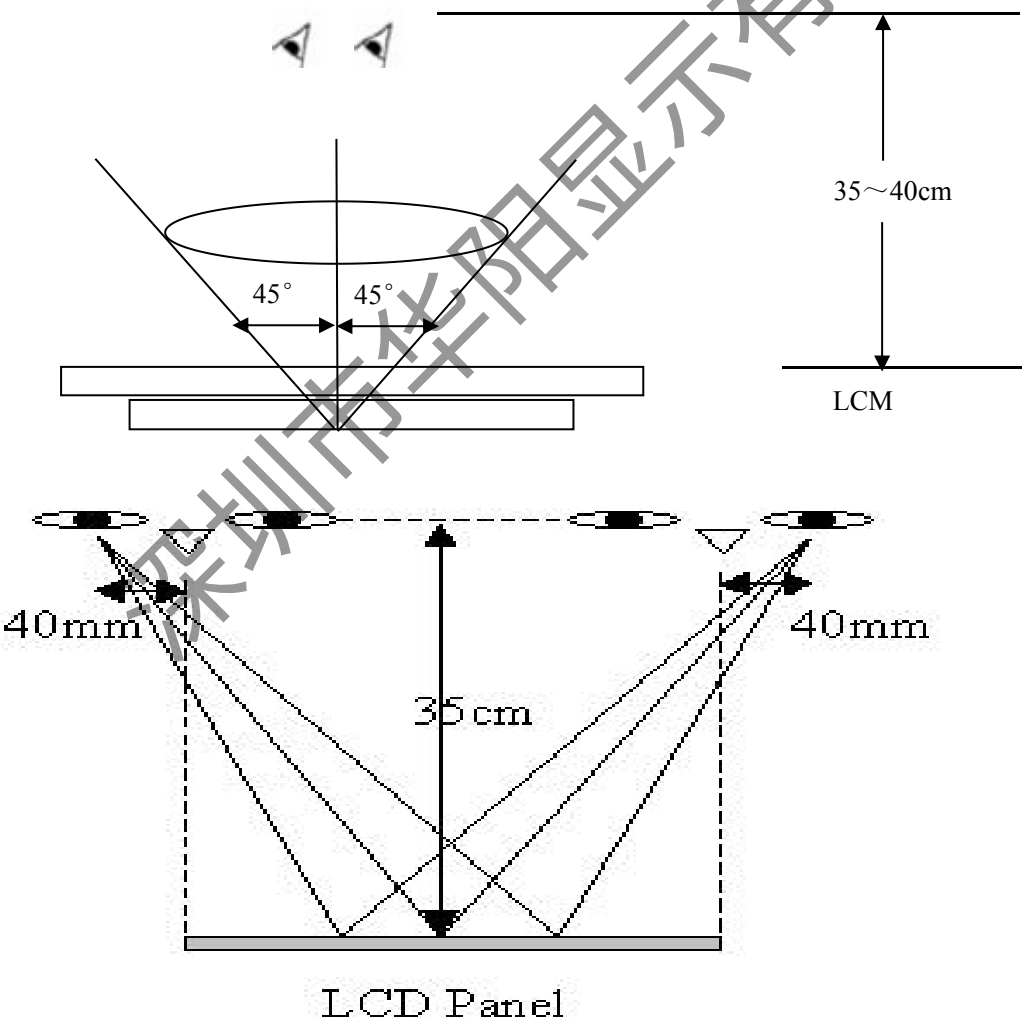
9.5.3 Ambient temperature is approximately 25±5℃

9.5.4 Ambient humidity is 60±5% RH

9.5.5 Ambient luminance is from 300-500 Lux.

9.5.6 Input signal timing should be typical value(3s-5s).

9.5.7 Mura & Light leakage inspection at ND-Filter 6%.



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9.6 Sampling method

9.6.1 According to the MIL-STD-105E general inspection level , Ⅱ Sampling plan.

9.6.2 AQL: MA 0.65 MI 1.0

9.7 Inspection Criteria

DEFECT TYPE			LIMIT			Defect	Note
VISUAL DEFECT	SCRATCH		W≤0.05mm and L≤5mm		Ignore	Maj	NOTE1
			0.05mm<W≤0.2mm L≤10mm		N≤4		
			10mm<L, 0.1mm<W		N=0		
	INTERNAL	SPOT	Φ≤0.2mm		Ignore		
			0.2mm<Φ≤0.5mm		N≤4		
			Φ>0.5mm		N=0		
		FIBER	0.1mm≤W≤0.2mm L≤2.5mm		N≤4		
			0.2mm<W, 2.5mm<L		N=0		
		POLARIZER BUBBLE	Φ≤0.25mm		Ignore		
			0.25mm<Φ≤0.5mm		N≤4		
			Φ>0.5mm		N=0		
		DENT	Φ<0.25mm		Ignore		
			0.25mm≤Φ≤0.5mm		N≤4		
			Φ>0.5mm		N=0		
ELECTRICAL DEFECT	BRIGHT DOT		C Area	O Area	Total	Maj	NOTE2 NOTE3
			N≤4 （contain C area and O area）		N≤4		
	DARK DOT		N≤5 （contain C area and O area）		N≤5		
	TWO ADJACENT DOT		N≤1	N≤2	N≤3		

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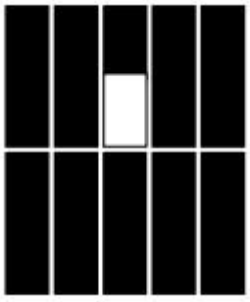
	THREE OR MORE ADJACENT DOT	NOT ALLOWLED		
	LINE DEFECT	NOT ALLOWLED		

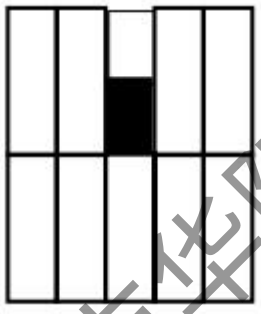
Note1: Minimum distance between dot defects and spot is 5mm;

Note2: The definition of Bright dot and Dark dot

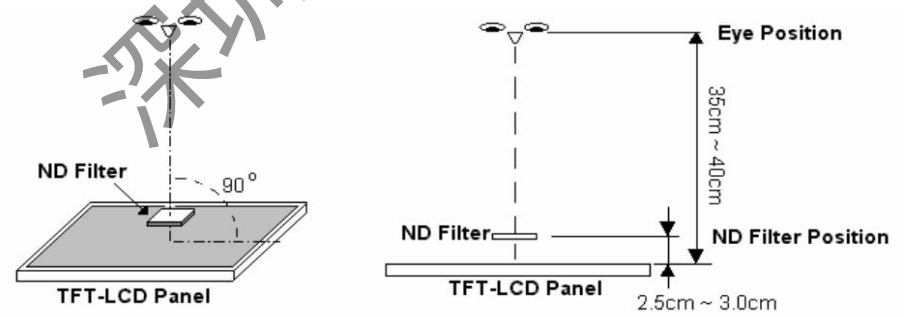
-bright area is more than 50% of one dot



-dark area is more than 50% of one dot



-The bright dot shall be visible under ND-Filter 5% as following:



NOTE3:

-A bit rate(bright dot model)≤10%;

-Class Chipping but not affect the function of quality OK;

-Polarizing film appearance does not affect the function OK;

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10.0 Precautions For Using LCD Modules

Handing Precautions

(1) The display panel is made of glass and polarizer. As glass is fragile, it tends to become or chipped during handling especially on the edges. Please avoid dropping or jarring. Do not subject it to a mechanical shock by dropping it or impact.

(2) If the display panel is damaged and the liquid crystal substance leaks out, be sure not to get any in your mouth. If the substance contacts your skin or clothes, wash it off using soap and water.

(3) Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary. Do not touch the display with bare hands. This will stain the display area and degraded insulation between terminals (some cosmetics are determined to the polarizer).

(4) The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully. Do not touch, push or rub the exposed polarizers with anything harder than an HB pencil lead (glass, tweezers, etc.). Do not put or attach anything on the display area to avoid leaving marks on. Condensation on the surface and contact with terminals due to cold will damage, stain or dirty the polarizer. After products are tested at low temperature they must be warmed up in a container before coming is contacting with room temperature

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air.

(5) If the display surface becomes contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If it is heavily contaminated, moisten cloth with one of the following solvents

- Isopropyl alcohol
- Ethyl alcohol

Do not scrub hard to avoid damaging the display surface.

(6) Solvents other than those above-mentioned may damage the polarizer. Especially, do not use the following.

- Water
- Ketone
- Aromatic solvents Wipe off saliva or water drops immediately, contact with water over a long period of time may cause deformation or color fading. Avoid contacting oil and fats.

(7) Exercise care to minimize corrosion of the electrode. Corrosion of the electrodes is accelerated by water droplets, moisture condensation or a current flow in a high┐humidity environment.

(8) Install the LCD Module by using the mounting holes. When mounting the LCD module make sure it is free of twisting, warping and distortion. In particular, do not forcibly pull or bend the I/O cable or the backlight cable.

(9) Do not attempt to disassemble or process the LCD module.

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(10) NC terminal should be open. Do not connect anything.

(11) If the logic circuit power is off, do not apply the input signals.

(12) Since LCM has been assembled and adjusted with a high degree of precision, avoid applying excessive shocks to the module or making any alterations or modifications to it.

- Do not alter, modify or change the shape of the tab on the metal frame.
- Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.
- Do not damage or modify the pattern writing on the printed circuit board.
- Absolutely do not modify the zebra rubber strip (conductive rubber) or heat seal connector.
- Except for soldering the interface, do not make any alterations or modifications with a soldering iron.
- Do not drop, bend or twist LCM.

Storage Precautions

When storing the LCD modules, the following precaution is necessary.

(1) Store them in a sealed polyethylene bag. If properly sealed, there is no need for the dessicant.

(2) Store them in a dark place. Do not expose to sunlight or fluorescent light, keep the temperature between 0°C and 35°C.

(3) The polarizer surface should not come in contact with any other objects. (We

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advise you to store them in the container in which they were shipped).

Others

Liquid crystals solidify under low temperature (below the storage temperature range) leading to defective orientation or the generation of air bubbles (black or white). Air bubbles may also be generated if the module is subject to a low temperature. If the LCD modules have been operating for a long time showing the same display patterns, the display patterns may remain on the screen as ghost images and a slight contrast irregularity may also appear. A normal operating status can be regained by suspending use for some time. It should be noted that this phenomenon does not adversely affect performance reliability. To minimize the performance degradation of the LCD modules resulting from destruction caused by static electricity etc., exercise care to avoid holding the following sections when handling the modules.

- Exposed area of the printed circuit board.

-Terminal electrode sections.

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