

# APPROVAL SHEET

## 承 认 书

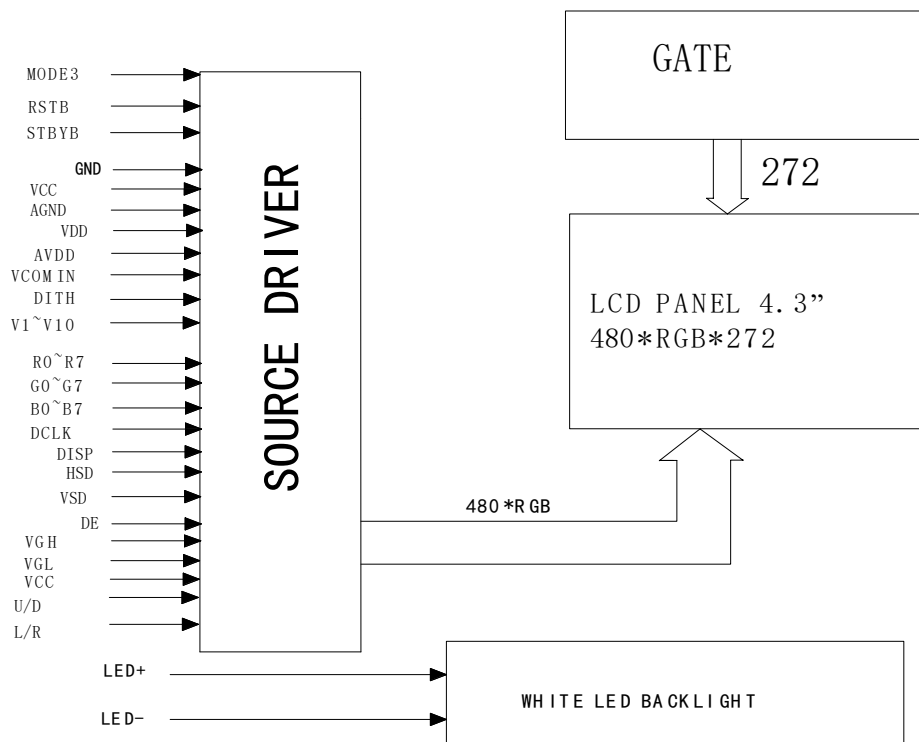
Customer 客户名称	
Part NO. 产品型号	RP04340HS-H1
Product type 产品内容	Mode: Transmissive type .Normally white. TFT LCD Module LCD Module: Graphic 480RGB*272Dot-matrix
Remarks 备注栏	<input type="checkbox"/> APPROVAL FOR SEPCIFICATIONS ONLY <input checked="" type="checkbox"/> APPROVAL FOR SEPCIFICATIONS AND SAMPLE
Signature by Customer: 客户确认签章	

Issued by	Checked by	Approved by
	Lr.Yin	GF.Zhang

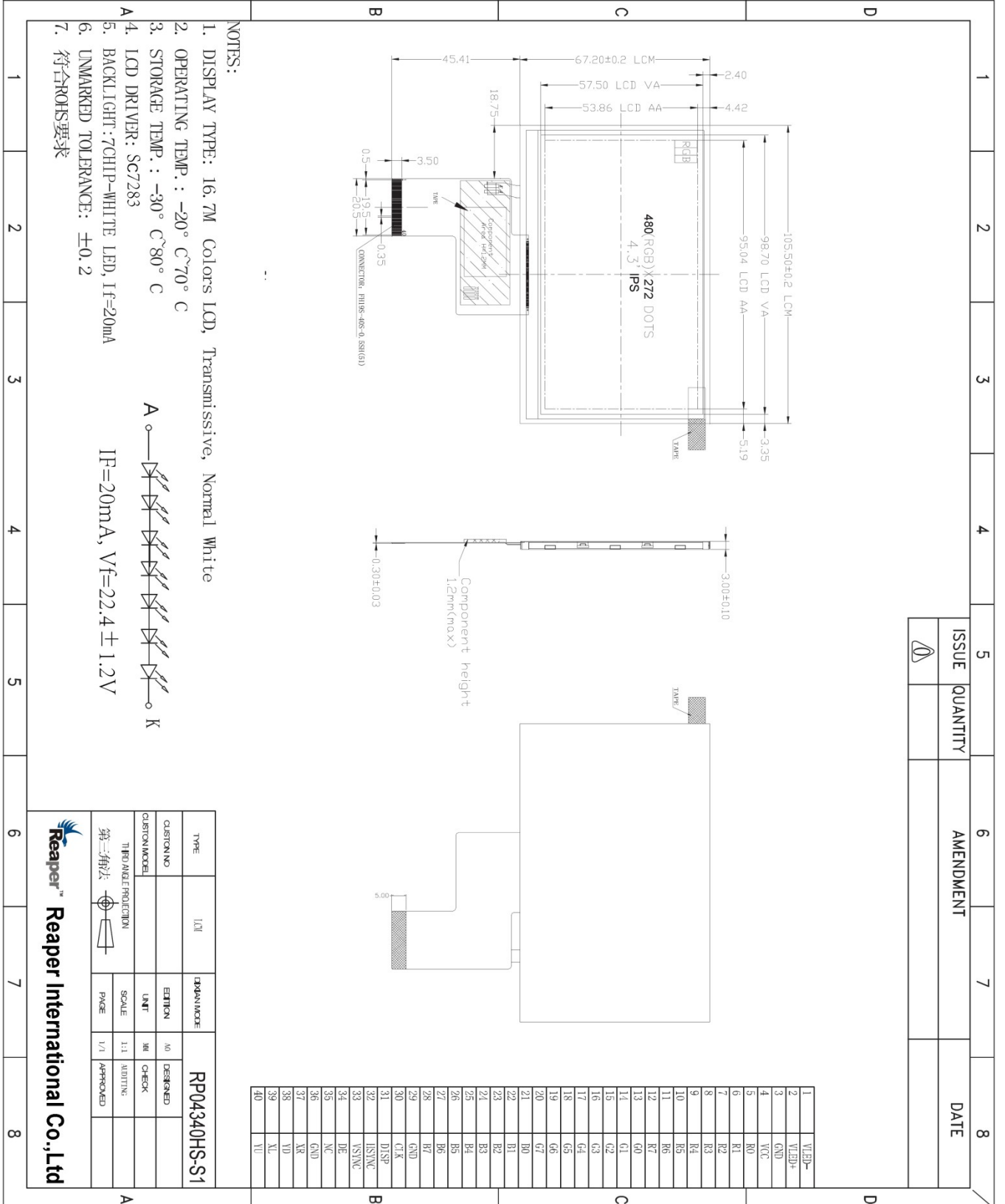
## 1. PHYSICAL DATA

Item	Contents	Unit
LCD type	TFT TRANSMISSIVE	---
Viewing direction	ALL	
Module size (W×H×T)	105.50 × 67.10 × 3.00	mm <sup>3</sup>
Active area(W×H)	95.04×53.856	mm <sup>2</sup>
Number of dots(W×H)	480(RGB) ×272	dots
Pixel Pitch(H×V)	0.066×0.198	mm
Driver IC	SC7283	---
Colors	16.7M	---
Backlight Type	7 white leds Serial	---
Interface Type	Parallel RGB 24-BIT	---

## 2. BLOCK DIAGRAM



### 3. Mechanical Dimension



ISSUE	QUANTITY	AMENDMENT	DATE

- NOTES:
1. DISPLAY TYPE: 16.7M Colors LCD, Transmissive, Normal White
  2. OPERATING TEMP.: -20° C~70° C
  3. STORAGE TEMP.: -30° C~80° C
  4. LCD DRIVER: SC7283
  5. BACKLIGHT: CHIP-WHITE LED, If=20mA
  6. UNMARKED TOLERANCE: ±0.2
  7. 符合ROHS要求



TYPE	LCM	EXPAN MODE	RP04340HS-S1
CUSTOM NO.		EDITION	00
CUSTOM MODEL		UNIT	MM
		SCALE	1:1
		PAGE	1/1
		CHECK	
		APPROVED	

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#### 4. Pin Descriptions

Pin.No	Symbol	Function
1	LEDK	back light power supply negative
2	LEDA	back light power supply positive
3	GND	Ground
4	VCC	Power supply
5-12	R0-R7	Red Data
13-20	G0-G7	Green Data
21-28	B0-B7	Blue Data
29	GND	Ground
30	CLK	Colock signal
31	DISP	Display on/off
32	HSYNC	Horizontal sync input in RGB mode(short to GND if not used)
33	VSYNC	Vertical sync input in RGB mode(short to GND if not used)
34	DE	Data enable
35	NC	No Connection
36	GND	Ground
37	XR	touch panel X-right
38	YD	touch panel Y-bottom
39	XL	touch panel X-left
40	YU	touch panel Y-up

## 5. ABSOLUTE MAXIMUM RATINGS

### 5.1 (GND=AGND=0V)

Parameter	Symbol	Min	Max	Unit
Power supply1	V <sub>DD</sub>	-0.3	+3.6	V
Power supply2	A <sub>v</sub> dd	-0.3	VCC+0.3	V
Operating temperature	T <sub>OPR</sub>	-20	70	°C
Storage temperature	T <sub>STG</sub>	-30	80	°C

### 5.2 Input voltage refer list

Parameter	Symbol	Value	Unit	Remarks
TFT Gate ON Voltage	V <sub>GH</sub>	21	V	
TFT Gate Off Voltage	V <sub>GL</sub>	-8	V	
TFT Common Electrode Voltage	V <sub>COM</sub>	3.8	V	NOTE
Analog Power Supply Voltage	A <sub>V</sub> DD	10.85	V	

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

## 6. DC ELECTRICAL CHARACTERISTICS

### 6.1.1 Recommended Operating Range

Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
Supply Voltage	VDD	3.0	3.3	3.6	V	
IO Supply Voltage	VDDI	3.0	-	3.6	V	
Charge Pump Supply Voltage	PVDD	3.0	3.3	3.6	V	

### 6.1.2 DC Characteristics for Digital Circuit

Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
Logic-High Input Voltage	Vih	0.7VDDI	-	VDDI	V	
Logic-Low Input Voltage	Vil	DGND	-	0.3VDDI	V	
Logic-High Output Voltage	Voh	VDDI-0.4	-	VDDI	V	
Logic-Low Output Voltage	Vol	DGND	-	DGND+0.4	V	

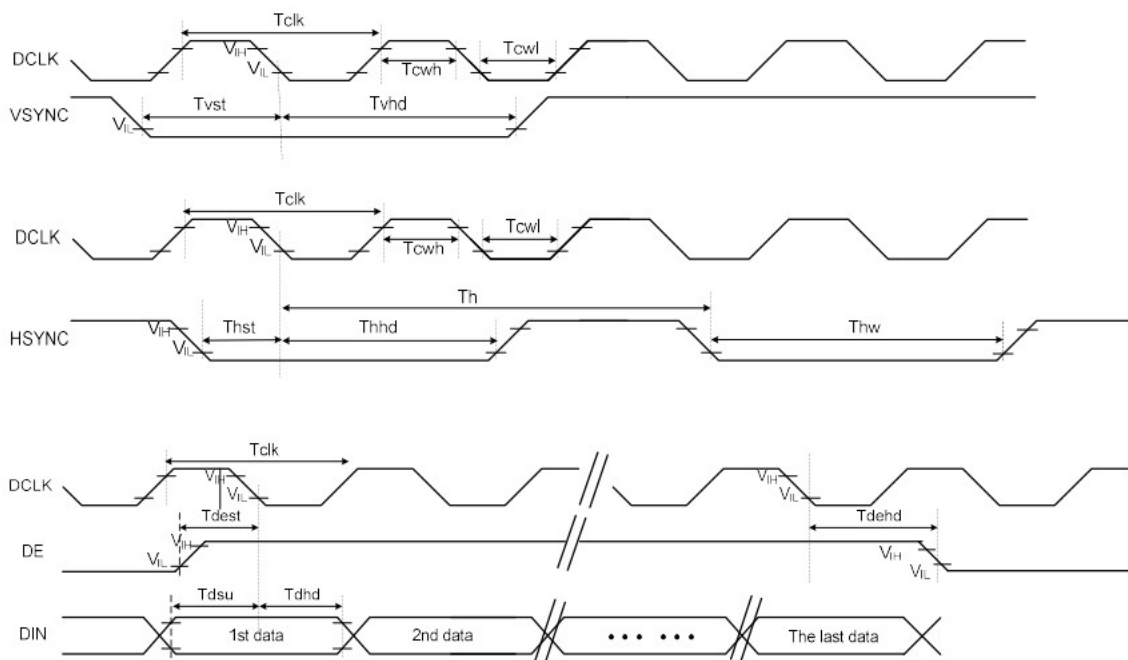
### 6.1.3 DC Characteristics for Analog Circuit

Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
Positive High-Voltage Power	VGH	13	15	16.5	V	No Load@ FR=60Hz
Negative High-Voltage Power	VGL	-7	-10	-11	V	
Output Voltage Deviation	Vod	-	±35	±45	mV	
Standby Current	Isc	-	-	50-	uA	
Operation Current	Ioc	-	20	-	mA	

## 7. TTL MODE AC ELECTRICAL CHARACTERISTICS

Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
VDD Power Source Slew Time	TPOR	-	-	20	ms	From 0V to 99% VDD
GRB Pulse Width	tRSTW	10	50	-	us	R=10Kohm, C=1uF
SD Output Stable Time	Tst	-	-	12	us	Output settled within +20mV Loading = 6.8k+28.2pF.
GD Output Rise and Fall Time	Tgst	-	-	6	us	Output settled (5%~95%), Loading = 4.7k+29.8pF

## 8. Data input format for RGB



Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
CLK Pulse Duty	Tcw	40	50	60	%	
HSYNC Width	Thw	2	-	-	DCLK	
HSYNC Period	Th	55	60	65	us	
VSYNC Setup Time	Tvst	12	-	-	ns	
VSYNC Hold Time	Tvhd	12	-	-	ns	
HSYNC Setup Time	Thst	12	-	-	ns	
HSYNC Hold Time	Thhd	12	-	-	ns	
Data Setup Time	Tdsu	12	-	-	ns	
Data Hold Time	Tdhd	12	-	-	ns	
DE Setup Time	Tdest	12	-	-	ns	
DE Hold Time	Tdehd	12	-	-	ns	

## 9. Backlight Characteristic

Item	Symbol	Min	Typical	Max	Unit
<b>LED module Forward voltage</b>	<b>V<sub>LED</sub></b>	--	<b>22.4</b>	--	<b>V</b>
<b>LED module current</b>	<b>I<sub>LED</sub></b>	--	<b>20</b>	--	<b>mA</b>
<b>L/G Surface Luminance ★1</b>	<b>L<sub>S</sub></b>	--	<b>TBD</b>	--	<b>mcd</b>
<b>LCM Surface brightness uniform ★2</b>	<b>L<sub>D</sub></b>	<b>80</b>	--	--	<b>%</b>

★ 1 Test condition is:

(a) Center point on active area.

(b) Best Contrast.

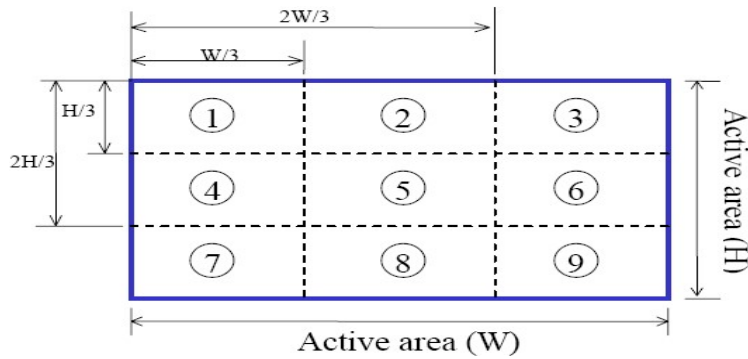
★2 Uniform measure condition:

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



(2)  $\text{Uniform} = (\text{Min. brightness} / \text{Max. brightness}) * 100\%$

(3) **Best Contrast.**



## 10. Electro-optical Characteristics

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing angle range	Hor.	$\phi 3$		80		Deg.	
		$\phi 9$	$CR \geq 10$	80		Deg.	
	Ver.	$\phi 12$		80		Deg.	
		$\phi 6$		80		Deg.	
Color gamut (C light)				50		%	
Luminance Contrast ratio	T (%)	$\phi 0^\circ$		600			
Response Time	TRT	Temp=25° C		8		ms	

## 11. Reliability

### 11.1 Mtbf

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

### 11.2 Test condition

NO.	ITEM	CONDITION	CRITERION
1	High Temperature Non-Operating Test	80°C*240Hrs	No Defect Of Operational
2	Low Temperature Non-Operating Test	-30°C*240Hrs	Function In Room
3	High Temperature/Humidity Non Operating Test	60°C*90%RH*240Hrs	Temperature Are Allowable IDD of LCM in Pre-and
4	High Temperature Operating Test	70°C*240Hrs	Post-Test Should Follow
5	Low Temperature Operating Test	-20°C*240Hrs	Specification
6	Thermal Shock Test	-20 °C (30Min) – 70 °C (30Min)	
		*10CYCLES	

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.

## 12. Inspection standards

1.AQL(Acceptable Quality Level)

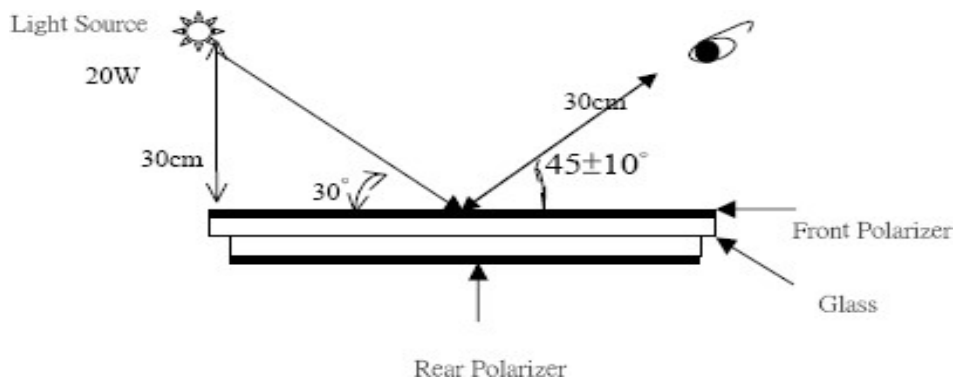
AQL of major and minor defect.

	MAJOR DEFECT	MINOR DEFECT
AQL	0.65	1.5

### 2. Basic conditions for inspection

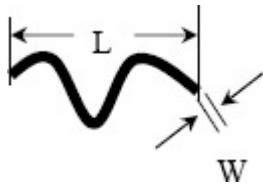
The LCM face to us, in normal environment, the lux is  $1000 \pm 200$ . (Darkroom's lux:  $100 \pm 50$ ), About an angle of incidence 30, a distance of 30 cm with an angle of 45 degree to check the products without uncovering the film!

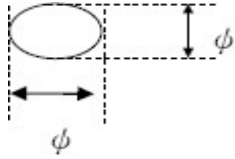
(As shown below)



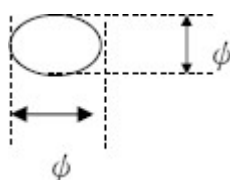
### 3. Inspection item and criteria

#### 3.1 LCD appearance defect(View area)

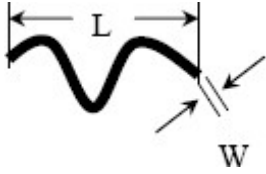
NO	Defect item	Criteria		Remark
		Specification	Allowable	
1	Fiber 、 glass cratch、 polarizer scratch/folded (minor defect)	$W \leq 0.03\text{mm}$	disregard	note1:L: Length, W: Width note2: disregard if out of AA 
		$0.03\text{mm} < W \leq 0.05\text{mm};$ $L \leq 3.0\text{mm}$	2	
		$0.05\text{mm} < W \leq 0.1\text{mm};$ $L \leq 3.0\text{mm}$	1	
		$W > 0.1\text{mm}; L > 3.0\text{mm}$	0	
2	Polarizer bubble、 concave and convex (minor defect)	$\phi \leq 0.2\text{mm}$	disregard	note1: $\phi = (L+W)/2$ , L:Length, W :Width note2:disregard if out of AA
		$0.2\text{mm} < \phi \leq 0.3\text{mm}$	2	
		$0.3\text{mm} < \phi \leq 0.5\text{mm}$	1	
		$0.5\text{mm} < \phi$	0	

3	Black dots、dirty dots、impurities、eye winker (minor defect)	$\phi \leq 0.15\text{mm}$	disregard	note2:disregard if out of AA 
		$0.15\text{mm} < \phi \leq 0.25\text{mm}$	2	
		$0.25\text{mm} < \phi \leq 0.3\text{mm}$	1	
		$0.3\text{mm} < \phi$	0	
4	Polarizer prick (minor defect)	$\phi \leq 0.1\text{mm}$	disregard	note1: $\phi = (L+W) / 2$ , L=Length, W=Width note2:the distance between two dots>5mm
		$0.1\text{mm} < \phi \leq 0.25\text{mm}$	3	
		$\phi > 0.25\text{mm}$	0	

### 3.2 Electrical criteria

NO	Defect item	Criteria	Remark	
1	No display (major defect)	No display 【Reject】		
2	Missing line (major defect)	Missing line 【Reject】		
3	Seg-com light and dark (major defect)	Seg-com light and dark 【Reject】	ND filter 2% test	
4	No display in immobility (major defect)	No display in immobility 【Reject】		
5	Flicker of Pattern (major defect)	Flicker of Pattern 【Reject】		
6	Mura (major defect)	ND filter 2%test		
7	Over current (major defect)	Over current 【Reject】		
8	Voltage out of specification (major defect)	Voltage out of specification 【Reject】		
9	Pattern blur, error code (major defect)	Pattern blur, error code 【Reject】		
10	Dark light, Flicker (major defect)	Dark light, Flicker 【Reject】		
11	Black/white dots、Dirty dots、eye winker (major defect)	Specification	Allowable	Note1:disregard if out of AA 
		$\phi \leq 0.15\text{mm}$	disregard	
		$0.15\text{mm} < \phi \leq 0.25\text{mm}$	2	
		$0.25\text{mm} < \phi \leq 0.3\text{mm}$	1	
	$0.3\text{mm} < \phi$	0		
12	Fiber、glass crutch、Polarizer scratch/folded	$W \leq 0.03\text{mm}$	disregard	Note1:L: Length, W: Width Note2: disregard if out of AA
		$0.03\text{mm} < W \leq 0.05\text{mm}$	2	

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	(major defect)	$L \leq 3.0\text{mm}$	1	
		$0.05\text{mm} < W \leq 0.1\text{mm}$ $L \leq 3.0\text{mm}$		
		$W > 0.1\text{mm}; L > 3.0\text{mm}$	0	

## 13. Precautions for using LCD modules.

### 13.1 Safety

- (1) Do not 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.

### 13.2 Storage Conditions

- (4) Store the panel or module in a dark place where the temperature is  $23 \pm 5^\circ\text{C}$  and the humidity is below  $45 \pm 20\% \text{RH}$ .
- (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.

### 13.3 Handling Precautions

- (9) Avoid static electricity, which can damage the CMOS LSI.
- (10) The polarizing plate of the display is very fragile, please handle it very carefully.
- (11) Do not give external shock.
- (12) Do not 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 the plate.
- (14) Do not use ketonic 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.

### 13.4 Warranty

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