

CUSTOMER' S APPROVAL SPECIFICATIONS

MODEL: CH084OLEL-TS1

(Complied with RoHS)



ISSUE:AUG.29.2013

Spec Condition preliminary

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CUSTOMER	CHEFREE		
APPROVAL	APPROVAL	CHECKER	PREPARE
	ch lee	ch lee	Carl

2. RECORD OF REVISION

REV	DATE	PAGE	SUMMARY
0.1	2015.0: .2;	ALL	Preliminary specification was first issued

3.MECHANICAL SPECIFICATIONS

NO.	ITEM		SPECIFICATION
(1)	Number Of Dots (Dots)		800(R.G.B) X 600
(2)	Module Size(mm)		203.00(W) X 145.90(H) X 5.70(D)
(3)	Active Area(mm)		170.40(H) X 127.80(V)
(4)	Pixel Pitch(mm)		0.213 (H) X 0.213(V)
(5)	LCD / Polarizer Model		Transmissive, Ergct.'3' 'uwthceg'ki j vtghgevkpp
(6)	Backlight Color		White LED
(7)	Viewing Direction		6 O'clock
(8)	Gray Scale Inversion Direction		12 O'clock
(9)	Color Configuration		R.G.B Stripe
(10)	Module Weight(g)		(218)
(11)	Power Consumption	Logic System	0.7W (Max.)
		B/L System	3.7W (Max.)

**This is a sunlight readable display with TSD enhanced for applying under direct sunlight environment
The ambient light reflection for panel backlight is 1.5% rate!

Distributed by:



www.texim-europe.com

4.OUTLINE DIMENSIONS

1

2

3

4

5

6

7

8 樣式 Q13-RD-E-0004-003

文件題目

圖號

舊版日

發行日

登入號碼

頁

次頁

修訂內容

修訂日期

No.

作成

Joan

2012.03.23

8.4" TFT
800(RGB)X600 DOTS

Gray Scale Inversion Direction

184.20±0.5

5.80

131.50±0.5

65.00±0.5

103.20±0.5

20.00

18.13

203.00±0.5

170.40(AA)

174.15(BEZEL)

88.00

100.00±0.5

127.80(AA)

131.20(BEZEL)

145.90±0.5

5.70±0.5

(30.50)

(48.40)

198.50

99.00

PCB

CNT1

備考

入庫

製圖

Carl

120528

名稱:

8.4"LCM

單位:mm

投影法:

1:1

比例尺:

圖號

NOTE:

1.Unit:mm

2.Without Tolerance ±0.3

3.CN1:STM MSB24013P20

Mating Connector:STM P24013P20

5. TFT LCD PANEL INTERFACE

5.1 LCM PANEL DRIVING SECTION

CN1 Connector : STM MSB24013P20 Mating Connector:STM P24013P20

PIN No.	SIGNAL	FUNCTION	REMARK
1	V _{CC}	Power Supply For Digital Circuit	
2	V _{CC}	Power Supply For Digital Circuit	
3	U/D	Vertical Display Mode Select Signal Up / Down Scan Control Input.	Note1
4	L/R	Horizontal Display Mode Select Signal Left / Right Scan Control Input.	Note1
5	RxIN0-	Differential Clock Input,CH0(Negative)	
6	RxIN0+	Differential Clock Input,CH0(Positive)	
7	GND	Ground	
8	RxIN1-	Differential Clock Input,CH1(Negative)	
9	RxIN1+	Differential Clock Input,CH1(Positive)	
10	GND	Ground	
11	RxIN2-	Differential Clock Input,CH2(Negative)	
12	RxIN2+	Differential Clock Input,CH2(Positive)	
13	GND	Ground	
14	RxIN-	Differential Clock Input(Negative)	
15	RxIN+	Differential Clock Input(Positive)	
16	GND	Ground	
17	V _{LED}	Power Supply for LED Driver Circuit(5V)	
18	V _{LED}	Power Supply for LED Driver Circuit(5V)	
19	GND	Ground	
20	ADJ	Adjust The Back Light Brightness	Note2,3

Note1:



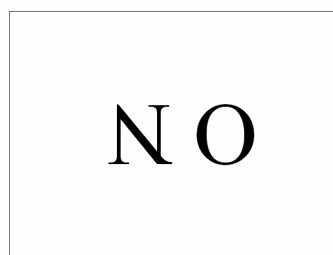
R/L=L
U/D=H



R/L=H
U/D=H

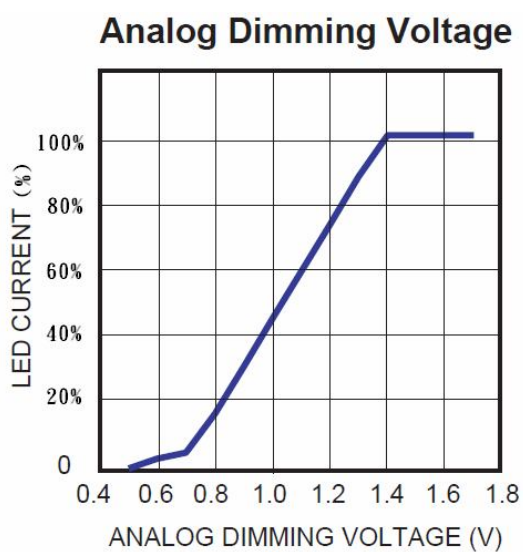


R/L=L
U/D=L



R/L=H
U/D=L
(Default)

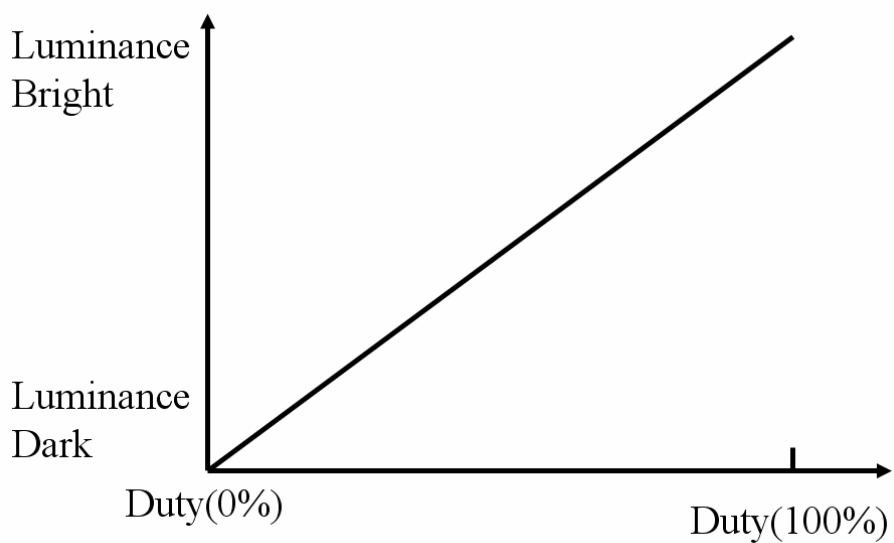
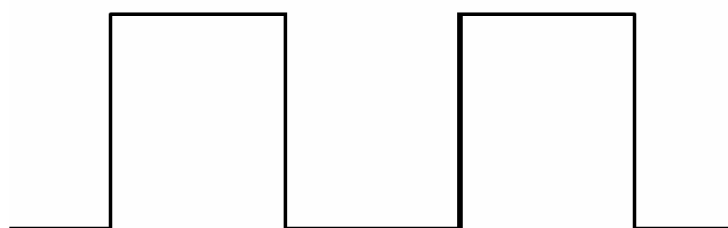
Note2: When the ADJ pin voltage rises from 0.7VDC to 1.4VDC, the LED current will change from 0% to 100% of the maximum LED current.



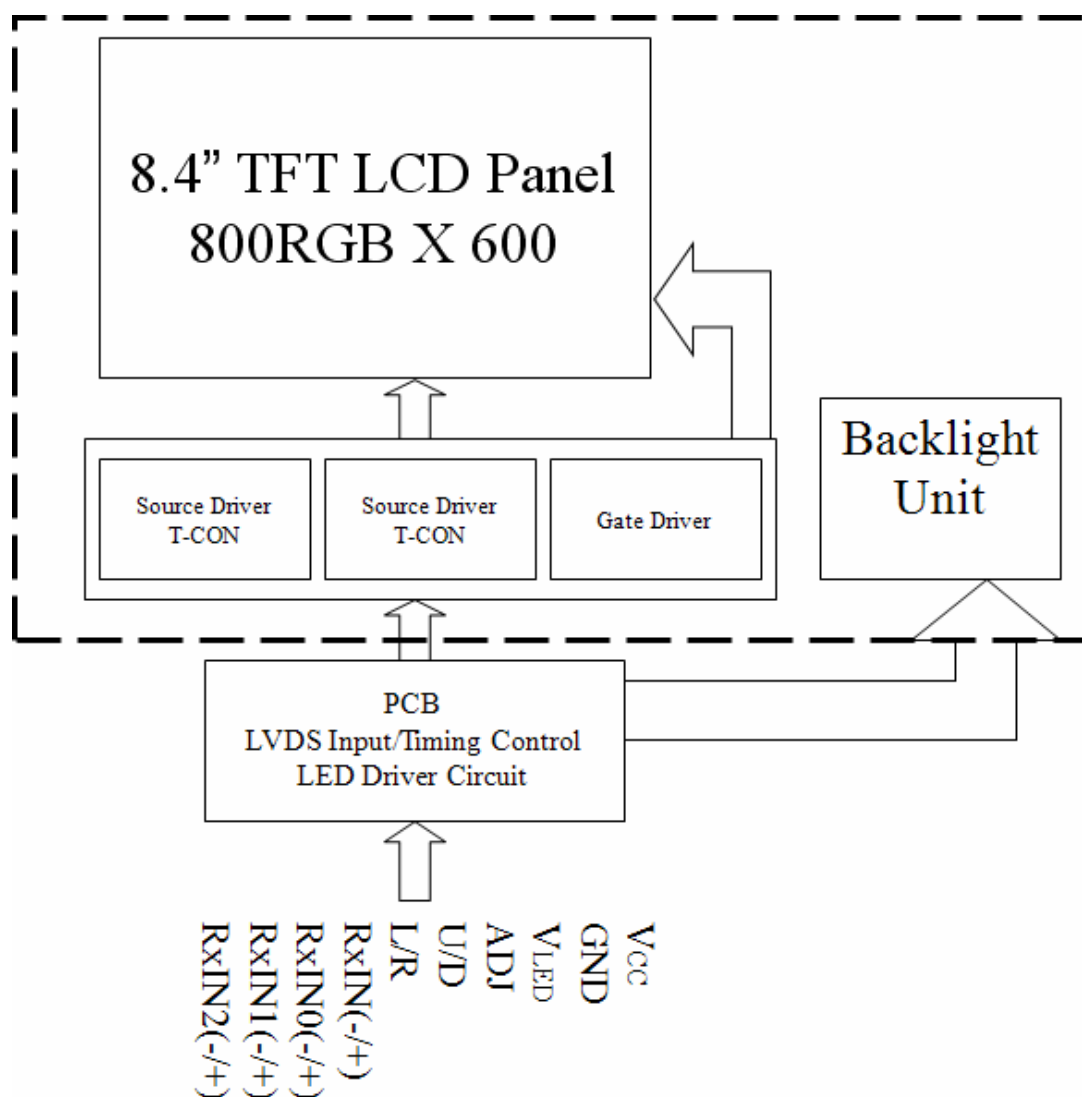
Note3: ADJ signal $V_{p-p} = 1.4 \sim 5.0V$, operation frequency: 100Hz ~ 1kHz

PWM Dimming Duty

$F=1KHz, T=1ms$



6. BLOCK DIAGRAM



7. ABSOLUTE MAXIMUM RATINGS

7.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	REMARK
Digital Supply Voltage	V _{CC}	-0.3	+5.0	V	
LED Driving Voltage	V _{LED}	-0.3	+17	V	
Logic Input Voltage	V _{IN}	-0.3	V _{CC} +0.3	V	
Logic Output Voltage	V _{OUT}	-0.3	V _{CC} +0.3	V	

7.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	OPERATING		STORAGE		REMARK
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature(°C)	-20	70	-30	80	Note 1,2,3
Humidity(% RH)	-	90	-	90	Note 4

Note 1 : The response time will become lower when operated at low temperature.

Note 2 : Background color changes slightly depending on ambient temperature.

Note 3 : Operation Ta=70°C & -20°C ≤ 240Hrs.

Note 4 : Operation Ta=60°C & H=90% ≤ 240Hrs.

8.ELECTRICAL CHARACTERISTICS

8.1 ELECTRICAL CHARACTERISTICS OF LCD

Ta=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Power Voltage for LCD	V _{CC}	3.0	3.3	3.6	V	
	I _{CC}	-	210	-	mA	Note 1
Input signal voltage	V _{IH}	0.7V _{CC}	-	V _{CC}	V	Note 2
	V _{IL}	0	-	0.3V _{CC}	V	

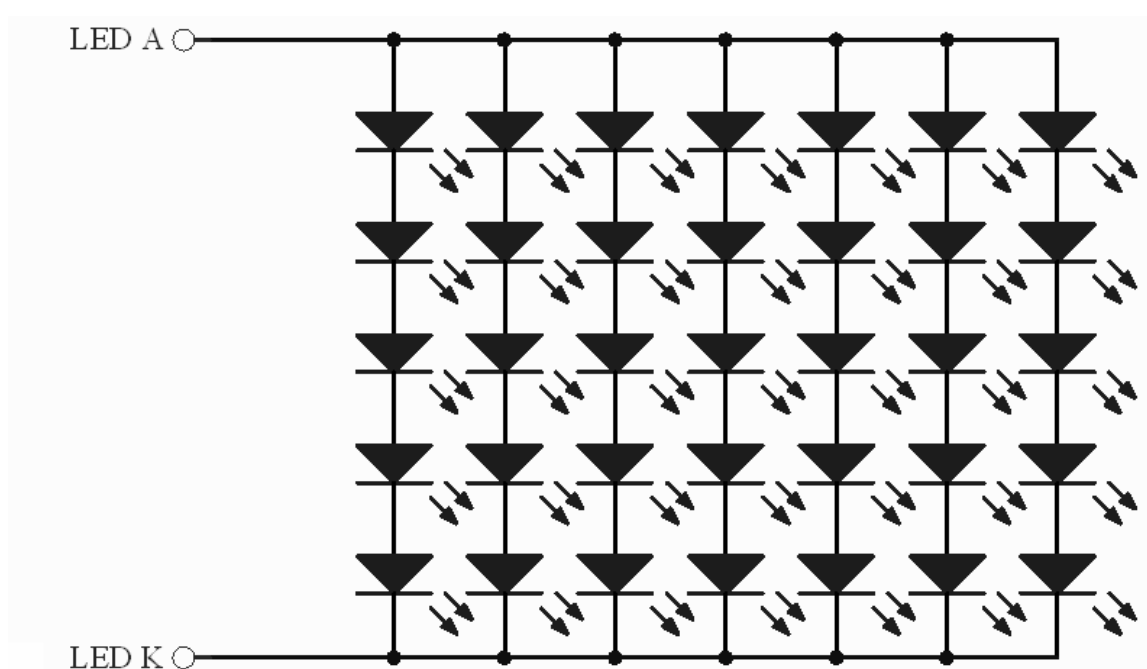
Note1: Test Pattern: All Black.

Note2: HSYNC, VSYNC, DE, Digital Data.

8.2 ELECTRICAL CHARACTERISTICS OF BACKLIGHT

Ta=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
LED Driving Voltage	V _{LED}	4.5	5	15	V	
	I _{LED}	-	(650)	-	mA	
ADJ Input Analog Dimming	-	0.7	-	1.4	V _{DC}	
ADJ Input PWM Dimming Voltage	-	1.4	-	5.0	V _{p-p}	
ADJ frequency	-	100	-	1000	Hz	



9.OPTICAL CHARACTERISTICS

Ta=25°C

ITEM		SYMBOL	CONDITIONS	SPECIFICATIONS				REMARK
				MIN.	TYP.	MAX.	UNIT	
Response Time		TF	T=0	-	2	4	ms	Note 2
		TR		-	6	12	ms	
Contrast Ratio		CR	Viewing Normal Angle $\theta_x = \theta_y = 0^\circ$	450	600	-	ms	Note 1
Chromaticity	White	x _w		0.25	0.30	0.35	-	Note 4
		y _w		0.27	0.32	0.37	-	
Viewing Angle	Hor.	θ_{x+}	Viewing Normal Angle $\theta_x = \theta_y = 0^\circ$ CR ≥ 10	65	75	-	Deg.	Note 3
		θ_{x-}		65	75	-		
	Ver.	θ_{y+}		60	70	-		
		θ_{y-}		50	60	-		
Luminance		L	ADJ=1.4V _{DC}	400	500	-	cd/m ²	
Luminance uniformity		YU		80	-	-	%	Note 5

Note 1: Definition Of Contrast Ratio(CR):

The contrast ratio can be calculated by the following expression

Contrast Ratio (CR)=L63/L0

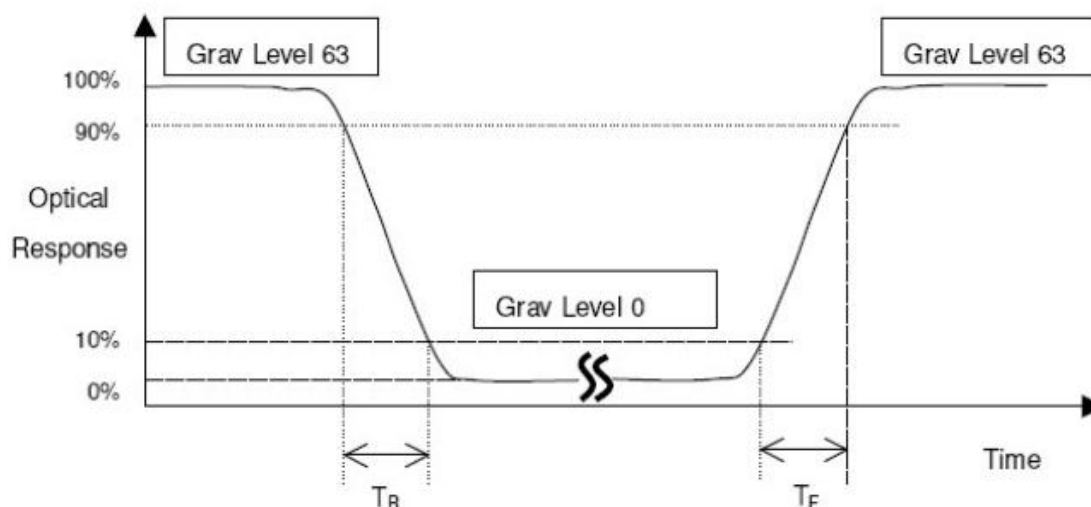
L63:Luminance of gray level 63

L0:Luminance of gray level 0

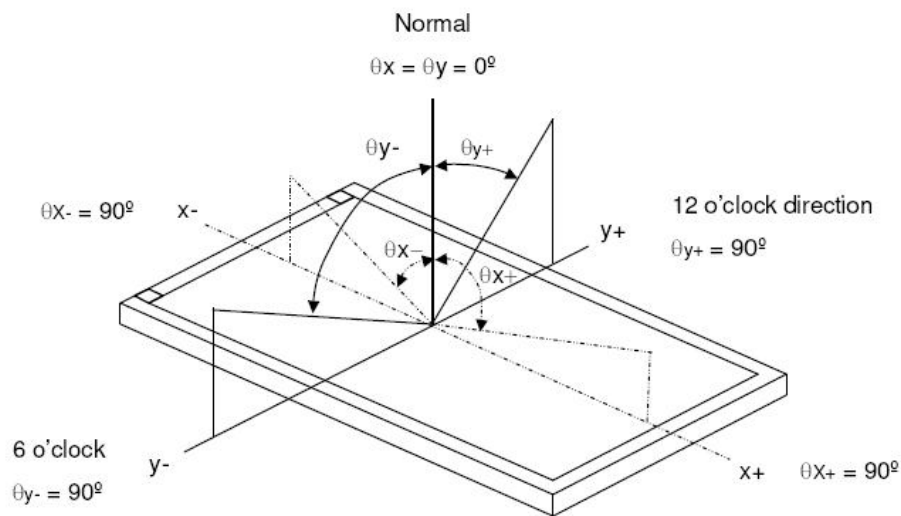
CR=CR(5)

CR(X) is corresponding to the contrast ratio of the point X at figure in Note(5)

Note 2: Definition Of Response Time(TR,TF):

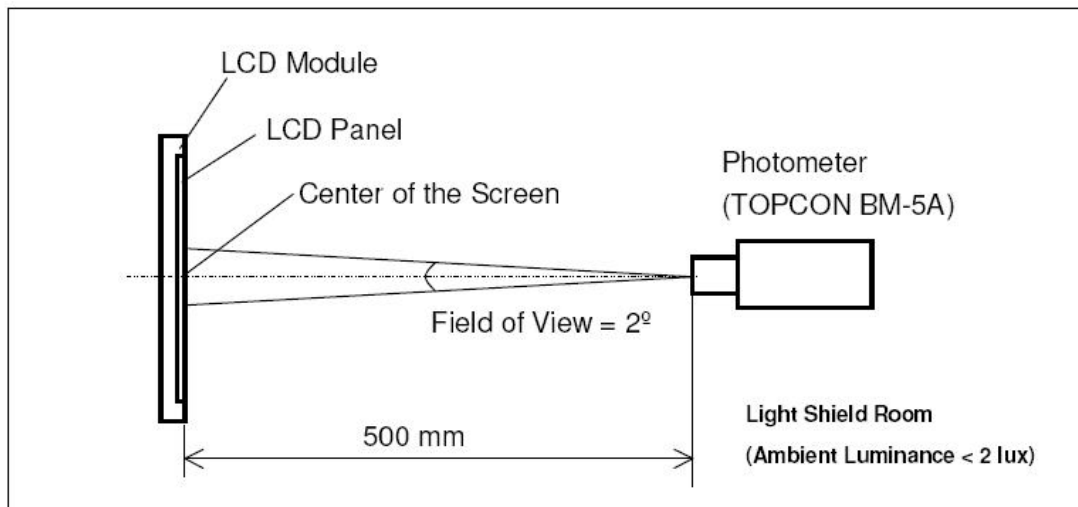


Note 3: Definition Of Viewing Angle

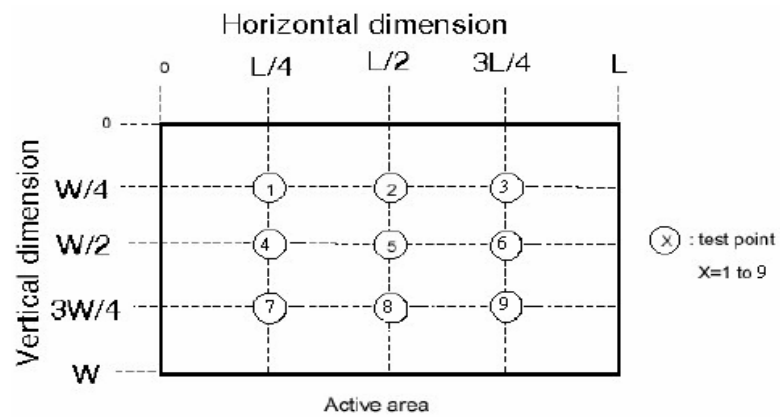


Note 4: Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.

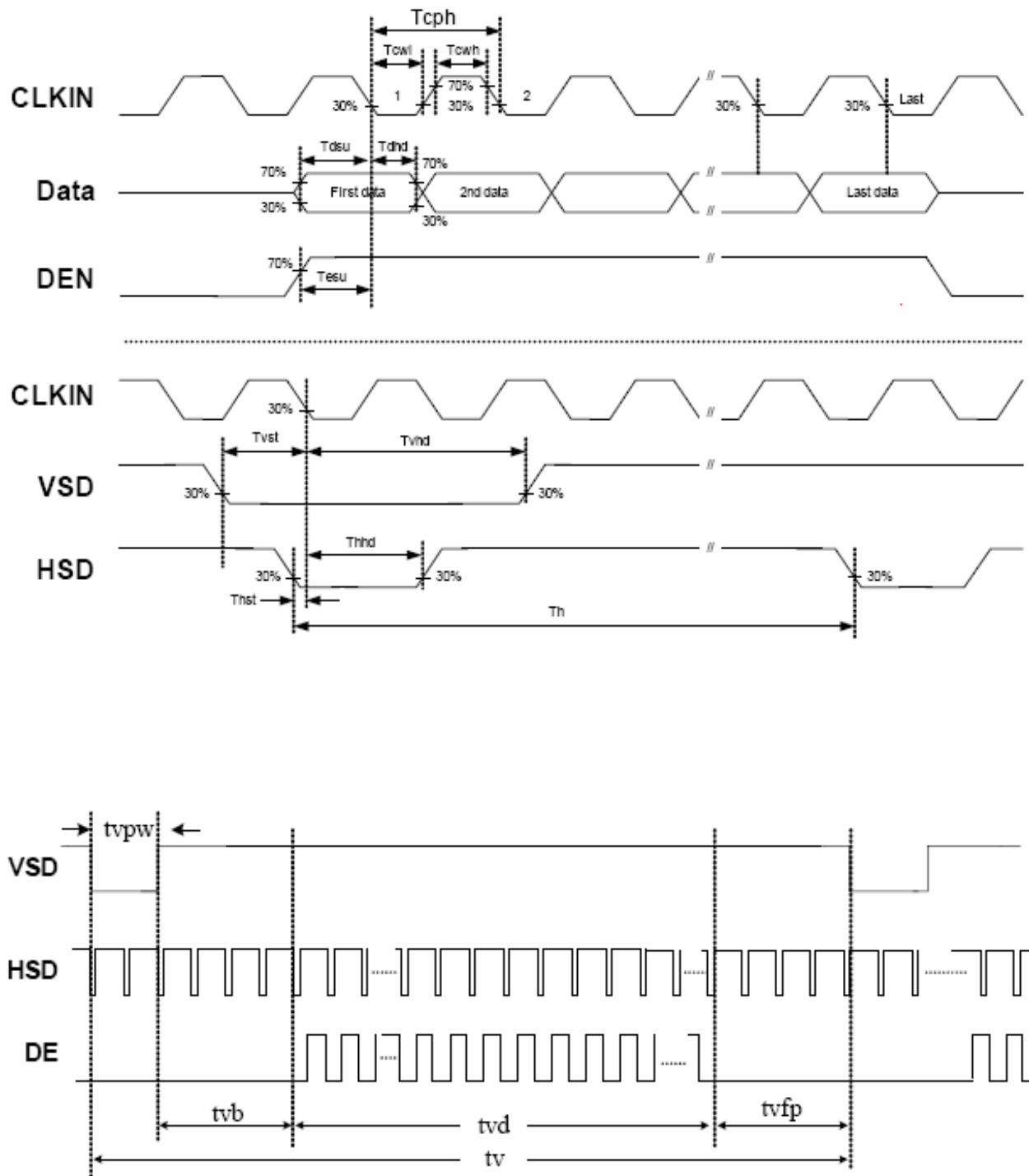


Note 5:



$$\left(1 - \frac{\text{MAX Luminance} - \text{Average Luminance}}{\text{Average Luminance}} \right) \times 100\% \geq 80\%$$

10.3 AC TIMING DIAGRAMS



11. RELIABILITY TEST

ENVIRONMENTAL TEST				
NO.	ITEM	CONDITIONS	TIME PERIOD	REMARK
1	High Temperature Storage	80℃	240HRS	
2	Low Temperature Storage	-30℃	240HRS	
3	High Temperature Humidity Storage	60℃ 90%RH	240HRS	
4	High Temperature Operation	70℃	240HRS	
5	Low Temperature Operation	-20℃	240HRS	
6	Temperature Cycle	-30℃ ← 25℃ → 80℃ (30min) (5min) (30min)	100CYCLE	

Note 1: a. The module should work properly.

b. Before and after function test, the difference of consumptive current should be within 10%

Note 2: a. The module should work properly.

b. The module won't be deformative, color changeable or broken.

c. The modules can't be apart.

12. LCM INSPECTION STANDARD

12.1 QUALITY LEVEL

INSPECTION PLAN:

SAMPLING LEVEL : II, normal inspection, single sampling inspection

Sampling Plan		MIL-STD-105E
		Normal Inspection, Single Sampling
		Level II
AQL	Major Defect	1.0%
	Minor Defect	2.5%

12.2 ENVIRONMENT CONDITIONS:

Ambient Temperature		20 ~ 25°C.
Ambient Humidity		65±5%RH
Ambient Illumination	Inspection	250~350 Lux

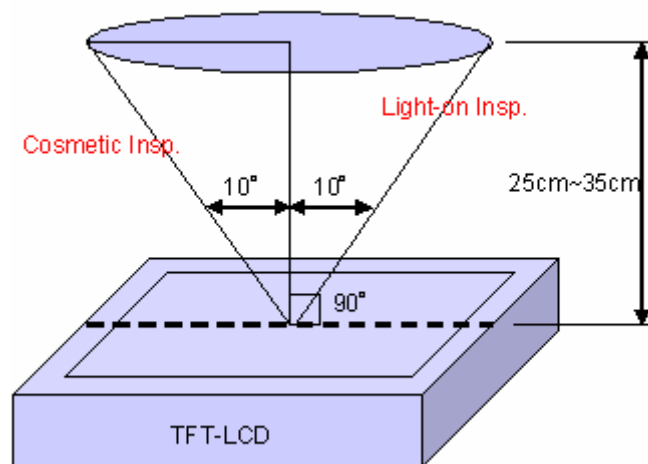
12.3 INSPECTION CONDITION

(1) Inspection Distance: 30 cm±5cm

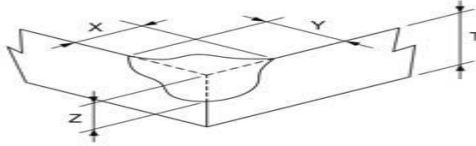
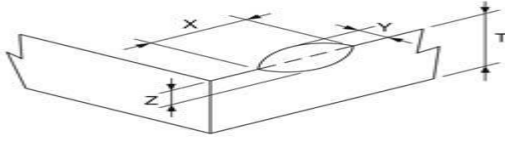
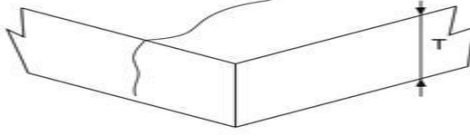
(2) View Angle:

Light-on Inspection Angle : ±10°

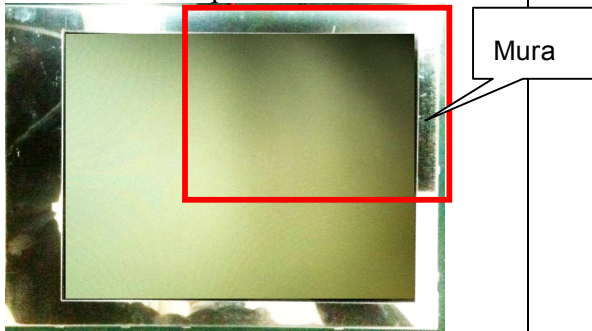
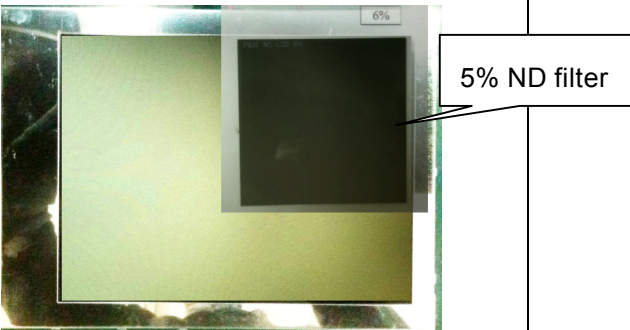
Cosmetic Inspection Angle : ±10°



12.4 COSMETIC INSPECTION(PANEL):

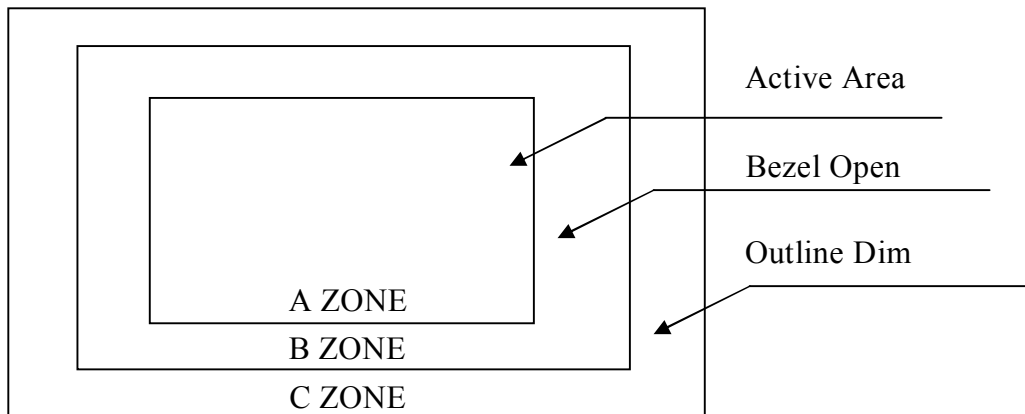
ITEM	JUDGMENT CRITERIA	CLASSIFICATION
Corner Flaw	 $X \leq 3.0\text{mm}, Y \leq 3.0\text{mm}, Z \leq T$	MA
Edge Flaw	 $X \leq 3.0\text{mm}, Y \leq 3.0\text{mm}, Z \leq T$	MI
Progressive Flaw	 Not allowed	MI
Scratch on Panel/Touch Panel *Note-2	$W \leq 0.05\text{mm}$, Ignored $0.05\text{mm} < W \leq 0.1\text{mm}$ and $L \leq 8\text{mm}$: $N \leq 5$ $W > 0.1\text{mm}$ or $L > 8\text{mm}$, Not allowed	MI
Bubble or Dent on Panel/Touch Panel *Note-3	$D \leq 0.2\text{mm}$: Ignored $0.2\text{mm} < D \leq 0.6\text{mm}$: $N \leq 4$ Ignored $D > 0.6\text{mm}$: Not allowed	MI
Bezel Deformation	Obvious deformation is not allowed	MI
Bezel Oxidation	Not allowed if it rusts continuously over 1 cm (It is out of warranty with rusted tin plate)	MI
Bezel Scratch	Non-feeling abrasion: Ignored feeling abrasion, $L \leq 20\text{mm}$, $W \leq 0.3\text{ mm}$, $N \leq 7$ Not allowed	MI
Metal Squash Dent /Flange(Front Side)	$D(W) \leq 1\text{ mm}$, $L \leq 3$, $N \leq 4$;	MI
B/L High Voltage Wire Denudation	Not allowed	MA
Polarizer flaw or leak out resin	Defect is defined as the active area.	MI
Outline Dimension	Must in Spec, refer to related product spec.	MI

12.5 FUNCTIONAL INSPECTION:

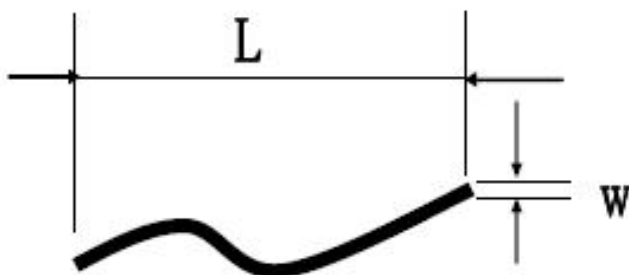
ITEM	JUDGMENT CRITERIA			CLASSIFICATION
Point Defect	Bright dot	Random	2	MI
		2 dots adjacent	0	
		3 dots adjacent or more	0	
	Dark dot	Random	4	
		2 dots adjacent	0	
		3 dots adjacent or more	0	
	Total Dot Defect		4	
	Distance	Distance between Bright and Bright dot	$L \geq 5\text{mm}$	
Distance between Bright and Dark dot		$L \geq 5\text{mm}$		
Distance between Dark dot		$L \geq 5\text{mm}$		
Line Defect	Obvious vertical or horizontal line defect is not allowed.			MA
Mura	1. Under the normal examination angle of view, the picture has the non-uniform phenomenon. 			MI
	2. Weak defect will be defined as Mura if it can be Observed through ND filter 5% 			
Foreign Material in spot shape	$D \leq 0.15\text{mm}$: Ignored $0.15\text{mm} < D \leq 0.5\text{mm}$: $N \leq 4$ $D > 0.5\text{mm}$: Not allowed			MI

Foreign Material in line or spiral shape	$0.1\text{mm} < W \leq 0.5\text{mm}$, $0.3\text{mm} < L \leq 1.5\text{mm}$	MI
Display Function Abnormal	No Malfunction can be allowed	MA
Touch panel Malfunction	No Malfunction can be allowed in AA area.	MA

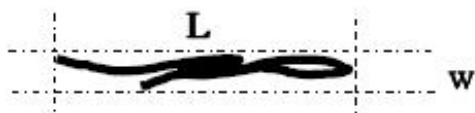
Note1: I/OArea Definition



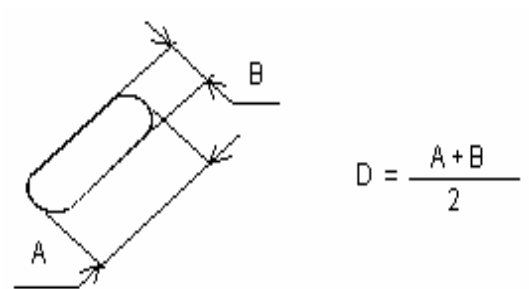
Note 2 : Polarizer Scratch



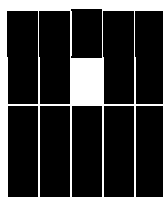
Note 3 : Line or Spiral Foreign Material



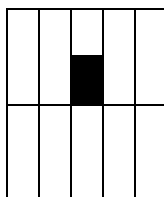
Note 4 : Spot Foreign Material



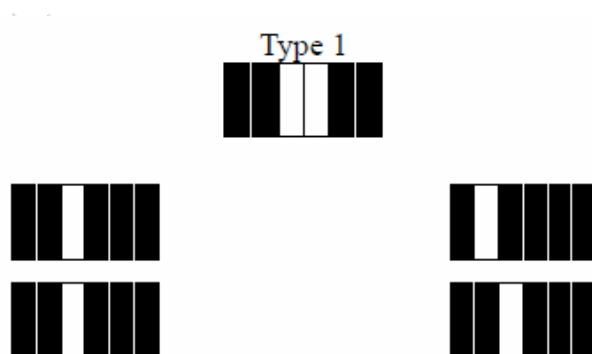
Note 5 : Bright dot defect description:



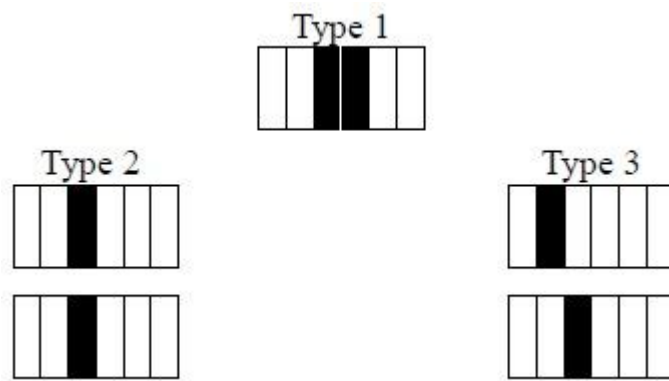
Note 6 : Dark dot defect description:



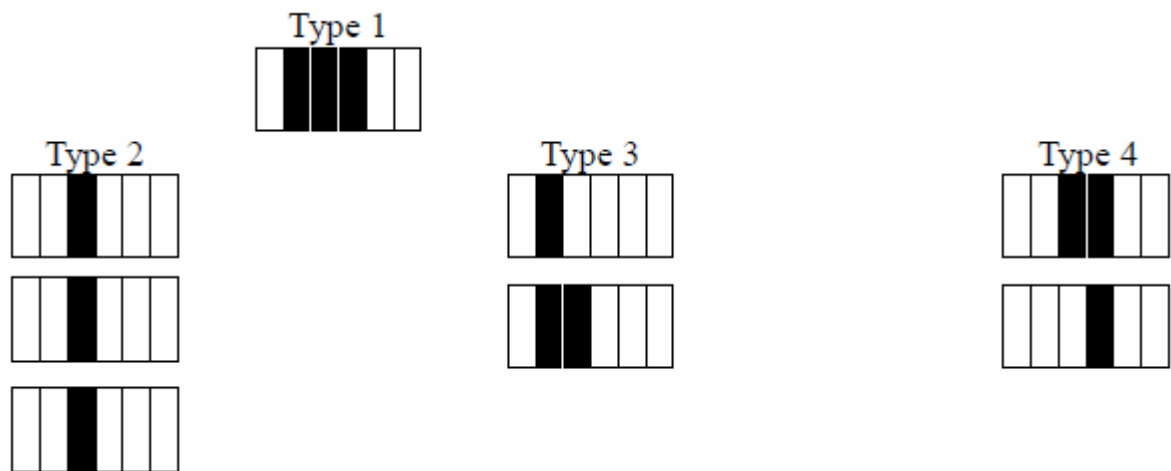
Note 7 : Bright dot defect description- Two adjacent.



Note 8 : Dark dot defect description- Two adjacent.

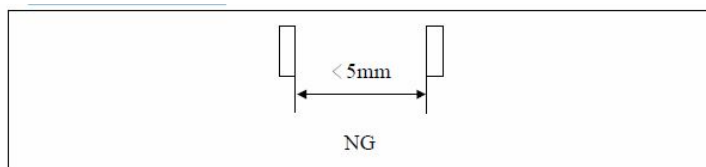


Note 9 : Dark dot defect description- Three adjacent.

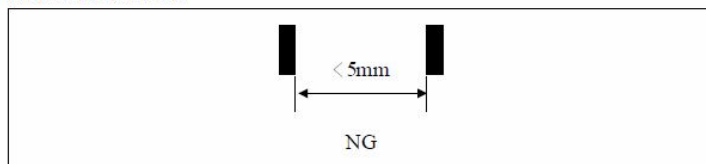


Note 10 : Minimum distance between dot defects :

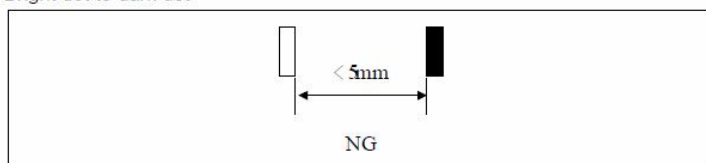
Bright dot to bright dot.



Dark dot to dark dot



Bright dot to dark dot



13. PRECAUTIONS FOR USE

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

- (1) Store the panel or module in a dark place where the temperature is $23\pm 5^{\circ}\text{C}$ and the humidity is below $50\pm 20\%\text{RH}$.
- (2) Store in anti-static electricity container.
- (3) Store in clean environment, free from dust, active gas, and solvent.
- (4) Do not place the module near organics solvents or corrosive gases.
- (5) Do not crush, shake, or jolt the module.

13.3 HANDLING PRECAUTIONS

- (1) Avoid static electricity which can damage the CMOS LSI.
- (2) The polarizing plate of the display is very fragile. So, please handle it very carefully.
- (3) Do not give external shock.
- (4) Do not apply excessive force on the surface.
- (5) Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the Surface of plate.
- (6) Do not use ketonics solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.
- (7) Do not operate it above the absolute maximum rating.
- (8) Do not remove the panel or frame from the module.
- (9) When the module is assembled, it should be attached to the system firmly, Be careful not to twist and bend the module.
- (10) Wipe off water droplets or oil immediately . If you leave the droplets for a long time, staining and discoloration may occur.
- (11) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, legs or clothes, it must be washed away thoroughly with soap.

13.4 WARRANTY

(1) Acceptance inspection period

The period is within one month after the arrival of contracted commodity at the buyer's factory site.

(2) Applicable warrant period

The period is within 12 months since the date of shipping out under normal using and storage conditions.