POWERTIP TECH. CORP.

SPECIFICATIONS

CUSTOMER	:	CES008
SAMPLE CODE	:	SH480272T-005-I10Q
MASS PRODUCTION CODE	:	PH480272T-005-I10Q
SAMPLE VERSION	:	01
SPECIFICATIONS EDITION	:	006
DRAWING NO. (Ver.)	:	LMD-PH480272T-005-I10Q (Ver.004)
PACKAGING NO. (Ver.)	:	PKG-PH480272T-005-I10Q (Ver.001)

Customer Approved

Date:

Approved	Checked	Designer
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POWERTIP
2010.12.21
TW RD APR

□ Preliminary specification for design input

■ Specification for sample approval

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History of Version

Date (mm / dd / yyyy)	Ver.	Edi.	Description	Page	Design by
03/23/2009	01	001	New Drawing	—	Poly
04/03/2009	01	002	1. Add touch panel mechanical specifications. 2. Add touch panel characteristics. 3. Modify LCM drawing.	4,10, Appendix 1	Poly
05/20/2009	01	003	New Sample	—	Poly
08/27/2009	01	004	Modify Block Diagram & Interface Pin.	11, 13	Poly
03/11/2010	01	005	1. Modify Optical Characteristics. 2. Modify LCM drawing (J1,J2 type).	6 Appendix 1	Poly
12/21/2010	01	06	Modify 1.5 Optical Characteristics	6	Timter

Total：27 Page

Contents

Note : For detailed information please refer to IC data sheet : SOLOMON --- SSD1963

1. SPECIFICATIONS

1.1 Features

Item	Standard Value
Display Type	480 * 3 (RGB) * 272 Dots
LCD Type	a-Si TFT , Normally white , Transmissive type
Screen size(inch)	4.3 inch
Viewing Direction	6 O'clock
Color configuration	RGB-Strip
Backlight Type	LED B/L
Weight	85 g
Interface	Support 16-bit Parallel interface with 8080 or 6800 series MCU
Other (controller/driver IC)	SSD1963 / HX8257-A (Or Compatible IC)
ROHS	THIS PRODUCT CONFORMS THE ROHS OF PTC Detail information please refer web side： http://www.powertip.com.tw/news.php?area_id_view=1085560481/

1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	105.5(W) x 67.2 (L) x 9.2(H)	mm

LCD panel

Item	Standard Value	Unit
Viewing Area	96.64 (W) x 55.456 (L)	mm
Active Area	95.04 (W) x 53.856 (L)	mm

Touch panel

Item	Standard Value	Unit
Viewing Area	99.5 (W) * 58.0 (L)	mm
Active Area	97.0 (W) * 55.8 (L)	mm

Note：For detailed information please refer to LCM drawing.

1.3 Absolute Maximum Ratings

Module

Item	Symbol	Condition	Min.	Max.	Unit
System Power Supply Voltage	VDDIO	VSS=0	-0.5	4.6	V
Input Voltage	VI	—	-0.5	4.6	V
Operating Temperature	T_{OP}	—	-20	70	°C
Storage Temperature	T_{ST}	—	-30	80	°C

1.4 DC Electrical Characteristics

Module VSS = 0V, Ta = 25°C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply Voltage	VDDIO	—	3.0	3.3	3.6	V
Input H/L Level Voltage	VIH	—	0.8VDDIO	—	—	V
	VIL	—	—	—	0.2VDDIO	V
Output H/L Level Voltage	VOH	—	0.8VDDIO	—	—	V
	VOL	—	—	—	0.2VDDIO	V
Supply Current	I_{DDIO}	VDDIO = 3.3 V Pattern = Full display*1	—	250	350	mA

Note*1：Maximum current display

1.5 Optical Characteristics

TFT LCD Module VDDIO= 3.3 V, Ta=25°C

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	—
Response time	Tr+Tf	25℃	—	—	36	54	ms	—
Viewing angle	Top	θY+	CR ≥ 10	—	60	—	Deg.	Note 4
	Bottom	θY-		—	50	—		
	Left	θX-		—	60	—		
	Right	θX+		—	60	—		
Contrast ratio		CR	Ta = 25°C θX , θY = 0°	200	250	—	—	Note 3
Color of CIE Coordinate （With B/L,T/P）	White	X		0.28	0.33	0.38	—	Note1
		Y		0.33	0.38	0.43		
	Red	X		0.57	0.62	0.67		
		Y		0.31	0.36	0.41		
	Green	X		0.29	0.34	0.39		
		Y		0.54	0.59	0.64		
	Blue	X		0.10	0.15	0.20		
		Y		0.09	0.14	0.19		
Average Brightness Pattern=white display (With LCD, T/P)*1		IV	IF= 20 mA	280	340	—	cd/m^2	Note1
Uniformity (With LCD, T/P)*2		△B	IF= 20 mA	70	—	—	%	Note1

Note 1:

*1：△B=B(min) / B(max) * 100%

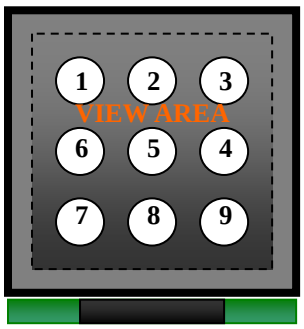
*2：Measurement Condition for Optical Characteristics:

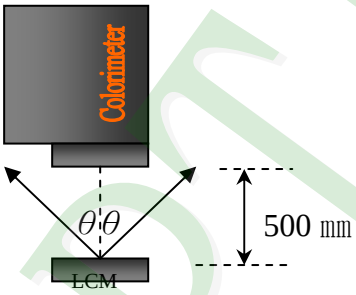
a：Environment: 25℃±5℃ / 60±20%R.H，no wind，dark room below 10 Lux at typical lamp current and typical operating frequency.

b：Measurement Distance: 500 ± 50 ㎜ ，(θ= 0°)

c：Equipment: TOPCON BM-7 fast，(field 1°)，after 10 minutes operation.

d：The uncertainty of the C.I.E coordinate measurement ±0.01，Average Brightness ± 4%





Colorimeter=BM-7 fast

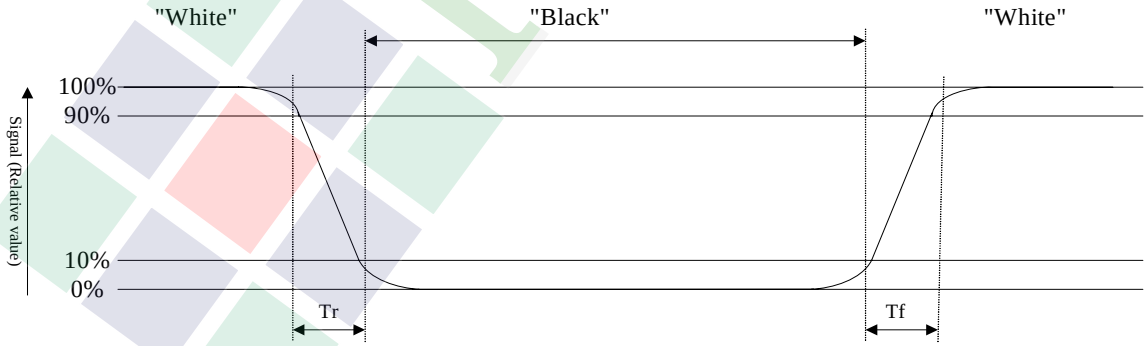
To be measured at the center area of panel with a viewing cone of 1° by Topcon luminance meter BM-7, after 10 minutes operation (module)

Note2: Definition of response time:

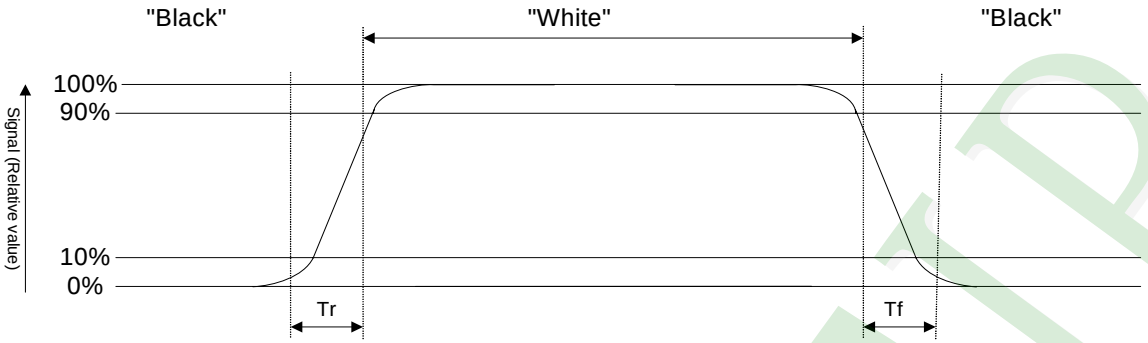
The output signals of photo detector are measured when the input signals are changed from “black” to “white”(falling time) and from “white” to “black”(rising time), respectively. The response time is defined as the time interval between the 10% and 90% of Amplitudes.

Refer to figure as below:

Normally White



Normally Black



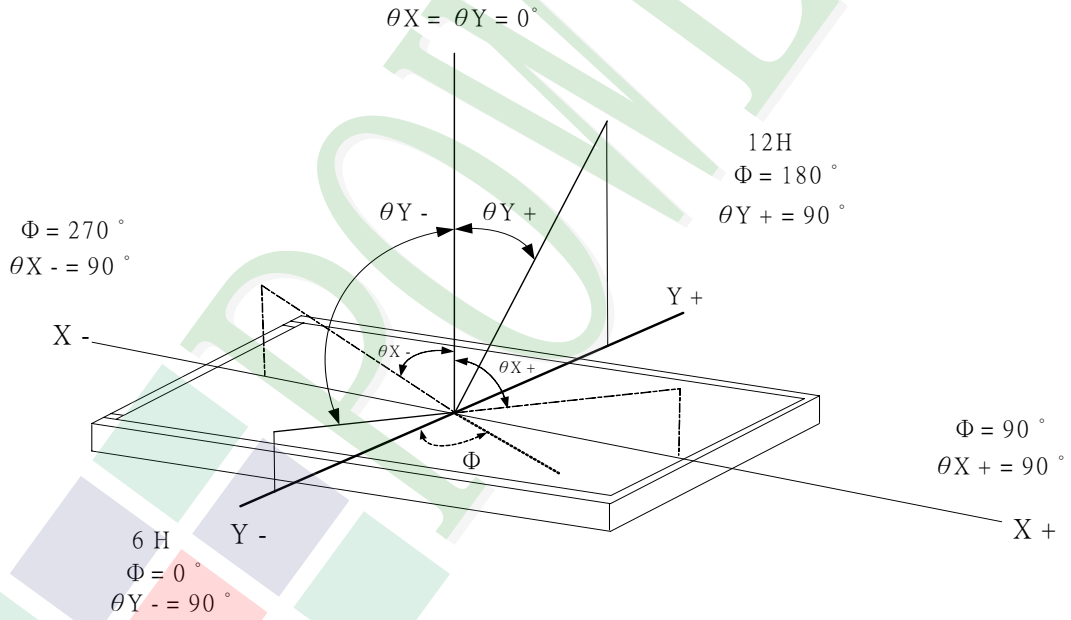
Note3: Definition of contrast ratio:

Contrast ratio is calculated with the following formula

$$\text{Contrast ratio (CR)} = \frac{\text{Photo detector output when LCD is at “White” state}}{\text{Photo detector output when LCD is at “Black” state}}$$

Note4: Definition of viewing angle:

Refer to figure as below:



1.6 Backlight Characteristics

Maximum Ratings

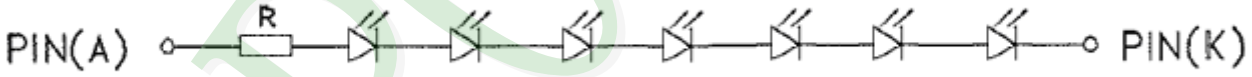
Item	Symbol	Conditions	Min.	Max.	Unit
Forward Current	IF	Ta =25℃	—	25	mA
Reverse Voltage	VR	Ta =25℃	—	5	V
Power Dissipation	Pd	Ta =25℃	—	525	mW

Backlight Characteristics

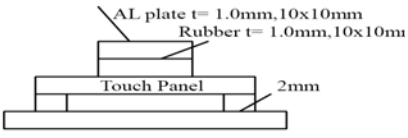
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	VF	IF= 20 mA	—	22.8	—	V
Average Brightness (Without LCD) *1	IV		3850	4250	—	cd/m^2
CIE Color Coordinate*1 (Without LCD)	X		0.285	0.315	0.345	—
	Y		0.282	0.312	0.342	—
Uniformity *1	△B		80	—	—	%*2
Color	White					

*1：This value will be changed while mass production.

*2：△B=B(min) / B(max)%



1.7 Touch Panel Characteristics

Item	Specification
Input Method	Finger or stylus pen.
ITO Glass	T=0.7mm , 500Ω/□ ±150 Ω
ITO Film	T=0.188mm , 450Ω/□ ±150 Ω Anti-Glare Type
Operating Temperature	-20℃~40℃,90%RH↓,41℃~75℃,60%RH↓(Except for dew gathering.)
Storage Temperature	-40℃~40℃,90%RH↓,41℃~85℃,60%RH↓(Except for dew gathering.)
Surface Hardness	2H- pressure 500gf , 45deg.
Hitting Durability	1,000,000 times min. (Tip R 8 mm & R0.8mm)
Pen Sliding Durability	100,000 times min. (Tip R0.8mm)
Insulation Impedance	DC25V 1min,20MΩ↑
Light Transparency	80%min.
Linearity	±1.5% (±1.5% After environmental and life test)
Linearity Force	130gf less input with stylus pen (R0.8mm)
Activation Force	80gf(Typical 20gf) less individual point on with stylus pen(R0.8mm).
Bouncing	<10ms
Impact Resistance	No damage when ψ9mm steel ball is dropped on the surface from 30 cm height at 1 time.
Flexible Pattern Heat Seal Peeling Strength	500gf/cm (peeling upward by 90 deg.)
Flexible Pattern Bending Resistance	Bending 3 times by bending radius R1.0 mm. The requirements in 4-2 shall be satisfied
Flexible Pattern Insert/Pull Out Resistance	1times at least. The requirements in 4-2 shall be satisfied.
Vibration Resistance	Not in operation: The requirements in 3 to 4 shall be satisfied after sweep vibration of 2G 15~55Hz(1 min.) is given for 30 min. each in the directions of X, Y, Z.
Package Drop	No damage to the product.(1corner edge, 2 ridges, 4 surfaces, drop from 50 cm height)
Static load resistance	After 4.5Kg load for 1 min is applied to the center area(1.0cm²)of the Touch panel, the requirements in 3 and 4,shall be satisfied. 

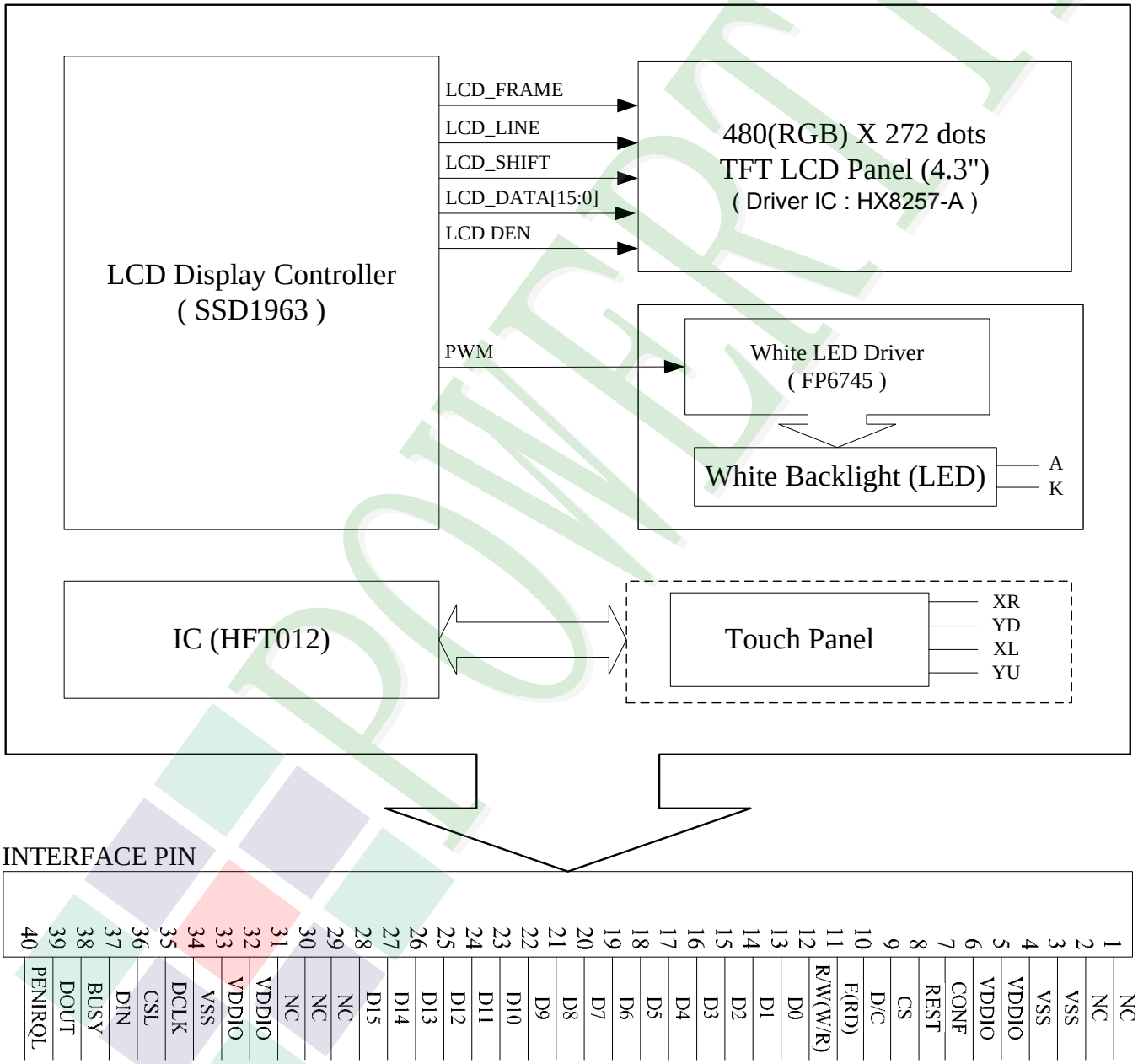
2. MODULE STRUCTURE

2.1 Counter Drawing

2.1.1 LCM Mechanical Diagram

* See Appendix

2.1.2 Block Diagram



INTERFACE PIN

2.2 Interface Pin Description

Pin No.	Symbol	Function
1	NC	Not Connect
2	NC	Not Connect
3	VSS	Ground
4	VSS	Ground
5	VDDIO	Power Supply Voltage.
6	VDDIO	Power Supply Voltage.
7	CONF	MCU interface configuration 0: 6800 Interface 1: 8080 Interface
8	RESET	Master synchronize reset.
9	CS	Chip select.
10	D/C	Data/Command select.
11	E (RD)	6800 mode: E (enable signal) 8080 mode: RD (read strobe signal)
12	R/W (W/R)	6800 mode: R/W 0: Write cycle 1: Read cycle 8080 mode: WR (write strobe signal)
13	D0	Data bus.
14	D1	Data bus.
15	D2	Data bus.
16	D3	Data bus.
17	D4	Data bus.
18	D5	Data bus.
19	D6	Data bus.
20	D7	Data bus.
21	D8	Data bus.
22	D9	Data bus.
23	D10	Data bus.

Pin No.	Symbol	Function
24	D11	Data bus.
25	D12	Data bus.
26	D13	Data bus.
27	D14	Data bus.
28	D15	Data bus.
29	NC	Not Connect
30	NC	Not Connect
31	NC	Not Connect
32	VDDIO	Power Supply Voltage. (For T/P)
33	VDDIO	Power Supply Voltage. (For T/P)
34	VSS	Ground. (For T/P)
35	DCLK	Serial Interface Clock Input. (For T/P)
36	CSL	Chip Select Input (Active Low); this pin is used to initialize the transmission and ADC conversion, don't tied to GND directly. (For T/P)
37	DIN	Serial Data Input. (For T/P)
38	BUSY	Busy Output. High impedance when CSL is high. (For T/P)
39	DOUT	Serial Data output. High impedance when CSL is high. (For T/P)
40	PENIRQL	Pen Interrupt. (For T/P)

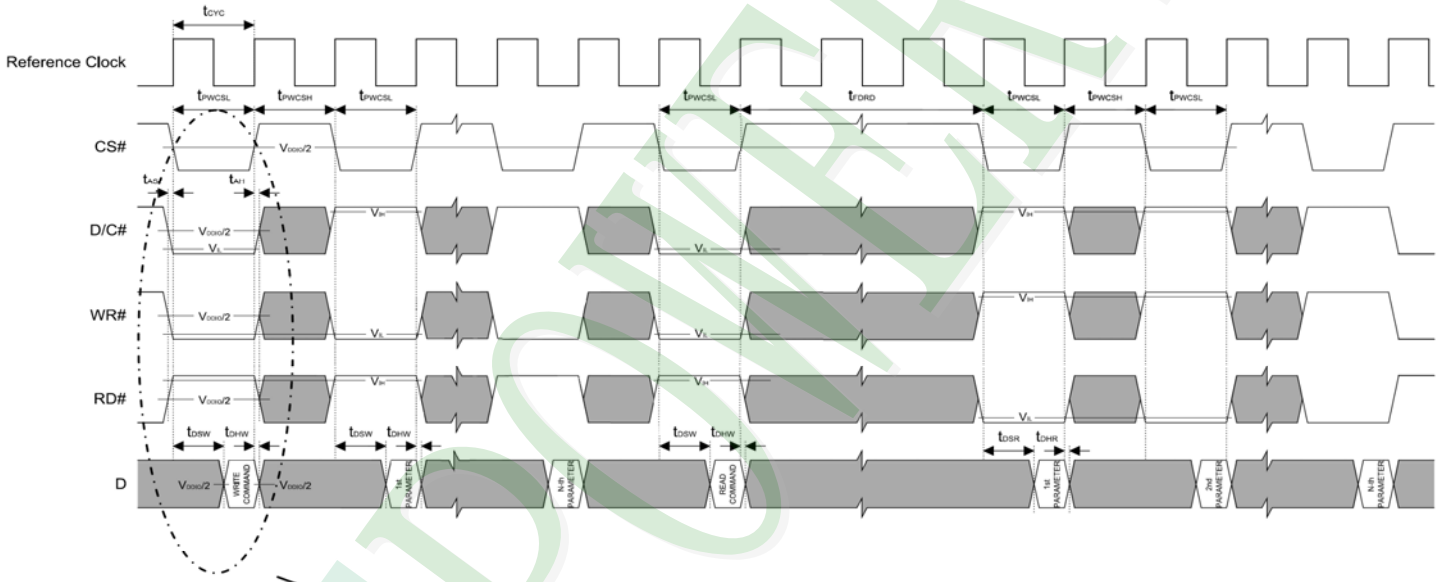
2.3 Timing Characteristics

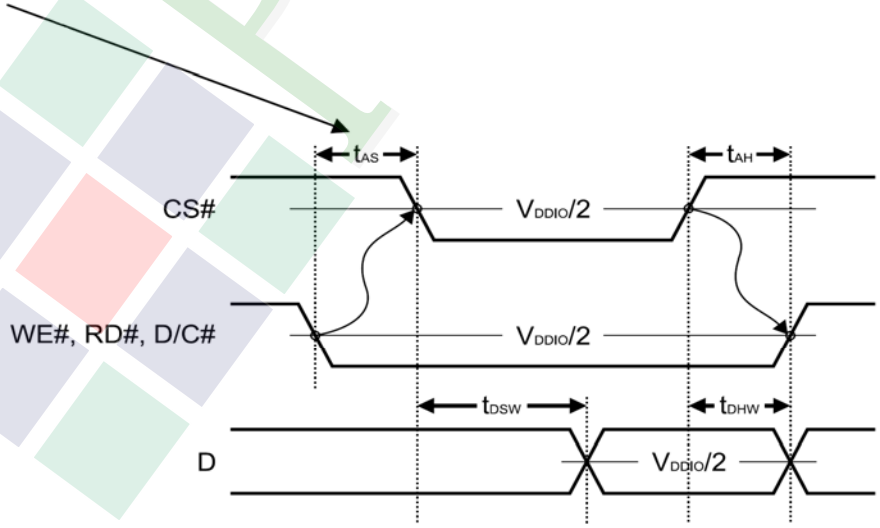
2.3.1 8080 Mode

8080 Mode Timing

Symbol	Parameter	Min	Typ	Max	Unit
t_{CYC}	Reference Clock Cycle Time	9	-	-	ns
t_{PWCSL}	Pulse width CS# low	1	-	-	t_{CYC}
t_{PWCSH}	Pulse width CS# high	1	-	-	t_{CYC}
t_{FDRD}	First Read Data Delay	5	-	-	t_{CYC}
t_{AS}	Address Setup Time	1	-	-	ns
t_{AH}	Address Hold Time	1	-	-	ns
t_{DSW}	Data Setup Time	4	-	-	ns
t_{DHW}	Data Hold Time	1	-	-	ns
t_{DSR}	Data Access Time	-	-	5	ns
t_{DHR}	Output Hold time	1	-	-	ns

8080 Mode Timing Diagram



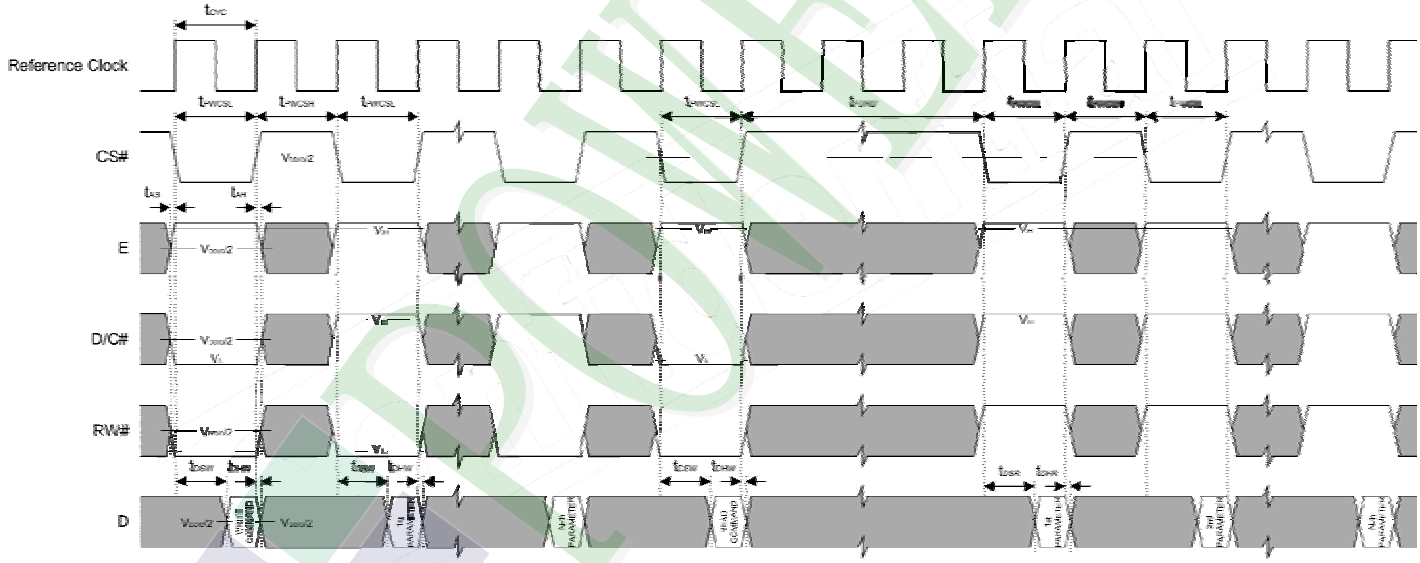


2.3.1 6800 Mode

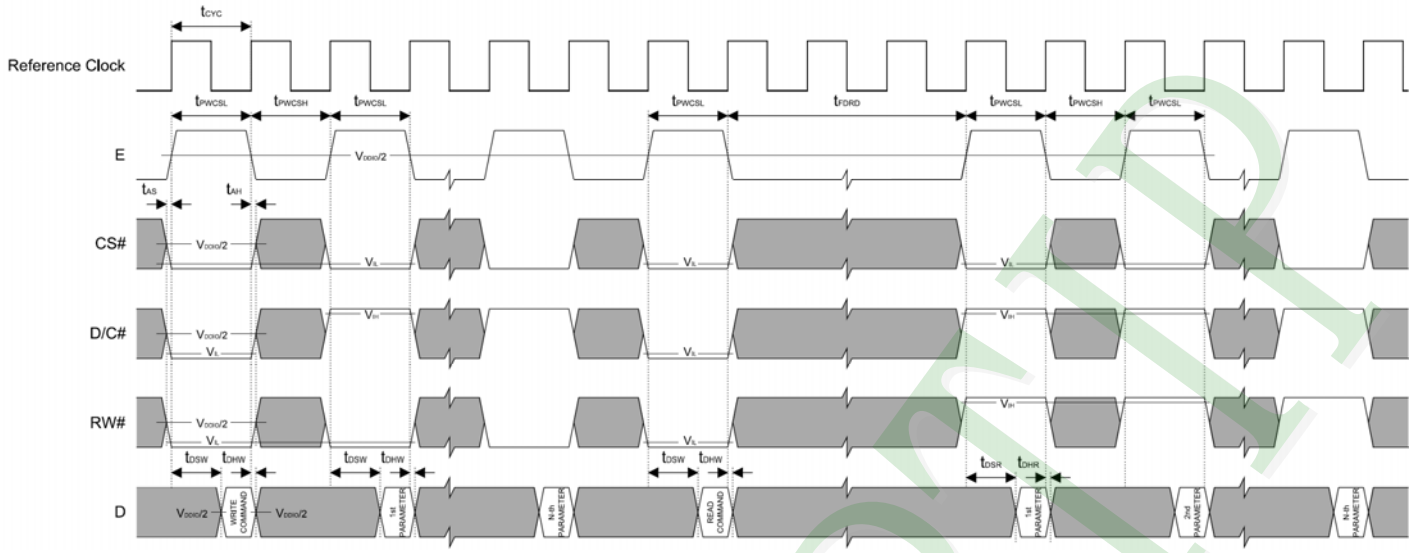
6800 Mode Timing

Symbol	Parameter	Min	Typ	Max	Unit
t_{CYC}	Reference Clock Cycle Time	9	-	-	ns
t_{PWCSL}	Pulse width CS# or E low	1	-	-	t_{CYC}
t_{PWCSH}	Pulse width CS# or E high	1	-	-	t_{CYC}
t_{FDRD}	First Data Read Delay	5	-	-	t_{CYC}
t_{AS}	Address Setup Time	1	-	-	ns
t_{AH}	Address Hold Time	1	-	-	ns
t_{DSW}	Data Setup Time	4	-	-	ns
t_{DHW}	Data Hold Time	1	-	-	ns
t_{DSR}	Data Access Time	-	-	5	ns
t_{DHR}	Output Hold time	1	-	-	ns

6800 Mode Timing Diagram (Use CS# as Clock)

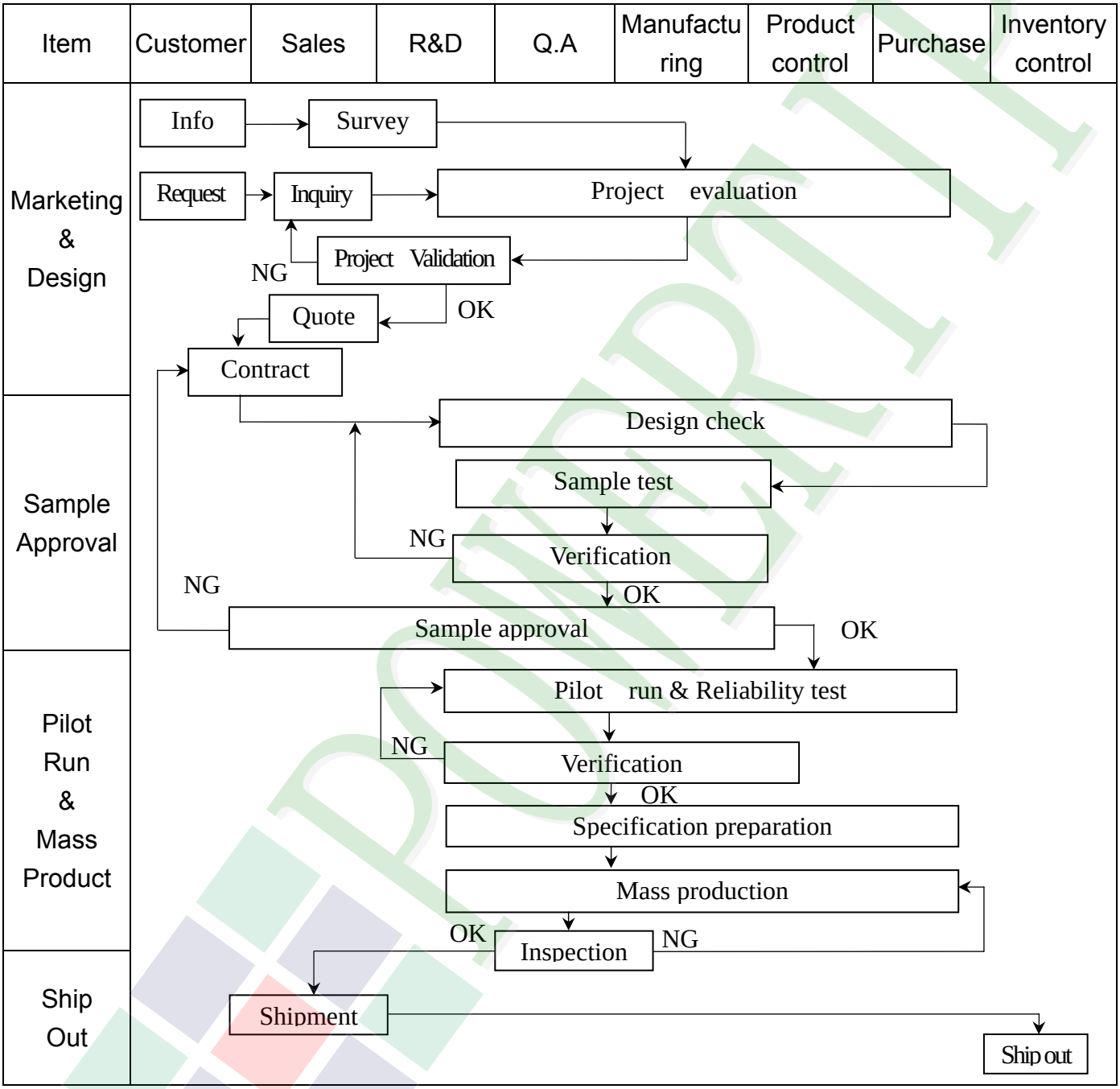


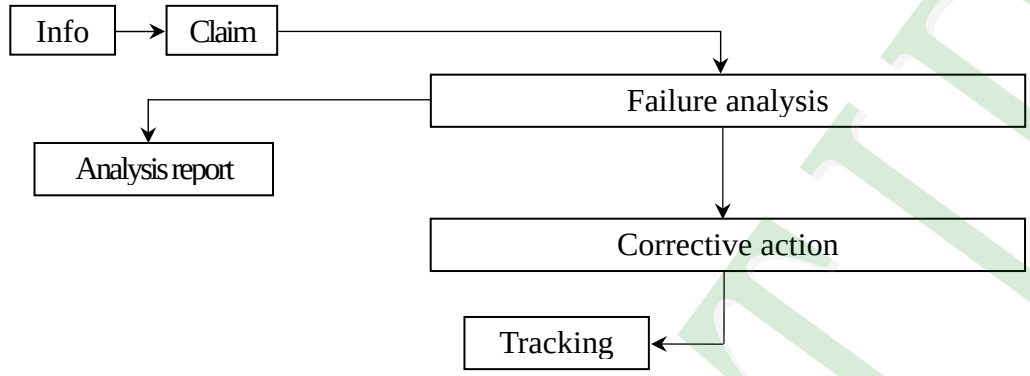
6800 Mode Timing Diagram (Use E as Clock)



3. QUALITY ASSURANCE SYSTEM

3.1 Quality Assurance Flow Chart



Item	Customer	Sales	R&D	Q.A	Manufacturing	Product control	Purchase	Inventory control
Sales Service								
Q.A Activity	1. ISO 9001 Maintenance Activities 2. Process improvement proposal 3. Equipment calibration 4. Education And Training Activities 5. Standardization Management							

3.2. Inspection Specification

◆Scope：The document shall be applied to TFT-LCD Module for 3.5″ ~10″ (Ver.B01).

◆Inspection Standard：MIL-STD-105E Table Normal Inspection Single Sampling Level Ⅱ.

◆Equipment：Gauge、MIL-STD、Powertip Tester、Sample

◆Defect Level：Major Defect AQL： 0.4 ； Minor Defect AQL： 1.5

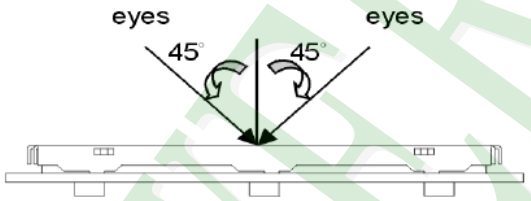
◆OUT Going Defect Level：Sampling.

◆Standard of the product appearance test：

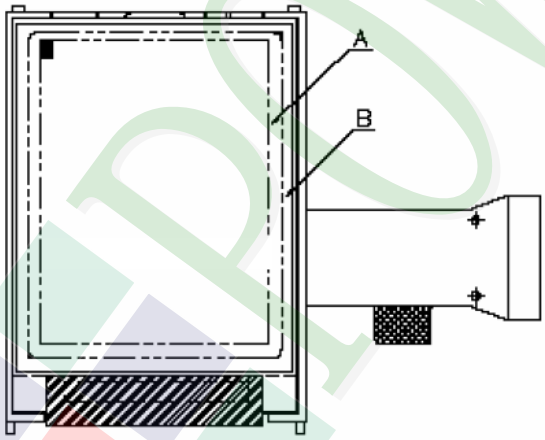
a. Manner of appearance test：

(1). The test best be under 20W×2 fluorescent light，and distance of view must be at 30 cm.

(2). The test direction is base on about around 45° of vertical line.



(3). Definition of area.



A area : viewing area

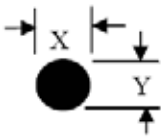
B area : Outside of viewing area

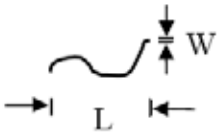
(4). Standard of inspection： (Unit：mm)

◆Specification For TFT-LCD Module 3.5″ ~10″ : (Ver.B01)

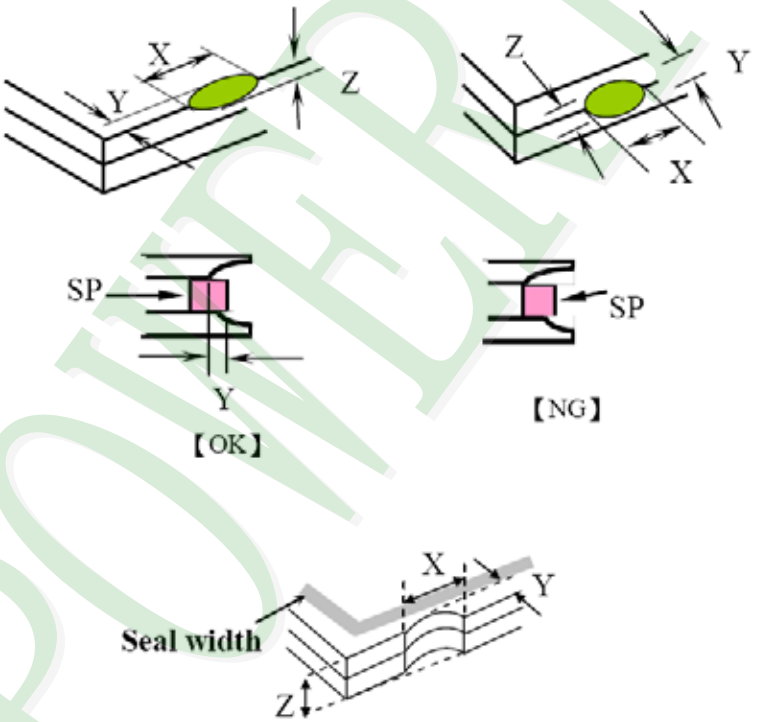
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td rowspan="3">01</td><td rowspan="3">Product condition</td><td>1.1 The part number is inconsistent with work order of production.</td><td>Major</td></tr>
<tr><td>1.2 Mixed product types.</td><td>Major</td></tr>
<tr><td>1.3 Assembled in inverse direction.</td><td>Major</td></tr>
<tr><td>02</td><td>Quantity</td><td>2.1 The quantity is inconsistent with work order of production.</td><td>Major</td></tr>
<tr><td>03</td><td>Outline dimension</td><td>3.1 Product dimension and structure must conform to structure diagram.</td><td>Major</td></tr>
<tr><td rowspan="5">04</td><td rowspan="5">Electrical Testing</td><td>4.1 Missing line character and icon.</td><td>Major</td></tr>
<tr><td>4.2 No function or no display.</td><td>Major</td></tr>
<tr><td>4.3 Display malfunction.</td><td>Major</td></tr>
<tr><td>4.4 LCD viewing angle defect.</td><td>Major</td></tr>
<tr><td>4.5 Current consumption exceeds product specifications.</td><td>Major</td></tr>
<tr><td>05</td><td>Dot defect
(Bright dot、Dark dot)
On -display</td><td>
<table>
<tr><th colspan="2">Item</th><th>Acceptance (Q'ty)</th></tr>
<tr><td rowspan="4">Dot Defect</td><td>Bright Dot</td><td>≦ 4</td></tr>
<tr><td>Dark Dot</td><td>≦ 5</td></tr>
<tr><td>Joint Dot</td><td>≦ 3</td></tr>
<tr><td>Total</td><td>≦ 7</td></tr>
</table>
5.1 Inspection pattern：full white , full black , Red , Green and blue screens.
5.2 It is defined as dot defect if defect area ＞1/2 dot.
5.3 The distance between two dot defect ≧5 mm.
</td><td>Minor</td></tr>
</table>

◆Specification For TFT-LCD Module 3.5″ ~10″ : (Ver.B01)

<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td>06</td><td>Black or white dot、scratch、contamination
Round type
 

Φ=(x+y) / 2
Line type
 
</td><td>6.1 Round type (Non-display or display) :
<table>
<tr><th rowspan="2">Dimension (diameter : Φ)</th><th colspan="2">Acceptance (Q'ty)</th></tr>
<tr><th>A area</th><th>B area</th></tr>
<tr><td>Φ ≦ 0.25</td><td>Ignore</td><td rowspan="4">Ignore</td></tr>
<tr><td>0.25 < Φ ≦ 0.50</td><td>5</td></tr>
<tr><td>Φ > 0.50</td><td>0</td></tr>
<tr><td>Total</td><td>5</td></tr>
</table>
6.2 Line type(Non-display or display) :
<table>
<tr><th rowspan="2">Length (L)</th><th rowspan="2">Width (W)</th><th colspan="2">Acceptance (Q'ty)</th></tr>
<tr><th>A area</th><th>B area</th></tr>
<tr><td>---</td><td>W ≦ 0.03</td><td>Ignore</td><td rowspan="5">Ignore</td></tr>
<tr><td>L ≦10.0</td><td>0.03 < W ≦ 0.05</td><td>4</td></tr>
<tr><td>L ≦5.0</td><td>0.05 < W ≦ 0.10</td><td>2</td></tr>
<tr><td>---</td><td>W >0.10</td><td>As round type</td></tr>
<tr><td colspan="2">Total</td><td>5</td></tr>
</table></td><td>Minor</td></tr>
<tr><td>07</td><td>Polarizer Bubble</td><td>
<table>
<tr><th rowspan="2">Dimension (diameter : Φ)</th><th colspan="2">Acceptance (Q'ty)</th></tr>
<tr><th>A area</th><th>B area</th></tr>
<tr><td>Φ ≦ 0.25</td><td>Ignore</td><td rowspan="5">Ignore</td></tr>
<tr><td>0.25 < Φ ≦ 0.50</td><td>4</td></tr>
<tr><td>0.50 < Φ ≦ 0.80</td><td>1</td></tr>
<tr><td>Φ > 0.80</td><td>0</td></tr>
<tr><td>Total</td><td>5</td></tr>
</table></td><td>Minor</td></tr>
</table>

◆Specification For TFT-LCD Module 3.5″ ~10″ : (Ver.B01)

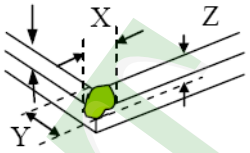
NO	Item	Criterion	Level
08	The crack of glass	Symbols : X : The length of crack Y : The width of crack. Z : The thickness of crack W : terminal length t : The thickness of glass a : LCD side length 8.1 General glass chip : 8.1.1 Chip on panel surface and crack between panels: 	Minor

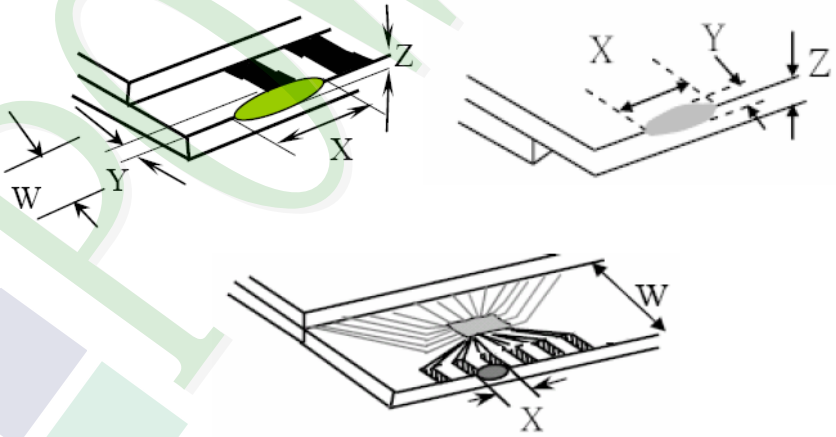
X	Y	Z
≦ a	Crack can't enter viewing area	≦1/2 t
≦ a	Crack can't exceed the half of SP width.	1/2 t < Z ≦2 t

◆Specification For TFT-LCD Module 3.5″ ~10″ : (Ver.B01)

<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td rowspan="2">08</td><td rowspan="2">The crack of glass</td><td>Symbols :

X : The length of crack
Z : The thickness of crack
t : The thickness of glass
Y : The width of crack.
W : terminal length
a : LCD side length

8.1.2 Corner crack :
 

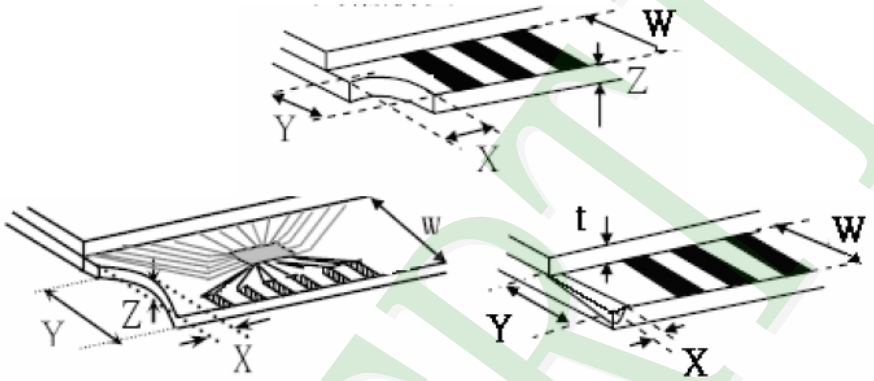
<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≦1/5 a</td><td>Crack can’t enter viewing area</td><td>Z ≦ 1/2 t</td></tr>
<tr><td>≦1/5 a</td><td>Crack can’t exceed the half of SP width.</td><td>1/2 t < Z ≦ 2 t</td></tr>
</table></td><td>Minor</td></tr>
<tr><td>8.2 Protrusion over terminal :
8.2.1 Chip on electrode pad :
 

<table>
<tr><th></th><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>Front</td><td>≦ a</td><td>≦ 1/2 W</td><td>≦ t</td></tr>
<tr><td>Back</td><td>≦ a</td><td>≦ W</td><td>≦ 1/2 t</td></tr>
</table></td></tr>
</table>

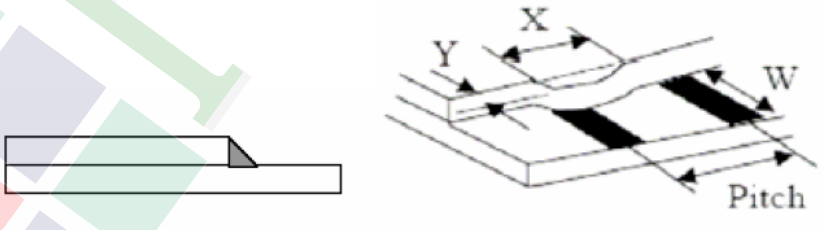
◆Specification For TFT-LCD Module 3.5″ ~10″ : (Ver.B01)

<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td>08</td><td>The crack of glass</td><td>
Symbols :

X : The length of crack Y : The width of crack.
Z : The thickness of crack W : terminal length
t : The thickness of glass a : LCD side length

8.2.2 Non-conductive portion :


<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≦ 1/3 a</td><td>≦ W</td><td>≦t</td></tr>
</table>
⊙ If the chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications.

8.2.3 Glass remain :


<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≦ a</td><td>≦ 1/3 W</td><td>≦t</td></tr>
</table>
</td><td>Minor</td></tr>
</table>

◆Specification For TFT-LCD Module 3.5″ ~10″ : (Ver.B01)

NO	Item	Criterion	Level
09	Backlight elements	9.1 Backlight can't work normally.	Major
		9.2 Backlight doesn't light or color is wrong.	Major
		9.3 Illumination source flickers when lit.	Major
10	General appearance	10.1 Pin type、quantity、dimension must match type in structure diagram.	Major
		10.2 No short circuits in components on PCB or FPC .	Major
		10.3 Parts on PCB or FPC must be the same as on the production characteristic chart .There should be no wrong parts , missing parts or excess parts.	Major
		10.4 Product packaging must the same as specified on packaging specification sheet.	Minor
		10.5 The folding and peeled off in polarizer are not acceptable.	Minor
		10.6 The PCB or FPC between B/L assembled distance(PCB or FPC) is ≦1.5 mm.	Minor

4. RELIABILITY TEST

4.1 Reliability Test Condition (Ver.B01)

<table>
<tr><th>NO.</th><th>TEST ITEM</th><th>TEST CONDITION</th></tr>
<tr><td>1</td><td>High Temperature Storage Test</td><td>Keep in+80 ±2℃ 96 hrs
Surrounding temperature, then storage at normal condition 4hrs.</td></tr>
<tr><td>2</td><td>Low Temperature Storage Test</td><td>Keep in -30 ±2℃ 96 hrs
Surrounding temperature, then storage at normal condition 4hrs.</td></tr>
<tr><td>3</td><td>High Temperature / High Humidity Storage Test</td><td>Keep in +60℃ / 90% R.H duration for 96 hrs
Surrounding temperature, then storage at normal condition 4hrs.
(Excluding the polarizer)</td></tr>
<tr><td>4</td><td>Temperature Cycling Storage Test</td><td>-30℃ → +25℃ → +80℃ → +25℃
(30mins) (5mins) (30mins) (5mins)
10 Cycle
Surrounding temperature, then storage at normal condition 4hrs.</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">ESD Test</td><td>Air Discharge:
Apply 2 KV with 5 times
Discharge for each polarity +/-</td><td>Contact Discharge:
Apply 250 V with 5 times
discharge for each polarity +/-</td></tr>
<tr><td colspan="2">1. Temperature ambiance : 15℃～35℃
2. Humidity relative : 30%～60%
3. Energy Storage Capacitance(Cs+Cd) : 150pF±10%
4. Discharge Resistance(Rd) : 330Ω±10%
5. Discharge, mode of operation :
Single Discharge (time between successive discharges at least 1 sec)
(Tolerance if the output voltage indication : ±5%)</td></tr>
<tr><td>6</td><td>Vibration Test (Packaged)</td><td colspan="2">1. Sine wave 10～55 Hz frequency (1 min/sweep)
2. The amplitude of vibration :1.5 mm
3. Each direction (X、Y、Z) duration for 2 Hrs</td></tr>
<tr><td>7</td><td>Drop Test (Packaged)</td><td colspan="2"><table><tr><th>Packing Weight (Kg)</th><th>Drop Height (cm)</th></tr><tr><td>0 ~ 45.4</td><td>122</td></tr><tr><td>45.4 ~ 90.8</td><td>76</td></tr><tr><td>90.8 ~ 454</td><td>61</td></tr><tr><td>Over 454</td><td>46</td></tr></table>Drop Direction :※1 corner / 3 edges / 6 sides each 1time</td></tr>
</table>

5. PRECAUTION RELATING PRODUCT HANDLING

5.1 SAFETY

5.1.1 If the LCD panel breaks , be careful not to get the liquid crystal to touch your skin.

5.1.2 If the liquid crystal touches your skin or clothes , please wash it off immediately by using soap and water.

5.2 HANDLING

5.2.1 Avoid any strong mechanical shock which can break the glass.

5.2.2 Avoid static electricity which can damage the CMOS LSI—When working with the module , be sure to ground your body and any electrical equipment you may be using.

5.2.3 Do not remove the panel or frame from the module.

5.2.4 The polarizing plate of the display is very fragile. So , please handle it very carefully ,do not touch , push or rub the exposed polarizing with anything harder than an HB pencil lead (glass , tweezers , etc.)

5.2.5 Do not wipe the polarizing plate with a dry cloth , as it may easily scratch the surface of plate.

5.2.6 Do not touch the display area with bare hands , this will stain the display area.

5.2.7 Do not use ketonics solvent & aromatic solvent. Use with a soft cloth soaked with a cleaning naphtha solvent.

5.2.8 To control temperature and time of soldering is 320±10℃and 3-5 sec.

5.2.9 To avoid liquid (include organic solvent) stained on LCM .

5.3 STORAGE

5.3.1 Store the panel or module in a dark place where the temperature is 25℃ ±5℃ and the humidity is below 65% RH.

5.3.2 Do not place the module near organics solvents or corrosive gases.

5.3.3 Do not crush , shake , or jolt the module.

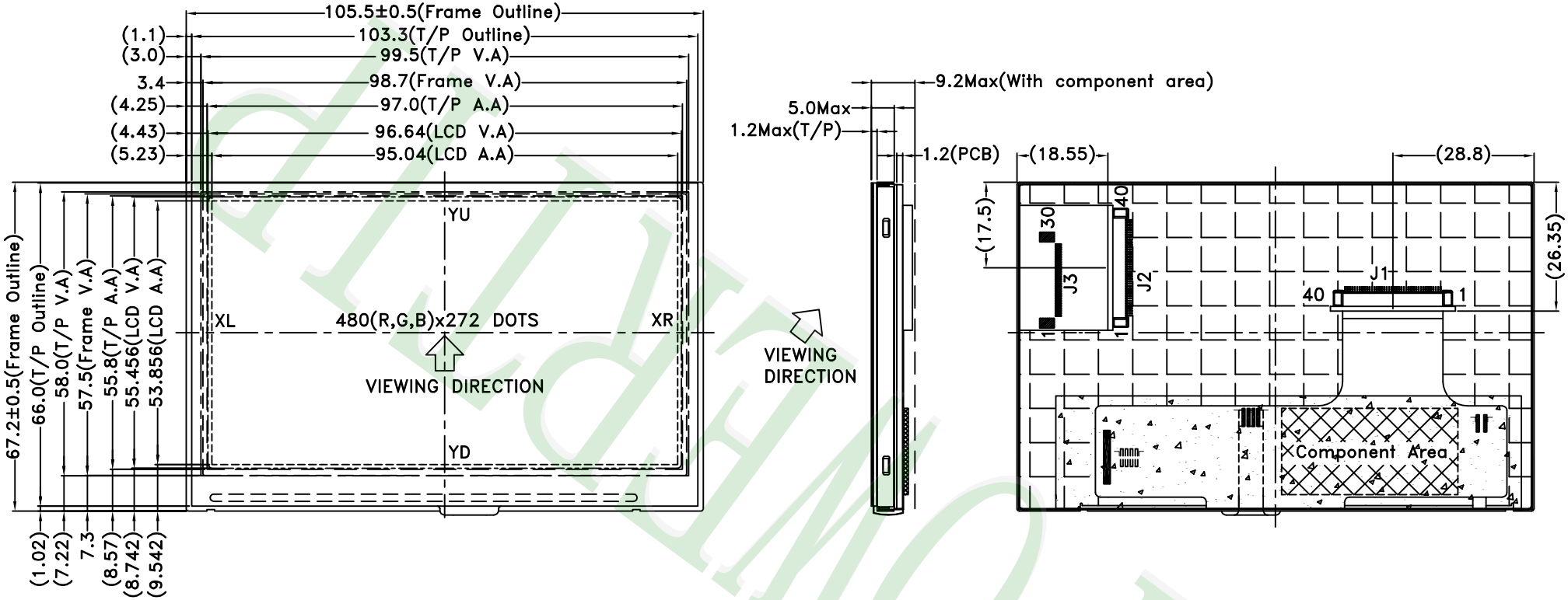
5.4 TERMS OF WARRANTY

5.4.1 Applicable warrant period

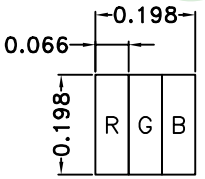
The period is within thirteen months since the date of shipping out under normal using and storage conditions.

5.4.2 Unaccepted responsibility

This product has been manufactured to your company's specification as a part for use in your company's general electronic products. It is guaranteed to perform according to delivery specifications. For any other use apart from general electronic equipment , we cannot take responsibility if the product is used in nuclear power control equipment , aerospace equipment , fire and security systems or any other applications in which there is a direct risk to human life and where extremely high levels of reliability are required.



NOTES:
1.LCD TYPE: a-Si TFT
2.LCD DISPLAY:POSITIVE/TRANSMISSIVE
3.VIEW DIRECTION: 6 O'CLOCK
4.Top: -20~70°C Tst:-30~80°C
5.The tolerance unless classified ±0.2mm
6. FPC Component Area(H=1.0Max)
PCB Component Area(H=2.5Max)
Shield tape
4 7.J1(Connector No): IMSA-9631S-40Y923(IRISO)
Pitch=0.5,40Pin,Top Contact
4 8.J2(Connector No): IMSA-9637S-40Y923(IRISO)
Pitch=0.5,40Pin,Bottom Contact



PIXEL Detail
SCALE:80/1

REV	REV BY	REVISER	DATE
007			
006			
005			
004	Modify J1,J2 type	Mag	2010/03/11
003	Modify size of shield tape	Mag	2009/05/20
002	Modify Touch Panel	Mag	2009/04/03
001	NEW DRAWING	Mag	2009/03/23

PART NO: PH480272T-005-I10Q

DRAWING NAME : LMD-PH480272T-005-I10Q

TITLE: LCD Module Drawing

久正光電股份有限公司
POWERTIP TECHNOLOGY CORPORATION

Design	Mag	(3)	Surface		
Check	Stone	Unit	MM	Material	
Approve	Linda	Scale	1:1.2	Thickness	
		Page	1/1	Quantity	

Length(Min) (mm) \ Tolerance \ Precision	Precision Level
1 ~ 4	-
4 ~ 16	-
16 ~ 63	-
63 ~ 250	-
250 ~ 1000	-

PT-A-054-01

Ver.001	
Documents NO.	PKG-PH480272T-005-I10Q

LCM包裝規格書
LCM Packaging Specifications

Approve	Check	Contact
Linda	Stone	Mag

1.包裝材料規格表 (Packaging Material) : (per carton)

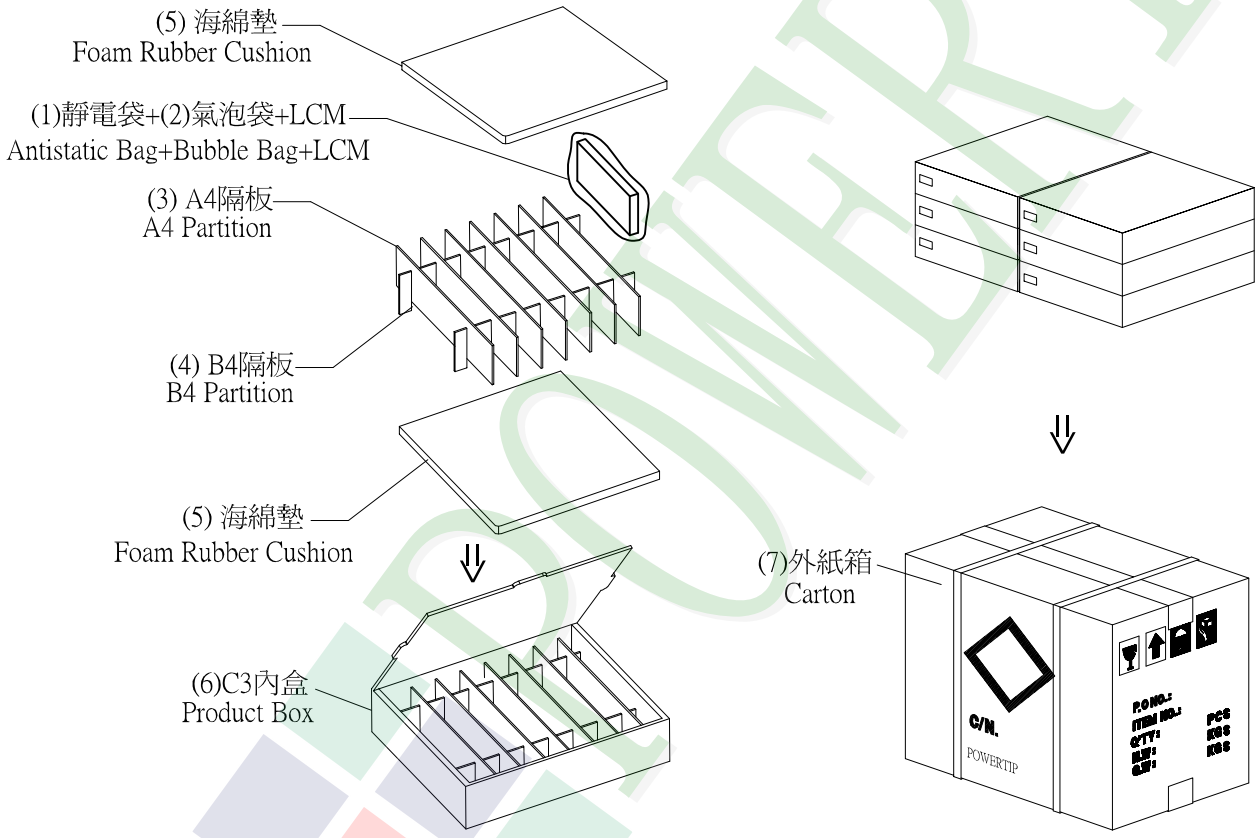
No.	Item	Model	Dimensions (mm)	1Pcs Weight	Quantity	Total Weight
1	成品 (LCM)	PH480272T-005-I10Q	105.5 X 67.2	0.085	84	7.14
2	氣泡袋(1)Bubble Bag	BAG170150BRABA	170 X 150	0.0045	84	0.378
3	A4隔板(2)A4 Partition	BX24500070BNBA	245 X 70 X 2.5	0.014	42	1.092
4	B4隔板(3)B4 Partition	BX29300070BLBA	293 X 70 X 2.5	0.012	12	0.144
5	海綿墊(4)Foam Rubber Cushion	OTFOAM00006ABA	290 X 240 X 10	0.02	12	0.24
6	C3內盒(5)Product Box	BX31025510AABA	310 X 255 X 100	0.263	6	1.578
7	外紙箱(6)Carton	BX52732536CCBA	527 X 325 X 360	1.092	1	1.092
8						
9						

2.一 整箱總重量 (Total LCD Weight in carton) : 11.66 Kg±10%

3.單箱數量規格表 (Packaging Specifications and Quantity) :

(1)Quantity Of Spacer : A4隔板 X 7 , B4隔板 X 2

(2)Total LCM quantity in carton : quantity per box 14 x no of boxes 6 = 84



特 記 事 項 (REMARK)

1. Label Specifications :

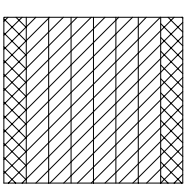
MODEL:
LOT NO:
QUANTITY:
CHECK:

2. 每隔放兩片模組,前後隔各放一片模組。(如3.放置格示意圖)

2. 2 LCM are placed on every. The first and the last slot should be one pcs (See remarks 3 on packaging specifications)

3.放置格示意圖:

3.Each divider is placed inside a product Box



模組(LCMx2PCS)

模組(LCMx1PCS)