



## SPECIFICATIONS

CUSTOMER	:	PTC
SAMPLE CODE	:	SH320240T-009-I09Q
MASS PRODUCTION CODE	:	PH320240T-009-I09Q
SAMPLE VERSION	:	01
SPECIFICATIONS EDITION	:	011
DRAWING NO. (Ver.)	:	LMD-PH320240T-009-I09Q_006
PACKAGING NO. (Ver.)	:	PKG-PH320240T-009-I09Q_002

**Customer Approved**

**Date:**

Approved	Checked	Designer
閔偉	劉進	譚超敏

- Preliminary specification for design input
- Specification for sample approval

### POWERTIP TECH. CORP.

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## History of Version

Date (mm / dd / yyyy)	Ver.	Edi.	Description	Page	Design by
03/01/2010	01	001	New Drawing.	-	Ackey
04/21/2010	01	002	New Sample.	-	Ackey
07/26/2010	01	003	Add Pull Tape.	Appendix	Ackey
12/16/2010	01	004	Modify 1.5 Optical Characteristics.	6	Timter
06/10/2011	01	005	Modify the LCM Thickness Label of LCM Drawing.	Appendix	Robin Hsieh
04/07/2014	01	006	Modify Viewing Angle & Contrast Ratio	6	劉進
04/21/2014	01	007	Modify Optical Characteristics Modify Backlight Characteristics	6 9	劉進
05/08/2014	01	008	Modify The Unit Of Forward Voltage	9	劉進
06/06/2014	01	009	Update LCM Drawing ( Touch Panel Viewing Area & Outline Dimension )	4,Appendix	劉進
11/27/2014	01	010	Change the LED of Backlight ( Optical Characteristics & Backlight Characteristics )	6,9	徐明菲
08/24/2015	01	011	Show Backlight Life Time	9	譚超敏

Total : 27 Page

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LCM Packaging Specifications.

Note : For detailed information please refer to IC data sheet :

Primacy ( TFT LCD ): Himax : HX8218-A + HX8615A ( Or compatible IC )

## 1. SPECIFICATIONS

### 1.1 Features

#### Main LCD panel

Item	Standard Value
Display Type	320 ( R · G · B ) * 240 Dots
LCD Type	Normally White, Transmissive type
Screen size (inch)	5.7 inch
Viewing Direction	6 H
Color configuration	RGB - Strip
Interface	Digital 24-bits RGB
Other (controller/driver IC)	Himax : HX8218-A + HX8615A ( Or compatible IC )
ROHS	THIS PRODUCT CONFORMS THE ROHS OF PTC Detail information please refer web site : <a href="http://www.powertip.com.tw/news.php?area_id_view=1085560481/">http://www.powertip.com.tw/news.php?area_id_view=1085560481/</a>

### 1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	159.4 ( W ) * 111.0 ( L ) * 10.5 ( H )( max )	mm

#### LCD panel

Item	Standard Value	Unit
Viewing Area	116.2 ( W ) * 87.4 ( L )	mm
Active Area	115.2 ( W ) * 86.4 ( L )	mm

#### Touch panel

Item	Standard Value	Unit
Viewing Area	122.0 ( W ) * 93.85 ( L )	mm
Active Area	115.17 ( W ) * 86.37 ( 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	V <sub>DD</sub>	AVSS = 0	-0.3	7.0	V
Input Voltage	V <sub>I</sub>	-	-0.3	V <sub>DD</sub> +0.3	V
Operating Temperature	T <sub>OP</sub>	Excluded T / P	-20	70	°C
Storage Temperature	T <sub>ST</sub>	Excluded T / P	-30	80	°C

### 1.4 DC Electrical Characteristics

#### Module

G<sub>ND</sub> = 0V, T<sub>A</sub> = 25°C

Item	Symbol	Condition	Min	Typ	Max	Unit
Power Supply Voltage	V <sub>DD</sub>	-	3.0	3.3	3.6	V
Supply Current	I <sub>DD</sub>	V <sub>DD</sub> = 3.3 V Pattern = Full Display	-	90	-	mA
		V <sub>DD</sub> = 3.3 V Pattern = Black ( *1 )	-	95	140	mA

Note : \*1. Maximum Current Display.

## 1.5 Optical Characteristics

### TFT LCD Module

 $V_{DD} = 3.3V, T_A = 25^{\circ}C$ 

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	-
Response time	Rise	Tr	-	-	15	30	ms	Note 2
	Fall	Tf		-	35	50		
Viewing angle	Top	$\theta Y+$	CR $\geq$ 10	-	60	-	Deg.	Note 4
	Bottom	$\theta Y-$		-	60	-		
	Left	$\theta X-$		-	60	-		
	Right	$\theta X+$		-	60	-		
Contrast ratio		CR	-	500	600	-	-	Note 3
Color of CIE Coordinate (With B/L)	White	X	IF=200mA	0.26	0.31	0.36	-	Note1
		Y		0.28	0.33	0.38		
	Red	X		0.58	0.63	0.68		
		Y		0.31	0.36	0.41		
	Green	X		0.29	0.34	0.39		
		Y		0.55	0.60	0.65		
	Blue	X		0.09	0.14	0.19		
		Y		0.02	0.07	0.12		
Average Brightness Pattern=white display (With B/L)		IV	IF=200mA	370	420	-	cd/m <sup>2</sup>	Note1
Uniformity (With B/L)		$\Delta B$	IF=200mA	70	-	-	%	Note1

Note 1:

\*1 :  $\Delta B = B(\text{min}) / B(\text{max}) * 100\%$

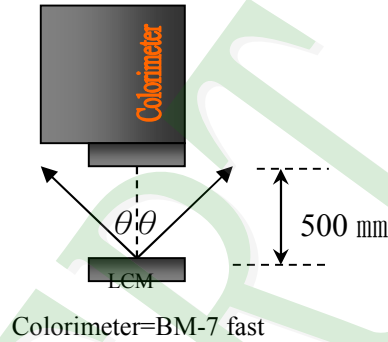
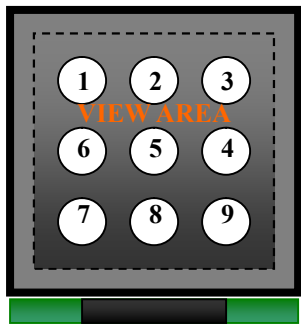
\*2 : Measurement Condition for Optical Characteristics:

a : Environment:  $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$  /  $60 \pm 20\% \text{R.H}$  , no wind , dark room below 10 Lux at typical lamp current and typical operating frequency.

b : Measurement Distance:  $500 \pm 50 \text{ mm}$  , ( $\theta = 0^{\circ}$ )

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

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



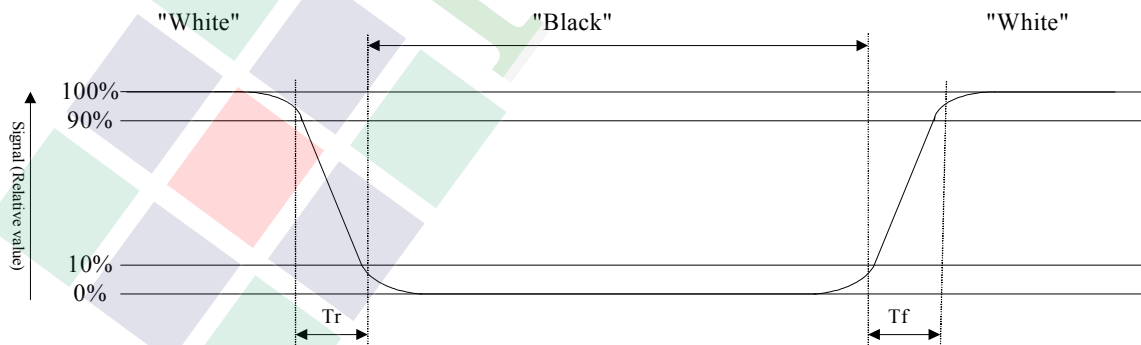
To be measured at the center area of panel with a viewing cone of 1° by Topcon luminance meter BM-7, after 10 minutes operation (module)

Note2: Definition of response time:

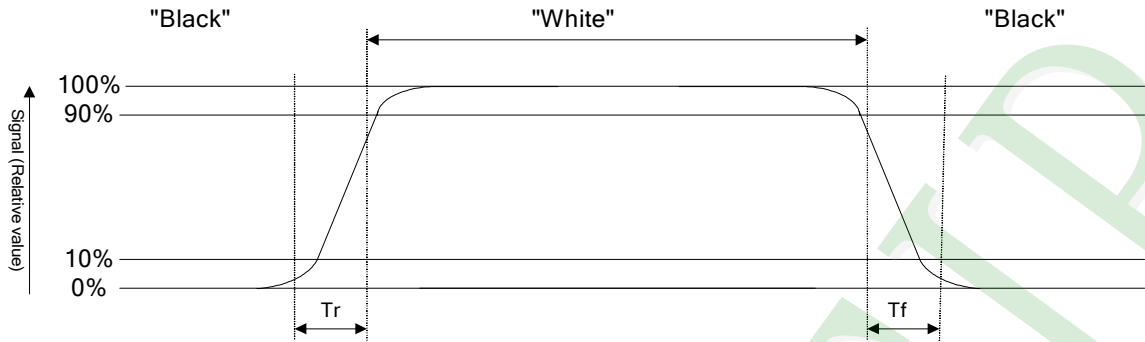
The output signals of photo detector are measured when the input signals are changed from “black” to “white”(falling time) and from “white” to “black”(rising time), respectively. The response time is defined as the time interval between the 10% and 90% of Amplitudes.

Refer to figure as below:

Normally White



## Normally Black



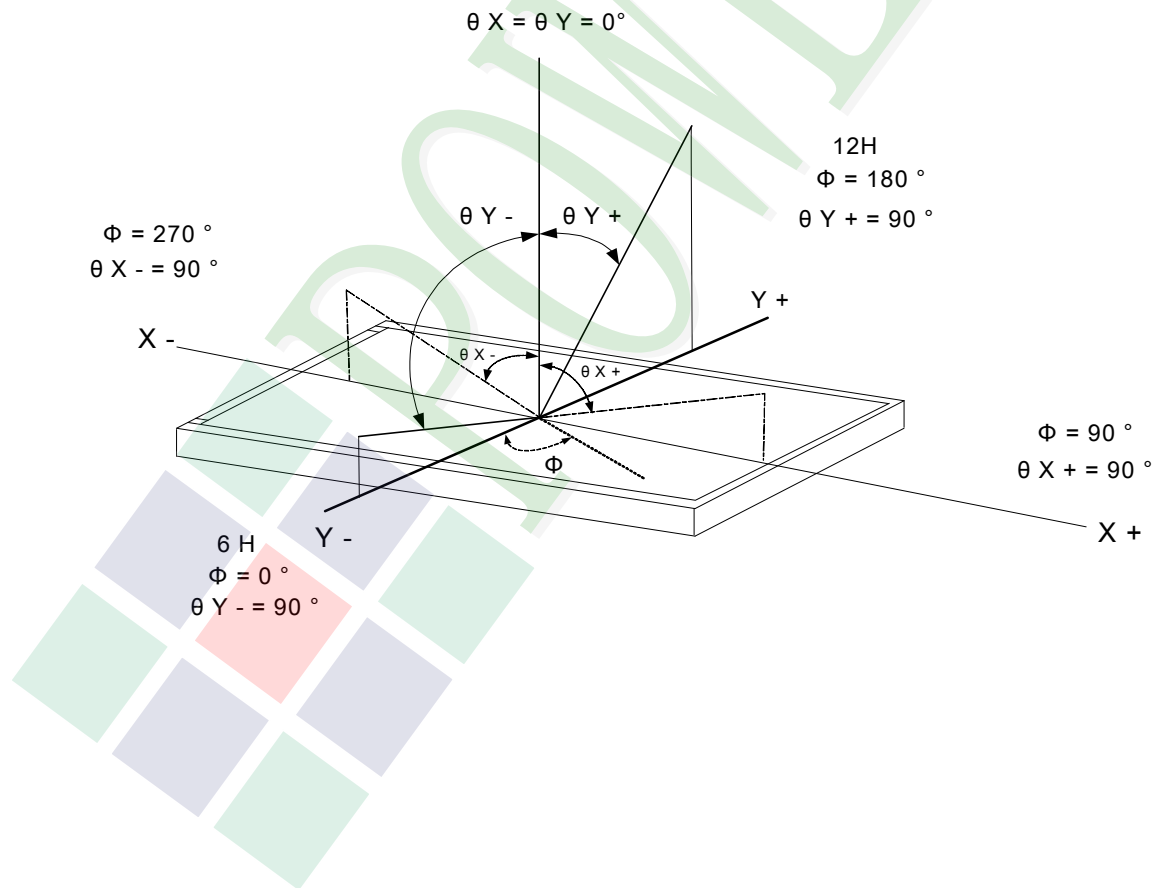
Note3: Definition of contrast ratio:

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

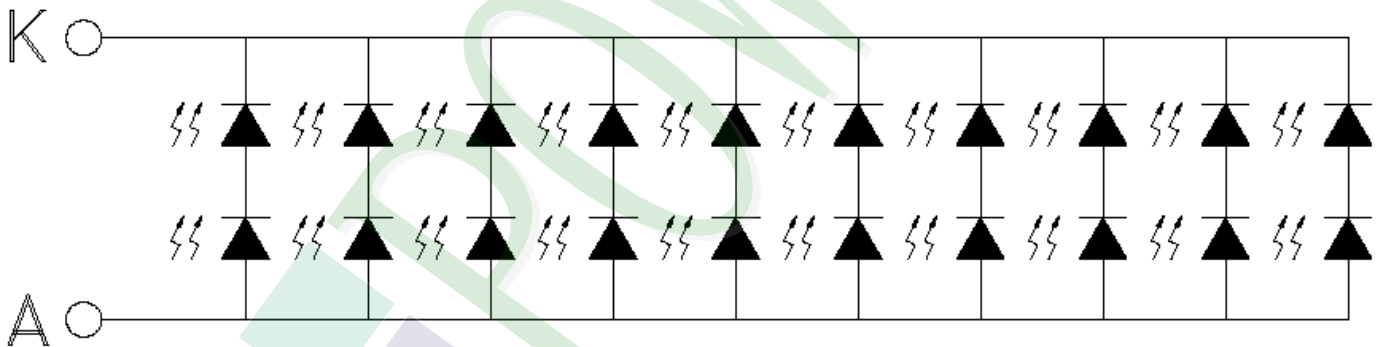
### Maximum Ratings

Item	Symbol	Conditions	Min.	Max.	Unit
LED Power Dissipation	PD <sub>LED</sub>	Ta =25°C / 20mA	-	0.12	W
Power Dissipation	PD	Ta =25°C	-	2.4	W

### Electrical / Optical Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	VF	IF = 200 mA	5.7	6.5	7.5	V
Average Brightness (Without LCD)	IV		7650	8800	-	cd/m <sup>2</sup>
CIE Color Coordinate (Without LCD)	X		0.26	0.29	0.32	-
	Y		0.26	0.29	0.32	
Color	White					

### Internal Circuit Diagram

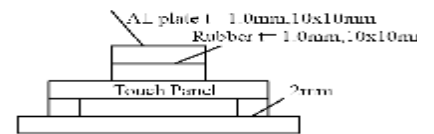


### Other Description

Item	Conditions	Description
Life Time	Ta =25°C IF= 200mA	50000 hrs

## 1.7 Touch Screen Characteristic

Item	Specification
Input Method	Finger or stylus pen.
ITO Glass	T = 1.1mm , 500Ω/□ ±150 Ω
ITO Film	T = 0.175mm , 500Ω/□ ±150 Ω Non-Glare Type
Operating Temperature	-0℃~50℃ , 20~90%RH(Except for dew gathering.)
Storage Temperature	-20℃~60℃ ,20~80%RH(Except for dew gathering.)
Surface Hardness	3H- pressure 150gf , 45deg.
Hitting Durability	1,000,000 times min. (Tip R 8 mm)
Pen Sliding Durability	100,000 times min. (Tip R0.8mm)
Insulation Impedance	DC25V 1min,20MΩ↑
Light Transparency	78%min.
Linearity	±1.5% (±3.0% After environmental and life test)
Operating Force	130gf least input with stylus pen (R0.8mm) or input with finger(R 8.0mm)
Bouncing	<10ms
Impact Resistance	No damage when φ9mm 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	5 times 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 10~55Hz(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 65 cm for the bottom)
Static load resistance	After 4.5Kg load is applied to The center area(25cm <sup>2</sup> )of the Touch panel, the requirements in 3 and 4,shall be satisfied.



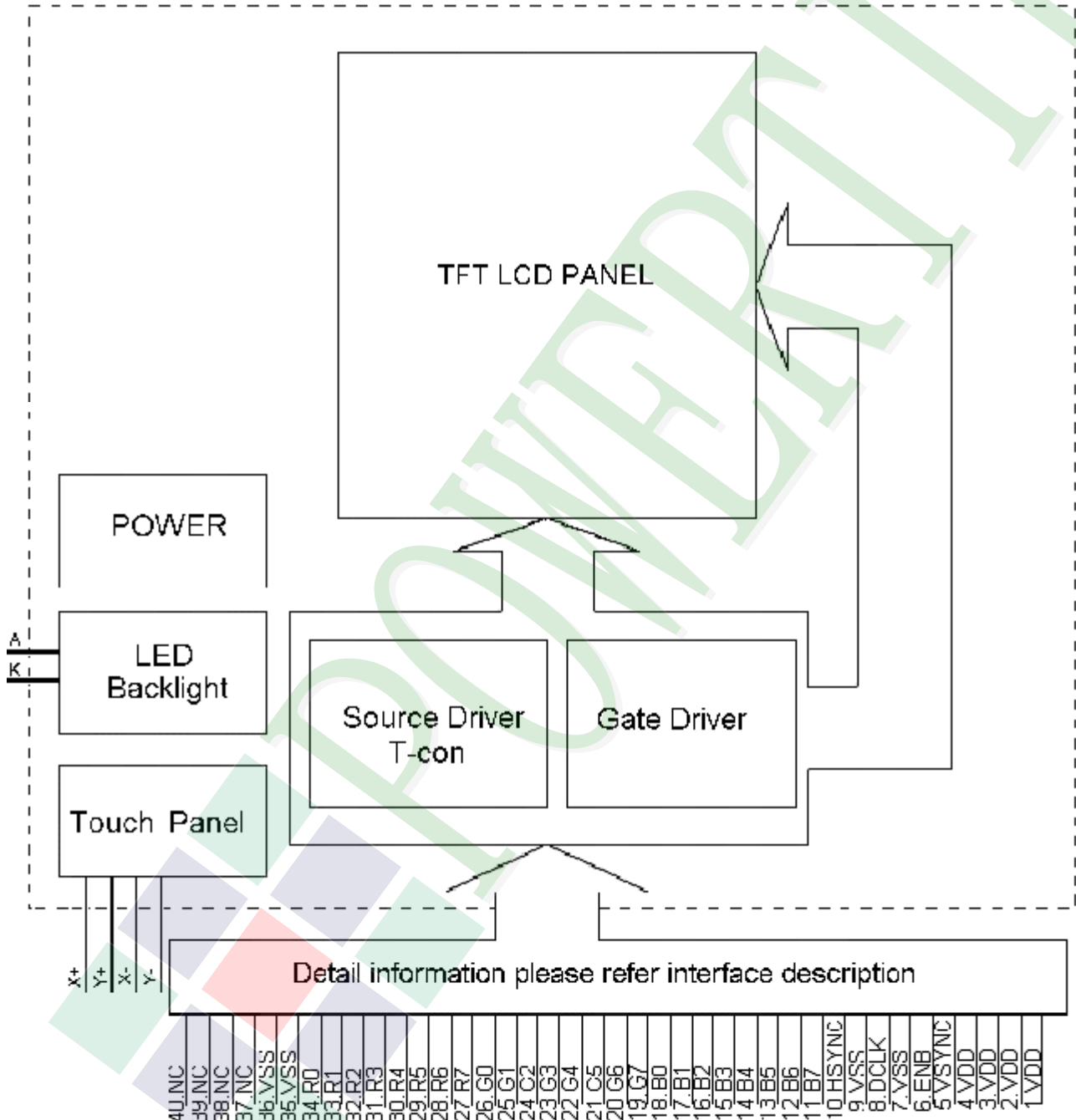
## 2. MODULE STRUCTURE

### 2.1 Counter Drawing

#### 2.1.1 LCM Mechanical Diagram

\* See Appendix

#### 2.1.2 Block Diagram



## 2.2 Interface Pin Description

Pin No.	Symbol	Function
1	VDD	Analog power.
2	VDD	
3	VDD	
4	VDD	
5	VSYNC	Vertical sync input.
6	ENB	Data enable control.
7	VSS	Ground.
8	DCLK	Dot data clock .
9	VSS	Ground.
10	HSYNC	Horizontal sync input.
11	B7	data bit B7.
12	B6	data bit B6.
13	B5	data bit B5.
14	B4	data bit B4.
15	B3	data bit B3.
16	B2	data bit B2.
17	B1	data bit B1.
18	B0	data bit B0.
19	G7	data bit G7.
20	G6	data bit G6.
21	G5	data bit G5.
22	G4	data bit G4.
23	G3	data bit G3.
24	G2	data bit G2.
25	G1	data bit G1.
26	G0	data bit G0.
27	R7	data bit R7.
28	R6	data bit R6.
29	R5	data bit R5.
30	R4	data bit R4.
31	R3	data bit R3.
32	R2	data bit R2.
33	R1	data bit R1.

**Interface Pin Description(CONT.)**

Pin No.	Symbol	Function
34	R0	data bit R0.
35	VSS	Ground.
36	VSS	Ground.
37	NC	No use..
38	NC	No use.
39	NC	No use.
40	NC	No use.

**Backlight Pin Description**

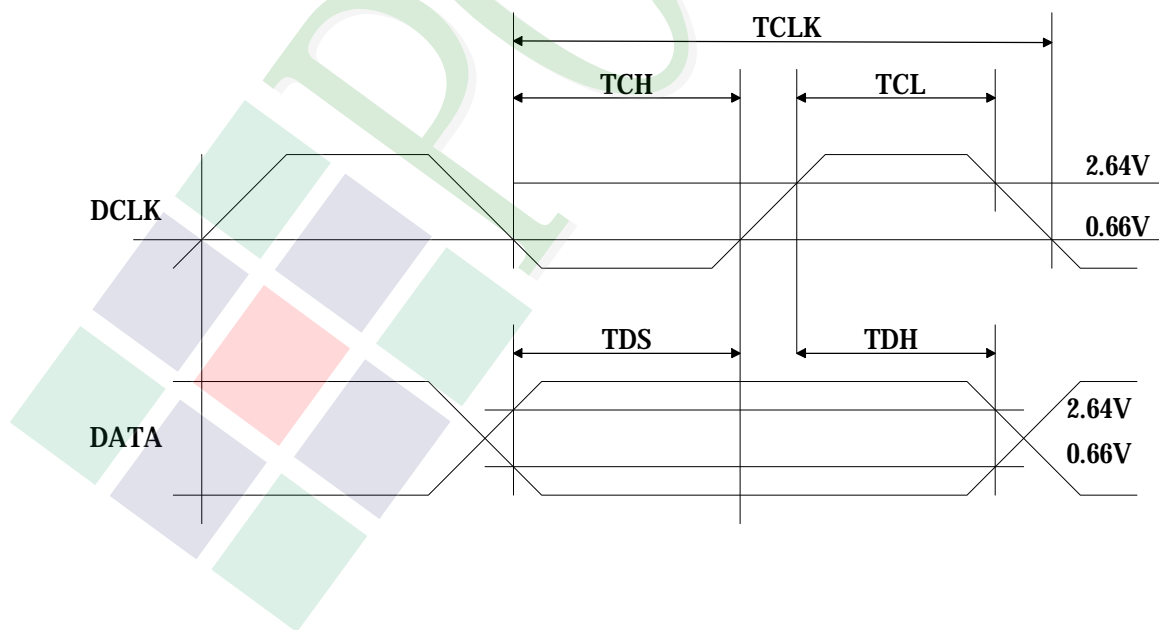
Pin No.	Symbol	Function
1	A	Power supply for LED Backlight anode input.
2	NC	No use.
3	K	Power supply for LED Backlight cathode input.

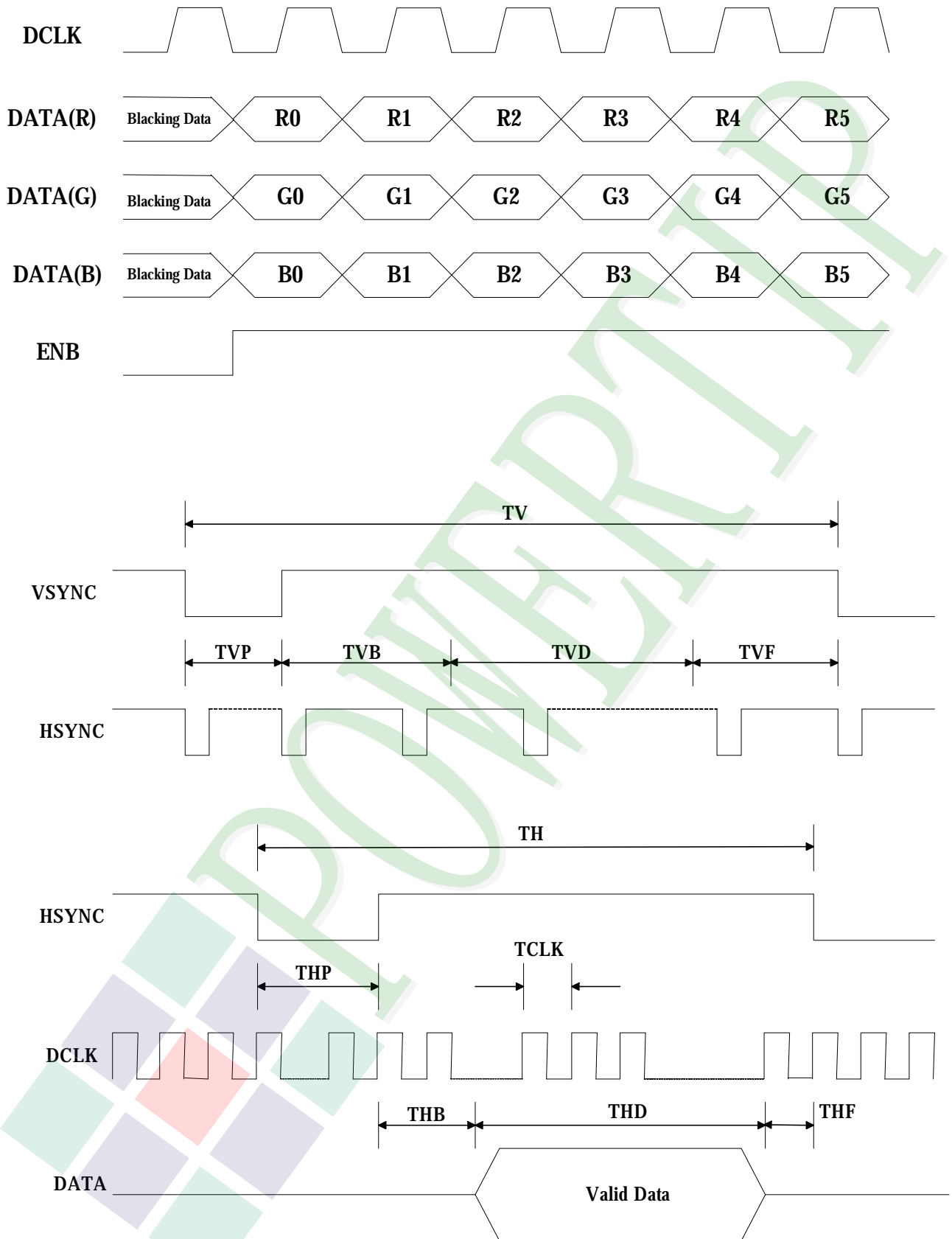
**Touch Panel Pin Description**

Pin No.	Symbol	Function
1	Y-	BOTTOM.(YU)
2	X+	RIGHT.(XR)
3	Y+	TOP.(YD)
4	X-	LEFT.(XL)

## 2.3 Timing Characteristics

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	
Dclk	Frequency	Dclk		6.4		MHz	
	High Time	Tch		78		ns	
	Low Time	Tcl		78		ns	
Data	Setup Time	Tds	12			ns	
	Hold Time	Tdh	12			ns	
Hsync	Period	TH		408		DCLK	
	Pulse Width	Thp		30		DCLK	
	Back-Porch	Thb		38		DCLK	
	Display Period	Thd		320		DCLK	
	Front-Porch	Thf		20		DCLK	
Vsync	Period	NTSC	Tv	262.5		TH	
		PAL		312.5			
	Pulse Width		Tvp	1	3	5	TH
	Back-Porch	NTSC	Tvb	15		TH	
		PAL		23			
	Display Period		Tvd		240		TH
	Front-Porch	NTSC	Tvf	4.5		TH	
		PAL		46.5			





## Color Data Assignment

COLOR	INPUT DATA	R DATA								G DATA								B DATA							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
		MSB							LSB	MSB							LSB	MSB							LSB
BASIC COLOR	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	BLUE(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	CYAN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MAGENTA	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	YELLOW	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	WHITE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RED	RED(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(2)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREEN	GREEN(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	GREEN(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	GREEN(254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	GREEN(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
BLUE	BLUE(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BLUE(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	BLUE(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	BLUE(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	BLUE(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

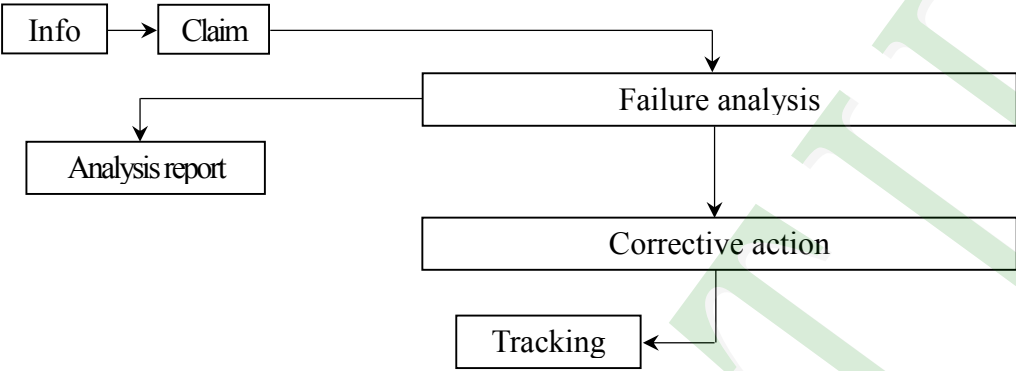
[Note]

- (1) Definition of gray scale  
Color (n) : n means level of gray scale  
Larger n means brighter level
- (2) Data: 1-High, 0-Low

## 2.4 JUMPER(Setting different use) : J1-1, J2-2, J3-2, J4-1, J5-1, J6-2.





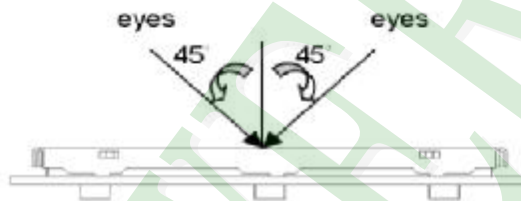
Item	Customer	Sales	R&D	Q.A	Manufacturing	Product control	Purchase	Inventory control
Sales Service	 <pre> graph TD     Info[Info] --&gt; Claim[Claim]     Claim --&gt; Failure[Failure analysis]     Failure --&gt; Report[Analysis report]     Failure --&gt; Action[Corrective action]     Action --&gt; Tracking[Tracking]           </pre>							
Q.A Activity	1. ISO 9001 Maintenance Activities 3. Equipment calibration 5. Standardization Management				2. Process improvement proposal 4. Education And Training Activities			

### 3.2. Inspection Specification

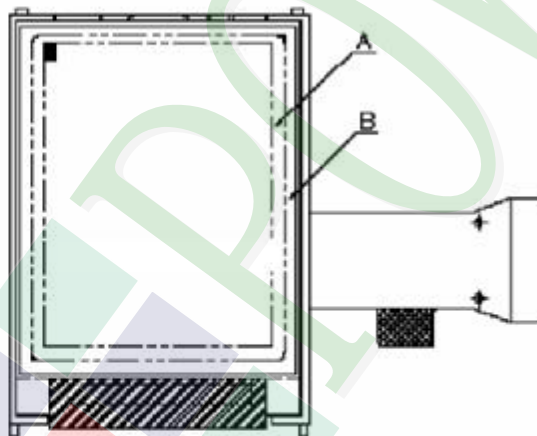
- ◆ Scope : The document shall be applied to TFT-LCD Module for 3.5" ~10" (Ver.B01).
- ◆ Inspection Standard : MIL-STD-105E Table Normal Inspection Single Sampling Level II.
- ◆ Equipment : Gauge 、 MIL-STD 、 Powertip Tester 、 Sample
- ◆ Defect Level : Major Defect AQL : 0.4 ; Minor Defect AQL : 1.5
- ◆ 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" :

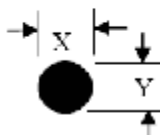
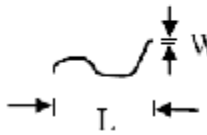
(Ver.B01)

NO	Item	Criterion	Level										
01	Product condition	1. 1 The part number is inconsistent with work order of production.	Major										
		1. 2 Mixed product types.	Major										
		1. 3 Assembled in inverse direction.	Major										
02	Quantity	2. 1 The quantity is inconsistent with work order of production.	Major										
03	Outline dimension	3. 1 Product dimension and structure must conform to structure diagram.	Major										
		4. 1 Missing line character and icon.	Major										
04	Electrical Testing	4. 2 No function or no display.	Major										
		4. 3 Display malfunction.	Major										
		4. 4 LCD viewing angle defect.	Major										
		4. 5 Current consumption exceeds product specifications.	Major										
05	Dot defect (Bright dot , Dark dot)  On -display	<table border="1"> <thead> <tr> <th>Item</th> <th>Acceptance (Q'ty)</th> </tr> </thead> <tbody> <tr> <td>Bright Dot</td> <td><math>\leq 4</math></td> </tr> <tr> <td>Dark Dot</td> <td><math>\leq 5</math></td> </tr> <tr> <td>Joint Dot</td> <td><math>\leq 3</math></td> </tr> <tr> <td>Total</td> <td><math>\leq 7</math></td> </tr> </tbody> </table>	Item	Acceptance (Q'ty)	Bright Dot	$\leq 4$	Dark Dot	$\leq 5$	Joint Dot	$\leq 3$	Total	$\leq 7$	Minor
		Item	Acceptance (Q'ty)										
		Bright Dot	$\leq 4$										
		Dark Dot	$\leq 5$										
		Joint Dot	$\leq 3$										
Total	$\leq 7$												
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 $\geq 5$ mm.													



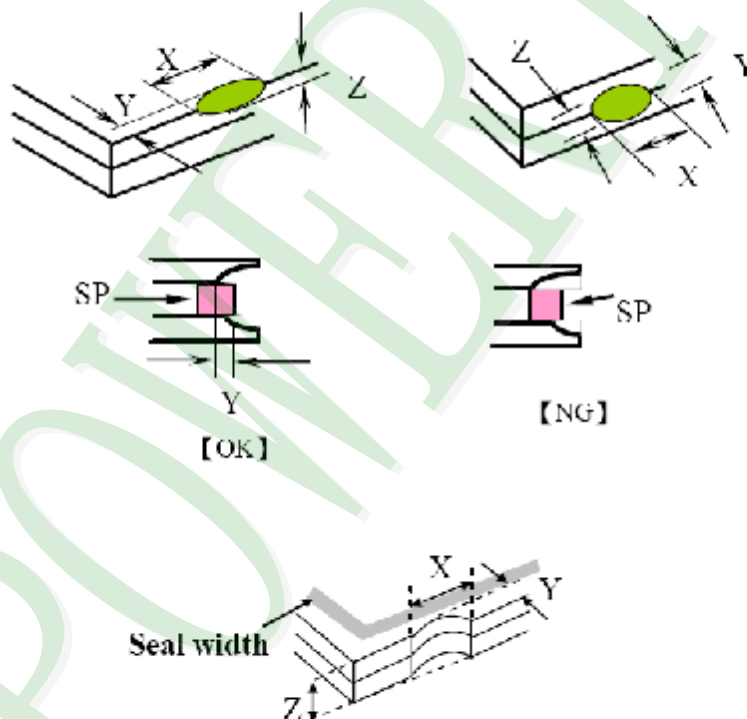
◆ Specification For TFT-LCD Module 3.5" ~10" :

(Ver.B01)

NO	Item	Level																																								
06	<p style="text-align: center;"><b>6.1 Round type ( Non-display or display ) :</b></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Black or white dot , scratch , contamination</p> <p>Round type</p>  <p><math>\Phi = (x + y) / 2</math></p> <p>Line type</p>  </div> <div style="width: 60%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Dimension (diameter : <math>\Phi</math>)</th> <th colspan="2">Acceptance (Q'ty)</th> </tr> <tr> <th>A area</th> <th>B area</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><math>\Phi \leq 0.25</math></td> <td colspan="2" style="text-align: center;">Ignore</td> </tr> <tr> <td style="text-align: center;"><math>0.25 &lt; \Phi \leq 0.50</math></td> <td style="text-align: center;">5</td> <td rowspan="3" style="text-align: center;">Ignore</td> </tr> <tr> <td style="text-align: center;"><math>\Phi &gt; 0.50</math></td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;"><b>Total</b></td> <td style="text-align: center;"><b>5</b></td> </tr> </tbody> </table> <p style="text-align: center;"><b>6.2 Line type( Non-display or display ) :</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <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> </thead> <tbody> <tr> <td style="text-align: center;">---</td> <td style="text-align: center;"><math>W \leq 0.03</math></td> <td colspan="2" style="text-align: center;">Ignore</td> </tr> <tr> <td style="text-align: center;"><math>L \leq 10.0</math></td> <td style="text-align: center;"><math>0.03 &lt; W \leq 0.05</math></td> <td style="text-align: center;">4</td> <td rowspan="3" style="text-align: center;">Ignore</td> </tr> <tr> <td style="text-align: center;"><math>L \leq 5.0</math></td> <td style="text-align: center;"><math>0.05 &lt; W \leq 0.10</math></td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">---</td> <td style="text-align: center;"><math>W &gt; 0.10</math></td> <td colspan="2" style="text-align: center;">As round type</td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>Total</b></td> <td colspan="2" style="text-align: center;"><b>5</b></td> </tr> </tbody> </table> </div> </div>	Dimension (diameter : $\Phi$ )	Acceptance (Q'ty)		A area	B area	$\Phi \leq 0.25$	Ignore		$0.25 < \Phi \leq 0.50$	5	Ignore	$\Phi > 0.50$	0	<b>Total</b>	<b>5</b>	Length (L)	Width (W)	Acceptance (Q'ty)		A area	B area	---	$W \leq 0.03$	Ignore		$L \leq 10.0$	$0.03 < W \leq 0.05$	4	Ignore	$L \leq 5.0$	$0.05 < W \leq 0.10$	2	---	$W > 0.10$	As round type		<b>Total</b>		<b>5</b>		Minor
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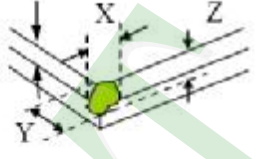
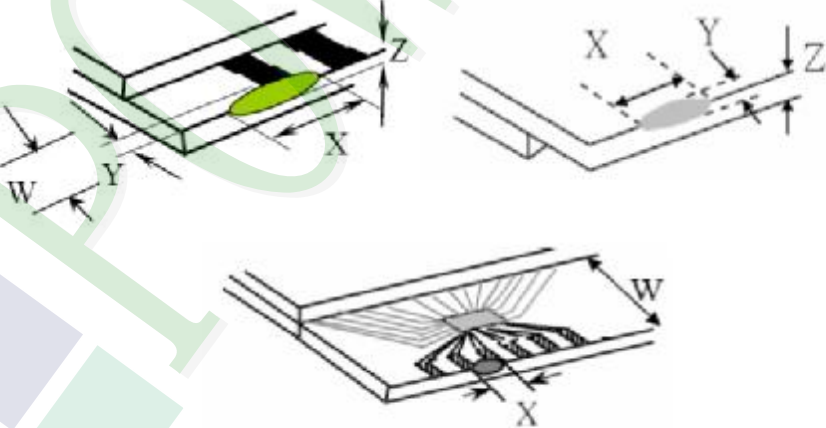
**◆Specification For TFT-LCD Module 3.5" ~10" :**

(Ver.B01)

NO	Item	Criterion	Level						
08	The crack of glass	<p><b>Symbols :</b></p> <p><b>X :</b> The length of crack  <b>Z :</b> The thickness of crack  <b>t :</b> The thickness of glass</p> <p><b>Y :</b> The width of crack.  <b>W :</b> terminal length  <b>a :</b> LCD side length</p>	Minor						
		<p>8.1 General glass chip :</p> <p>8.1.1 Chip on panel surface and crack between panels:</p>  <table border="1" data-bbox="542 1568 1340 1859"> <tr> <td style="text-align: center;"><math>X</math></td> <td style="text-align: center;"><math>Y</math></td> <td style="text-align: center;"><math>Z</math></td> </tr> <tr> <td style="text-align: center;"><math>\leq a</math></td> <td style="text-align: center;">Crack can't enter viewing area</td> <td style="text-align: center;"><math>\leq 1/2 t</math></td> </tr> <tr> <td style="text-align: center;"><math>\leq a</math></td> <td style="text-align: center;">Crack can't exceed the half of SP width.</td> <td style="text-align: center;"><math>1/2 t &lt; Z \leq 2 t</math></td> </tr> </table>		$X$	$Y$	$Z$	$\leq a$	Crack can't enter viewing area	$\leq 1/2 t$
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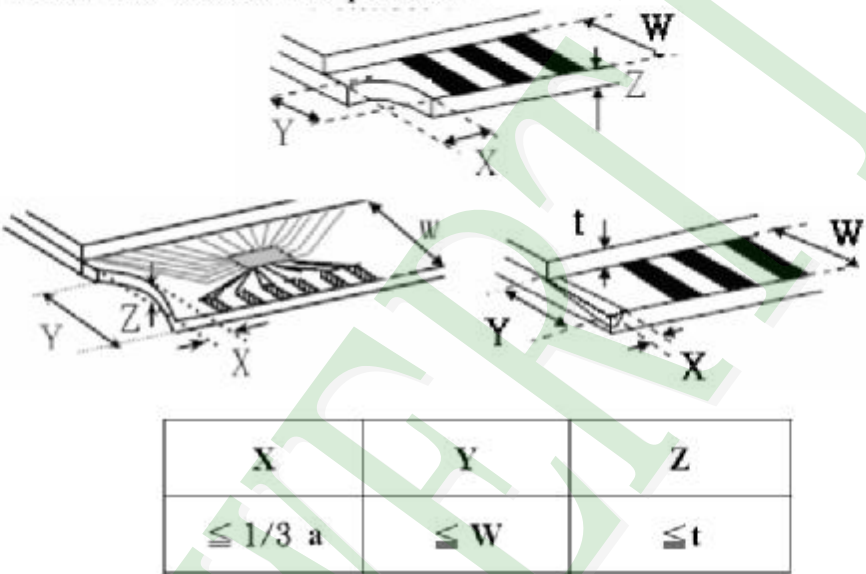
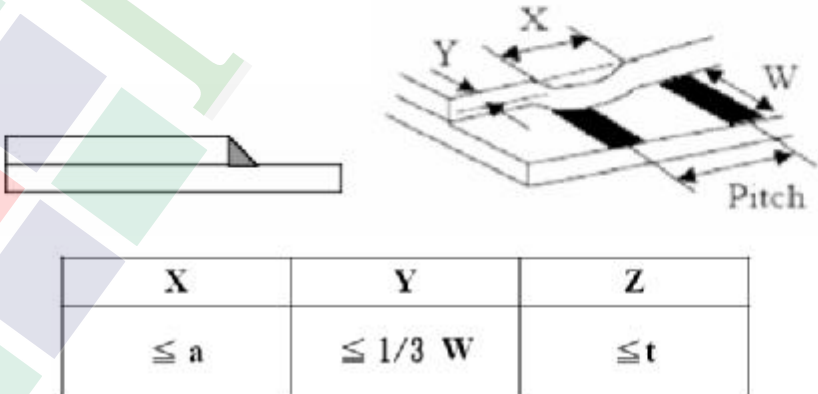
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(Ver.B01)

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		<p>8.2 Protrusion over terminal :</p> <p>8.2.1 Chip on electrode pad :</p>  <table border="1" data-bbox="561 1686 1343 1861"> <thead> <tr> <th></th> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>Front</td> <td><math>\leq a</math></td> <td><math>\leq 1/2 W</math></td> <td><math>\leq t</math></td> </tr> <tr> <td>Back</td> <td><math>\leq a</math></td> <td><math>\leq W</math></td> <td><math>\leq 1/2 t</math></td> </tr> </tbody> </table>		X	Y	Z	Front	$\leq a$	$\leq 1/2 W$	$\leq t$	Back	$\leq a$	$\leq W$	$\leq 1/2 t$	Minor
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◆ Specification For TFT-LCD Module 3.5" -10" :

(Ver.B01)

NO	Item	Criterion	Level
08	The crack of glass	<p>Symbols :</p> <p>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</p>	Minor
		<p>8.2.2 Non-conductive portion :</p>  <p>⊙ If the chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications.</p> <p>8.2.3 Glass remain :</p> 	





## ◆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 $\leq 1.5$ mm.	Minor



## 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  $320\pm 10^{\circ}\text{C}$  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  $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$  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.



Ver.002

Documents NO. PKG-PH320240T-009-I09Q

# LCM包裝規格書

## LCM Packaging Specifications

Approve

Check

Contact

Linda

Stone

Eve

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

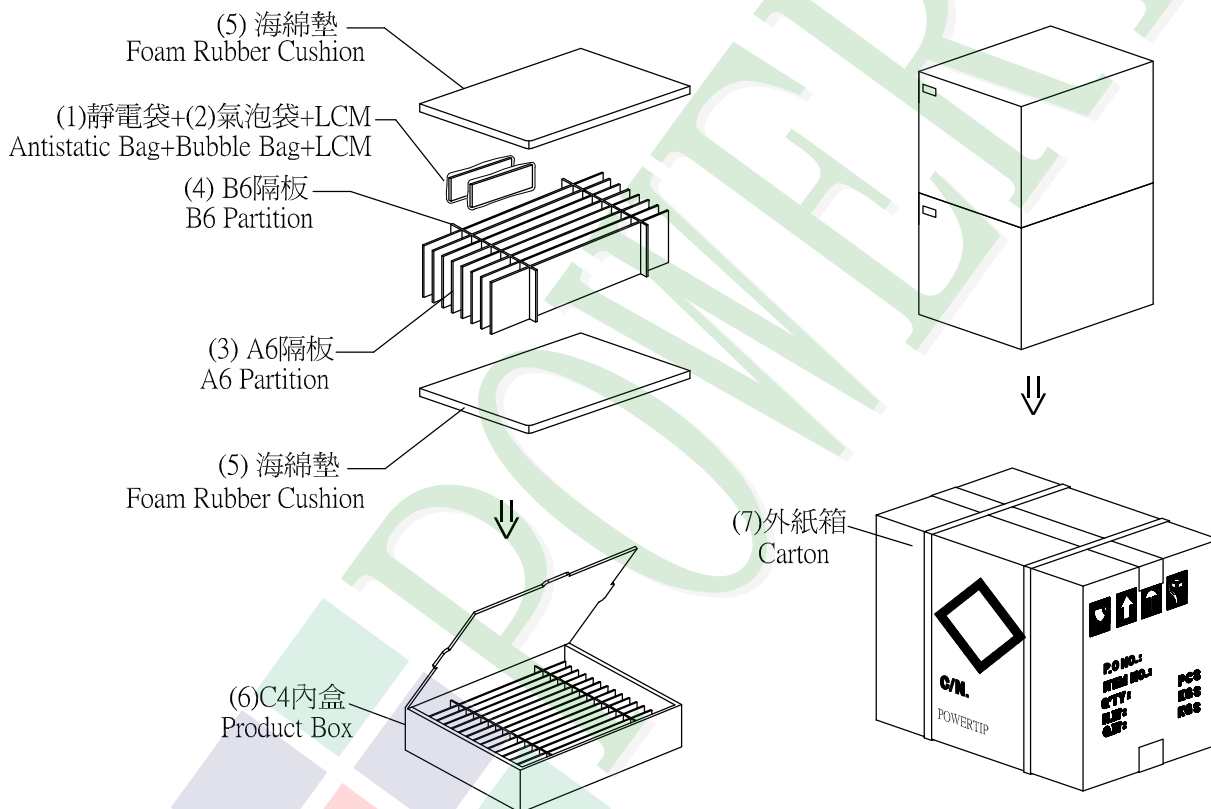
No.	Item	Model	Dimensions (mm)	1Pcs Weight	Quantity	Total Weight
1	成品 (LCM)	PH320240T-009-I09Q	159.8 X 111.0	0.18144	28	5.08032
2	氣泡袋(2)Bubble Bag	BAG170150BRABA	170 X 150	0.0045	28	0.126
3	A6隔板(3)A6 Partition	BX33800012BZBA	338 X 125 X 3	0.038	16	0.608
4	B6隔板(4)B6 Partition	BX29800012BZBA	298 X 125 X 3	0.023	4	0.092
5	海綿墊(5)Foam Rubber Cushion	OTFOAM00005ABA	330 X 290 X 10	0.025	4	0.1
6	C4內盒(6)Product Box	BX36031014AABA	360 X 310 X 142	0.406	2	0.812
7	外紙箱(7)Carton	BX39432432CCBA	394 X 324 X 321	0.884	1	0.884
8						
9						

2. 一整箱總重量 (Total LCD Weight in carton) : 7.70 Kg±10%

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

(1)Quantity Of Spacer : A6隔板 X 8 , B6隔板 X 2

(2)Total LCM quantity in carton : quantity per box 14 x no of boxes 2 = 28



### 特 記 事 項 (REMARK)

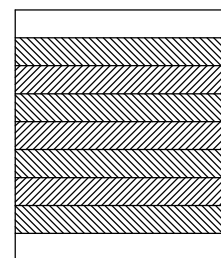
#### 1. Label Specifications :

MODEL:  
LOT NO:  
QUANTITY:  
CHECK:

2. 每個間隔放2片模組，前後間隔不放置模組。(如示意圖)  
2. 2 LCM are placed on every other slot of the divider.  
Note: First and last slot should be empty.  
(See remarks 3 on packaging specifications)

#### 3. 放置格示意圖:

3. Each divider is placed inside a product Box



1. 模組(LCM) X 2pcs.
2. 空格(Blank Space)