

SPECIFICATIONS

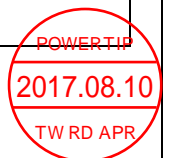
CUSTOMER	:	CNO003
SAMPLE CODE	:	SH800480T013-IHC01
MASS PRODUCTION CODE	:	PH800480T013-IHC01
SAMPLE VERSION	:	02
SPECIFICATIONS EDITION	:	005
DRAWING NO. (Ver.)	:	LMD-PH800480T013-IHC01 (Ver.002)
PACKAGING NO. (Ver.)	:	PKG-PH800480T013-IHC01 (Ver.001)

Customer Approved

Date:

Approved	Checked	Designer
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- 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
08/11/2016	01	001	New Drawing.	-	Ackey
10/25/2016	01	002	New Sample.	-	Ackey
03/31/2017	01	003	Update Absolute Maximum Ratings & DC Electrical Characteristics & Brightness.	6 4	Ackey
04/26/2017	01	004	Update Backlight Characteristics.	9	Ackey
08/10/2017	02	005	Second Sample(IC Sitronix->Hycon).	Appendix	Ackey

Total: 28 Page

Contents

1. SPECIFICATIONS

- 1.1 Features
- 1.2 Mechanical Specifications
- 1.3 Absolute Maximum Ratings
- 1.4 DC Electrical Characteristics
- 1.5 Optical Characteristics
- 1.6 Backlight Characteristics
- 1.7 Touch Panel Characteristics

2. MODULE STRUCTURE

- 2.1 Counter Drawing
- 2.2 Interface Pin Description
- 2.3 Timing Characteristics

3. QUALITY ASSURANCE SYSTEM

- 3.1 Quality Assurance Flow Chart
- 3.2 Inspection Specification

4. RELIABILITY TEST

- 4.1 Reliability Test Condition

5. PRECAUTION RELATING PRODUCT HANDLING

- 5.1 Safety
- 5.2 Handling
- 5.3 Storage
- 5.4 Terms of Warranty

Appendix : LCM drawing.
LCM Packaging Specifications.

1. SPECIFICATIONS

1.1 Features

Item	Standard Value
Display Resolution	800 * 3 (RGB) * 480 Dots
LCD Type	a-Si TFT , Normally white , Transmissive type
Touch panel	Projective Capacitive Touch Panel 5 Points touch
Screen size(inch)	7.0 inch
Viewing Direction	6 O'clock
Surface treatment	Anti-Glare
Color configuration	R.G.B. Vertical Stripe
Backlight Type	White LED B/L
Weight	159 g
Interface	24 Bits RGB Interface
ROHS	THIS PRODUCT CONFORMS THE ROHS OF PTC Detail information please refer website : http://www.powertip.com.tw/news_detail.php?Key=1&clD=1

1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	186.8 (W) * 110.56 (L) * 4.75 (H)	mm

LCD panel

Item	Standard Value	Unit
Active Area	154.08 (W) * 85.92 (L)	mm

Note : For detailed information please refer to LCM drawing.

1.3 Absolute Maximum Ratings

Module

Item	Symbol	Condition	Min.	Max.	Unit	Remark
Power Supply Voltage	DV _{DD}	VSS=0	-0.3	+5.0	V	-
	AV _{DD}		6.5	13.5	V	
	V _{GH}		-0.3	40	V	
	V _{GL}		-20	0.3	V	
	V _{GH} - V _{GL}		0	40	V	
Operating Temperature	T _{OP}	-	-20	+70	°C	
Storage Temperature	T _{ST}	-	-30	+80	°C	

1.4 DC Electrical Characteristics

Module

GND = 0V, Ta = 25°C

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Supply Voltage	DV _{DD}	3.0	3.3	3.6	V	-
	V _{GH}	15.3	16.0	16.7		
	V _{GL}	-7.7	-7.0	-6.3		
	AV _{DD}	10.2	10.4	10.6		
V _{com}	V _{com}	-	3.9	-	V	
Input signal Voltage	V _{IH}	0.7 DV _{DD}	-	DV _{DD}	V	
	V _{IL}	0	-	0.3 DV _{DD}		
Supply Current	IDV _{DD}	-	80	-	mA	Pattern= Full display
		-	80	120		Pattern= Black *1

Note1: Maximum current display.

1.5 Optical Characteristics

TFT LCD Module

 $DV_{DD} = 3.3 \text{ V}, T_a = 25^\circ\text{C}$

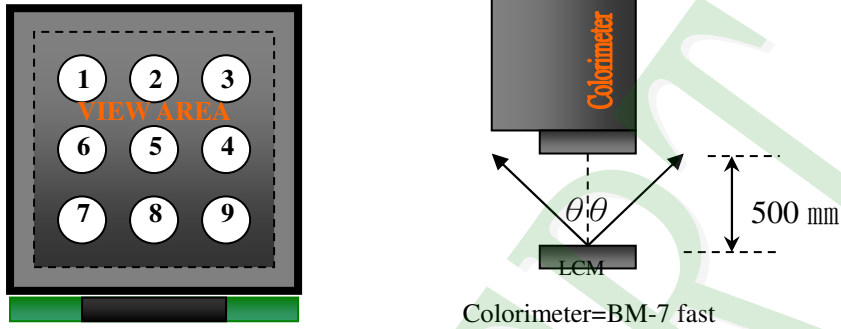
Item		Symbol	Condition	Min.	Typ.	Max.	unit	
Response time	Rise	Tr	$T_a = 25^\circ\text{C}$ $\theta X, \theta Y = 0^\circ$	-	10	20	ms	Note 2
	Fall	Tf		-	15	30		
Viewing angle	Top	$\theta Y+$	CR ≥ 10	40	50	-	Deg.	Note 4
	Bottom	$\theta Y-$		60	70	-		
	Left	$\theta X-$		60	70	-		
	Right	$\theta X+$		60	70	-		
Contrast ratio		CR		400	500	-	-	Note 3
Color of CIE Coordinate (With B/L)	White	X	$T_a = 25^\circ\text{C}$ $\theta X, \theta Y = 0^\circ$	0.24	0.29	0.34	-	Note1
		Y		0.27	0.32	0.37		
	Red	X		0.51	0.56	0.61		
		Y		0.30	0.35	0.40		
	Green	X		0.28	0.33	0.38		
		Y		0.53	0.58	0.63		
	Blue	X		0.09	0.14	0.19		
		Y		0.02	0.07	0.12		
Average Brightness Pattern=white display (With B/L)*1		IV	-	680	850	-	cd/m ²	Note1
Uniformity (With B/L)*2		ΔB	-	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 ± 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:

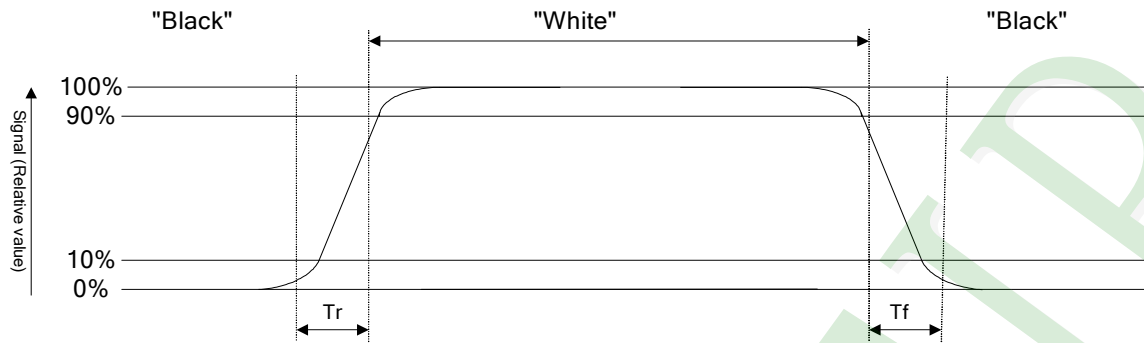
The output signals of photo detector are measured when the input signals are changed from "black" to "white"(falling time) and from "white" to "black"(rising time), respectively. The response time is defined as the time interval between the 10% and 90% of Amplitudes.

Refer to figure as below:

Normally White



Normally Black



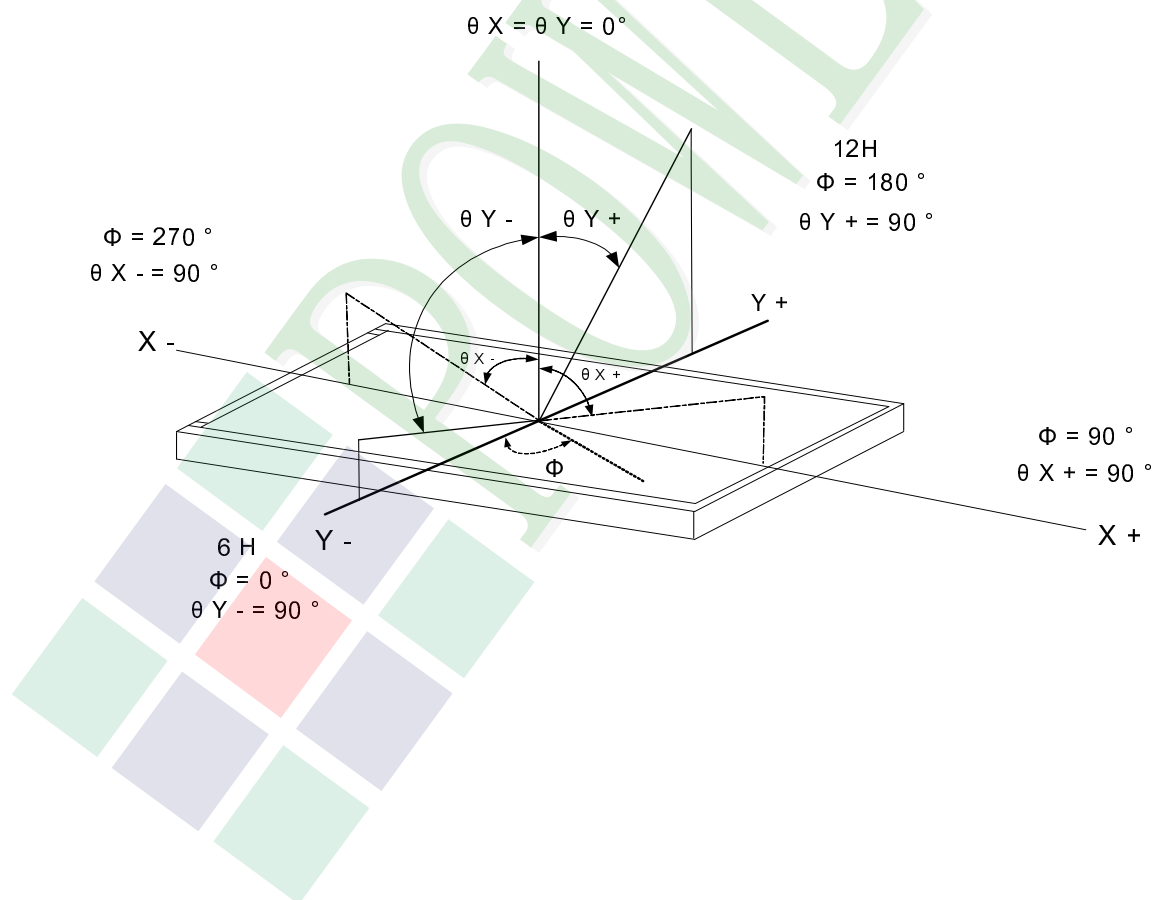
Note3: Definition of contrast ratio:

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

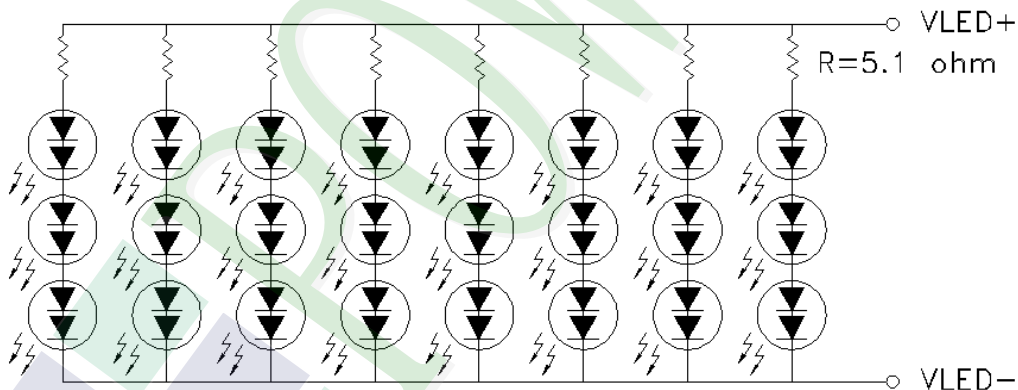
Item	Symbol	Min.	Max.	Unit	Remark
LED Forward Current	I_F	35		mA	One LED
LED Reverse Voltage	V_R	10		V	

Electrical / Optical Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
LED Voltage	V_L	18.0	18.6	19.2	V	Note1
LED Current	I_L	-	140	-	mA	-
LED life time	-	50000	-	-	H _r	Note2

Note 1: The LED Supply Voltage is defined by the number of LED at $T_a=25\text{ }^\circ\text{C}$ and $I_L=140\text{ mA}$.

Note 2: The "LED life time" is defined as the module brightness decrease to 50% original brightness at $T_a=25\text{ }^\circ\text{C}$ and $I_L=140\text{ mA}$. The LED life time could be decreased if operating I_L is larger than 140 mA.



1.7 Touch Panel Characteristics

Features

Item	Standard Value
Touch Panel Size	7"
Touch type	Projective capacitive touch panel
Input Method	Finger / 5 Points touch
Output Interface	I ² C
IC	HYCON

I²C Address

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	1	1	1	0	0	1	R/W

Bit 0: 0 for Write / 1 for Read

Mechanical Specifications

Item	Standard Value	Unit
Viewing Area	154.88 (W) * 86.72 (L)	mm
Number of sensing channel	20 * 12	

Absolute Maximum Ratings

Item	Symbol	Condition	Min.	Max.	Unit
Supply voltage	TPVDD	-	-0.3	+6.0	V
Operating Temperature	T _{OP}	-	-20	+70	°C
Storage Temperature	T _{ST}	-	-30	+80	°C

DC Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply Voltage	TPVDD	-	2.8	3.3	3.6	V
Input High Voltage	VIH	-	0.85 * TPVDD	-	-	V
Input Low Voltage	VIL	-	-	-	0.15 * TPVDD	V

Touch Panel IC Read/Write description & Register Mapping

Reference :HYCON Touch Driver Porting Reference Guide.

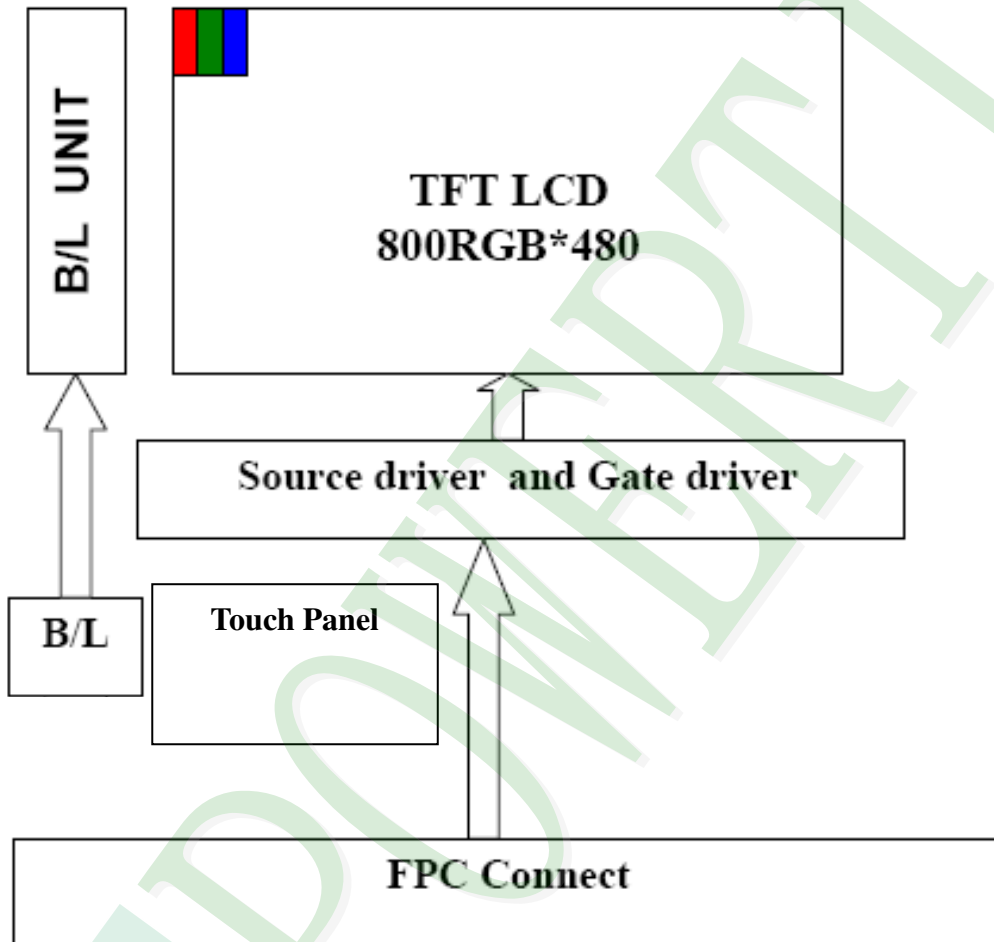
2. MODULE STRUCTURE

2.1 Counter Drawing

2.1.1 LCM Mechanical Diagram

* See Appendix

2.1.2 Block Diagram



2.2 Interface Pin Description

TFT LCM Interface

Pin NO.	SYMBOL	DESCRIPTION	Remark
1	V _{LED+}	Power For LED backlight (+).	Power
2	V _{LED+}	Power For LED backlight (+).	Power
3	V _{LED-}	Power For LED backlight (-).	Power
4	V _{LED-}	Power For LED backlight (-).	Power
5	GND	Power ground.	Power
6	V _{com}	Common voltage.	I
7	DV _{DD}	Power for Digital Circuit.	I
8	MODE	DE/SYNC mode select.	I,Note 1
9	DE	Data Input Enable.	I
10	VS	Vertical Sync Input.	I
11	HS	Horizontal Sync Input.	I
12	B7	Blue Data(MSB).	I
13	B6	Blue Data.	I
14	B5	Blue Data.	I
15	B4	Blue Data.	I
16	B3	Blue Data.	I
17	B2	Blue Data.	I
18	B1	Blue Data.	I:Note 2
19	B0	Blue Data(LSB).	I:Note 2
20	G7	Green Data(MSB).	I
21	G6	Green Data.	I
22	G5	Green Data.	I
23	G4	Green Data.	I
24	G3	Green Data.	I
25	G2	Green Data.	I
26	G1	Green Data.	I:Note 2
27	G0	Green Data(LSB).	I:Note 2
28	R7	Red Data(MSB).	I
29	R6	Red Data.	I
30	R5	Red Data.	I
31	R4	Red Data.	I
32	R3	Red Data.	I
33	R2	Red Data.	I
34	R1	Red Data.	I:Note 2
35	R0	Red Data(LSB).	I:Note 2

Pin NO.	SYMBOL	DESCRIPTION	Remark
36	GND	Power Ground	Power
37	DCLK	Sample clock	I:Note 3
38	GND	Power Ground.	Power
39	L/R	Left / right selection.	I:Note 4,5
40	U/D	Left / right selection.	I:Note 4,5
41	V _{GH}	Gate On Voltage.	Power
42	V _{GL}	Gate OFF Voltage.	Power
43	AV _{DD}	Power for Analog Circuit.	Power
44	RESET	Global reset pin.	I:Note 6
45	NC	No connection.	-
46	V _{COM}	Common Voltage.	I
47	DITHB	Dithering Function.	I:Note 7
48	GND	Power Ground.	Power
49	NC	No connection.	-
50	NC	No connection.	-

Capacitive Touch Panel (CTP) Interface

Pin No.	Symbol	Function	Remark
1	GND	Ground.	Power
2	TPVDD	Power.	Power
3	SCL	I ² C Clock.	I
4	SDA	I ² C Data.	I / O
5	INT	The interrupt from the CTP to the Host H: CTP interrupt not requested L: CTP request interrupt	O
6	RESET	RESET.	I

I: input, O: output, P: Power

Note 1: DE/SYNC mode select. Normally pull high.

When select DE mode, MODE="1", VS and HS must pull high.

When select SYNC mode, MODE="0", DE must be grounded.

Note 2: When input 18 bits RGB data, the two low bits of R,G and B data must be grounded.

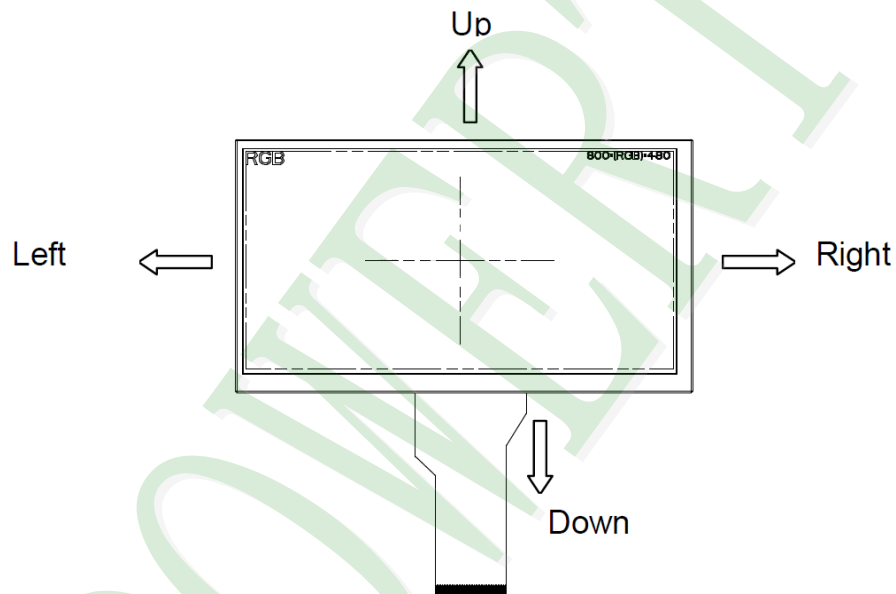
Note 3: Data shall be latched at the falling edge of DCLK.

Note 4: Selection of scanning mode.

Setting of scan control input		Scanning direction
U/D	L/R	
GND	DV _{DD}	Up to down, left to right
DV _{DD}	GND	Down to up, right to left
GND	GND	Up to down, right to left
DV _{DD}	DV _{DD}	Down to up, left to right

Note 5: Definition of scanning direction.

Refer to the figure as below:



Note 6: Global reset pin. Active low to enter reset state. Suggest to connect with an RC reset circuit for stability. Normally pull high.

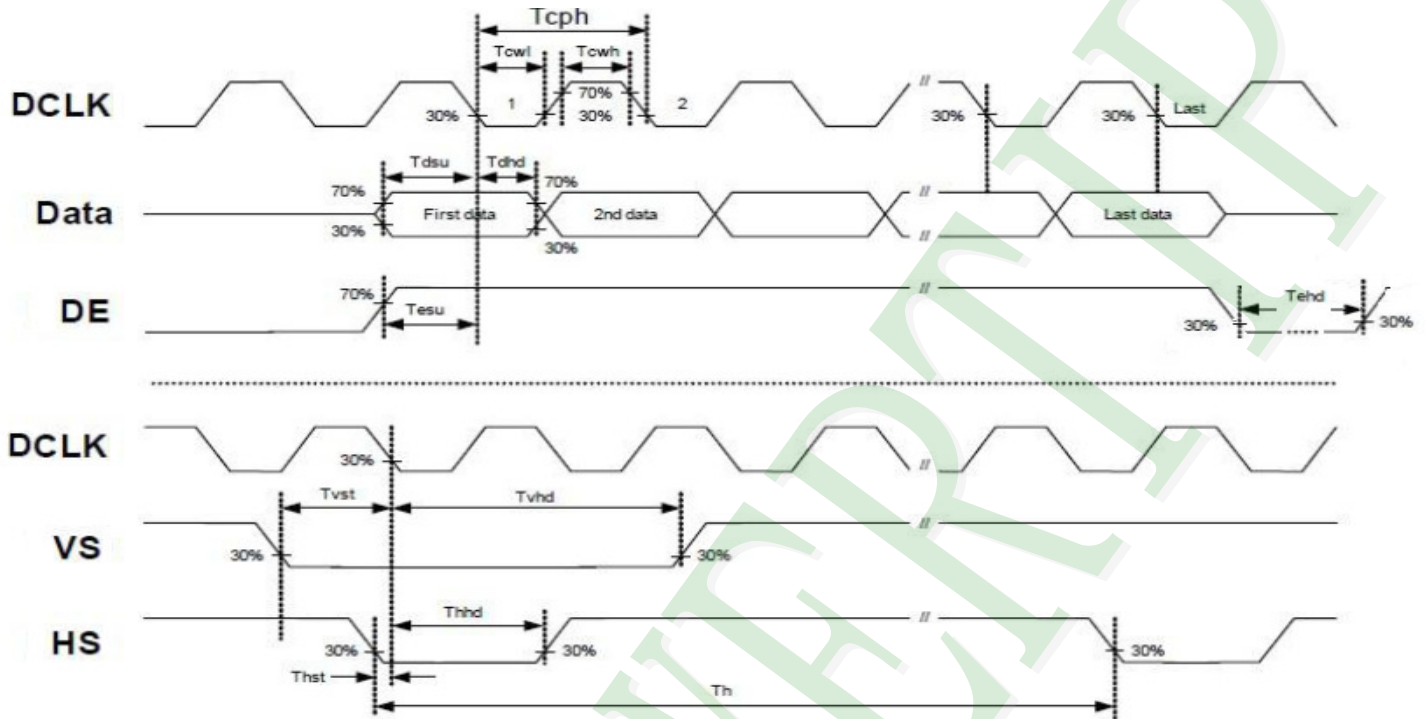
Note 7: Dithering function enable control, normally pull high.

When DITHB=" 1" ,Disable internal dithering function,

When DITHB=" 0" ,Enable internal dithering function

2.3 Timing Characteristics

2.3.1 Signal AC Characteristics



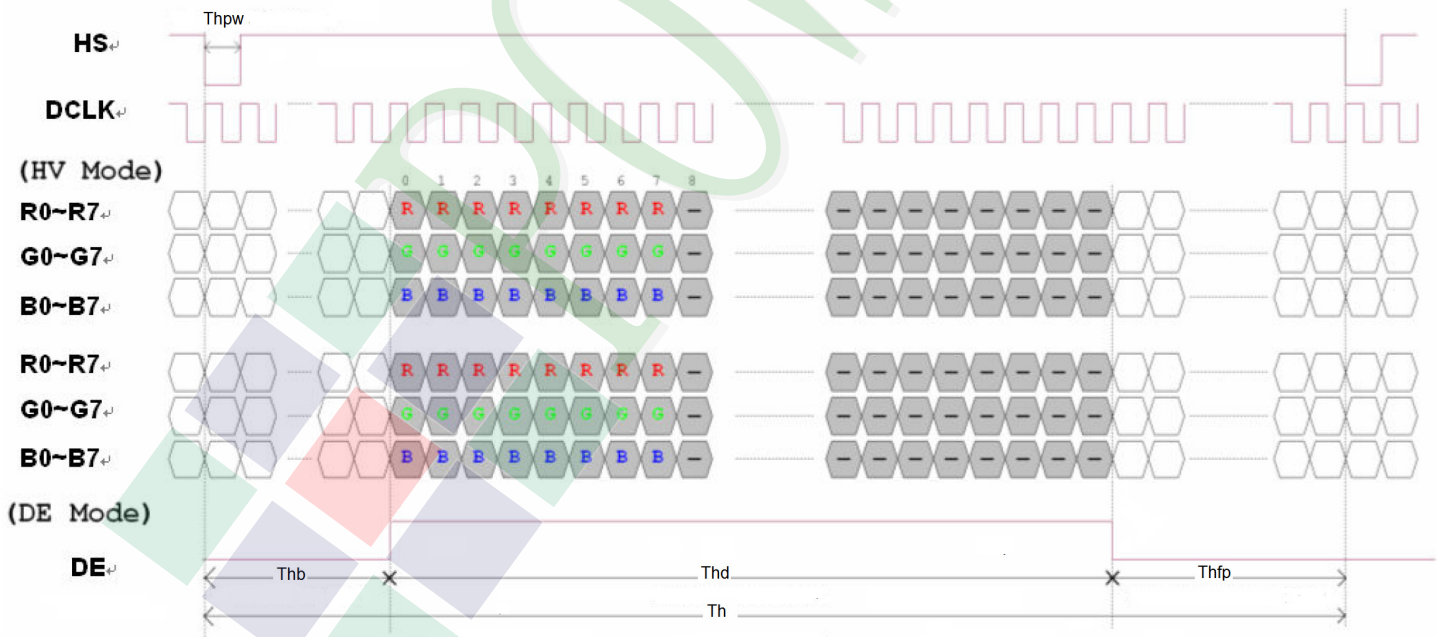
Item	Symbol	Values			Unit	Remark
		Min	Typ	Max		
HS setup time	T_{hst}	8	-	-	ns	
HS hold time	T_{hhd}	8	-	-	ns	
VS setup time	T_{vst}	8	-	-	ns	
VS hold time	T_{vhd}	8	-	-	ns	
Data setup time	T_{dsu}	8	-	-	ns	
Data hole time	T_{dhd}	8	-	-	ns	
DE setup time	T_{esu}	8	-	-	ns	
DE hold time	T_{ehd}	8	-	-	ns	
DVDD Power On Slew rate	T_{POR}	-	-	20	ms	From 0 to 90% DVDD
RESET pulse width	T_{Rst}	1	-	-	ms	
DCLK cycle time	T_{cph}	20	30	-	ns	
Low Level Width	T_{cwl}	8	-	-	ns	
High Level Width	T_{cwh}	8	-	-	ns	
DCLK pulse duty	Duty	40	50	60	%	T_{cwh} / T_{cph}

2.3.2 Input Timing Setting

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Horizontal Display Area	Thd		800		DCLK	
DCLK Frequency	Fclk	26.4	33.3	46.8	MHz	
One Horizontal Line	Th	862	1056	1200	DCLK	
HS pulse width	Thpw	1		40	DCLK	
HS Blanking	Thb	46	46	46	DCLK	
HS Front Porch	Thfp	16	210	354	DCLK	

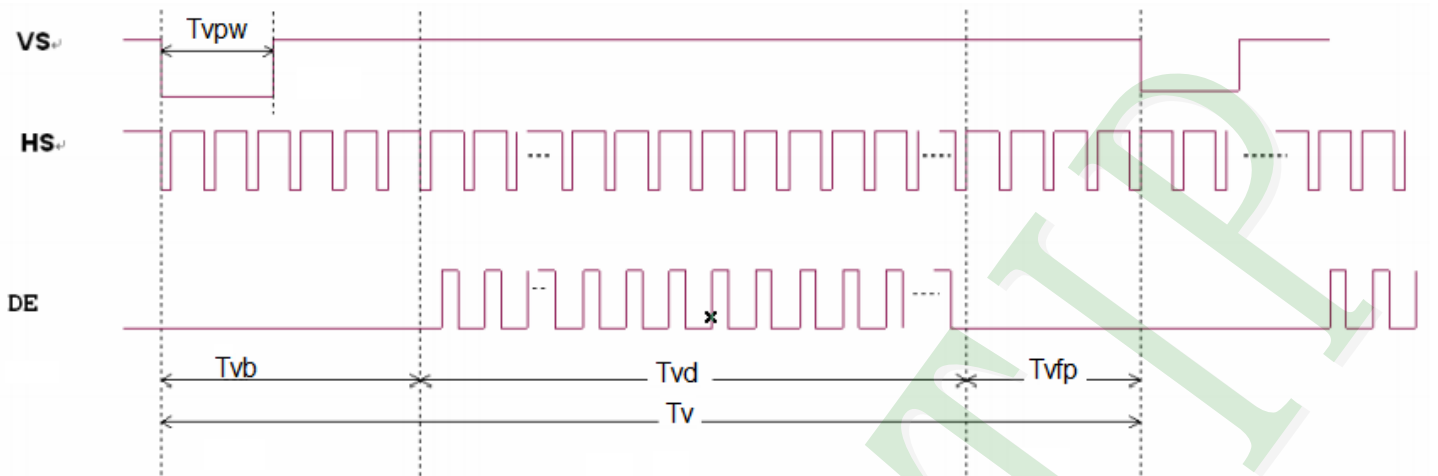
Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Vertical Display Area	Tvd		480		TH	
VS period time	Tv	510	525	650	TH	
VS pulse width	Tvpw	1		20	TH	
VS Blanking	Tvb	23	23	23	TH	
VS Front Porch	Tvfp	7	22	147	TH	

Horizontal input timing diagram





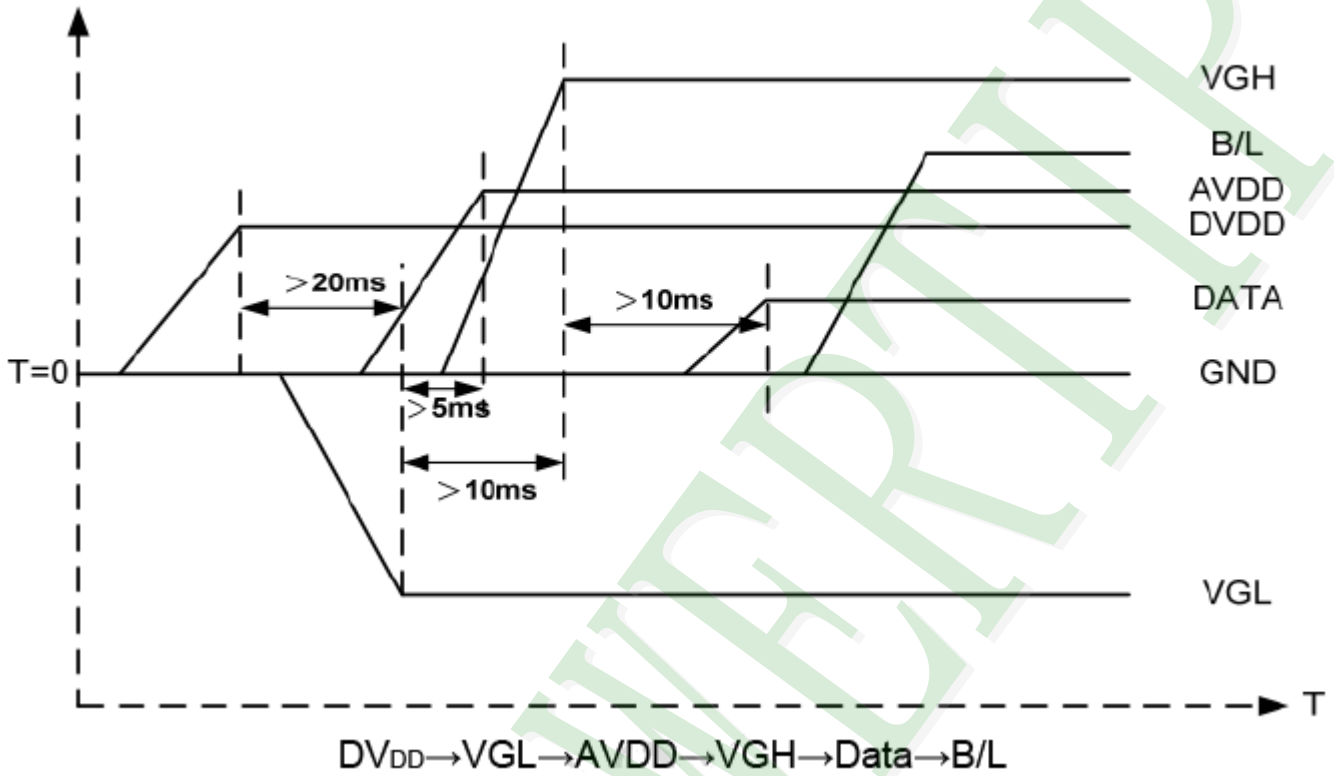
Vertical input timing diagram



2.3.3 Power Sequence

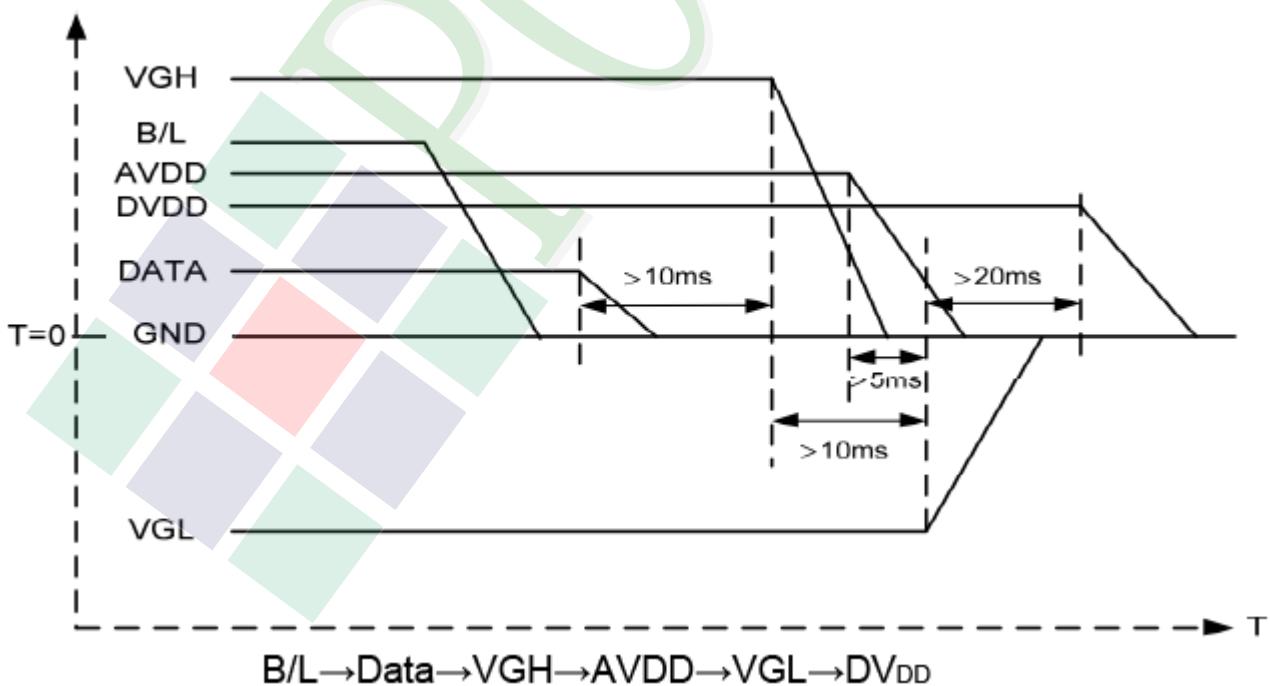
POWER ON

a. Power on:



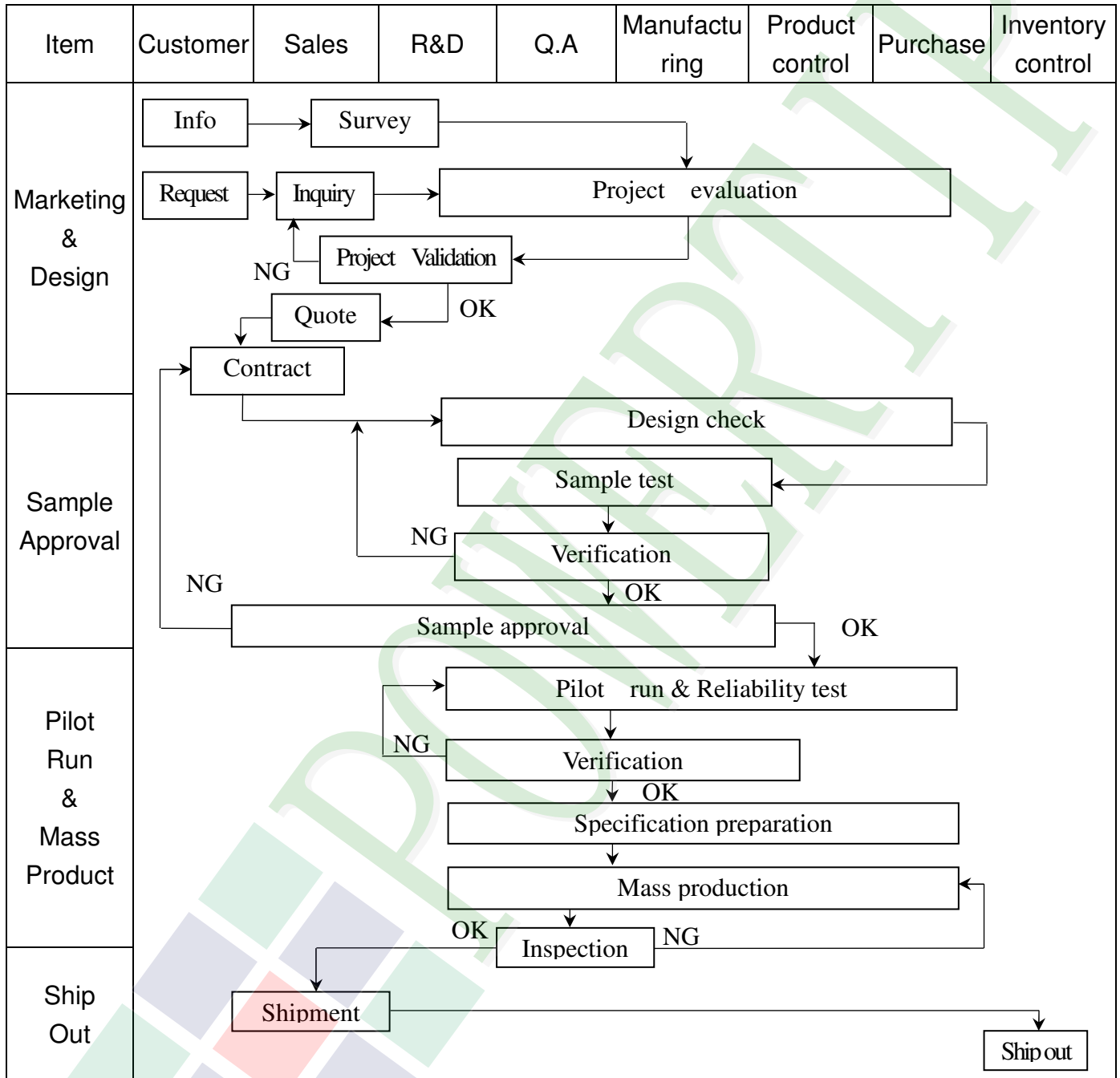
POWER OFF

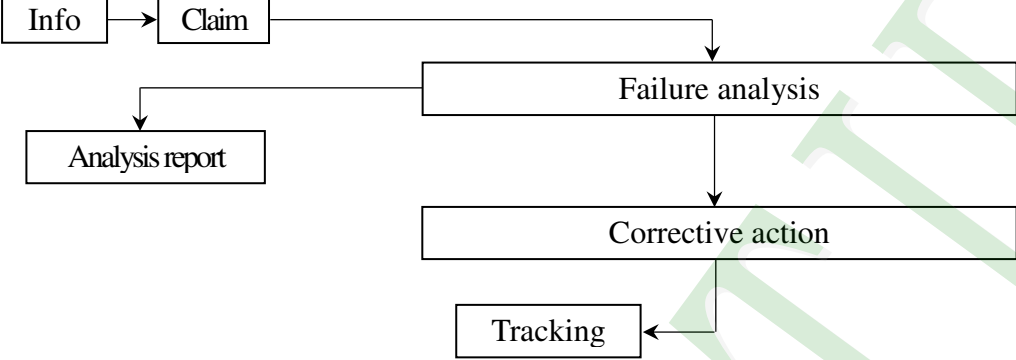
b. Power off:



3. QUALITY ASSURANCE SYSTEM

3.1 Quality Assurance Flow Chart



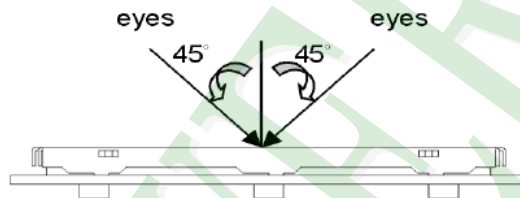
Item	Customer	Sales	R&D	Q.A	Manufacturing	Product control	Purchase	Inventory control
Sales Service	 <pre> graph TD Info[Info] --> Claim[Claim] Claim --> Failure[Failure analysis] Failure --> Analysis[Analysis report] Failure --> Corrective[Corrective action] Corrective --> Tracking[Tracking] </pre>							
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

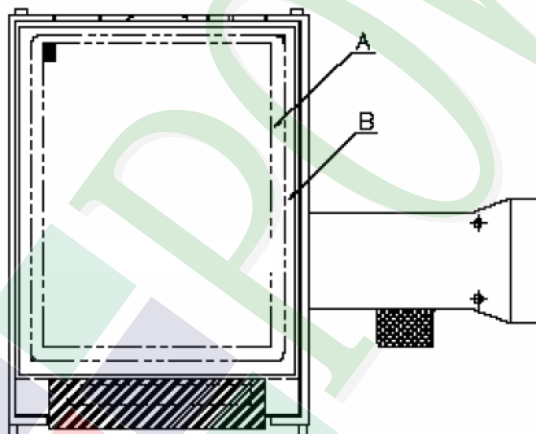
- ◆Scope : The document shall be applied to TFT-LCD Module for 3.5" ~10" (Ver.B01).
- ◆Inspection Standard : MIL-STD-105E Table Normal Inspection Single Sampling Level II.
- ◆Equipment : Gauge 、MIL-STD 、Powertip Tester 、Sample
- ◆Defect Level : Major Defect AQL : 0.4 ; Minor Defect AQL : 1.5
- ◆OUT Going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

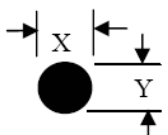
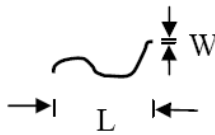
◆ Specification For TFT-LCD Module 3.5" ~10" :

(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										
04	Electrical Testing	4. 1 Missing line character and icon.	Major										
		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>≤ 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> </tbody> </table>	Item	Acceptance (Q'ty)	Bright Dot	≤ 4	Dark Dot	≤ 5	Joint Dot	≤ 3	Total	≤ 7	Minor
		Item	Acceptance (Q'ty)										
		Bright Dot	≤ 4										
		Dark Dot	≤ 5										
		Joint Dot	≤ 3										
Total	≤ 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 ≥ 5 mm.													

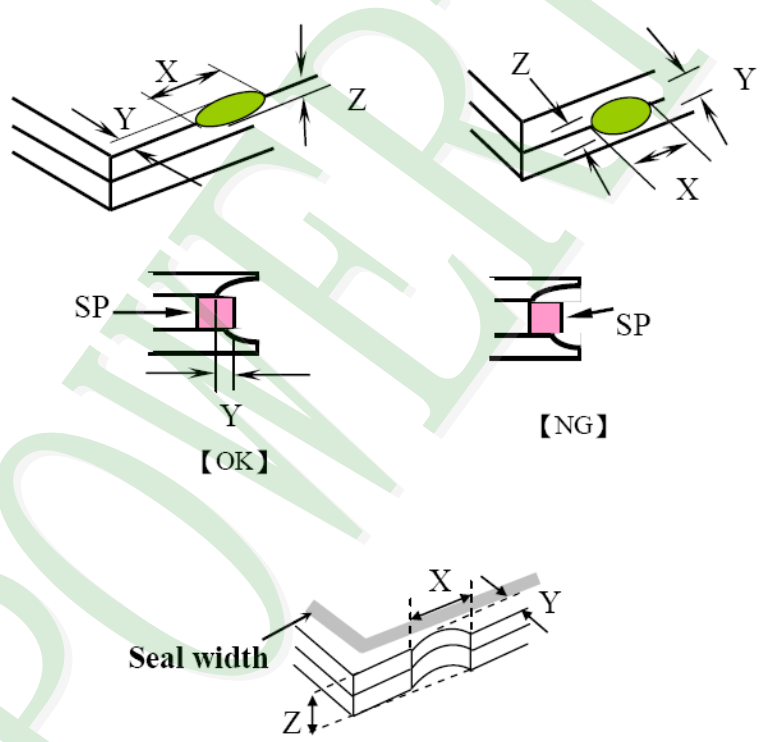
◆ Specification For TFT-LCD Module 3.5" ~10" :

(Ver.B01)

NO	Item	Criterion	Level																																								
06	<p>Black or white dot、scratch、contamination</p> <p>Round type</p>  <p>$\Phi = (x+y) / 2$</p> <p>Line type</p> 	<p>6.1 Round type (Non-display or display) :</p> <table border="1"> <thead> <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> </thead> <tbody> <tr> <td>$\Phi \leq 0.25$</td> <td colspan="2">Ignore</td> </tr> <tr> <td>$0.25 < \Phi \leq 0.50$</td> <td>5</td> <td rowspan="3">Ignore</td> </tr> <tr> <td>$\Phi > 0.50$</td> <td>0</td> </tr> <tr> <td>Total</td> <td>5</td> </tr> </tbody> </table> <p>6.2 Line type(Non-display or display) :</p> <table border="1"> <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>--</td> <td>$W \leq 0.03$</td> <td colspan="2">Ignore</td> </tr> <tr> <td>$L \leq 10.0$</td> <td>$0.03 < W \leq 0.05$</td> <td>4</td> <td rowspan="3">Ignore</td> </tr> <tr> <td>$L \leq 5.0$</td> <td>$0.05 < W \leq 0.10$</td> <td>2</td> </tr> <tr> <td>--</td> <td>$W > 0.10$</td> <td colspan="2">As round type</td> </tr> <tr> <td colspan="2">Total</td> <td>5</td> <td></td> </tr> </tbody> </table>	Dimension (diameter : Φ)	Acceptance (Q'ty)		A area	B area	$\Phi \leq 0.25$	Ignore		$0.25 < \Phi \leq 0.50$	5	Ignore	$\Phi > 0.50$	0	Total	5	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		Total		5		Minor
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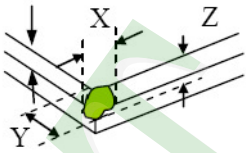
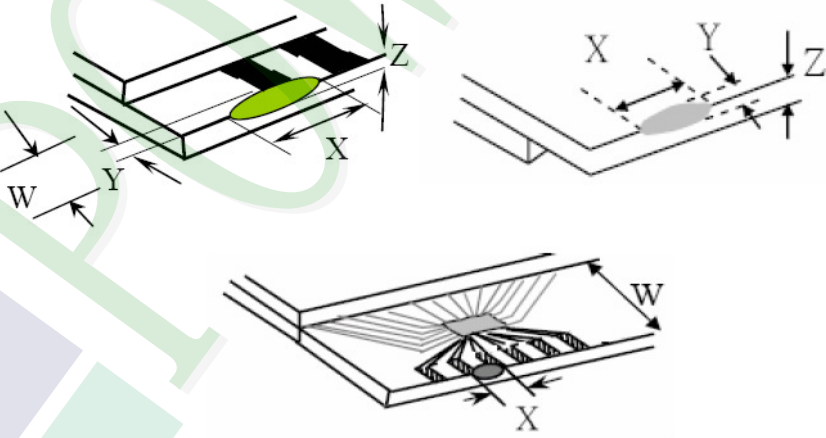
◆ Specification For TFT-LCD Module 3.5" ~10" :

(Ver.B01)

NO	Item	Criterion	Level						
08	The crack of glass	<p>Symbols :</p> <p>X : The length of crack Z : The thickness of crack t : The thickness of glass</p> <p>Y : The width of crack. W : terminal length a : 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 1545 1340 1836"> <thead> <tr> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>$\leq a$</td> <td>Crack can't enter viewing area</td> <td>$\leq 1/2 t$</td> </tr> <tr> <td>$\leq a$</td> <td>Crack can't exceed the half of SP width.</td> <td>$1/2 t < Z \leq 2 t$</td> </tr> </tbody> </table>		X	Y	Z	$\leq a$	Crack can't enter viewing area	$\leq 1/2 t$
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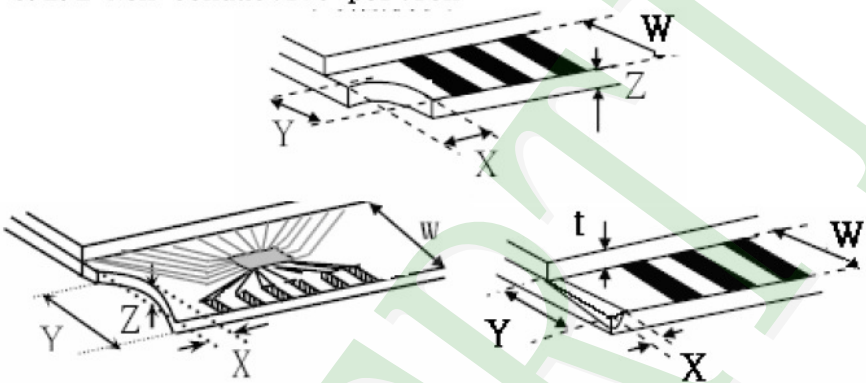
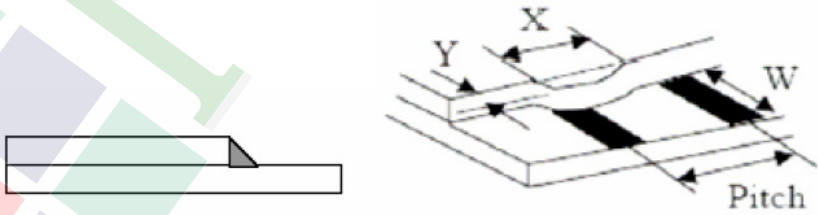
◆ Specification For TFT-LCD Module 3.5" ~10" :

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NO	Item	Criterion	Level												
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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="563 1675 1343 1848"> <thead> <tr> <th></th> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>Front</td> <td>$\leq a$</td> <td>$\leq 1/2 W$</td> <td>$\leq t$</td> </tr> <tr> <td>Back</td> <td>$\leq a$</td> <td>$\leq W$</td> <td>$\leq 1/2 t$</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
	X	Y	Z												
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◆ Specification For TFT-LCD Module 3.5" ~10" :

(Ver.B01)

NO	Item	Criterion	Level						
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		X	Y	Z					
$\leq 1/3 a$	$\leq W$	$\leq t$							
<p>8.2.3 Glass remain :</p>  <table border="1" data-bbox="550 1736 1244 1881"> <thead> <tr> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>$\leq a$</td> <td>$\leq 1/3 W$</td> <td>$\leq t$</td> </tr> </tbody> </table>	X	Y	Z	$\leq a$	$\leq 1/3 W$	$\leq t$			
X	Y	Z							
$\leq a$	$\leq 1/3 W$	$\leq t$							

4. RELIABILITY TEST

4.1 Reliability Test Condition

(Ver.B01)

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

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

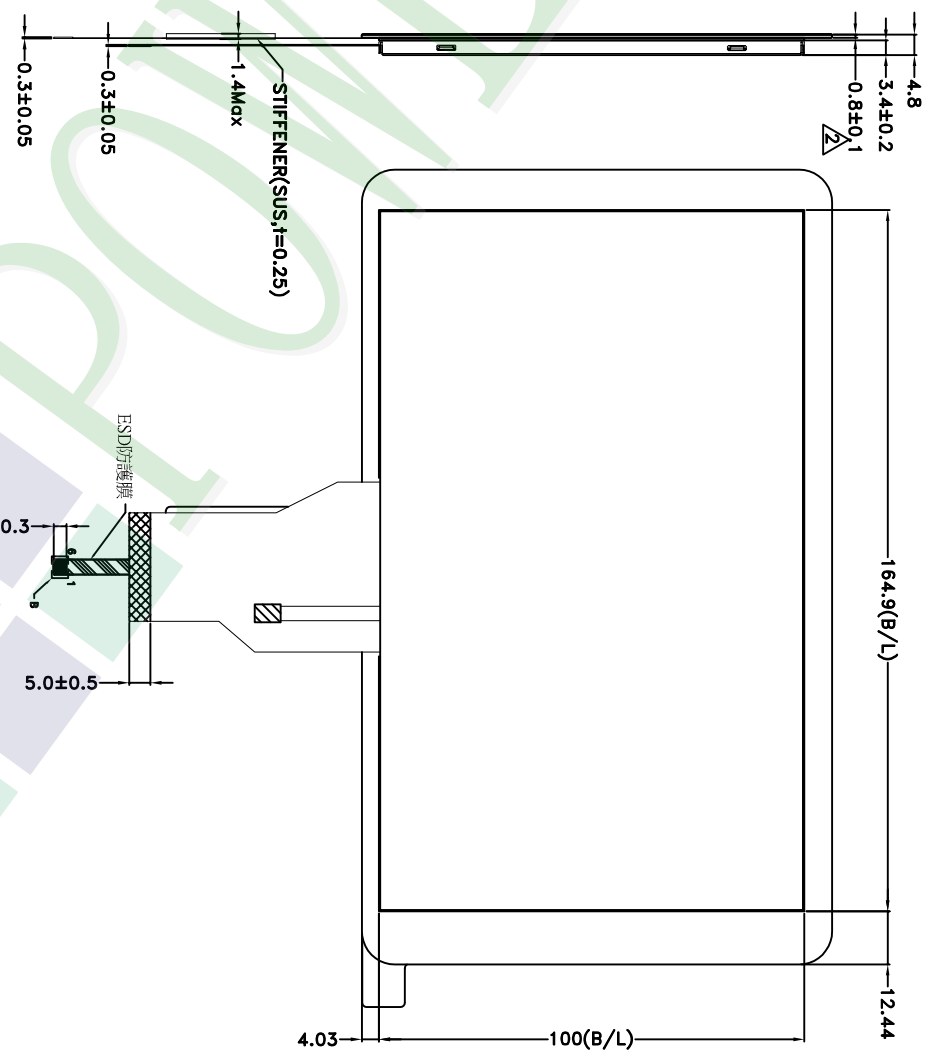
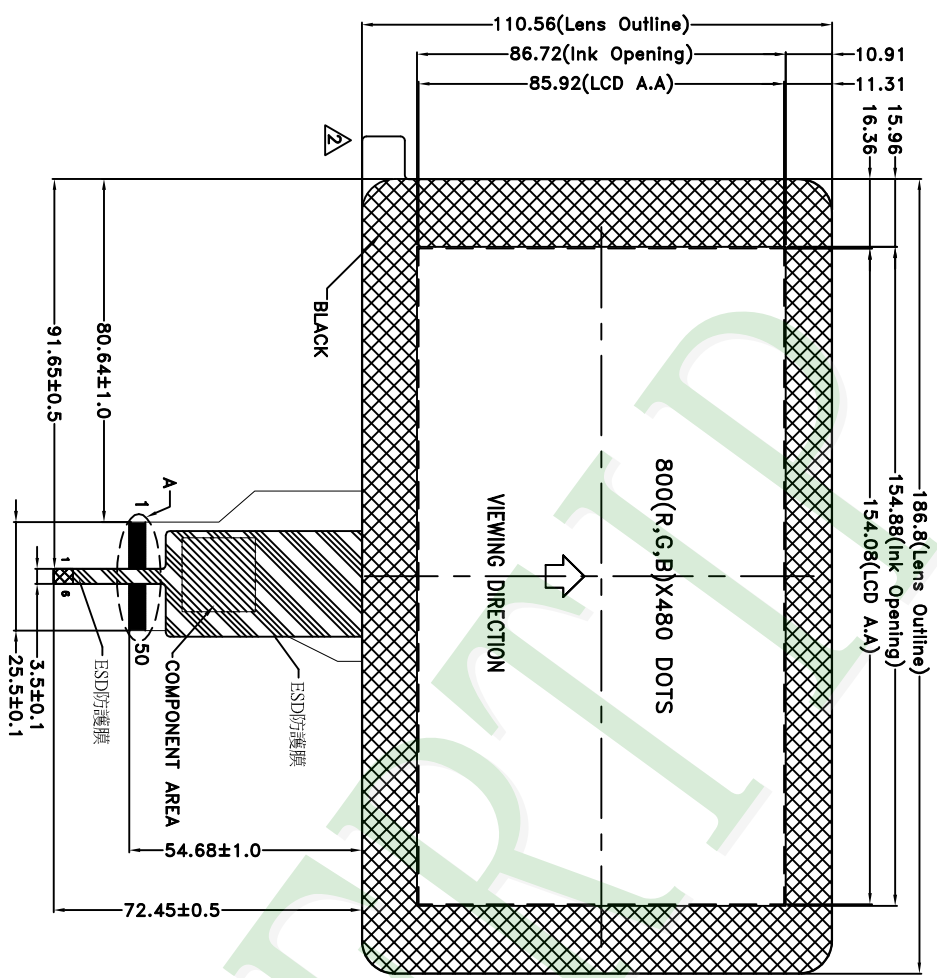
- 5.4.1 Applicable warrant period

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

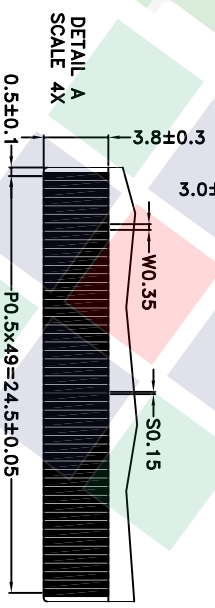
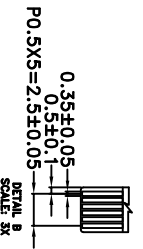
- 5.4.2 Unaccepted responsibility

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.

A B C D E F G H



NOTES:
 1. LCD TYPE: TFT LCD
 2. LCD DISPLAY: POSITIVE/TRANSMISSIVE
 3. VIEW DIRECTION: 6 O'CLOCK
 4. The tolerance unless classified $\pm 0.3\text{mm}$
 5. LCM FPC Matching Connector : HIROSE FH12A-50S-0.5H OR EQUIVALENT
 6. TP FPC Matching Connector : KYOCERA 04 6292 006 000 829+ OR EQUIVALENT



007			
006			
005			
004			
003			
002	MODIFY DRAWING	Kevin	2017/08/08
001	NEW DRAWING	Kevin	2016/08/08
REV	REV BY	REVISER	DATE

PART NO: PH800480T013-IHC01		DRAWING NAME: LMD-PH800480T013-IHC01	
TITLE: LCD MODULE DRAWING		DATE: 2016/08/08	
Design	Kevin	Check	Stone
Approve	Oliver	Scale	1:1
Page	1/1	Quantity	-
Surface	(3)	Material	-
Unit	MM	Thickness	-
Scale	1:1	Quantity	-
Page	1/1	Quantity	-

久正光電股份有限公司
 POWER TIP TECHNOLOGY CORPORATION

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

1 2 3 4 5 6

Approve	Check	Contact
Oliver	Stone	Kevin

Documents NO. PKG-PH800480T013-IHC01

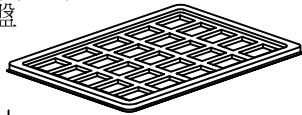
1. 包裝材料規格表 (Packaging Material) : (per carton)

No.	Item	Model	Dimensions (mm)	1Pcs Weight	Quantity	Total Weight
1	成品 (LCD)	PH800480T013-IHC01	186.8 X 110.56	0.154	72	11.09
2	多層薄膜(1)POF	OTFILM0BA03ABA	—————	—————	6	—————
3	TRAY 盤 (2)Tray	TY00000000329	352 X 260 X 12.8	0.1	42	4.2
4	內盒(3)Product Box	BX36627063ABBA	383 X 270 X 66	0.2692	6	1.6152
5	保利龍板(4)Polylon board	OTPLB00PL08ABA	550 X 393 X 20	0.0284	2	0.0568
6	外紙箱(5)Carton	BX57041027CCBA	570 X 410 X 265	1.4208	1	1.4208
7						
8						
9						

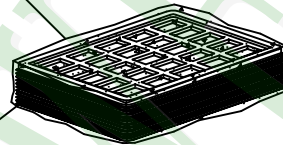
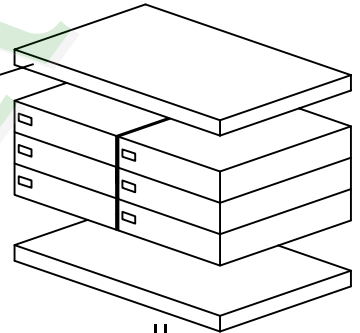
2. 一整箱總重量 (Total LCD Weight in carton) : 18.38 Kg±10%

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

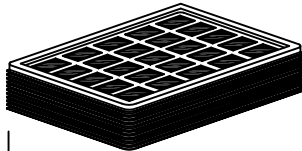
(1)LCD quantity per box : no per tray	2	x no of tray	6	=	12
(2)Total LCD quantity in carton : quantity per box	12	x no of boxes	6	=	72

Use empty tray
空盤

+

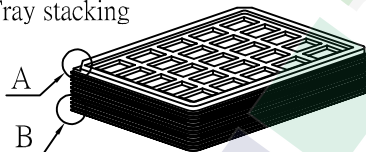
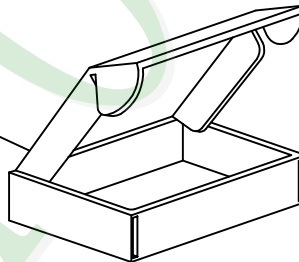
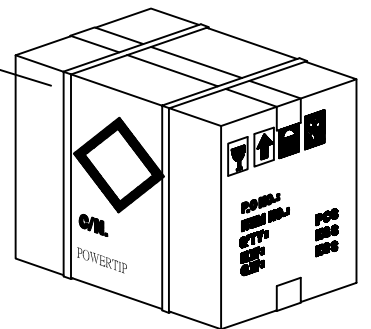
(1)多層薄膜
POF(4)保利龍板
Polylon board

Put products into the tray

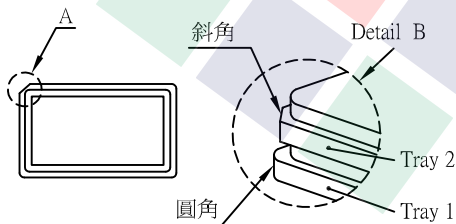
(2)TRAY 盤
Tray

⇓

Tray stacking

(3)內盒
Product Box(5)外紙箱
Carton

特 記 事 項 (REMARK)

5. TRAY盤相疊時,需旋轉180度,請詳見B視圖
Rotate tray 180 degrees and place on top of stack.
Check the tray stack using Fig. B.