

SPECIFICATIONS

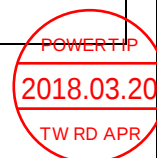
CUSTOMER	:	CDE012
SAMPLE CODE	:	SH128800T004-ZHA
MASS PRODUCTION CODE	:	PH128800T004-ZHA
SAMPLE VERSION	:	01
SPECIFICATIONS EDITION	:	005
DRAWING NO. (Ver.)	:	LMD-PH128800T004-ZHA (Ver.003)
PACKAGING NO. (Ver.)	:	PKG-PH128800T004-ZHA (Ver.003)

Customer Approved

Date:

Approved	Checked	Designer
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- ☐ Preliminary specification for design input
☒ Specification for sample approval



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LCM Packaging Specifications

1. SPECIFICATIONS

1.1 Features

Item	Standard Value
Screen size(Inch)	10.1(Diagonal)
Driver element	Normally Black
Resolution	1280* (R、G、B) * 800 Dots
Display mode	Transmissive, Anti-Glare
Color	16.7M
Weight	240.7 g
Interface	8 Bits LVDS
ROHS	THIS PRODUCT CONFORMS THE ROHS OF PTC Detail information please refer website : http://www.powertip.com.tw/news_detail.php?Key=1&cID=1

1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	229.8(W) * 149.0 (L) * 5.9 (H)	mm

LCD panel

Item	Standard Value	Unit
Active Area	216.96 (W) * 135.60 (L)	mm

Note : For detailed information please refer to LCM drawing.

1.3 Absolute Maximum Ratings

Item	Symbol	Condition	Min.	Max.	Unit
POWER SUPPLY VOLTAGE	VDD		-0.3	+4.0	V
POWER SUPPLY VOLTAGE	LED_VCC		-0.3	+50	V
OPERATING TEMPERATURE	T _{OP}	-	-20	+70	°C
STORAGE TEMPERATURE	T _{ST}	-	-30	+80	°C
Storage humidity	H _D	Ta < 60 °C	-	90	%RH

1.4 DC Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply Voltage for LCD Driver	VDD	-	2.75	3.3	3.6	V
Power Supply Voltage for LED Driver	LED_VCC	-	9.0	12.0	15.0	V
Power Supply Current	IDD	VDD=3.3V	-	230	280	mA
Power Supply Current For LED Driver	I _{LED_VCC}	LED_VCC = 12V	-	600	660	mA
PWM Signal Voltage	High	VPWM	-	0.8*V _{LED_EN}	-	V
	Low		-	-	0.2* V _{LED_EN}	V
LED Enable Voltage	High	V _{LED_EN}	-	1.65	-	V
	Low		-	-	0.4	V
LED PWM Frequency	F _{PWM}	-	100	-	20000	HZ

Note: Maximum Current Display.

1.5 Optical Characteristics

TFT LCD Panel

Ta=25℃

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	-
Response Time	Tr + Tf	-	-	25	35	ms	Note2
Viewing Angle	Top	ΘY+	-	85	-	Deg.	Note4
	Bottom	ΘY-	-	85	-		
	Left	ΘX-	-	85	-		
	Right	ΘX+	-	85	-		
Contrast Ratio	CR		600	800	-	-	Note3
Color of CIE Coordinate (With B/L)	White	X	0.27	0.32	0.37	-	Note1
		Y	0.31	0.36	0.41		
	Red	X	0.56	0.61	0.66		
		Y	0.30	0.35	0.40		
	Green	X	0.28	0.33	0.38		
		Y	0.53	0.58	0.63		
	Blue	X	0.10	0.15	0.20		
		Y	0.12	0.17	0.22		
Average Brightness Pattern=White Display	IV	If=200mA	800	1000	-	cd/m2	Note1
Luminance Uniformity	YU	-	70	-	-	%	Note1

Note1:

1 : $\Delta B = B(\min) / B(\max) \times 100\%$

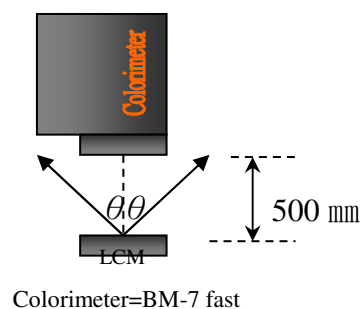
2 : Measurement Condition for Optical Characteristics:

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 mm , (θ= 0°)

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

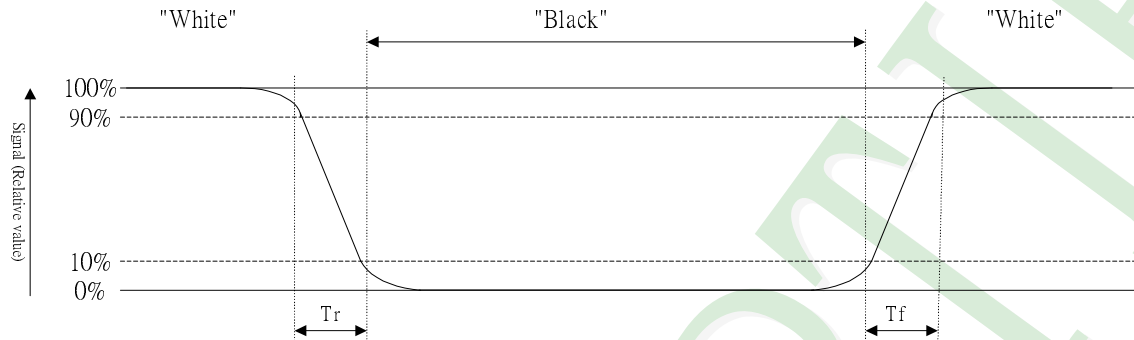
d : The uncertainty of the C.I.E coordinate measurement ±0.01 , Average Brightness ± 4%



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:



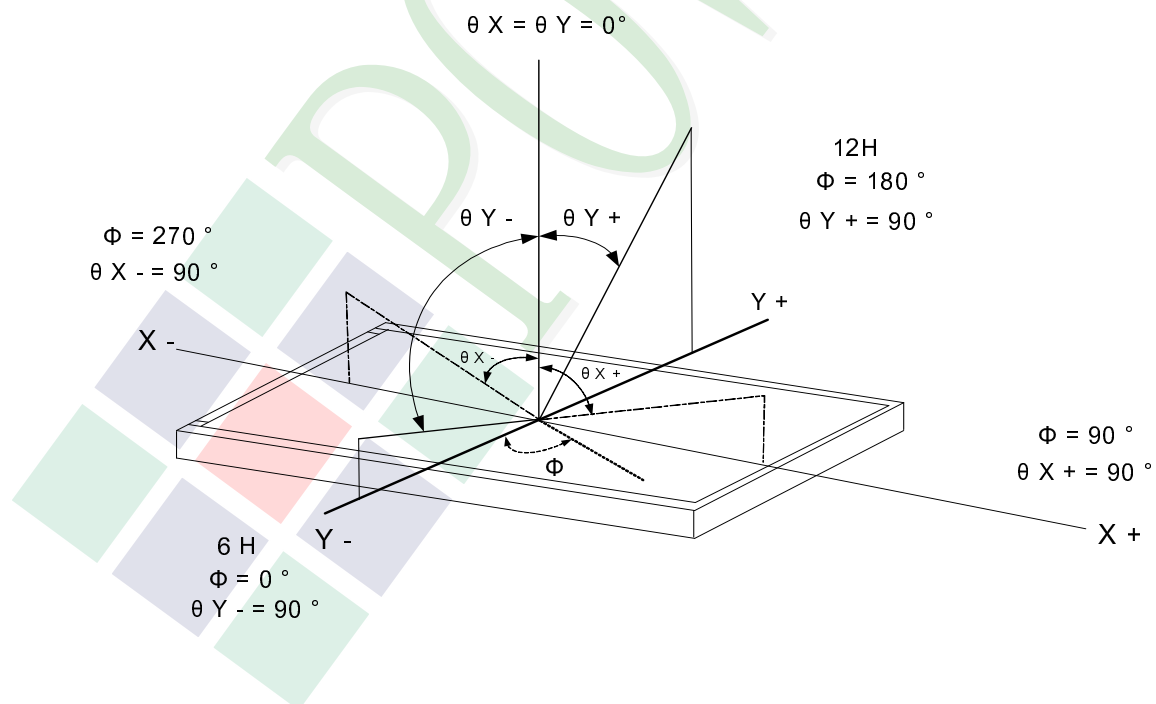
Note3: Definition of contrast ratio:

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

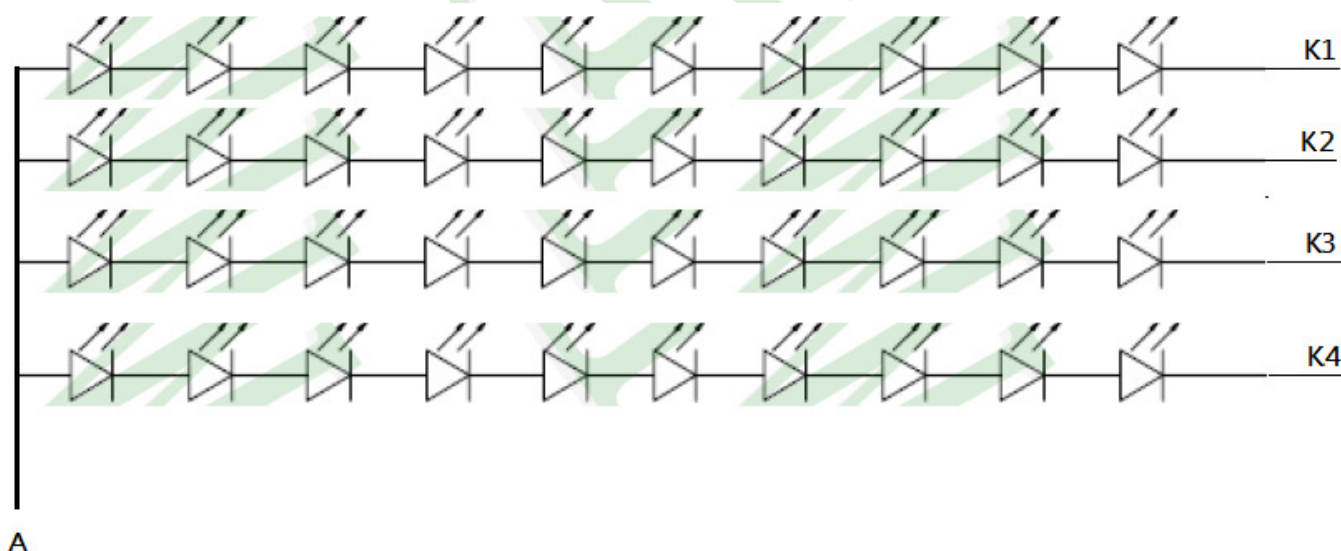
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power Dissipation	Pd	1 LED	-	-	260	mW
LED Forward Current	IF		-	-	80	mA
LED Reverse Voltage	VR		-	-	1.2	V

Electrical / Optical Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Voltage for LED Backlight	VF	If=200mA	26	28	30	V
Current for LED Backlight	IF		-	200	-	mA
Color	White					

Other Description

Item	Conditions	Description
Life Time	Ta =25℃ If= 200 mA	70000 hrs



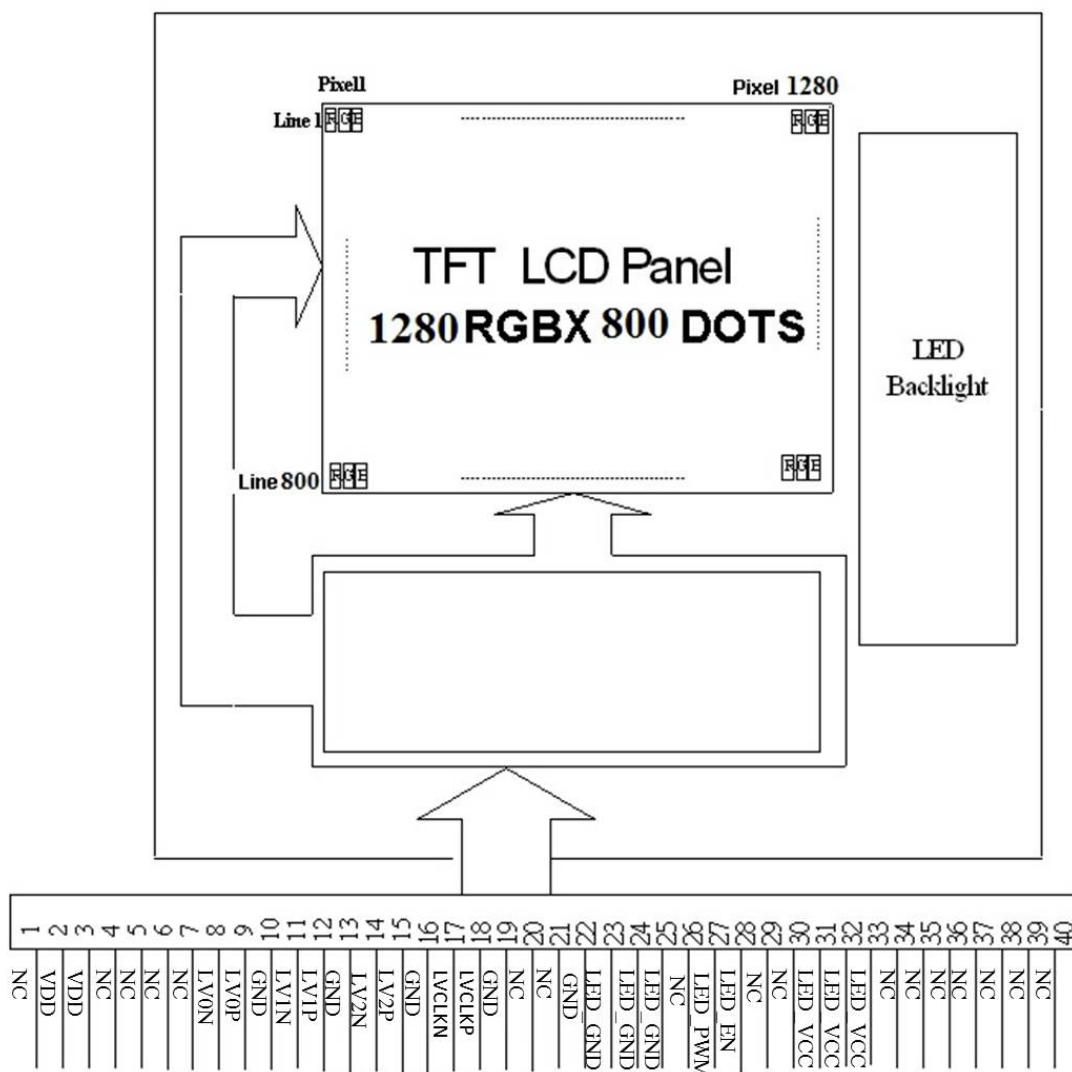
LED=10S4P

2. MODULE STRUCTURE

2.1 Counter Drawing

2.1.1 LCM Mechanical Diagram

* See Appendix



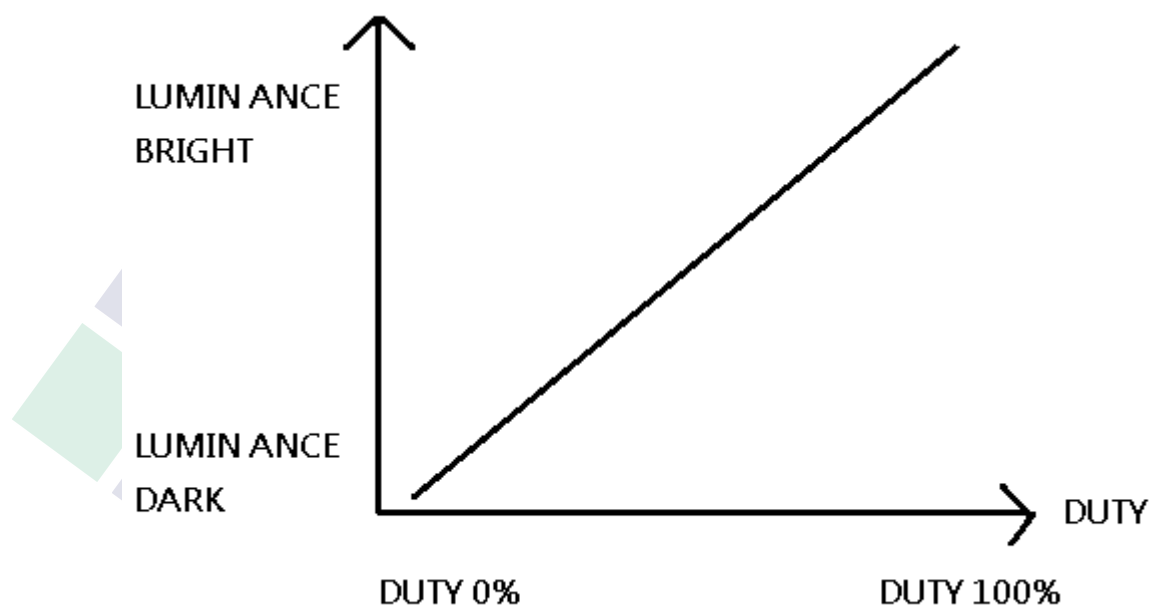
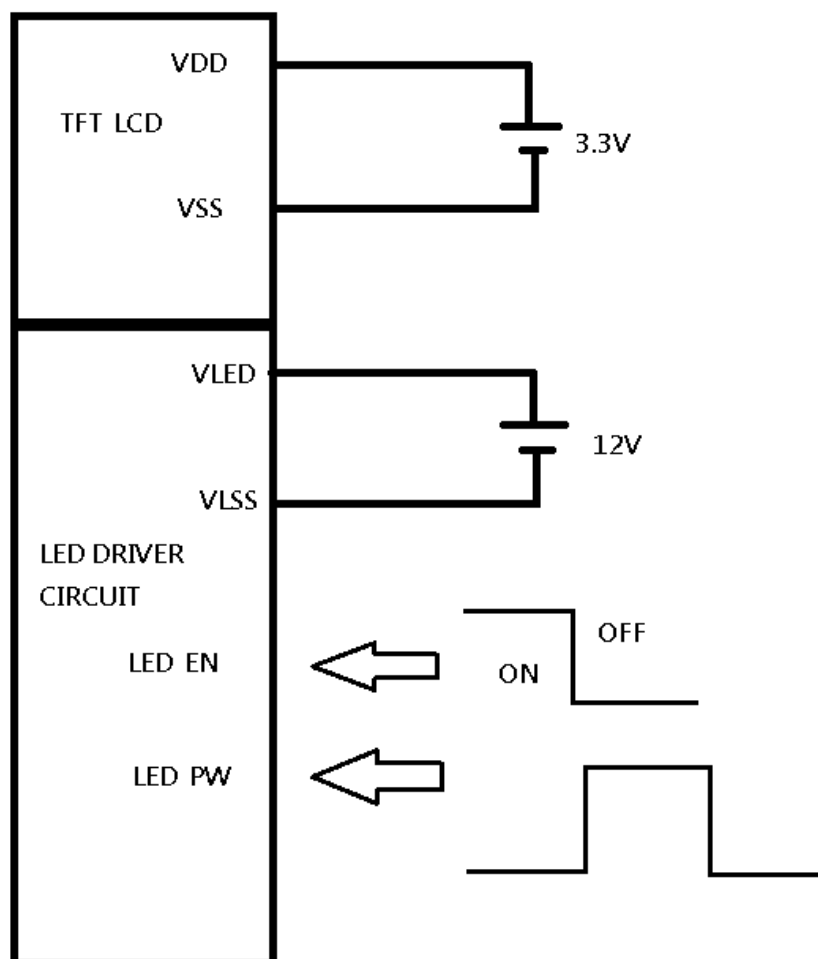
2.2 Interface Pin Description(CN1)

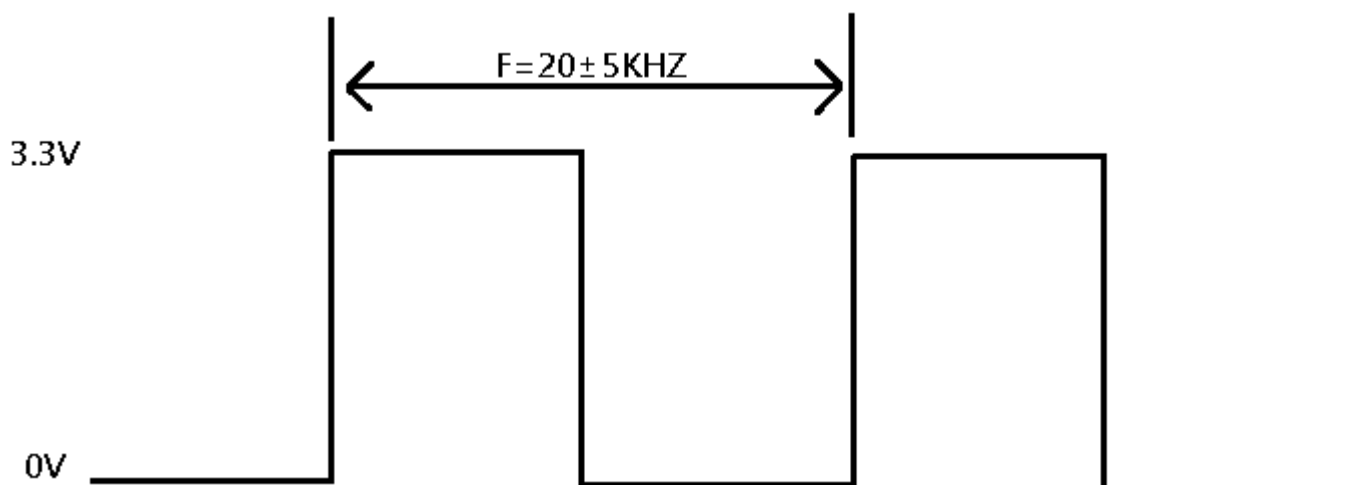
Pin No.	Symbol	Description
1	NC	No Connection
2	VDD	Power Supply
3	VDD	Power Supply
4	NC	No Connection
5	NC	No Connection
6	NC	No Connection
7	NC	No Connection
8	LV0N	-LVDS Differential Data Input
9	LV0P	+LVDS Differential Data Input
10	GND	Ground
11	LV1N	-LVDS Differential Data Input
12	LV1P	+LVDS Differential Data Input
13	GND	Ground
14	LV2N	-LVDS Differential Data Input
15	LV2P	+LVDS Differential Data Input
16	GND	Ground
17	LVCLKN	-LVDS Differential Clock Input
18	LVCLKP	+LVDS Differential Clock Input
19	GND	Ground
20	LV3N	-LVDS Differential Data Input
21	LV3P	+LVDS Differential Data Input
22	GND	Ground
23	LED_GND	Ground for LED Driving
24	LED_GND	Ground for LED Driving
25	LED_GND	Ground for LED Driving
26	NC	No Connection
27	LED_PWM	PWM Input Signal for LED Driver

Pin No.	Symbol	Description
28	LED_EN	LED Enable Pin
29	NC	No Connection
30	NC	No Connection
31	LED_VCC	Power Supply for LED Driver
32	LED_VCC	Power Supply for LED Driver
33	LED_VCC	Power Supply for LED Driver
34	NC	No Connection
35	BIST	BIST Pin (Active High), if not used, please no connection
36	NC	No Connection
37	NC	No Connection
38	NC	No Connection
39	NC	No Connection
40	NC	No Connection

2.3 Power Supply Characteristics

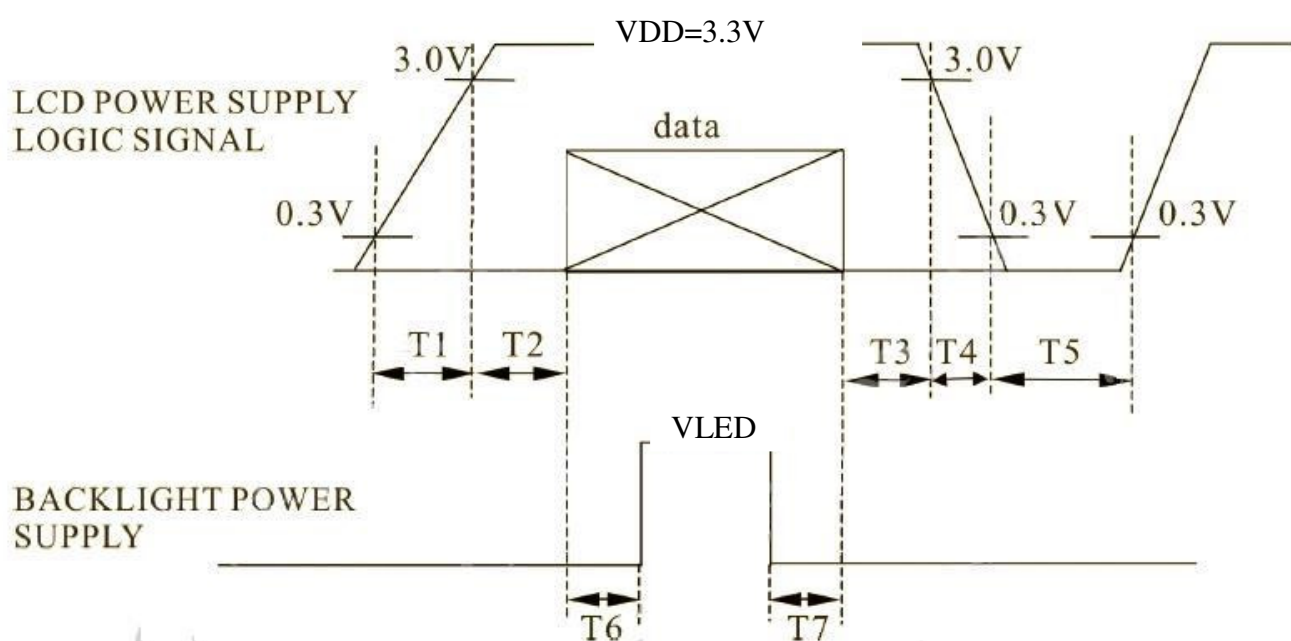
2.3.1 POWER SUPPLY FOR LCM





2.3.2 POWER ,SIGNAL SEQUENCE

$0.5 < t_1 \leq 10 \text{ ms}$	$200 \text{ ms} \leq t_5$
$0 < t_2 \leq 50 \text{ ms}$	$200 \text{ ms} \leq t_6$
$0 < t_3 \leq 50 \text{ ms}$	$200 \text{ ms} \leq t_7$
$0 < t_4 \leq 10 \text{ ms}$	



2.4 Timing Characteristics

2.4.1 LVDS Signal Timing Characteristics

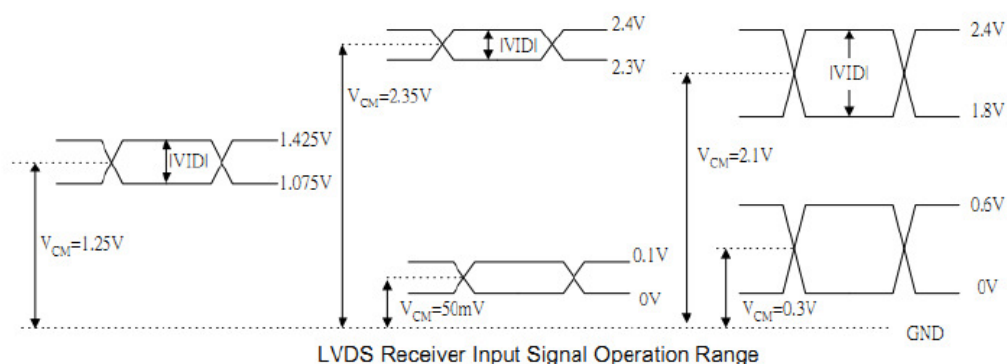
DC Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max	Unit
V_{TH}	Differential Input High Threshold	$V_{CM} = +1.2V$	-	-	100	mV
V_{TL}	Differential Input Low Threshold		-100	-	-	mV
I_{CC}	Average Supply Current		-	TBD	-	mA

Typical Input Swim

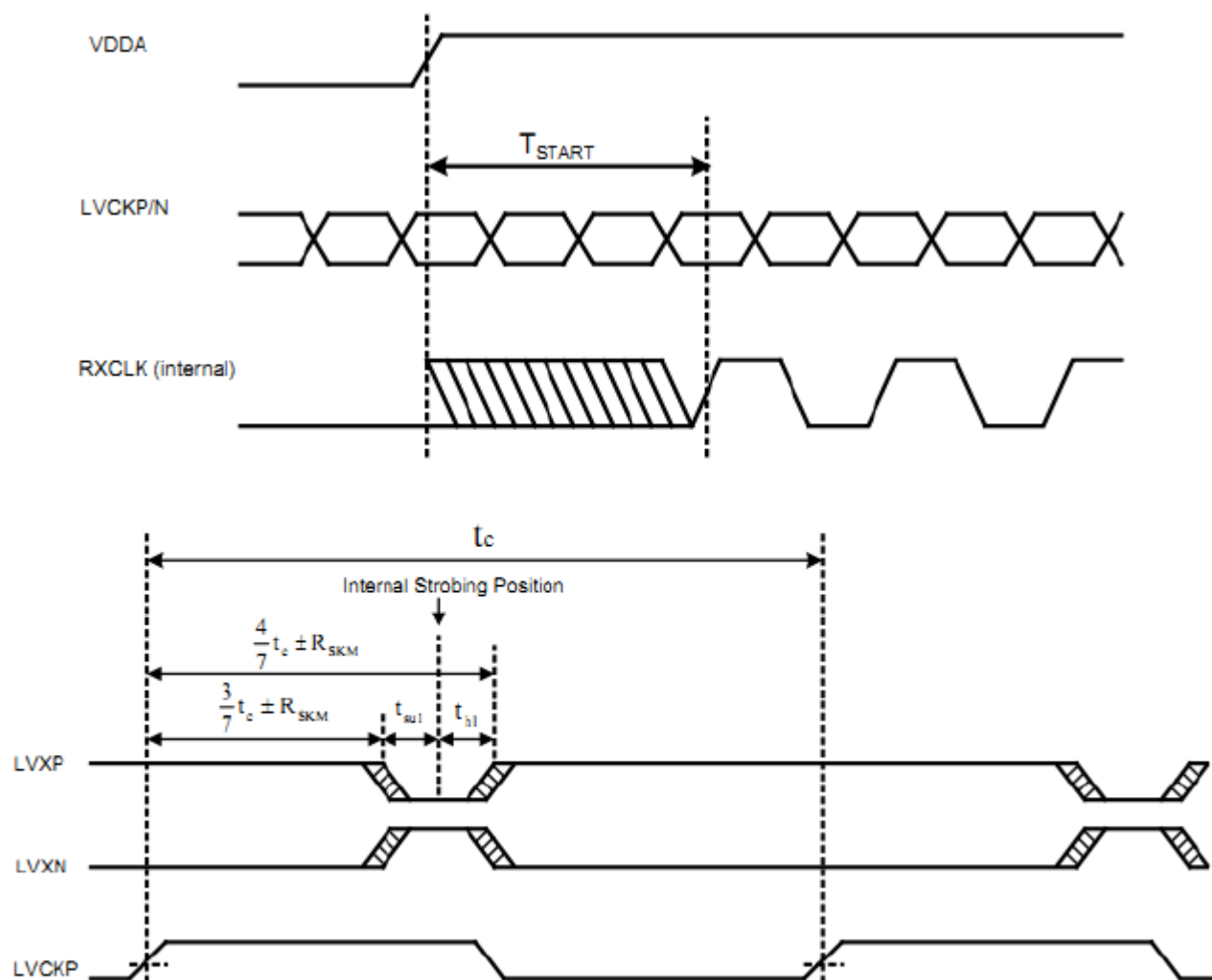
Minimum Input Swim

Maximum Input Swim



AC Characteristics

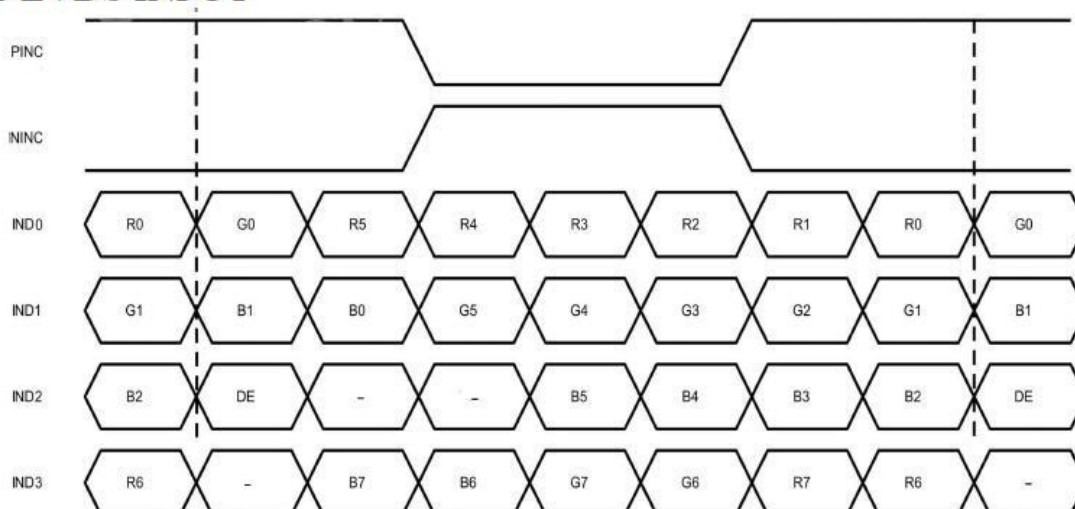
Symbol	Parameter	Conditions	Min.	Typ.	Max	Unit
F_{OP}	Input Operating Frequency range	RX_HF=0	25	-	100	MHz
		RX_HF=1	100	-	170	MHz
R_{SKM}	Receiver Skew Margin	85MHz, VID =400mV, $V_{CM}=1.2V$	450	-	-	pS
		150MHz, VID =400mV, $V_{CM}=1.2V$	267	-	-	pS
T_{STRAT}	Receiver startup time (after a valid LVDS clock is applied)		-	-	10	mS



NOTE: LVCK is advanced or delayed with respect to data until errors are observed at the receiver outputs. The advance or delay is then reduced until there are no data errors observed. The magnitude of the advance or delay is R_{SKM} .

2.4.2 LVDS Data Input Format

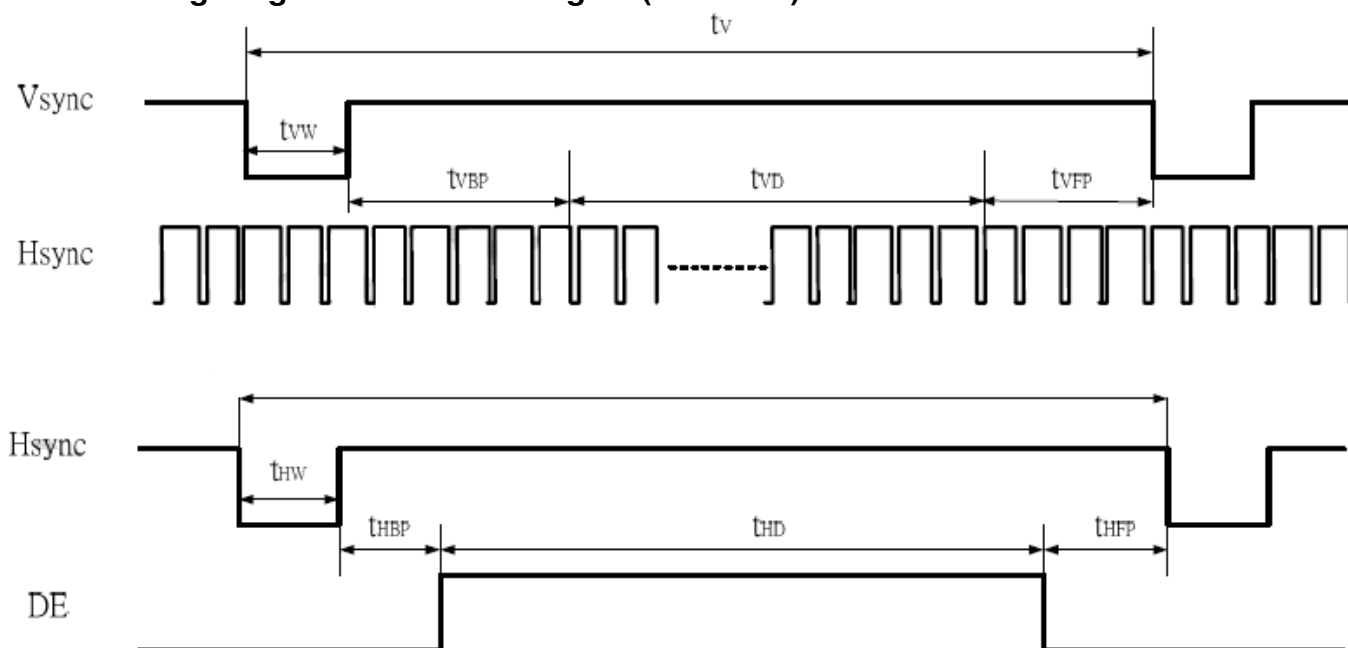
8-BIT LVDS INPUT



2.4.3 Interface Timings

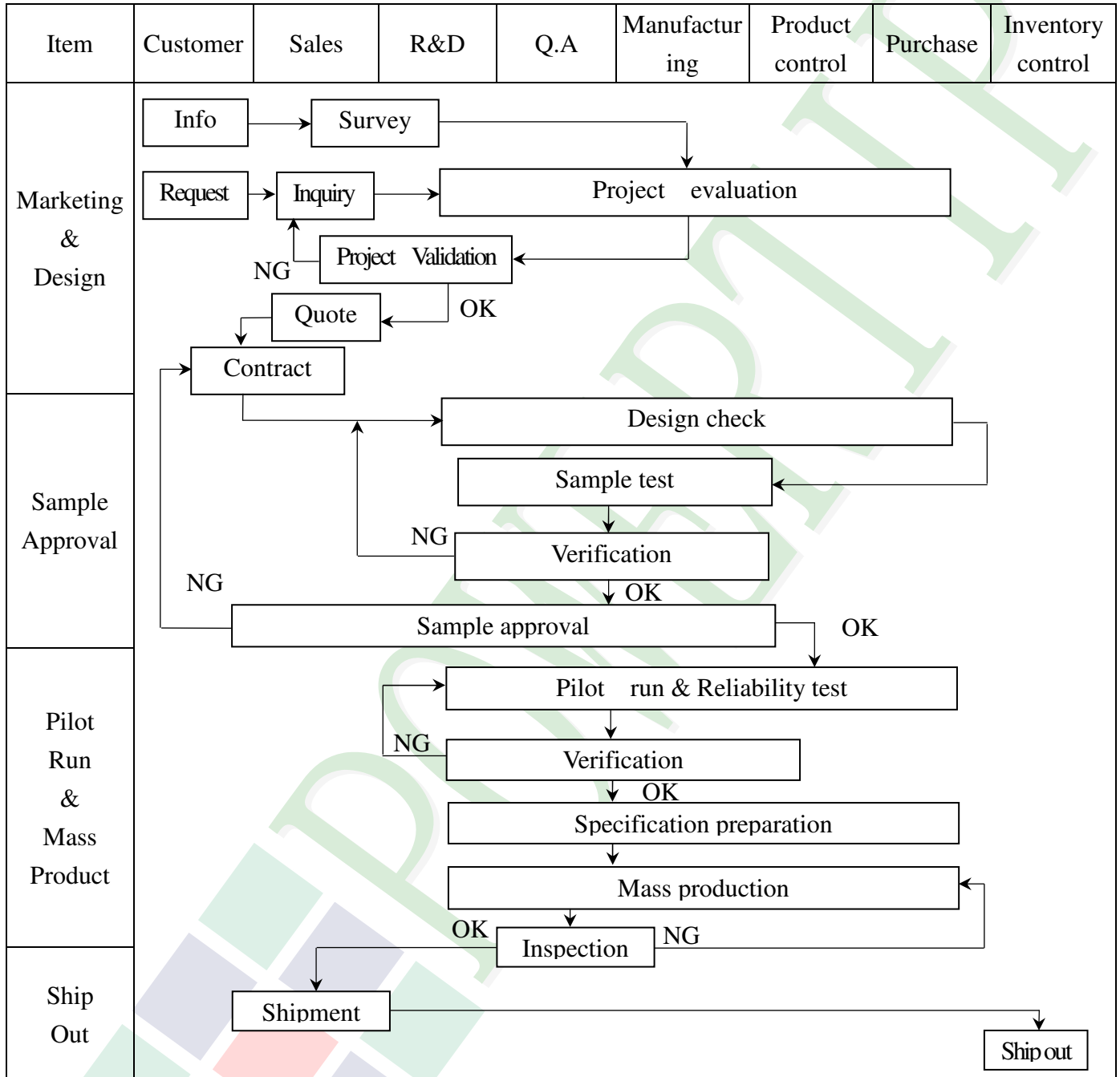
Parameter	Symbol	Unit	Min.	Typ.	Max.
Frame Rate	--	Hz	-	60	-
Frame Period	Tv	line	815	823	1023
Vertical Display Time	TvD	line	800		
Vertical Blanking Time	TvW+TvBP+TvFP	line	15	23	33
1 Line Scanning Time	Th	clock	1410	1440	1470
Horizontal Display Time	ThD	clock	1280		
Horizontal Blanking Time	ThW+ThBP+ThFP	clock	60	160	190
Clock Rate	1/Tc	MHz	68.9	71.1	73.4

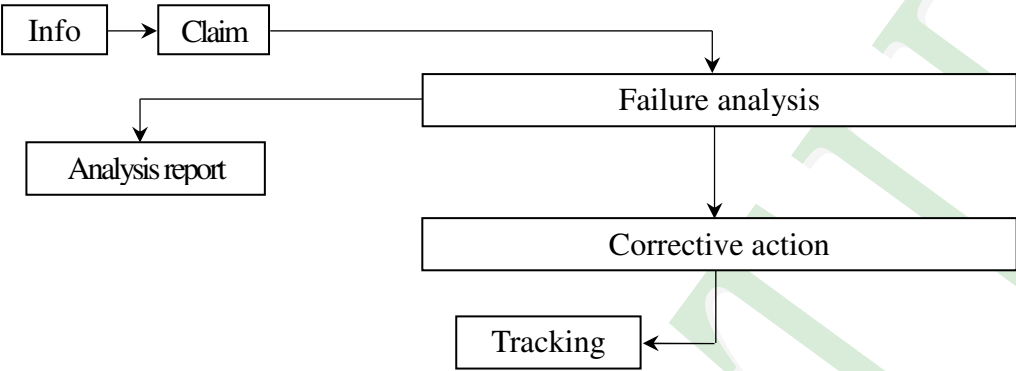
2.4.4 Timing Diagram of Interface Signal (DE mode)



3. QUALITY ASSURANCE SYSTEM

3.1 Quality Assurance Flow Chart



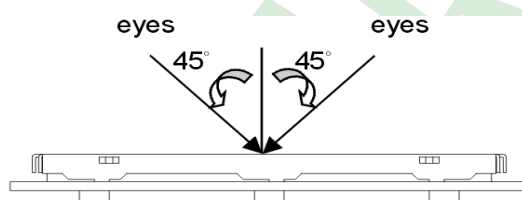
Item	Customer	Sales	R&D	Q.A	Manufacturing	Product control	Purchase	Inventory control
Sales Service	 <pre> graph TD Info[Info] --> Claim[Claim] Claim --> Failure[Failure analysis] Claim --> Report[Analysis report] Failure --> Action[Corrective action] Action --> Tracking[Tracking] </pre>							
Q.A Activity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

3.2. Inspection Specification

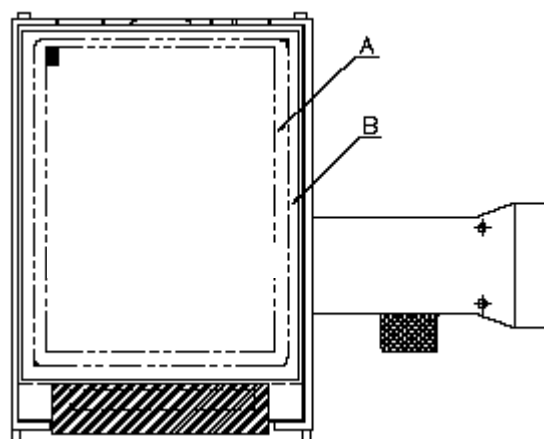
- ◆Scope : The document shall be applied to TFT-LCD Module for 3.5" ~15" (Ver.B01).
- ◆Inspection Standard : MIL-STD-105E Table Normal Inspection Single Sampling Level II.
- ◆Equipment : Gauge 、 MIL-STD 、 Powertip Tester 、 Sample
- ◆Defect Level : Major Defect AQL : 0.4 ; Minor Defect AQL : 1.5
- ◆OUT 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)

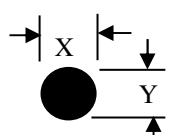
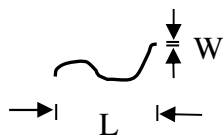
◆Specification For TFT-LCD Module 3.5" ~15" :

(Ver.B01)

NO	Item	Criterion	Level												
01	Product condition	1. 1The 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. 1The 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												
		4. 6 Mura can not be seen through 5% ND filter. (Mura : Under the normal examination angle of view,the picture has the non-uniform phenomenon.)	Minor												
05	Dot defect (Bright dot 、 Dark dot) On -display	<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>	Item		Acceptance (Q'ty)	Dot Defect	Bright Dot	≤ 4	Dark Dot	≤ 5	Joint Dot	≤ 3	Total	≤ 7	Minor
		Item		Acceptance (Q'ty)											
Dot Defect	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. 5. 4 Bright dot that can not be seen through 5% ND filter.															

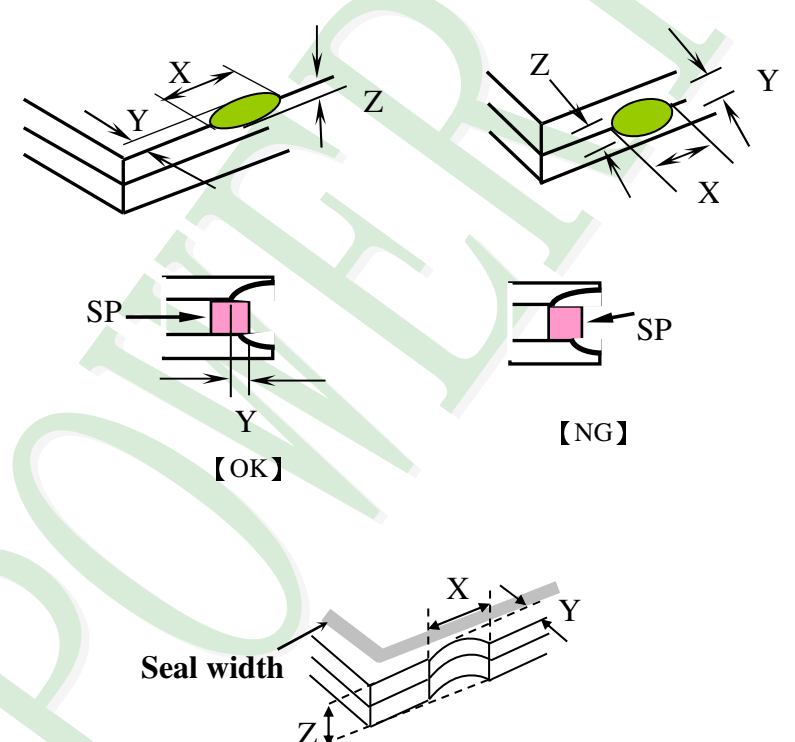
◆Specification For TFT-LCD Module 3.5" ~15" :

(Ver.B01)

NO	Item	Criterion	Level																																																					
06	Black or white dot、scratch、contamination Round type  $\Phi=(x+y) / 2$ Line type 	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>$\Phi \leq 0.25$</td><td>Ignore</td><td rowspan="4">Ignore</td></tr><tr><td>$0.25 < \Phi \leq 0.50$</td><td>5</td></tr><tr><td>$\Phi > 0.50$</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">module size</th><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 rowspan="5">3.5'' to less 9''</td><td>---</td><td>$W \leq 0.03$</td><td>Ignore</td><td rowspan="4">Ignore</td></tr><tr><td>$L \leq 10.0$</td><td>$0.03 < W \leq 0.05$</td><td>4</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>As round type</td></tr><tr><td colspan="2">Total</td><td>5</td><td></td></tr><tr><td rowspan="4">9'' to 15''</td><td>---</td><td>$W \leq 0.05$</td><td>Ignore</td><td rowspan="4">Ignore</td></tr><tr><td>$L \leq 10.0$</td><td>$0.05 < W \leq 0.10$</td><td>5</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>	Dimension (diameter : Φ)	Acceptance (Q'ty)		A area	B area	$\Phi \leq 0.25$	Ignore	Ignore	$0.25 < \Phi \leq 0.50$	5	$\Phi > 0.50$	0	Total	5	module size	Length (L)	Width (W)	Acceptance (Q'ty)		A area	B area	3.5'' to less 9''	---	$W \leq 0.03$	Ignore	Ignore	$L \leq 10.0$	$0.03 < W \leq 0.05$	4	$L \leq 5.0$	$0.05 < W \leq 0.10$	2	---	$W > 0.10$	As round type	Total		5		9'' to 15''	---	$W \leq 0.05$	Ignore	Ignore	$L \leq 10.0$	$0.05 < W \leq 0.10$	5	---	$W > 0.10$	As round type	Total		5	Minor
		Dimension (diameter : Φ)		Acceptance (Q'ty)																																																				
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Total	5																																																							
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3.5'' to less 9''	---	$W \leq 0.03$	Ignore	Ignore																																																				
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	Total		5																																																					
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	---	$W > 0.10$	As round type																																																					
	Total		5																																																					
07	Polarizer Bubble <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>$\Phi \leq 0.25$</td><td>Ignore</td><td rowspan="5">Ignore</td></tr><tr><td>$0.25 < \Phi \leq 0.50$</td><td>4</td></tr><tr><td>$0.50 < \Phi \leq 0.80$</td><td>1</td></tr><tr><td>$\Phi > 0.80$</td><td>0</td></tr><tr><td>Total</td><td>5</td></tr></table>	Dimension (diameter : Φ)	Acceptance (Q'ty)		A area	B area	$\Phi \leq 0.25$	Ignore	Ignore	$0.25 < \Phi \leq 0.50$	4	$0.50 < \Phi \leq 0.80$	1	$\Phi > 0.80$	0	Total	5	Minor																																						
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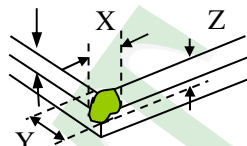
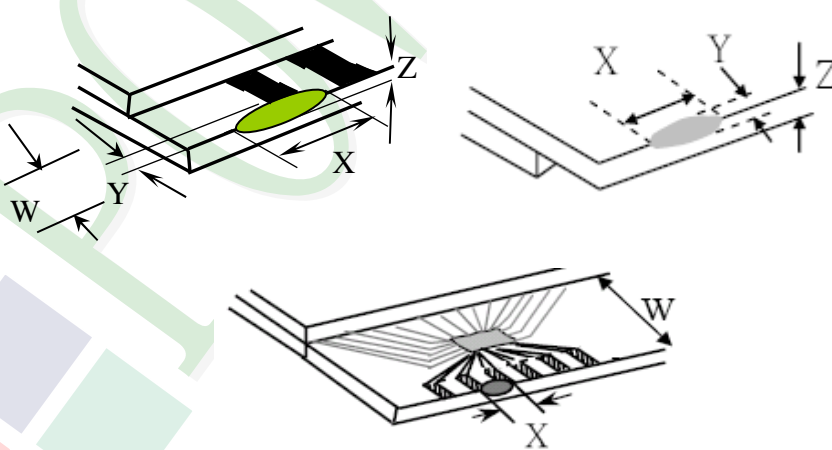
◆Specification For TFT-LCD Module 3.5" ~15" :

(Ver.B01)

NO	Item	Criterion	Level						
08	The crack of glass	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 General glass chip : 8.1.1 Chip on panel surface and crack between panels: 	Minor						
		<table><tr><th>X</th><th>Y</th><th>Z</th></tr><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></table>		X	Y	Z	$\leq a$	Crack can't enter viewing area	$\leq 1/2 t$
X	Y	Z							
$\leq a$	Crack can't enter viewing area	$\leq 1/2 t$							
$\leq a$	Crack can't exceed the half of SP width.	$1/2 t < Z \leq 2 t$							

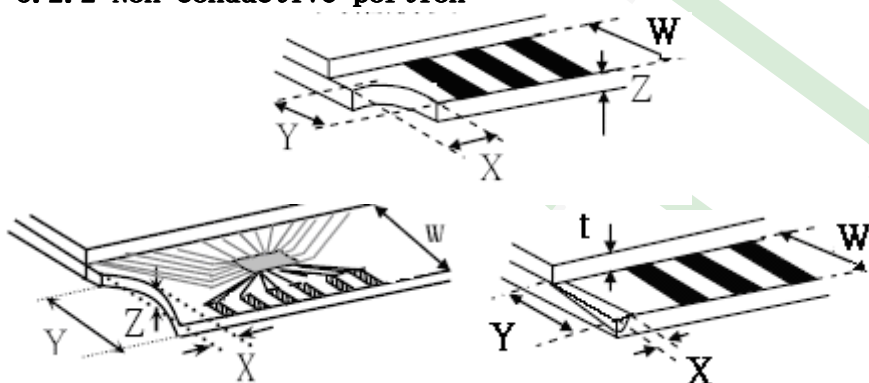
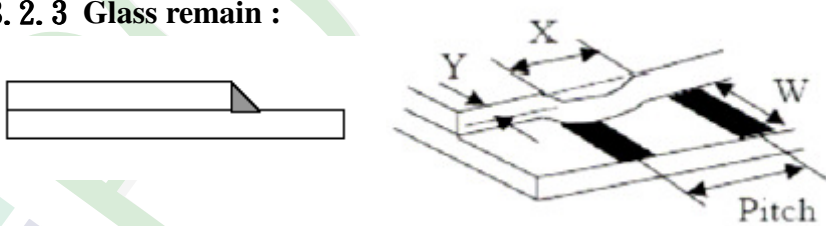
◆Specification For TFT-LCD Module 3.5" ~15" :

(Ver.B01)

NO	Item	Criterion	Level									
08	The crack of glass	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>$\leq 1/5 a$</td><td>Crack can't enter viewing area</td><td>$Z \leq 1/2 t$</td></tr><tr><td>$\leq 1/5 a$</td><td>Crack can't exceed the half of SP width.</td><td>$1/2 t < Z \leq 2 t$</td></tr></table>	X	Y	Z	$\leq 1/5 a$	Crack can't enter viewing area	$Z \leq 1/2 t$	$\leq 1/5 a$	Crack can't exceed the half of SP width.	$1/2 t < Z \leq 2 t$	Minor
		X	Y	Z								
$\leq 1/5 a$	Crack can't enter viewing area	$Z \leq 1/2 t$										
$\leq 1/5 a$	Crack can't exceed the half of SP width.	$1/2 t < Z \leq 2 t$										
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>$\leq a$</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></table>		X	Y	Z	Front	$\leq a$	$\leq 1/2 W$	$\leq t$	Back	$\leq a$	$\leq W$	$\leq 1/2 t$
	X	Y	Z									
Front	$\leq a$	$\leq 1/2 W$	$\leq t$									
Back	$\leq a$	$\leq W$	$\leq 1/2 t$									

◆Specification For TFT-LCD Module 3. 5" ~15" :

(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 8.2.2 Non-conductive portion :  <table> <tr> <th>X</th> <th>Y</th> <th>Z</th> </tr> <tr> <td>$\leq 1/3 a$</td> <td>$\leq W$</td> <td>$\leq t$</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>$\leq a$</td> <td>$\leq 1/3 W$</td> <td>$\leq t$</td> </tr> </table> 8.2.4 Cracking  Not Allowed	X	Y	Z	$\leq 1/3 a$	$\leq W$	$\leq t$	X	Y	Z	$\leq a$	$\leq 1/3 W$	$\leq t$	Minor
		X	Y	Z											
		$\leq 1/3 a$	$\leq W$	$\leq t$											
X	Y	Z													
$\leq a$	$\leq 1/3 W$	$\leq t$													

◆Specification For TFT-LCD Module 3.5" ~15" :
(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)

NO.	TEST ITEM	TEST CONDITION											
1	High Temperature Storage Test	Keep in +80 ±2℃ 240 hrs											
2	Low Temperature Storage Test	Keep in -30 ±2℃ 240 hrs											
3	High Temperature / High Humidity Storage Test	Keep in +60 °C / 90% R.H duration for 240 hrs (Excluding the polarizer)											
4	Temperature Cycling Storage Test	-30℃ → +25℃ → +80℃ → +25℃ (30mins) (5mins) (30mins) (5mins) ← 20 Cycle →											
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 +/-										
		1.Temperature ambience : 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%)											
6	Vibration Test (Packaged)	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											
7	Drop Test (Packaged)	<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>		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 1time											

◎Result Evaluation Criteria :

Under the display quality test conditions with normal operations with normal operation state. Do not change these conditions as such changes may affect practical display function.

(Normal operation state)

Temperature: +20~30℃

Humidity: 50~70%

Atmospheric pressure: 86~106Kpa

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

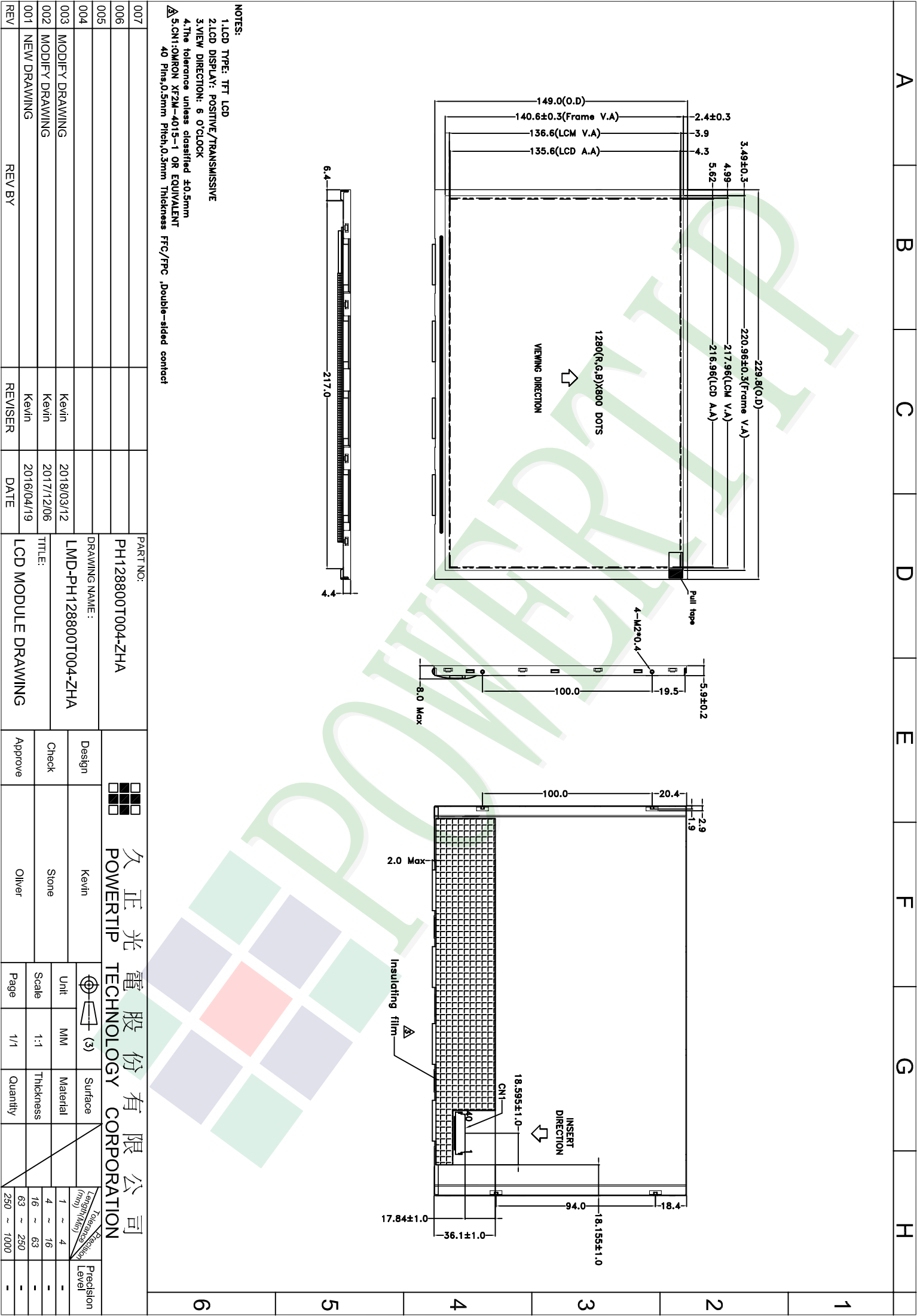
- 5.2.1 Avoid any strong mechanical shock which can break the glass.
- 5.2.2 Avoid static electricity which can damage the CMOS LSI—When working with the module , be sure to ground your body and any electrical equipment you may be using.
- 5.2.3 Do not remove the panel or frame from the module.
- 5.2.4 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.003		LCM包裝規格書 LCM Packaging Specifications	Approve	Check	Contact
Documents NO.	PKG-H128800T004-ZHA		Oliver	Stone	Kevin

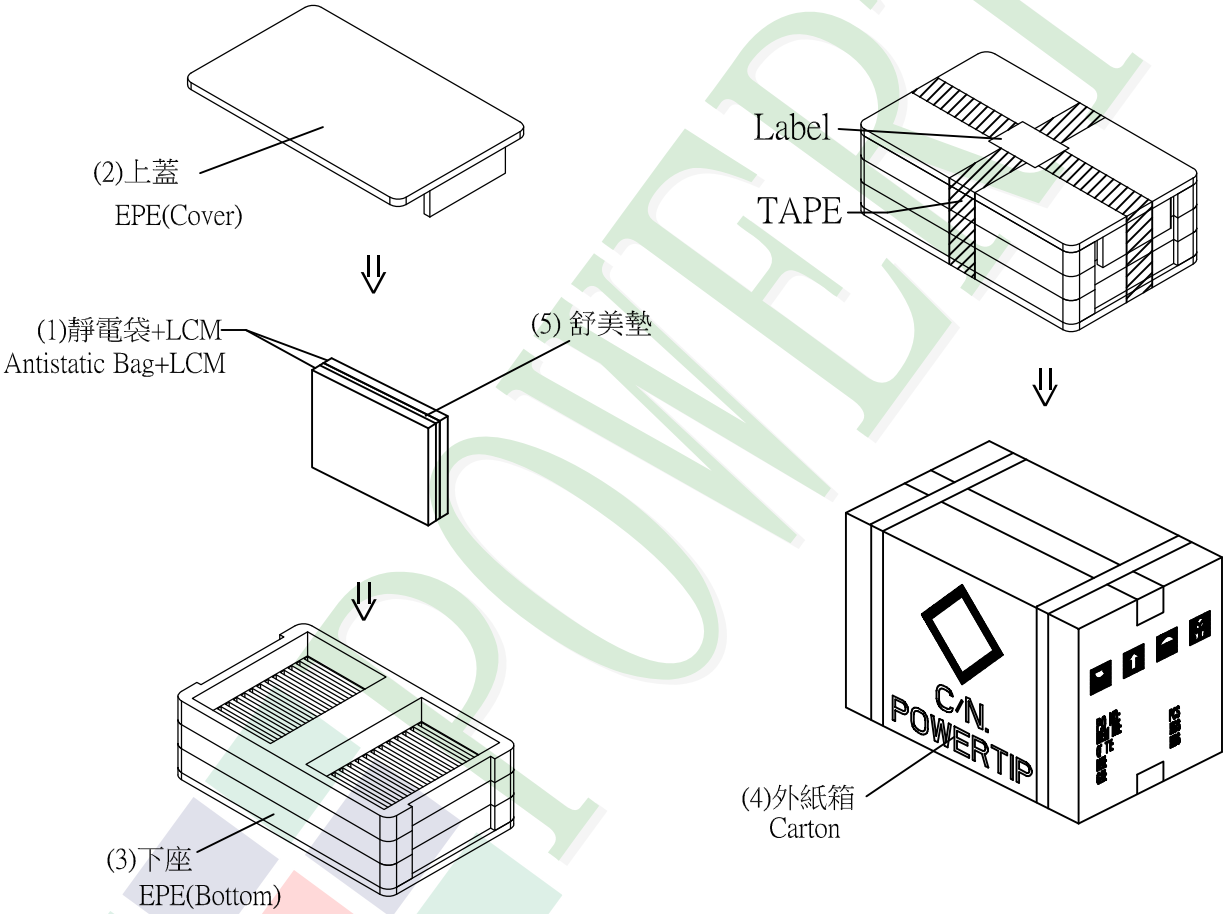
1.包裝材料規格表 (Packaging Material) : (per carton)

No.	Item	Model	Dimensions (mm)	1Pcs Weight	Quantity	Total Weight
1	成品 (LCM)	PH128800T004-ZHA	229.8 X 149.0	0.2407	40	9.628
2	靜電袋(1)Antistatic Bag	BAG0000000021	240 X 300	0.008	40	0.32
3	上蓋(2)EPE(Cover)	FOAM000000132	520 X 315 X 65	0.108	1	0.108
4	下座(3)EPE(Bottom)	FOAM000000133	520 X 315 X 330	0.85	1	0.85
5	外紙箱(4)Carton	BX52732536CCBA	527 X 325 X 360	1.092	1	1.092
6	舒美墊(5)EPE	OTFOAMEP0001BA	333X 218 X 2.0	0.0032	1	0.032

2.一 整箱總重量 (Total LCD Weight in carton) : 12.03 Kg±10%

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

Total LCM quantity in carton : quantity per EPE 20 x no of EPE 1 = 20



特 記 事 項 (REMARK)

4.放置格示意圖:		5. 2個 LCM面對面中間放置2.0t EPE(舒美墊)	6. 包裝數量不足時需以EPE(舒美墊)填補空槽 EPE:OTFOAMEP0004BA自裁成 (230X197.0X15mm)