POWERTIP TECH. CORP.

SPECIFICATIONS

CUSTOMER	:	
SAMPLE CODE	:	SH128800T004-ZFA01
MASS PRODUCTION CODE	:	PH128800T004-ZFA01
SAMPLE VERSION	:	01
SPECIFICATIONS EDITION	:	003
DRAWING NO. (Ver.)	:	LMD-PH128800T004-ZFA01 (Ver.002)
PACKAGING NO. (Ver.)	:	PKG-PH128800T004-ZFA01 (Ver.002)

Customer Approved

Date:

Approved	Checked	Designer
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POWERTIP
2017.07.21
TW RD APR

☐ Preliminary specification for design input

■ Specification for sample approval

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History of Version

Date	Ver.	Edi.	Description	Page	Design by
04/11/2017	01	001	New Drawing.	-	Stephen
05/20/2017	01	002	New Sample	-	Stephen
07/19/2017	01	003	Modify Spec Update packages version	10	Stephen

Total: 26 Page

Contents

1. SPECIFICATIONS

1.1 Features

Item	Standard Value
Touch panel	Projective Capacitive Touch Panel USB HID Touch
Screen size(inch)	10.1(Diagonal)
Driver element	IPS,Normally Black
Resolution	1280* (R、G、B) * 800 Dots
Display mode	Transmissive, ANTI-GLARE
Color	16.7M
Weight	256.7 g
Interface	HDMI Interface
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) * 23.6 (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	V12V	GND=0V	-0.3	+26.0	V
Operating Temperature	T_{OP}	-	-20	+70	℃
Storage Temperature	T_{ST}	-	-30	+80	℃
Storage humidity	H_D	Ta＜25 ℃	55	60	%RH

1.4 DC Electrical Characteristics

Ta=25 ℃

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power supply voltage	V_{12V}	-	11.5	12.0	12.5	V
Input logic high voltage	VIH	-	2	-	DVDD	V
Input logic low voltage	VIL	-	0	-	0.8	V
Supply Current	I_{V12V}	V_{12V}=12.0V Pattern= Picture*1	-	500	550	mA
Power Consumption	P	-	-	4.8	6.25	W

Note 1: Maximum current display.

Note 2: DVDD=3.3V

1.5 Optical Characteristics

TFT LCD Panel Ta=25℃

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	-
Response time		Tr + Tf	-	-	25	50	ms	Note2
Viewing angle	Top	ΘY+	CR ≥ 10	75	85	-	Deg.	Note4
	Bottom	ΘY-		75	85	-		
	Left	ΘX-		75	85	-		
	Right	ΘX+		75	85	-		
Contrast ratio		CR	IF=80 mA	600	800	-	-	Note3
Color of CIE Coordinate (With B/L)	White	X		0.268	0.318	0.368	-	Note1
		Y		0.302	0.352	0.402		
	Red	X		-	0.591	-		
		Y		-	0.350	-		
	Green	X		-	0.343	-		
		Y		-	0.584	-		
	Blue	X		-	0.154	-		
		Y		-	0.149	-		
Average Brightness Pattern=white display		IV	IF=80 mA	400	500	-	cd/m2	Note1
Luminance uniformity		YU	IF=80 mA	70	75	-	%	Note1

Note1:

1：△B=B(min) / B(max) × 100%

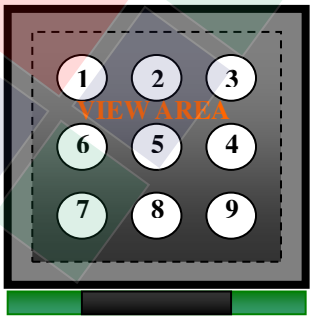
2：Measurement Condition for Optical Characteristics:

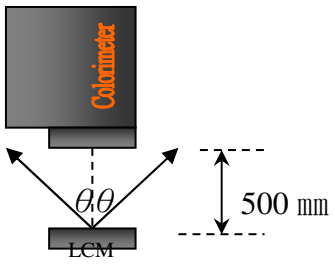
a：Environment: 25℃±5℃ / 60±20%R.H，no wind，dark room below 10 Lux at typical lamp current and typical operating frequency.

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%



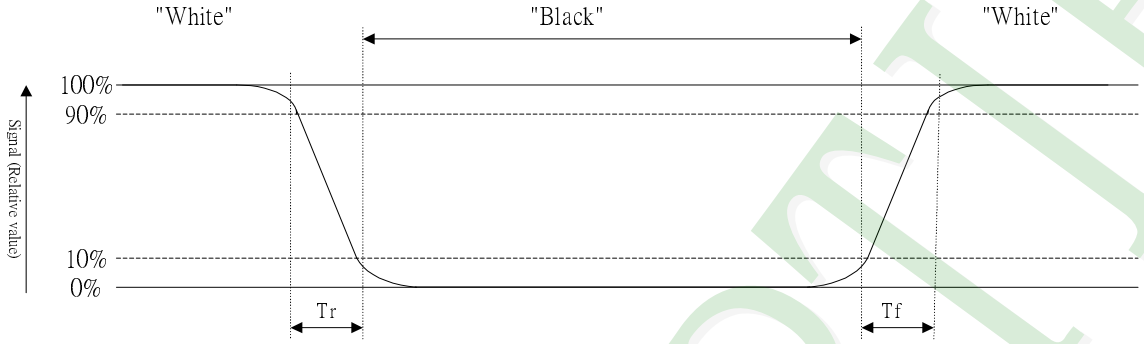


Colorimeter=BM-7 fast

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:



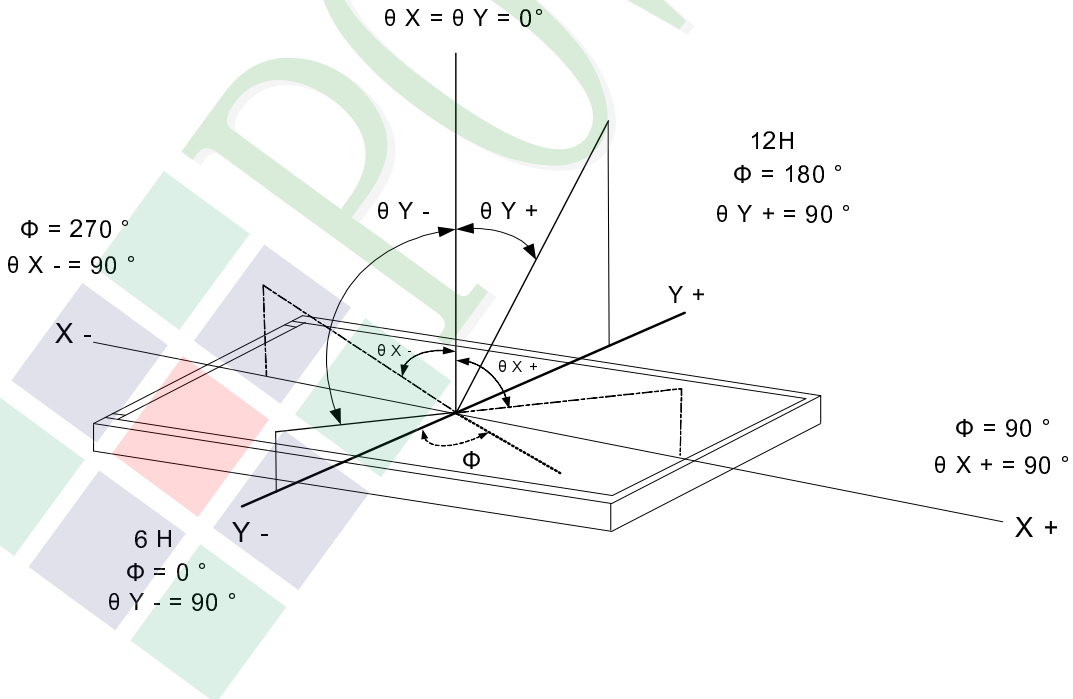
Note3: Definition of contrast ratio:

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

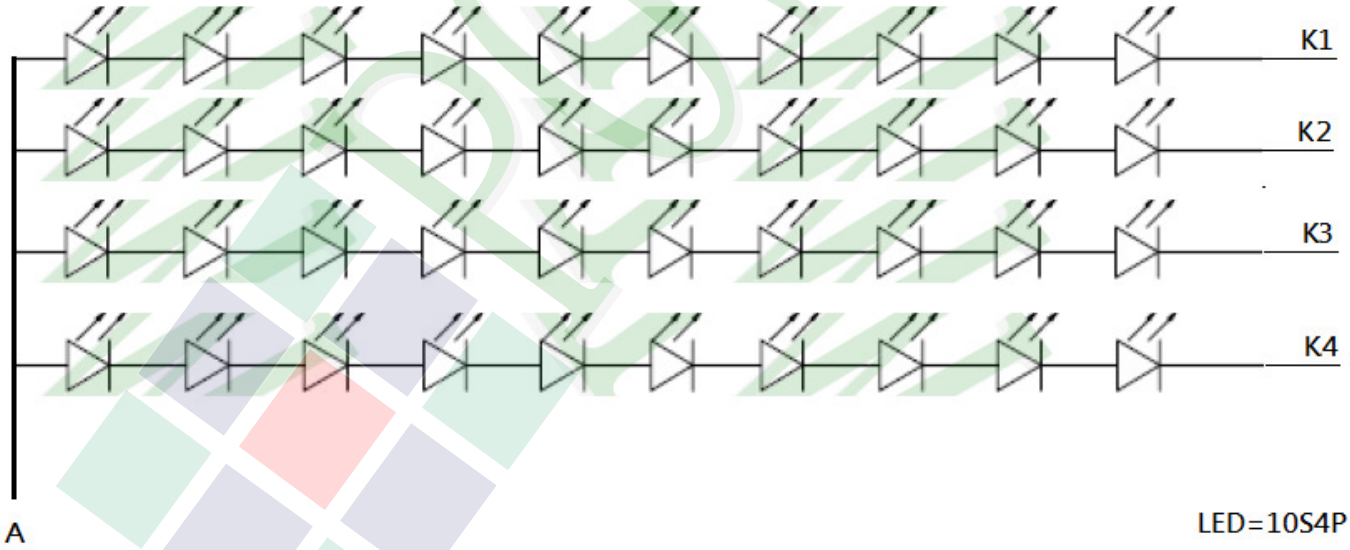
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power Dissipation	Pd	-	-	100	-	mW
LED Forward Current	IF	1 LED	-	-	30	mA
LED Reverse Voltage	VR	1 LED	-	-	1.2	V

Electrical / Optical Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Voltage for LED Backlight	VF	If=80mA	27.5	31.0	34.0	V
Current for LED Backlight	IF		-	80	-	mA
Color	White					

Other Description

Item	Conditions	Description
Life Time	Ta =25℃ If= 80 mA	50000 hrs



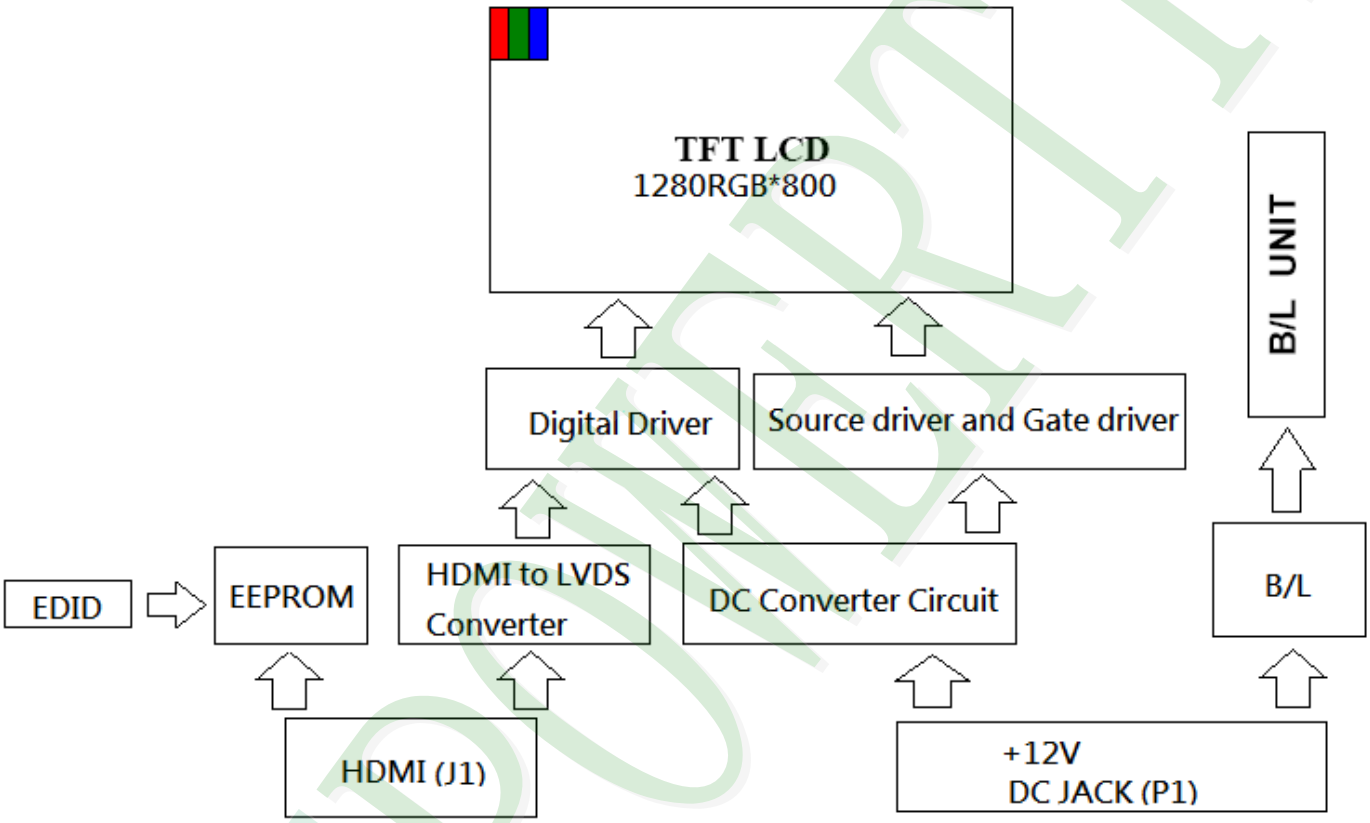
2. MODULE STRUCTURE

2.1 Counter Drawing

2.1.1 LCM Mechanical Diagram

* See Appendix

2.1.2 Block Diagram



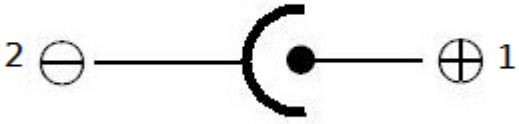
2.2 Interface Pin Description

2.2.1 (J1:HDMI 1.3 A type Interface)

Pin#	Name	Description
1	TX2+	TMDS Data 2+
2	TX2 Shield	TMDS Data 2 Shield
3	TX2–	TMDS Data 2-
4	TX1+	TMDS Data 1+
5	TX1 Shield	TMDS Data 1 Shield
6	TX1–	TMDS Data 1-
7	TX0+	TMDS Data 0+
8	TX0 Shield	TMDS Data 0 Shield
9	TX0–	TMDS Data 0-
10	TXC+	TMDS Clock+
11	TXC Shield	TMDS Clock Shield
12	TXC–	TMDS Clock-
13	CEC	CEC
14	NC	No connection
15	SCL	Serial Clock for DDC
16	SDA	Serial Data for DDC
17	GND	Power Ground
18	V5V	No connection
19	Hot Plug Detect	Hot Plug Detect

2.2.2 (PJ1:POWER DC JACK Interface)

PJ1



Hold Φ6.4mm / Center Pin Φ 2.0mm

Pin#	Name	Description
1	V12V	+12V Power
2	GND	Power Ground

2.3 HDMI Data Input Format

(For detailed information please refer to TI TFP401A Specification)

2.3.1 (DC&AC Electrical Characteristics)

DC Digital I/O Electrical Characteristics

over operating free-air temperature range (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
V_{IH}	High-level digital input voltage(1)		2		DV_{DD}	V
V_{IL}	Low-level digital input voltage(1)		0		0.8	V
I_{OH}	High-level output drive current(2)	ST = high, V_{OH} = 2.4 V	5	10	14	mA
		ST = low, V_{OH} = 2.4 V	3	6	9	
I_{OL}	Low-level output drive current(2)	ST = high, V_{OL} = 0.8 V	10	13	19	mA
		ST = low, V_{OL} = 0.8 V	5	7	11	
I_{OZ}	Hi-Z output leakage current	$\overline{PD}$ = low or $\overline{PDO}$ = low	–1		1	µA

(1) Digital inputs are labeled DI in I/O column of Terminal Functions table.
(2) Digital outputs are labeled DO in I/O column of Terminal Functions table.

DC Electrical Characteristics

over operating free-air temperature range (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
V_{ID}	Analog input differential voltage(1)		75		1200	mV
V_{IC}	Analog input common-mode voltage(1)		AV_{DD} – 300		AV_{DD} – 37	mV
$V_{I(OC)}$	Open-circuit analog input voltage		AV_{DD} – 10		AV_{DD} + 10	mV
$I_{DD(2PIX)}$	Normal 2-pix/clock power supply current (2)	ODCK = 82.5 MHz, 2-pix/clock			370	mA
I_{PD}	Power-down current (3)	$\overline{PD}$ = low			10	mA
I_{PDO}	Output drive power-down current(3)	$\overline{PDO}$ = low		35		mA

(1) Specified as dc characteristic with no overshoot or undershoot
(2) Alternating 2-pixel black/2-pixel white pattern. ST = high, $\overline{STAG}$ = high, QE[23:0] and QO[23:0] C_L = 10 pF.
(3) Analog inputs are open circuit (transmitter is disconnected from TFP401/401A).

AC Electrical Characteristics

over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
$V_{ID(2)}$	Differential input sensitivity(1)		150		1560	mV_{p-p}
t_{ps}	Analog input intra-pair (+ to –) differential skew(2)				0.4	t_{bit}(3)
t_{ccs}	Analog input inter-pair or channel-to-channel skew (2)				1	t_{pix}(4)
t_{jit}	Worst-case differential input clock jitter tolerance(2)(5)		50			ps
t_{f1}	Fall time of data and control signals(6)(7)	ST = low, C_L = 5 pF			2.4	ns
		ST = high, C_L = 10 pF			1.9	
t_{r1}	Rise time of data and control signals(6)(7)	ST = low, C_L = 5 pF			2.4	ns
		ST = high, C_L = 10 pF			1.9	
t_{r2}	Rise time of ODCK clock(6)	ST = low, C_L = 5 pF			2.4	ns
		ST = high, C_L = 10 pF			1.9	
t_{f2}	Fall time of ODCK clock(6)	ST = low, C_L = 5 pF			2.4	ns
		ST = high, C_L = 10 pF			1.9	

(1) Specified as ac parameter to include sensitivity to overshoot, undershoot and reflection.
(2) By characterization
(3) t_{bit} is 1/10 the pixel time, t_{pix}
(4) t_{pix} is the pixel time defined as the period of the RxC input clock. The period of ODCK is equal to t_{pix} in 1-pixel/clock mode or $2t_{pix}$ when in 2-pixel/clock mode.
(5) Measured differentially at 50% crossing using ODCK output clock as trigger
(6) Rise and fall times measured as time between 20% and 80% of signal amplitude.
(7) Data and control signals are QE[23:0], QO[23:0], DE, HSYNC, VSYNC. and CTL[3:1].

Typical Characteristics

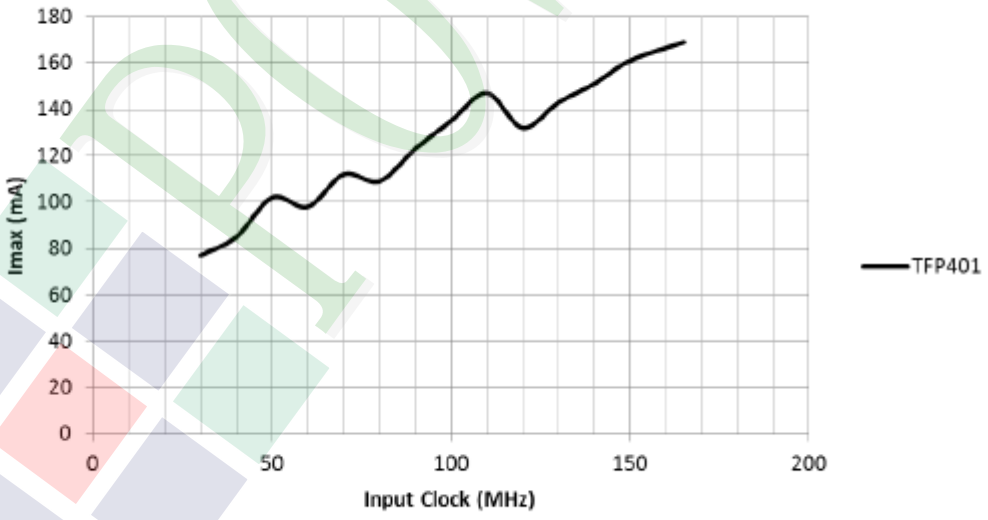


Figure 1. Imax vs Input Frequency

AC Electrical Characteristics (continued)

over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{su1}	Setup time, data and control signal to falling edge of ODCK	1 pixel/clock, PIXS = low, OCK_INV = low	1.8			ns
		2 pixel/clock, PIXS = high, $\overline{STAG}$ = high, OCK_INV = low	3.8			
		2 pixel and STAG, PIXS = high, $\overline{STAG}$ = low, OCK_INV = low	0.7			
t_{h1}	Hold time, data and control signal to falling edge of ODCK	1 pixel/clock, PIXS = low, OCK_INV = low	0.6			ns
		2 pixel and STAG, PIXS = high, $\overline{STAG}$ = low, OCK_INV = low	2.5			
		2 pixel/clock, PIXS = high, $\overline{STAG}$ = high, OCK_INV = low	2.9			
t_{su2}	Setup time, data and control signal to rising edge of ODCK	1 pixel/clock, PIXS = low, OCK_INV = high	2.1			ns
		2 pixel/clock, PIXS = high, $\overline{STAG}$ = high, OCK_INV = high	4			
		2 pixel and STAG, PIXS = high, $\overline{STAG}$ = low, OCK_INV = high	1.5			
t_{h2}	Hold time, data and control signal to rising edge of ODCK	1 pixel/clock, PIXS = low, OCK_INV = high	0.5			ns
		2 pixel and STAG, PIXS = high, $\overline{STAG}$ = low, OCK_INV = high	2.4			
		2 pixel/clock, PIXS = high, $\overline{STAG}$ = high, OCK_INV = high	2.1			
f_{ODCK}	ODCK frequency	PIX = low (1-PIX/CLK)	25		165	MHz
		PIX = high (2-PIX/CLK)	12.5		82.5	
	ODCK duty-cycle		40%	50%	60%	
$t_{pd(PDL)}$	Propagation delay time from $\overline{PD}$ low to Hi-Z outputs				9	ns
$t_{pd(PDOL)}$	Propagation delay time from $\overline{PDO}$ low to Hi-Z outputs				9	ns
$t_{t(HSC)}$	Transition time between DE transition to SCDT low(8)			1e6		t_{pix}
$t_{t(FSC)}$	Transition time between DE transition to SCDT high(8)			1600		t_{pix}
$t_{d(st)}$	Delay time, ODCK latching edge to QE[23:0] data output	$\overline{STAG}$ = low, PIXS = high		0.25		t_{pix}
$t_{WL(PDL\_MIN)}$	Minimum time $\overline{PD}$ is asserted low		9			ns
t_{DEL}	Minimum DE low		128			Tpixel

(8) Link active or inactive is determined by amount of time detected between DE transitions. SCDT indicates link activity.

2.3.2 (Parameter Measurement Information)

Parameter Measurement Information

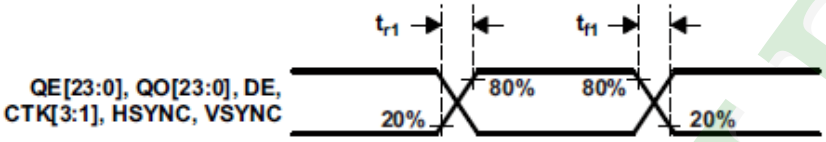


Figure 2. Rise and Fall Times of Data and Control Signals

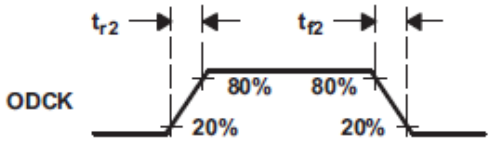


Figure 3. Rise and Fall Times of ODCK

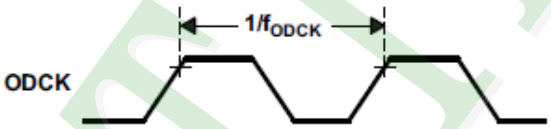


Figure 4. ODCK Frequency

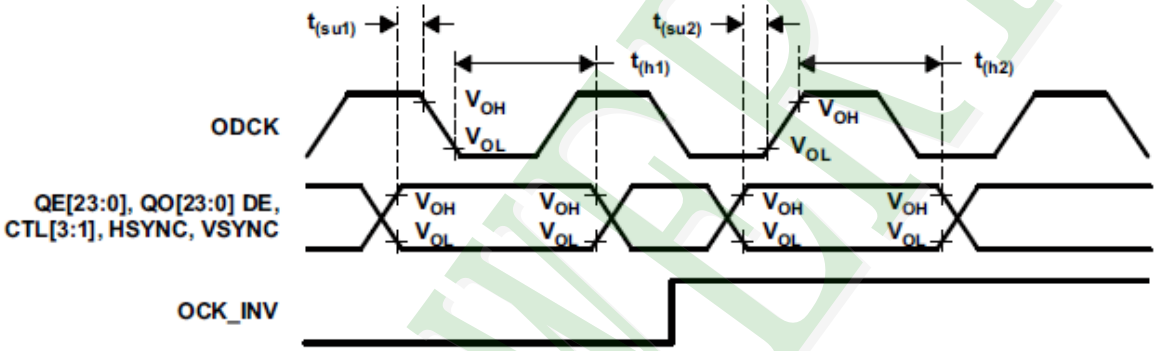


Figure 5. Data Setup and Hold Times to Rising and Falling Edges of ODCK

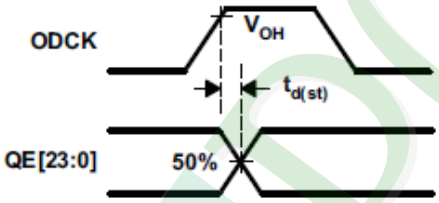


Figure 6. ODCK High to QE[23:0] Staggered Data Output

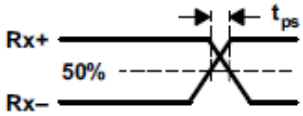


Figure 7. Analog Input Intra-Pair Differential Skew

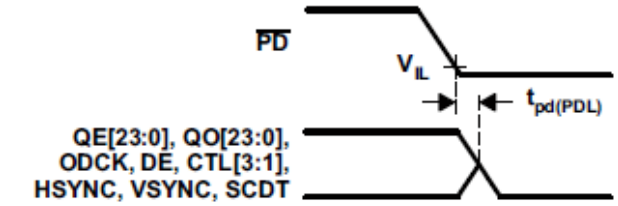


Figure 8. Delay From $\overline{PD}$ Low to Hi-Z Outputs

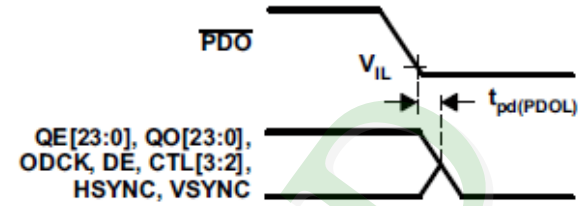


Figure 9. Delay From $\overline{PDO}$ Low to Hi-Z Outputs

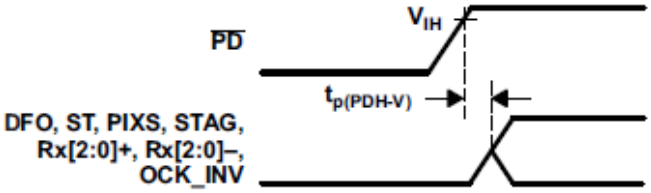


Figure 10. Delay From $\overline{PD}$ Low to High Before Inputs Are Active

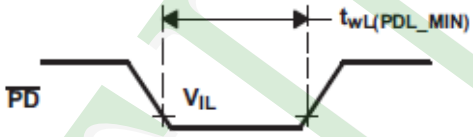


Figure 11. Minimum Time $\overline{PD}$ Low

Parameter Measurement Information (continued)

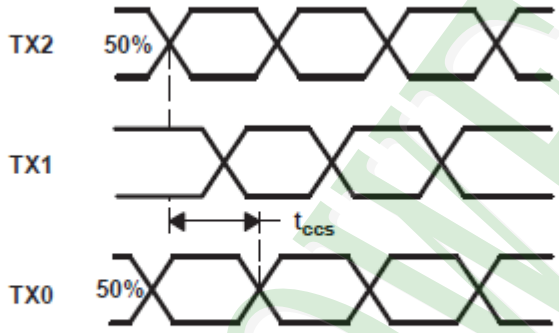


Figure 12. Analog Input Channel-to-Channel Skew

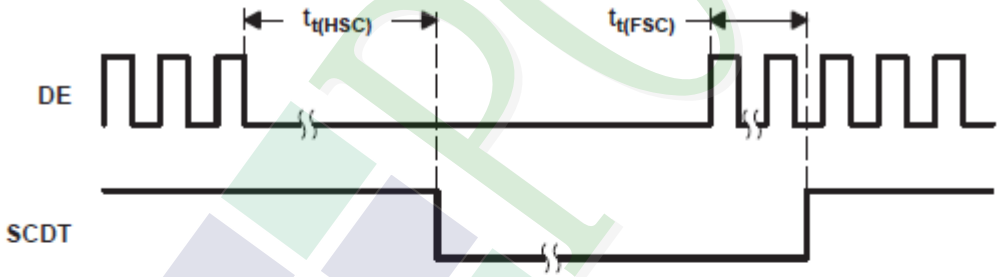


Figure 13. Time Between DE Transitions to SCDT Low and SCDT High

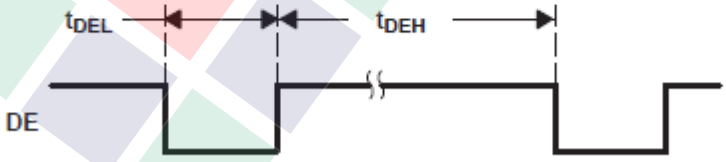
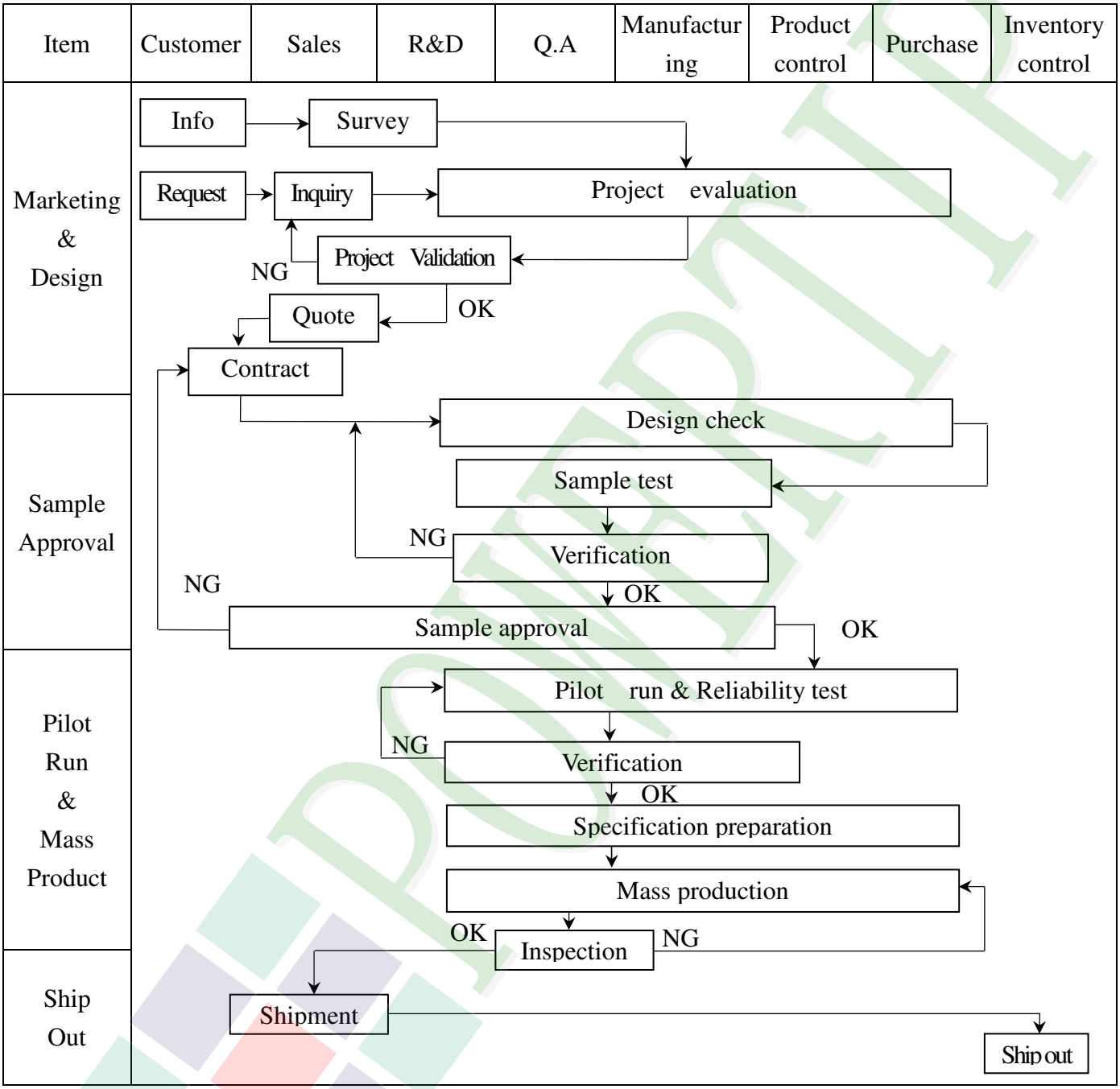
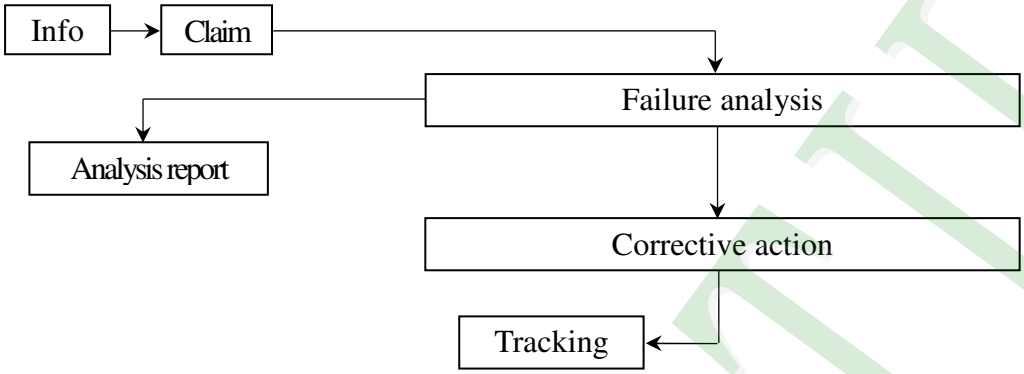


Figure 14. Minimum DE Low and Maximum DE High

3. QUALITY ASSURANCE SYSTEM

3.1 Quality Assurance Flow Chart



Item	Customer	Sales	R&D	Q.A	Manufactu ring	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

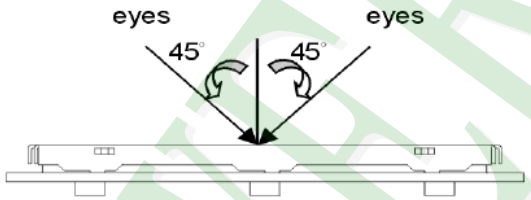
◆OUT Going Defect Level：Sampling.

◆Standard of the product appearance test：

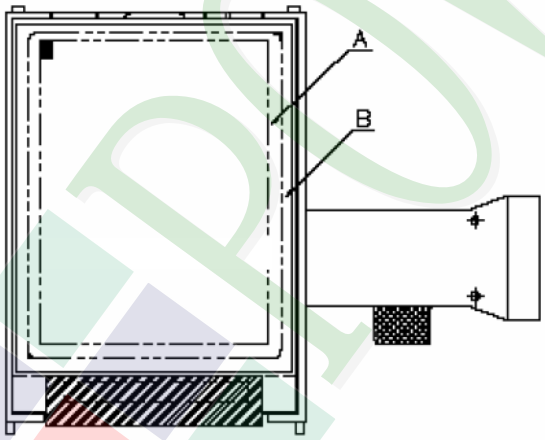
a. Manner of appearance test：

(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

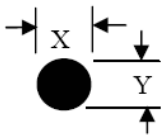
(4). Standard of inspection： (Unit：mm)

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

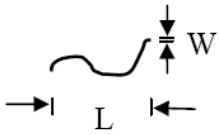
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td rowspan="3">01</td><td rowspan="3">Product condition</td><td>1.1 The part number is inconsistent with work order of production.</td><td>Major</td></tr>
<tr><td>1.2 Mixed product types.</td><td>Major</td></tr>
<tr><td>1.3 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)

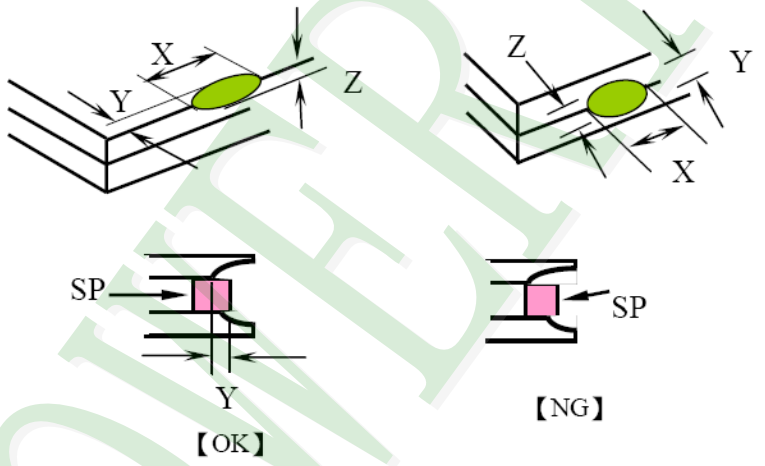
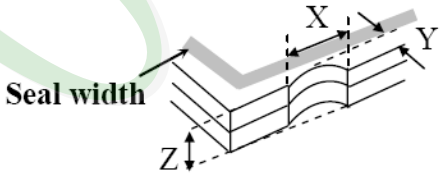
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td>06</td><td>Black or white dot、scratch、contamination

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)

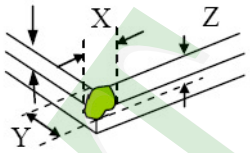
NO	Item	Criterion	Level
08	The crack of glass	Symbols : X : The length of crack Y : The width of crack. Z : The thickness of crack W : terminal length t : The thickness of glass a : LCD side length 8.1 General glass chip : 8.1.1 Chip on panel surface and crack between panels:   	Minor

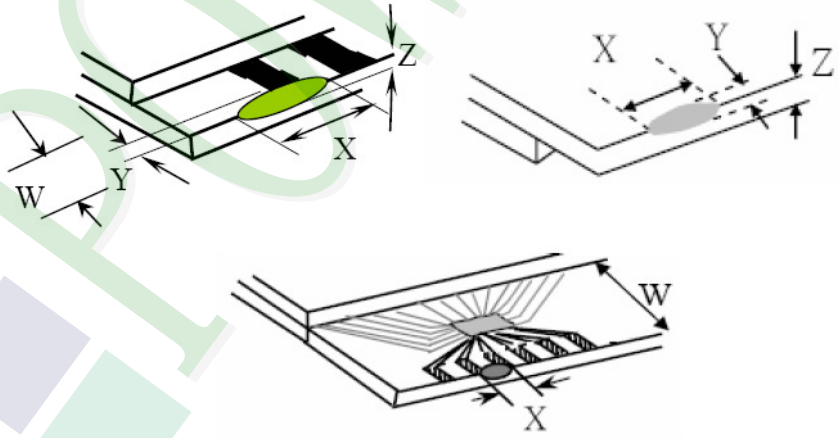
X	Y	Z
≦ a	Crack can't enter viewing area	≦1/2 t
≦ a	Crack can't exceed the half of SP width.	1/2 t < Z ≦2 t

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

8.1.2 Corner crack :


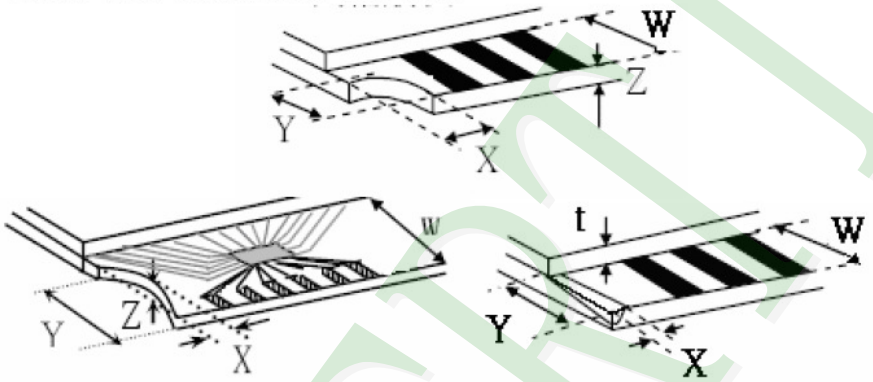
<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≦1/5 a</td><td>Crack can’t enter viewing area</td><td>Z ≦ 1/2 t</td></tr>
<tr><td>≦1/5 a</td><td>Crack can’t exceed the half of SP width.</td><td>1/2 t < Z ≦ 2 t</td></tr>
</table>
</td><td rowspan="2">Minor</td></tr>
<tr><td>
8.2 Protrusion over 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>

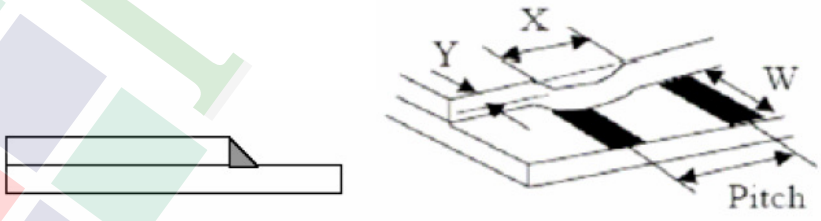
◆Specification For TFT-LCD Module 3.5″ ~10″ : (Ver.B01)

<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>

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 +/-
Contact Discharge:
Apply 250 V with 5 times
discharge for each polarity +/-</td></tr>
<tr><td>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>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</td></tr>
<tr><td>7</td><td>Drop Test
(Packaged)</td><td>
<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 1times</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.

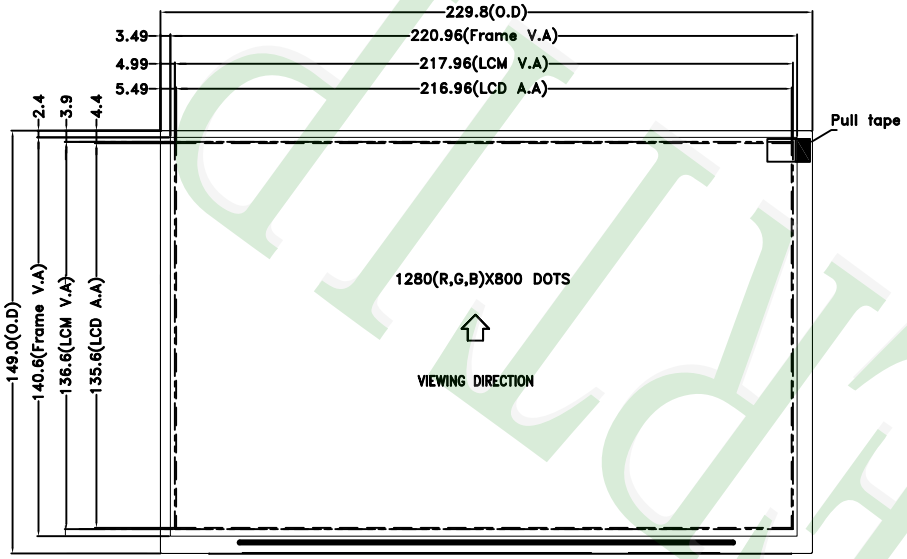
5.4 TERMS OF WARRANTY

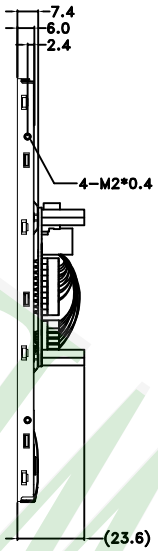
5.4.1 Applicable warrant period

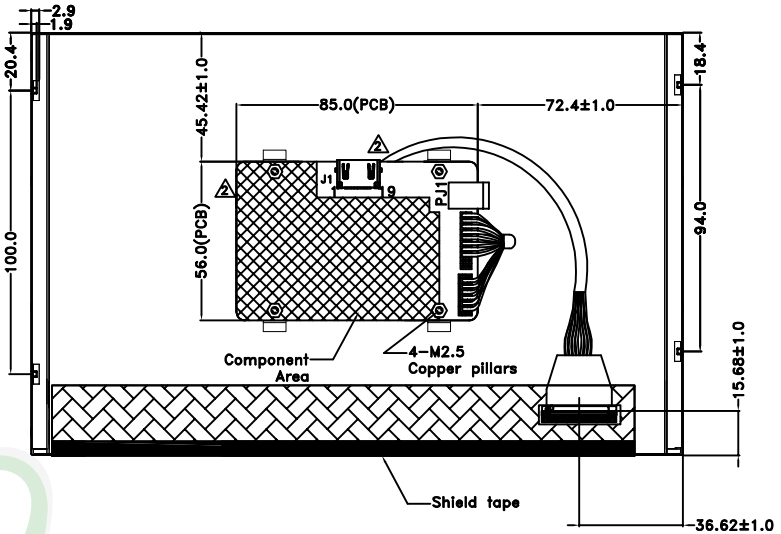
The period is within thirteen months since the date of shipping out under normal using and storage conditions.

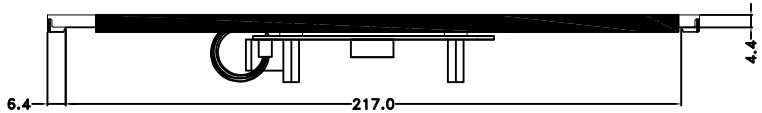
5.4.2 Unaccepted responsibility

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: TFT LCD
2. LCD DISPLAY: POSITIVE/TRANSMISSIVE
3. VIEW DIRECTION: 6 O'CLOCK
4. The tolerance unless classified ±0.3mm
5. Manufacturer/Type :Starconn/300E40-0010RA-G3
6. Mating Receptacle/Type (Reference) :111B40-1211TA-G3 OR EQUIVALENT.
7. PJ1 :KD-014-L(DC JACK2.0mm ROHS) OR EQUIVALENT.
8. J1 :ETC-HMAR51610U019S-3440N-7RM4-GP OR EQUIVALENT.

REV	REV BY	REVISER	DATE
007			
006			
005			
004			
003			
002	MODIFY DRAWING	Kevin	2017/04/18
001	NEW DRAWING	Kevin	2017/04/13

PART NO: PH128800T004-ZFA01

DRAWING NAME : LMD-PH128800T004-ZFA01

TITLE: LCD MODULE DRAWING

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

Design	Kevin	(3)	Surface		
Check	Stone	Unit	MM	Material	
Approve	Oliver	Scale	1:1	Thickness	
		Page	1/1	Quantity	

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

Ver.002

Documents NO.	PKG-PH128800T004-ZFA01

LCM包裝規格書
LCM Packaging Specifications (For Tray)

Approve	Check	Contact
Oliver	Stone	Kevin

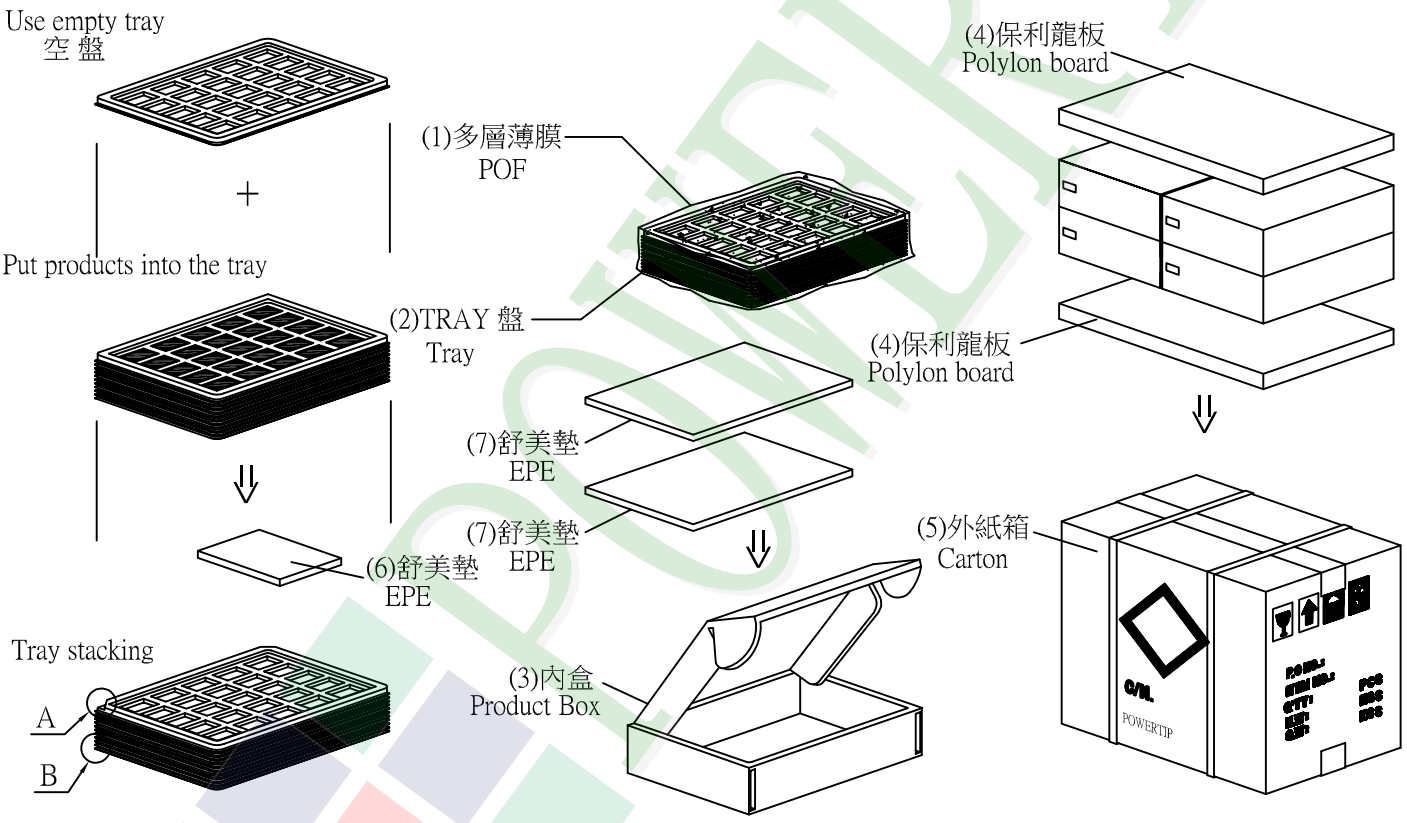
1.包裝材料規格表 (Packaging Material) : (per carton)

No.	Item	Model	Dimensions (mm)	1Pcs Weight	Quantity	Total Weight
1	成品 (LCD)	PH128800T004-ZFA01	229.8 X 149	0.2567	8	2.0536
2	多層薄膜(1)POF	OTFILM0BA03ABA	————	——	4	——
3	TRAY 盤 (2)Tray	TY00000000425	352 X 260 X 35.8	0.15	12	1.8
4	內盒(3)Product Box	BX38327211AABA	383 X 270 X 110	0.25	4	1.0
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	舒美墊(6)EPE	OTFOAMEP0001BA	333X 218 X 2.0	0.0032	4	0.0128
8	舒美墊(7)EPE	FOAM000000047	350 X 255 X 5	0.011	8	0.088
9						

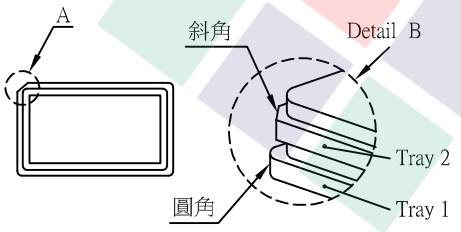
2.一 整箱總重量 (Total LCD Weight in carton) : 6.43 Kg±10%

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

(1)LCD quantity per box : no per tray	1	x no of tray	2	=	2
(2)Total LCD quantity in carton : quantity per box	2	x no of boxes	4	=	8

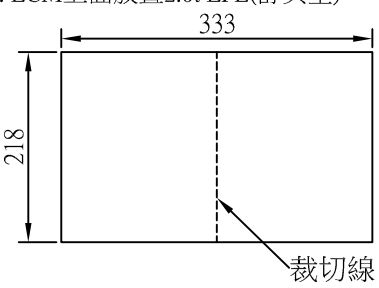


特 記 事 項 (REMARK)



4. 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.

5. LCM上面放置2.0t EPE(舒美墊)



POWERTIP TECH. CORP.