SPECIFICATION

PH128800T007-ZHC02

10.1" – WXGA – MIPI

Version: 00.3
Date: 05.03.2024

Note: This specification is subject to change without prior notice

History of Version

Date (mm / dd / yyyy)	Ver.	Edi.	Description	Page	Design by
10/16/2023	01	001	Preliminary.	-	Howard
12/26/2023	01	002	Frist Sample Modify Interface Pin Description Modify Dimension	- 12 Appendix	Howard
03/04/2024	01	003	Add Input Timing Table	16	Howard

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1. SPECIFICATIONS

1.1 Features

Item	Standard Value
Display Resolution	1280 *3 (RGB) * 800 Dots
LCD Type	Full Viewing Angle , Normally Black, Transmissive type
Screen size(inch)	10.1 inch
Color configuration	R.G.B. Vertical Stripe
Backlight Type	White LED B/L
Weight	480g
Interface	4-Lane MIPI
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	254.96 (W) * 173.6 (L) * 9.7(Max)(H)	mm

LCD panel

Item	Standard Value	Unit
Active Area	216.96 (W) * 135.6 (L)	mm

Note: For detailed information please refer to LCM drawing.

1.3 Absolute Maximum Ratings

Module

Item	Symbol	Condition	Min.	Max.	Unit	Remark
Logic Supply Voltage	V_{DD}	GND=0V	-0.3	+4.0	V	-
Logic Input Signal Voltage	V_{signal}	GND=0V	-0.3	+4.0	V	
Power Supply for Backlight Unit	LED_V_{CC}	LED_GND=0V	-0.3	+26.5	V	
Operating Temperature	T_{OP} (Ts)	Note 1	-20	+70	°C	
Storage Temperature	T_{ST} (Ta)	Note 2	-30	+80	°C	

The absolute maximum rating values of this product are not allowed to be exceeded at any time. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

Note 1: Ts is the temperature of panel's surface

Note 2: Ta is the ambient temperature of samples

1.4 DC Electrical Characteristics

GND = 0V, Ta = 25°C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Logic Supply Voltage	V_{DD}	GND=0V	3.0	3.3	3.6	V
Logic Current	I_{DD}	V_{DD} =3.3V	-	-	312	mA
Logic Power Consumption	PV_{DD}		-	-	1.123	W
Power Supply for Backlight Unit	LED_V_{CC}	LED_GND=0V	2.7	12.0	24.0	V
Power Current for Backlight Unit	ILED_VCC	LED_V_{CC} =12V		240	360	mA
Backlight Unit Power Consumption	PLED_V_{CC}		-	-	4.32	W
PWM Signal Voltage	VIH	LED_VCC =12V	1.6	-	-	V
	VIL		0	-	0.8	
LED Enable Voltage	VIH		1.6	-	-	
	VIL		0	-	0.8	
Input PWM Frequency	F_{PWM}	-	100	-	8K	Hz
Minimum PWM Dimming Duty Ratio	PWM	Dimming Freq. = 100Hz to 8kHz	1	-	-	%

1.5 Optical Characteristics

VDD=3.3V, Ta=25°C

Item	Symbol		Condition	Min.	Typ.	Max.	unit	
Response time	Tr+Tf		Ta = 25°C θX, θY = 0°	-	25	50	ms	Note 2
Viewing angle	Top	θY+	CR ≥ 10	-	80	-	Deg.	Note 4
	Bottom	θY-		-	80	-		
	Left	θX-		-	80	-		
	Right	θX+		-	80	-		
Contrast ratio		CR	Ta = 25°C θX , θY = 0°	800	1000	-		Note 3
Color of CIE Coordinate	White	X		0.27	0.32	0.37	-	Note1
		Y		0.30	0.35	0.40		
	Red	X		0.53	0.58	0.63		
		Y		0.30	0.35	0.40		
	Green	X		0.30	0.35	0.40		
		Y		0.54	0.59	0.64		
	Blue	X		0.08	0.13	0.18		
		Y		0.05	0.10	0.15		
Average Brightness Pattern=white display (With LCD)*1	IF		LED_V_{CC}=12.0V PWM=”High” (Duty=100%)	400	500	-	cd/m^2	Note1
Uniformity (With LCD)*2	△B		LED_V_{CC} =12.0V PWM=”High” (Duty=100%)	70	-	-	%	Note1

Note 1:

*1: △B=B(min) / B(max) * 100%

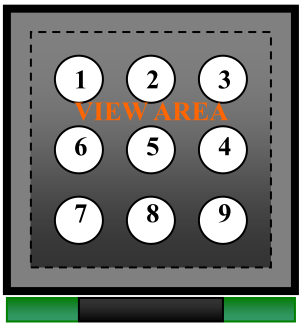
*2: Measurement Condition for Optical Characteristics:

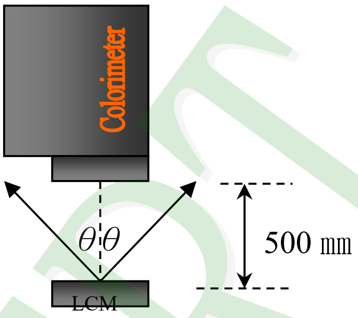
a: Environment: 25℃±5℃ / 60±20%R.H, no wind, dark room below 10 Lux at typical lamp current and typical operating frequency

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

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

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





Colorimeter=BM-7 fast

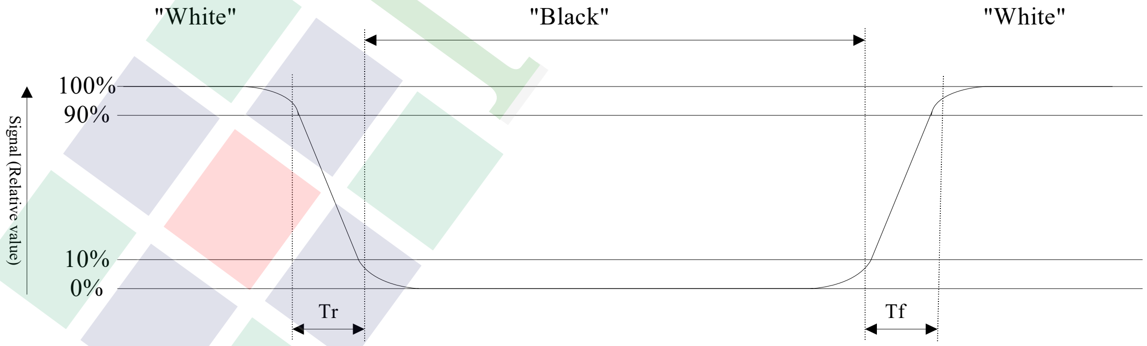
To be measured at the center area of panel with a viewing cone of 1° by Topcon luminance meter BM-7, after 10 minutes operation (module)

Note 2: Definition of response time:

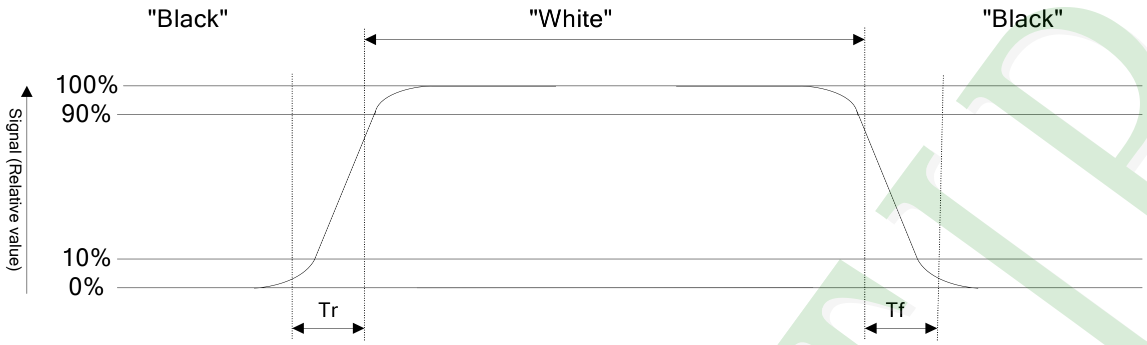
The output signals of photo detector are measured when the input signals are changed from “black” to “white” (falling time) and from “white” to “black” (rising time), respectively. The response time is defined as the time interval between the 10% and 90% of Amplitudes.

Refer to figure as below:

Normally White



Normally Black



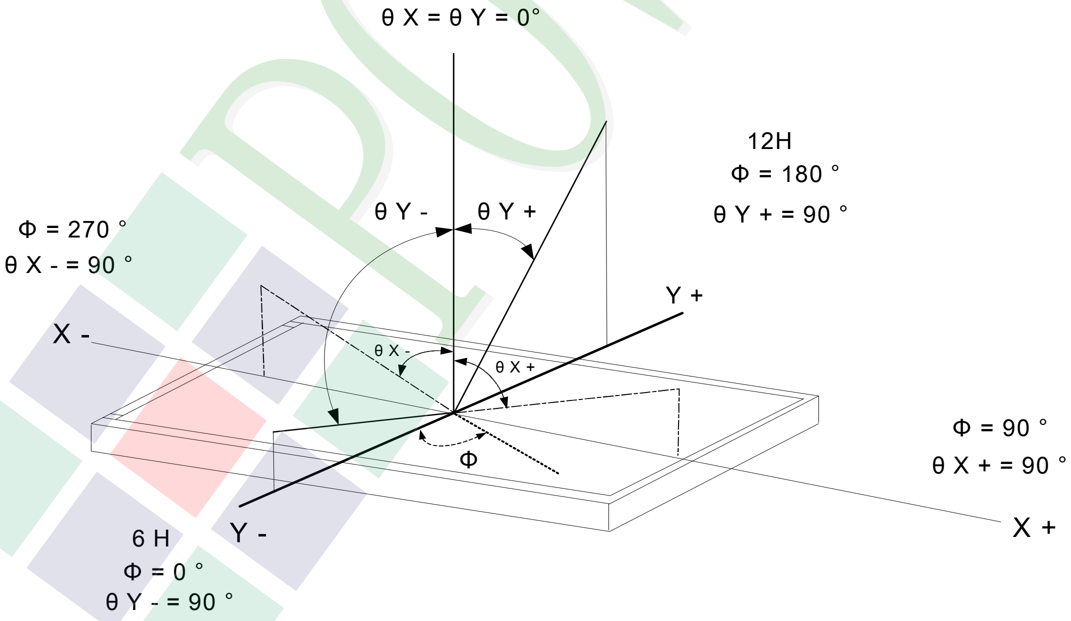
Note 3: Definition of contrast ratio:

Contrast ratio is calculated with the following formula

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

Note 4: Definition of viewing angle:

Refer to figure as below:


θ X = θ Y = 0°
12H
Φ = 180 °
θ Y + = 90 °
Φ = 270 °
θ X - = 90 °
θ Y -
θ Y +
Y +
X -
θ X -
θ X +
Φ
Φ = 90 °
θ X + = 90 °
X +
Y -
6 H
Φ = 0 °
θ Y - = 90 °

1.6 Backlight Characteristics

Maximum Ratings

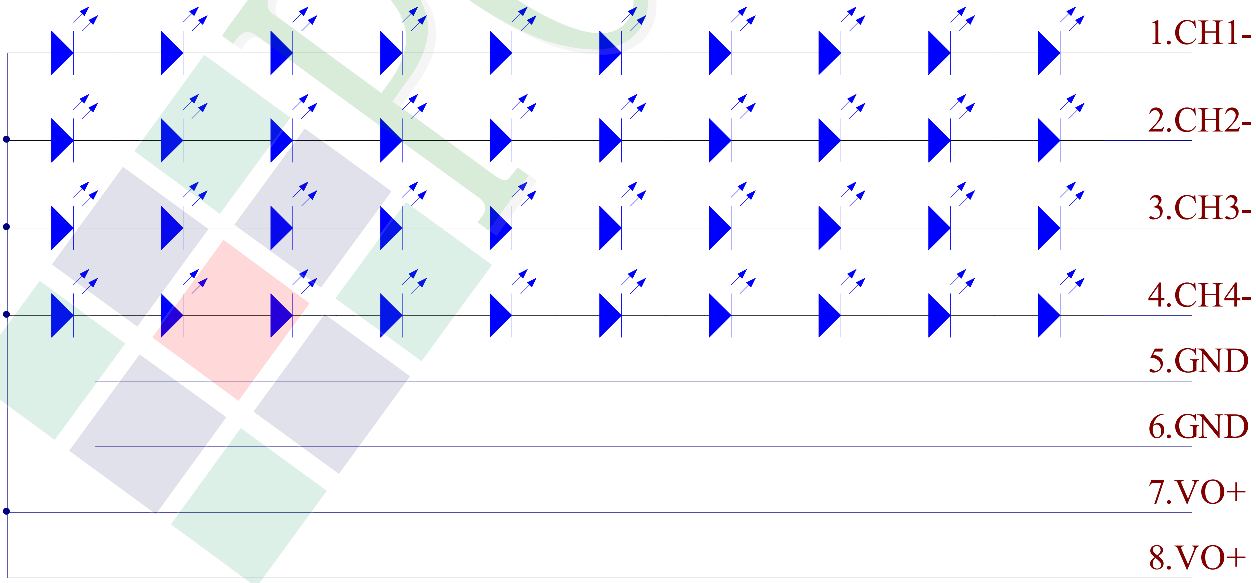
Item	Symbol	Min.	Max.	Unit	Remark
LED Forward Current	I_F	-	120	mA	
LED Reverse Voltage	V_R	-	10	V	
Power Dissipation	PD		5040	mW	

Electrical / Optical Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
LED Voltage	V_L	28	30	32.0	V	Note1
LED Current	I_L	-	20*4	-	mA	-
LED life time	-	50,000	-	-	H_r	Note2

Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25℃ and I_L =20*4 mA

Note 2: The "LED life time" is defined as the module brightness decrease to 50% original brightness at Ta=25℃ and I_L =20*4 mA. The LED life time could be decreased if operating I_L is larger than 20*4 mA



1.7 Touch Panel Unit Characteristics

Features

Item	Standard Value
Touch Panel Size	10.1”
Touch type	Projective capacitive touch panel
Input Method	Finger
Support Operation	5 Points touch
Output Interface	I2C
IC	FT5726

I^2C Address

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
0	1	1	1	0	0	0	R/W

R/W: 1 : Read 0 : Write

Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	Refer to drawing	-

Absolute Maximum Ratings

Item	Symbol	Condition	Min.	Max.	unit
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(I^2C)	VI2C	-	-	3.3	-	V

Optical Characteristics

Item	Standard Value	unit
Total light transmittance	85% or more	-

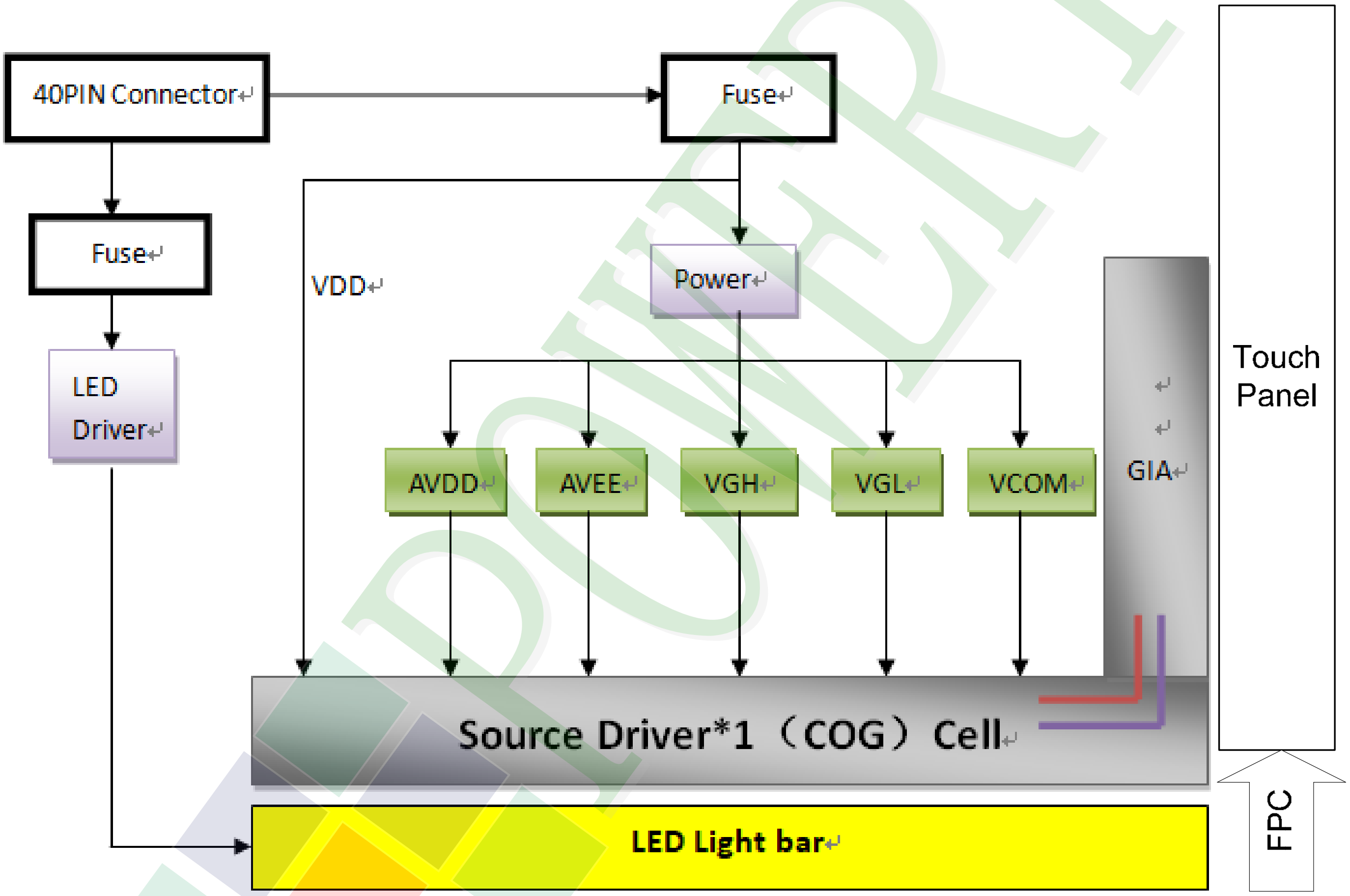
2. Module Structure

2.1 Counter Drawing

2.1.1 LCM Mechanical Diagram

* See Appendix

2.1.2 Block Diagram


40PIN Connector
Fuse
Fuse
LED Driver
VDD
Power
AVDD
AVEE
VGH
VGL
VCOM
GIA
Touch Panel
Source Driver*1（COG）Cell
LED Light bar
FPC

2.2 Interface Pin Description

TFT LCM Interface

Pin#	Name	Description
1	NC	No Connection.
2	VDD	Power Supply.(+3.3V)
3	VDD	Power Supply. (+3.3V)
4	NC	No Connection.
5	NC	No Connection.
6	NC	No Connection.
7	NC	No Connection.
8	MIPI3N	-MIPI Differential Data Input.
9	MIPI3P	+MIPI Differential Data Input.
10	GND	Power ground.
11	MIPI2N	-MIPI Differential Data Input.
12	MIPI2P	+MIPI Differential Data Input.
13	GND	Power ground.
14	MIPICLKN	-MIPIDifferential Clock Input.
15	MIPICLKP	+MIPI Differential Clock Input.
16	GND	Power ground.
17	MIPI1N	-MIPI Differential Data Input.
18	MIPI1P	+MIPI Differential Data Input.
19	GND	Power ground.
20	MIPI0N	-MIPI Differential Data Input.
21	MIPI0P	+MIPI Differential Data Input.
22	GND	Power 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 Backlight Diver.
28	LED_EN	Backlight Enable Pin.
29	NC	No Connection.

Pin#	Name	Description
30	NC	No Connection.
31	LED_VCC	Power Supply for Backlight Diver.(+12V)
32	LED_VCC	Power Supply for Backlight Diver. (+12V)
33	LED_VCC	Power Supply for Backlight Diver. (+12V)
34	NC	No Connection.
35	BIST	Self Test Enable. When it is not used, please don't connect to GND, connecting to Normal High(3.3V) is recommended
36	NC	No Connection.
37	NC	No Connection.
38	NC	No Connection.
39	NC	No Connection.
40	NC	No Connection.

Capacitive Touch Panel(CTP) Interface

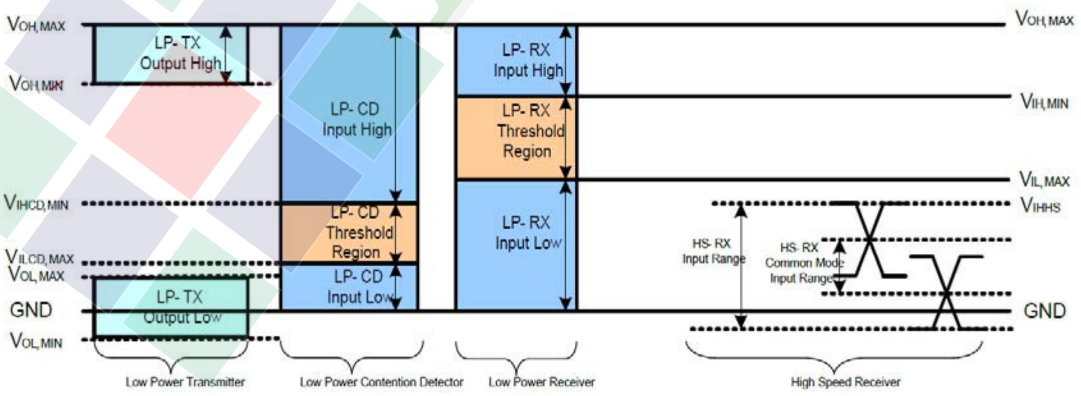
CN1

Pin No.	Symbol	Function
1	GND	Ground.
2	I^2C_SDA	I^2C Data
3	I^2C_SCL	I^2C Clock
4	I^2C_INT	Active Low
5	I^2C_RST	Active low global reset signal input.
6	VI2C	Power Supply Voltage (3.3V)

2.3 MIPI Characteristics

2.3.1 MIPI DC electrical characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
MIPI Characteristics for High Speed Receiver					
Single-ended input low voltage	VILHS	-40	-	-	mV
Single-ended input high voltage	VIHHS	-	-	460	mV
Common-mode voltage	VCMRXDC	70	-	330	mV
Differential input impedance	ZID	80	100	120	ohm
HS transmit differential voltage(VOD=VDP-VDN)	|VOD|	100	200	250	V
MIPI Characteristics for Low Power Mode					
Pad signal voltage range	VI	-50		1350	mV
Ground shift	VGNDSH	-50	-	50	mV
Logic 0 input threshold	VIL	0	-	550	mV
Logic 1 input threshold	VIH	1000	-	1350	mV
Input hysteresis	VHYST	25	-	-	mV
Output low level	VOL	-50	-	50	mV
Output high level	VOH	1.1	1.2	1.3	V
Output impedance of Low Power Transmitter	ZOLP	110	-	-	ohm
Logic 0 contention threshold	VILCD,MAX	-	-	200	mV
Logic 1 contention threshold	VIHCD,MIN	450	-	-	mV

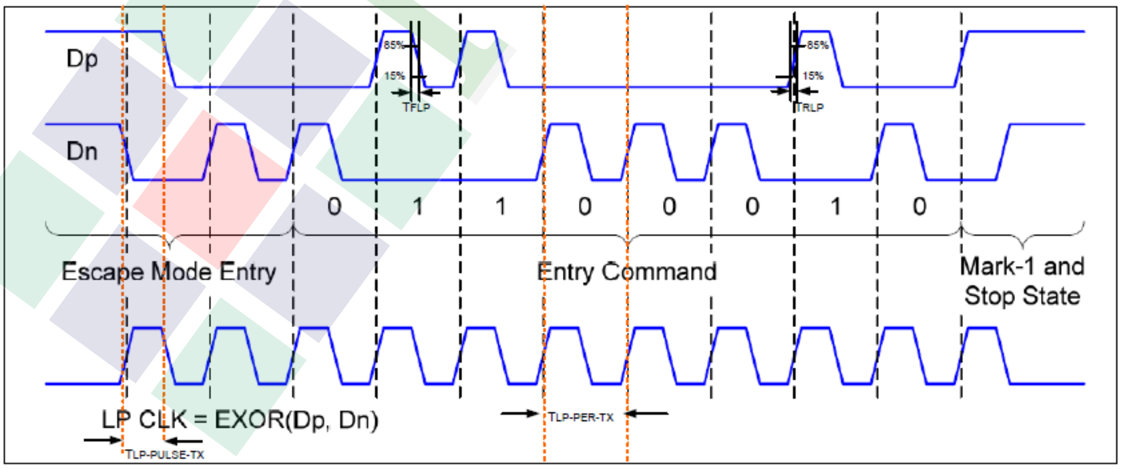

VOH,MAX
VOH,MIN
VIHCD,MIN
VILCD,MAX
VOL,MAX
GND
VOL,MIN
LP-TX Output High
LP-TX Output Low
LP-CD Input High
LP-CD Threshold Region
LP-CD Input Low
LP-RX Input High
LP-RX Threshold Region
LP-RX Input Low
HS-RX Input Range
HS-RX Common Mode Input Range
VOH,MAX
VIH,MIN
VIL,MAX
VIHHS
GND
Low Power Transmitter
Low Power Contention Detector
Low Power Receiver
High Speed Receiver

MIPI signaling and contention voltage levels

2.3.2 LP Transmitter AC Specification

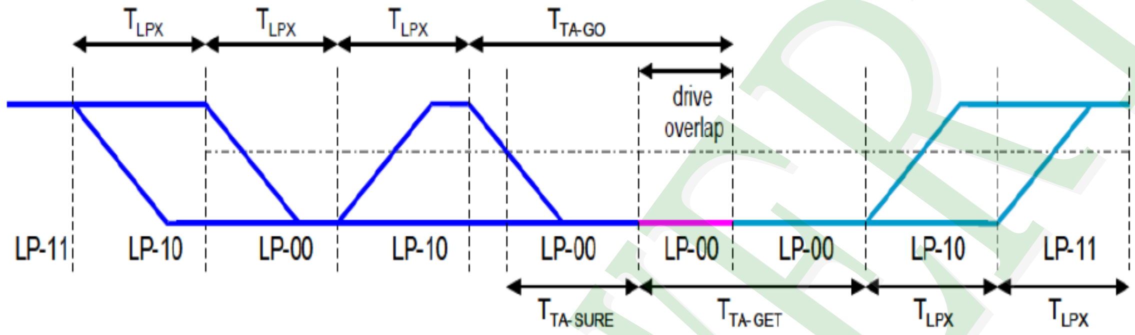
Parameter		Symbol	Min.	Typ.	Max.	Unit
15%~85% rising time and falling time		TRLP /TFLP	-	-	25	ns
30%~85% rising time and falling time		TREOT	-	-	35	ns
Pulse width of LP exclusive-OR clock	First LP EXOR clock pulse after STOP state or Last pulse before stop state	TLP-PULSE-TX	50			ns
	All other pulses		50			ns
Period of the LP EXOR clock(LP Speed)		TLP-PER-TX	100	200		ns
Slew Rate @CLOAD =0pF		δ V/δ tSR	20		500	mV/ns
Slew Rate @CLOAD =5pF			20		200	mV/ns
Slew Rate @CLOAD =20pF			20		150	mV/ns
Slew Rate @CLOAD =70pF			20		100	mV/ns
Load Capacitance		TRLP			70	pF

.


Dp
85%
15%
TFLP
85%
15%
TRLP
Dn
0
1
1
0
0
0
1
0
Escape Mode Entry
Entry Command
Mark-1 and Stop State
LP CLK = EXOR(Dp, Dn)
TLP-PER-TX
TLP-PULSE-TX

2.3.3 Turnaround Procedure Operation Timing Parameters

Parameter	Symbol	Min.	Typ.	Max.	Unit
Length of any Low-Power state period	TLPX	50	-	-	ns
Time-out before new TX side start driving	TTA-Sure	TLPX	-	2TLPX	ns
Time to drive LP-00 by new TX	TTA-GET	-	5TLPX	-	ns
Time to drive LP-00 after Turnaround Request	TTA-GO	-	4TLPX	-	ns


T_{LPX}
T_{LPX}
T_{LPX}
$T_{TA\text{-}GO}$
drive overlap
LP-11
LP-10
LP-00
LP-10
LP-00
LP-00
LP-00
LP-10
LP-11
$T_{TA\text{-}SURE}$
$T_{TA\text{-}GET}$
T_{LPX}
T_{LPX}

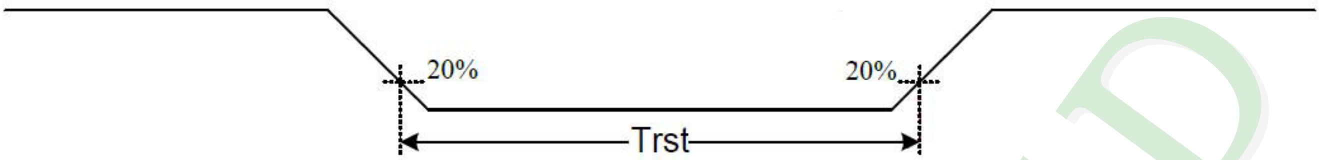
2.3.4 Input Timing Table

Parameter	Symbol	Min.	Typ.	Max.	Unit
LVDS Clock Frequency	1/TC	66.3	72.4	78.9	MHz
Horizontal display area	tHD		1280		Tc
HSYNC pulse width	tHPW	2		40	Tc
HSYNC back porch(with pulse width)	tHBP	88	88	88	Tc
HSYNC front porcht	tHFP	12	72	132	Tc
Vertical display area	tVD		800		TH
VSYNC pulse width	tVPW	2	-	20	TH
VSYNC back porch(with pulse width)	tBPW	23	23	23	TH
VSYNC front porch	tVFP	1	15	49	TH

Note1：HT * VT *Frame Frequency ≤ (78.9) MHz

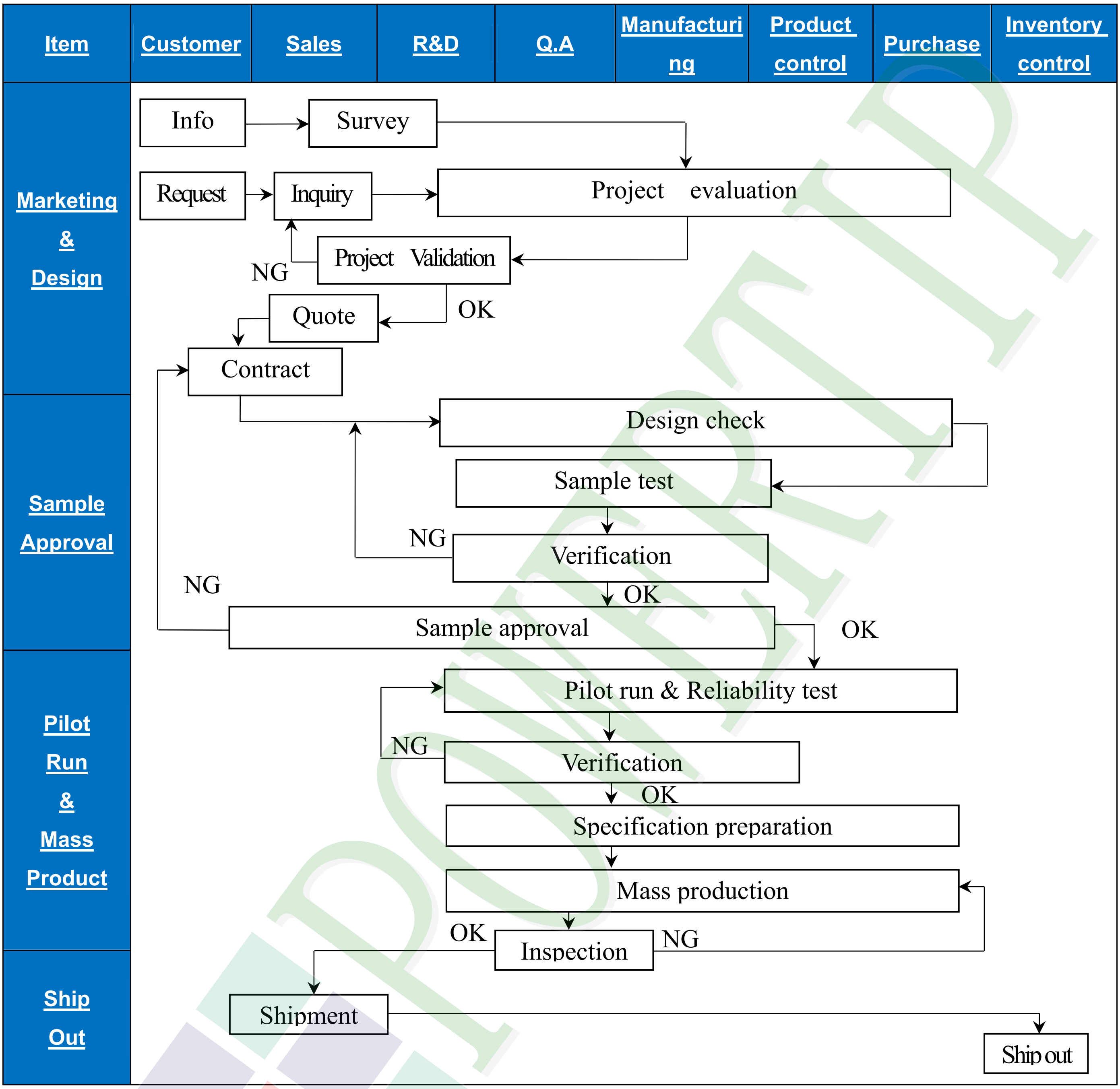
Note2: All reliabilities are specified for timing specification based on refresh rate of 60Hz.

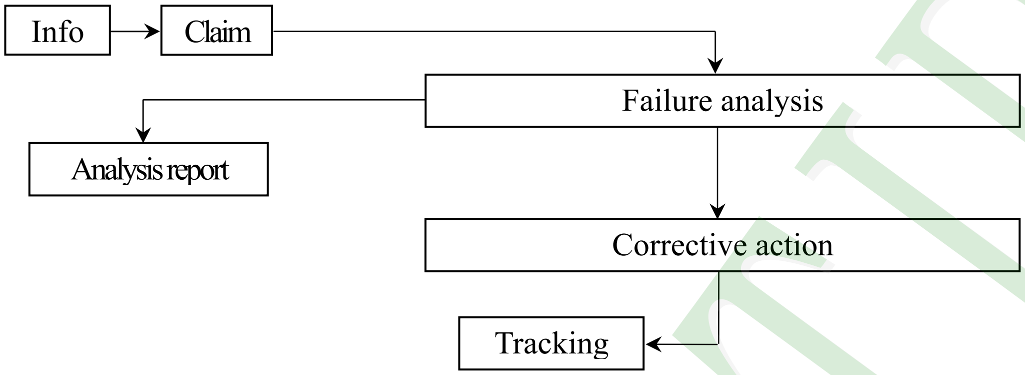
2.3.5 Timing requirements for RESETB



Parameter	Symbol	Conditions	Spec.			Unit
			Min.	Typ.	Max.	
Reset low pulse width	Trst		20	-	-	us

3.1 Quality Assurance Flow Chart


Item
Customer
Sales
R&D
Q.A
Manufacturing
Product control
Purchase
Inventory control
Marketing & Design
Sample Approval
Pilot Run & Mass Product
Ship Out
Info
Survey
Request
Inquiry
Project evaluation
NG
Project Validation
OK
Quote
Contract
Design check
Sample test
NG
Verification
NG
OK
Sample approval
OK
Pilot run & Reliability test
NG
Verification
OK
Specification preparation
Mass production
OK
Inspection
NG
Shipment
Ship out

<table>
<tr><th>Item</th><th>Customer</th><th>Sales</th><th>R&D</th><th>Q.A</th><th>Manufacturing</th><th>Product control</th><th>Purchase</th><th>Inventory control</th></tr>
<tr><td>Sales Service</td><td colspan="8">

Info
Claim
Failure analysis
Analysis report
Corrective action
Tracking

</td></tr>
<tr><td>Q.A Activity</td><td colspan="8">1. ISO 9001 Maintenance Activities
2. Process improvement proposal
3. Equipment calibration
4. Education And Training Activities
5. Standardization Management</td></tr>
</table>

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

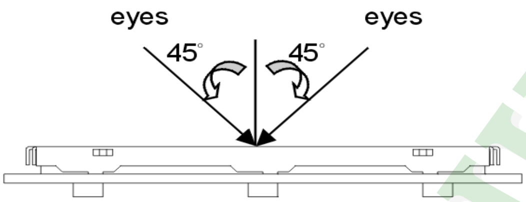
◆OUT Going Defect Level: Sampling

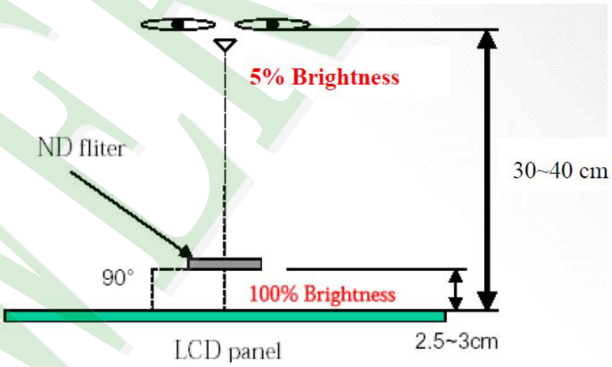
◆Standard of the product appearance test:

a. Manner of appearance test:

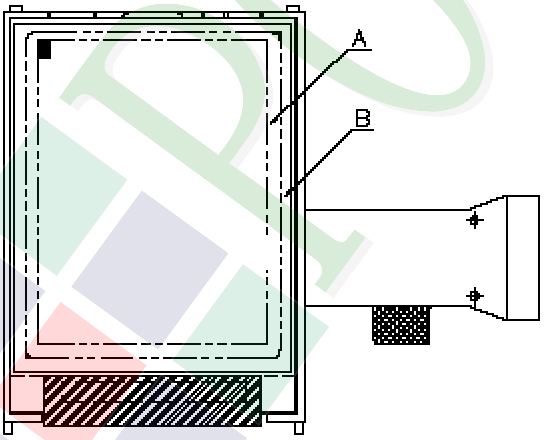
(1). The test best be under 20W×2 fluorescent light(about 300lux ～500lux) and distance of view must be at 30~40 cm.

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


eyes
eyes
45°
45°


5% Brightness
ND fliter
30~40 cm
90°
100% Brightness
LCD panel
2.5~3cm

(3). Definition of area.



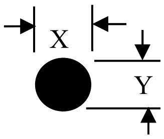
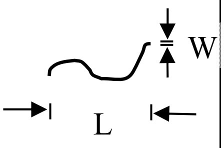
A area: viewing area

B area: Outside of viewing area

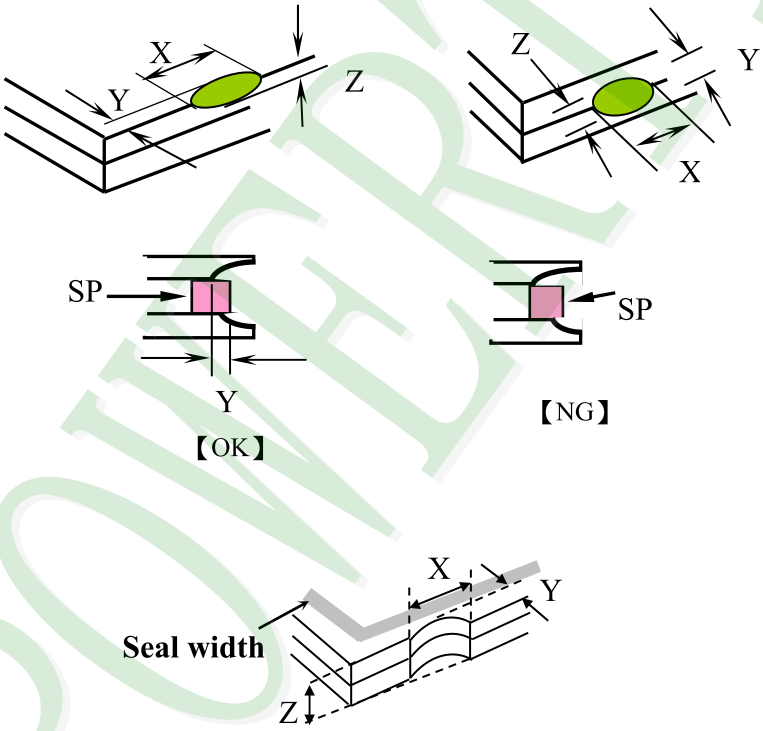
(4). Standard of inspection： (Unit：mm)

◆Specification For TFT-LCD Module 3.5"~15": (Ver.B01)

<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="6">04</td><td rowspan="6">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>4.6 Mura cannot be seen through 5% ND filter at 50% Gray, should be judged by the viewing angle of 90 degree.</td><td>Minor</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.
5.4 Bright dot : Dots appear bright and unchanged in visible with 5% ND filter is defined.
5.5 Tiny bright dot: bright dot area ≦1/2 dot.
a. Dots appear bright and unchanged in visible with 5% ND filter is defined defect and is judged in accordance with 6.1
b. Dots invisible with 5% ND Filter is Ignored
</td><td>Minor</td></tr>
</table>

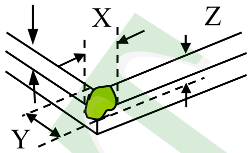
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td>06</td><td>Black or white Dot, scratch, contamination
Round type

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">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 ≦ 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>
<tr><td rowspan="4">9" to 15"</td><td>---</td><td>W ≦ 0.05</td><td>Ignore</td><td rowspan="4">Ignore</td></tr>
<tr><td>L ≦ 10.0</td><td>0.05 ＜W ≦ 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></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>

<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

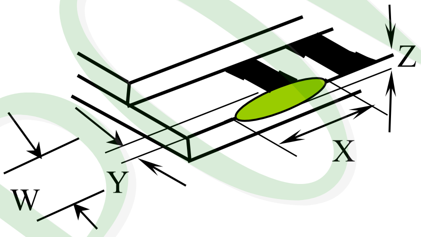
8.1 General glass chip:
8.1.1 Chip on panel surface and crack between panels:


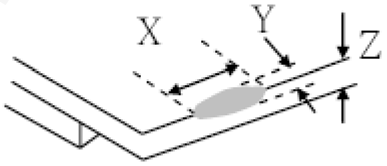
<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≦≦ a</td><td>Crack can’t enter viewing area</td><td>≦1/2 t</td></tr>
<tr><td>≦a</td><td>Crack can’t exceed the half of SP width.</td><td>1/2 t ＜ Z ≦2 t</td></tr>
</table>
</td><td>Minor</td></tr>
</table>

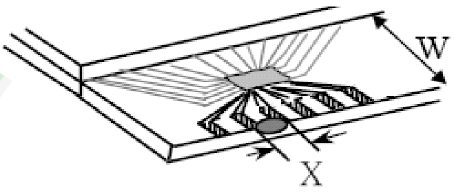
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td>08</td><td>The crack of glass</td><td>
Symbols：
X: The length of crack
Z: The thickness of crack
t: The thickness of glass
Y: The width of crack.
W: terminal length
a: LCD side length

8.1.2 Corner crack:


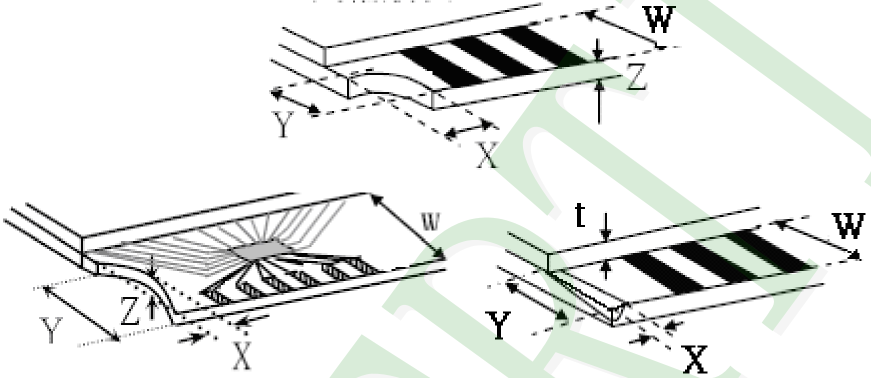
<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≦1/5 a</td><td>Crack can’t enter viewing area</td><td>Z ≦ 1/2 t</td></tr>
<tr><td>≦1/5 a</td><td>Crack can’t exceed the half of SP width.</td><td>1/2 t ＜ Z ≦ 2 t</td></tr>
</table>

8.2 Protrusion over terminal:
8.2.1 Chip on electrode pad:


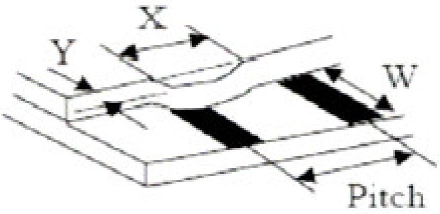


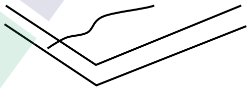


<table>
<tr><th></th><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>Front</td><td>≦ a</td><td>≦ 1/2 W</td><td>≦ t</td></tr>
<tr><td>Back</td><td>≦ a</td><td>≦ W</td><td>≦ 1/2 t</td></tr>
</table>
</td><td>Minor</td></tr>
</table>

<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>
8.2.4 Cracking:

Not Allowed
</td><td>Minor</td></tr>
</table>

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: no wrong parts, missing parts or excess parts.	Major
		10.4 Product packaging must the same as specified on packaging specification sheet.	Minor
		10.5 The folding and peeled off in polarizer are not acceptable.	Minor
		10.6 The PCB or FPC between B/L assembled distance (PCB or FPC) is ≦1.5 mm.	Minor

4. RELIABILITY TEST

4.1 Reliability Test Condition (Ver.B01)

<table>
<tr><th>NO.</th><th>TEST ITEM</th><th colspan="2">TEST CONDITION</th></tr>
<tr><td>1</td><td>High Temperature Storage Test</td><td colspan="2">Keep in 80 ±5℃ 240 hrs</td></tr>
<tr><td>2</td><td>Low Temperature Storage Test</td><td colspan="2">Keep in -30 ±5℃ 240 hrs</td></tr>
<tr><td>3</td><td>High Temperature / High Humidity Storage Test</td><td colspan="2">Keep in 60 ℃ / 90% R.H duration for 240 hrs
(Excluding the polarizer)</td></tr>
<tr><td>4</td><td>Temperature Cycling Storage Test</td><td colspan="2">-30℃ → +25℃ → 80℃ → +25℃
(30mins) (5mins) (30mins) (5mins)
← 20 Cycle →</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">ESD Test</td><td>Air Discharge:
Apply 2 KV with 5 times Discharge for each polarity +/-</td><td>Contact Discharge:
Apply 250 V with 5 times discharge for each polarity +/-</td></tr>
<tr><td colspan="2">1. Temperature ambiance: 15℃～35℃
2. Humidity relative: 30%～60%
3. Energy Storage Capacitance(Cs+Cd): 150pF±10%
4. Discharge Resistance(Rd): 330Ω±10%
5. Discharge, mode of operation:
Single Discharge (time between successive discharges at least 1 sec) (Tolerance if the output voltage indication: ±5%)</td></tr>
<tr><td>6</td><td>Vibration Test (Packaged)</td><td colspan="2">1. Sine wave 10～55 Hz frequency (1 min/sweep)
2. The amplitude of vibration: 1.5 mm
3. Each direction (X, Y, Z) duration for 2 hrs</td></tr>
<tr><td>7</td><td>Drop Test (Packaged)</td><td colspan="2"><table>
<tr><th>Packing Weight (Kg)</th><th>Drop Height (cm)</th></tr>
<tr><td>0 ~ 45.4</td><td>122</td></tr>
<tr><td>45.4 ~ 90.8</td><td>76</td></tr>
<tr><td>90.8 ~ 454</td><td>61</td></tr>
<tr><td>Over 454</td><td>46</td></tr>
</table>
Drop Direction :※1 corner / 3 edges / 6 sides each 1time</td></tr>
</table>

◎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°C
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 ± 10°C and 3-5 sec.

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

5.2.10 Caution!(LCM products with Capacitive Touch Panel)

Strong EMI-sources such as switch-mode power supplies (SMPS) can lead to touch malfunction (e.g. ghost-touches).

Therefore, the touch needs to be thoroughly tested inside the target application.

5.2.11 CAUTION: Continuously displaying same static image will result in high possibility of image sticking/image burn-in effect due to TFT panel characteristic.

5.2.12 Double-sided tape designed to be attach with the customer's mechanical device, please follow up the rules and regulations published by the original manufacturer of double-sided tape for the attachment operation.

5.3 STORAGE

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

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

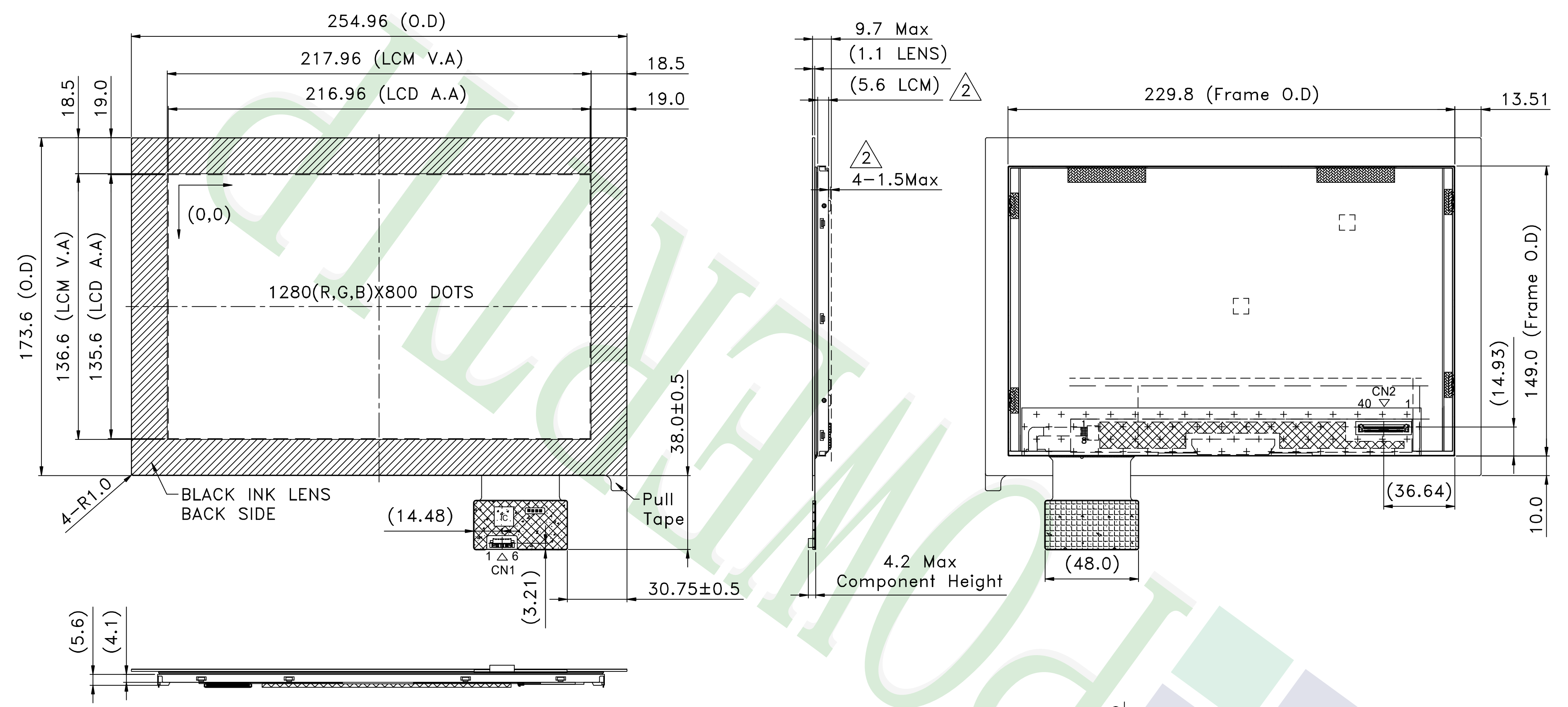
5.3.3 Do not crush, shake, or jolt the module.

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
1
2
3
4
5
6
254.96 (O.D)
217.96 (LCM V.A)
216.96 (LCD A.A)
18.5
19.0
18.5
19.0
173.6 (O.D)
136.6 (LCM V.A)
135.6 (LCD A.A)
(0,0)
1280(R,G,B)X800 DOTS
38.0±0.5
4-R1.0
BLACK INK LENS BACK SIDE
(14.48)
1 △ 6
CN1
Pull Tape
(3.21)
30.75±0.5
(5.6)
(4.1)
9.7 Max
(1.1 LENS)
(5.6 LCM) 2
2
4-1.5Max
4.2 Max
Component Height
229.8 (Frame O.D)
13.51
(14.93)
149.0 (Frame O.D)
CN2
40 ▽ 1
(36.64)
(48.0)
10.0

NOTES:

1.LCD TYPE: TFT

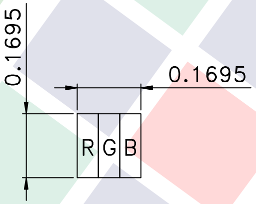
2.LCD DISPLAY: Normally Black/Transmissive

3.The tolerance unless classified ±0.3mm

4. ⊠ Component Area; ░ Insulating Tape; ▩ Shading tape; ▢ :Kapton tape;

5.CN1 connector : CviLux CI4406M1H00 (1.25pitch ; 6pin) or compatible

6.CN2 connector : Starconn 300E40-0010RA-G3 (0.5pitch ; 40pin) or compatible


0.1695
0.1695
R G B

Detail Dots
Scale 150X

REV	REV BY	REVISER	DATE
007			
006			
005			
004			
003			
002	Modify Dimension	Clare	2023/12/26
001	NEW DRAWING	Clare	2023/10/13

PART NO:
PH128800T007-ZFC01

DRAWING NAME :
LMD-PH128800T007-ZFC01

TITLE:
LCD MODULE DRAWING

久 正 光 電 股 份 有 限 公 司
POWERTIP TECHNOLOGY CORPORATION

Design	Clare	(3)		Surface	
Check	Tina	Unit	MM	Material	
		Scale	1:1	Thickness	
Approve	Bright	Page	1/1	Quantity	

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

Ver.001

Documents NO.	PKG-PH128800T007-ZFC01

Packaging Specifications

Approve	Check	Contact
Bright	Tina	Clare

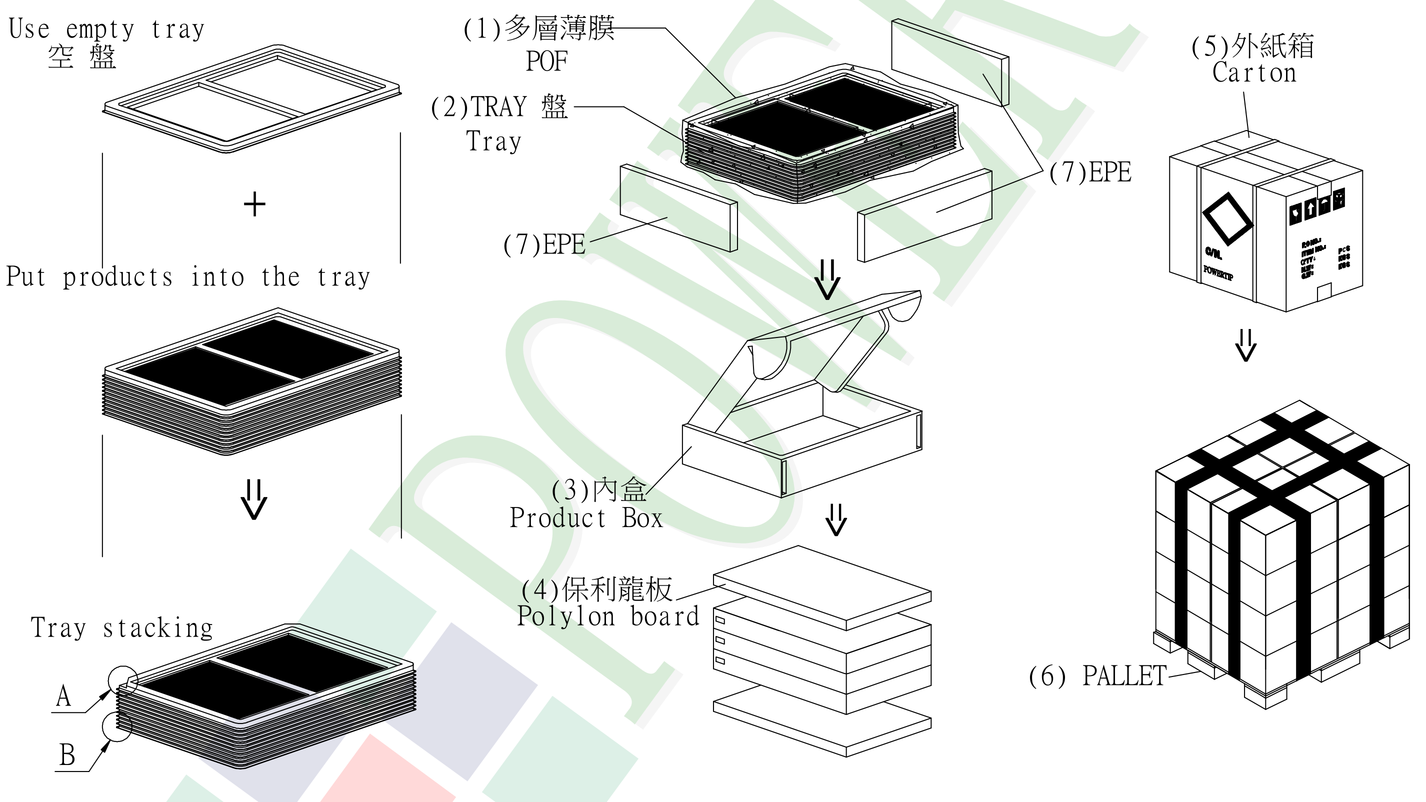
1.包裝材料規格表(Packaging Material) : (per carton)

No.	Item	Model	Dimensions (mm)	1Pcs Weight	Quantity	Total Weight
1	成品 (LCD)	PH128800T007-ZFC01	254.96 X 173.6	0.4712	288	135.7056
2	多層薄膜(1)POF	OTFILM0BA03ABA	――――	――	48	――
3	TRAY 盤 (2)Tray	TYSG000000067	517 X 377 X 18.8	0.217	192	41.664
4	內盒(3)Product Box	BX00000000071	558 X 393 X 68	0.6	48	28.8
5	保利龍板(4)Polylon board	OTPLB00PL08ABA	550 X 393 X 20	0.0284	32	0.9088
6	外紙箱(5)Carton	BX57041027CCBA	570 X 410 X 265	1.4208	16	22.7328
7	棧板(6)Carton	OTPALLET005ABA	1200 X 1000 X 140	8.0	1	8.0
8	EPE(7)EPE	OTFOAMEP0003BA	333 X 218 X 10	0.022	48	1.056
9						

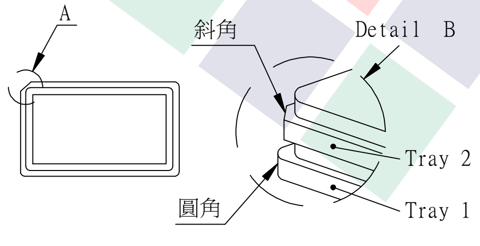
2.一 整箱總重量 (Total LCD Weight in carton) : 238.87 Kg±10%

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	3	=	6
(2)Total LCD quantity in carton : quantity per box	6	x no of boxes	3	=	18
(3)Total LCM quantity in pallet : quantity per carton	18	x no of boxes	16	=	288

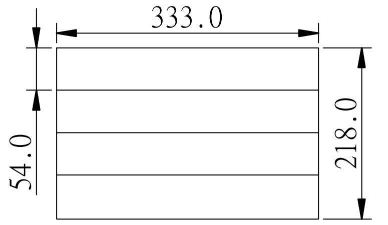

Use empty tray
空 盤
+
Put products into the tray
⇓
Tray stacking
A
B
(1)多層薄膜
POF
(2)TRAY 盤
Tray
(7)EPE
(7)EPE
⇓
(3)內盒
Product Box
⇓
(4)保利龍板
Polylon board
(5)外紙箱
Carton
⇓
(6) PALLET

特 記 事 項 (REMARK)


A
斜角
Detail B
Tray 2
Tray 1
圓角

1. 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.

2.OTFOAMEP0003BA可裁 4 PCS:
尺寸 333.0 X 54.5mm
2.OTFOAMEP0003BA cut 4 PCS:
Size: 333.0 X 54.5mm


333.0
54.0
218.0

3.棧板外箱擺放方式:一層擺放4箱外箱,共4層,故 4箱 X 4層=16箱外箱
Placement of carton on pallet: 4 boxes of carton on one layer, a total of 4 layers, so 4 boxes X 4 layers = 16 boxes of carton

4.外圍加打包帶及外部封塑膠膜
Packing tape and plastic film outside

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80687 Munich
Phone: +49-89-56017-0

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Lindenstraße 8
DE-97990 Weikersheim Phone:
+49-7934-101-0

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www.data-modul.com