

MODEL NO : TM080TDHG01**MODEL VERSION: 40****SPEC VERSION : 1.1****ISSUED DATE: 2016-04-28**

- ☒ Preliminary Specification
☐ Final Product Specification

Customer : _____

| Approved by | Notes |
|-------------|-------|
| | |

TIANMA Confirmed :

| Prepared by | Checked by | Approved by |
|-------------|---------------|-------------|
| Junwen Du | Longping Deng | Feng Qin |

This technical specification is subjected to change without notice

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Record of Revision

[illegible]

1 General Specifications

| Feature | | Spec |
|-----------------------------------|--------------------------------|------------------------|
| Display Spec. | Size | 8 inch |
| | Resolution | 1024RGBx768 |
| | Technology Type | a-Si |
| | Pixel Configuration | R.G.B. Stripe |
| | Pixel pitch(mm) | 0.158(H) x0.158(V) |
| | Display Mode | TM with Normally White |
| | Surface Treatment | Clear |
| | Viewing Direction | 10:30 o'clock |
| | Gray Scale Inversion Direction | 4:30 o'clock |
| Mechanical Characteristics | LCM (W x H x D) (mm) | 183.0x141.0x3.40 |
| | Active Area(mm) | 162.05 × 121.54 |
| | With /Without TSP | Without TSP |
| | Matching Connection Type | FH12A-40S-0.5SH |
| | LED Numbers | 27 LEDS |
| | Weight (g) | TBD |
| Electrical Characteristics | Interface | LVDS |
| | Color Depth | 16.7M |
| | Driver IC | HX8282A+HX8684B |

Note 1: Viewing direction for best image quality is different from TFT definition. There is a 180 degree shift.

Note 2: Requirements on Environmental Protection: Q/S0002

Note 3: LCM weight tolerance: ± 5%

2 Input/Output Terminals

Matched connector:FH12A-40S-0.5SH

| Pin No. | Symbol | I/O | Function | Remark |
|---------|--------------|-----|--|-------------------------------|
| 1 | VCOM | P | Common Voltage | |
| 2 | VDD | P | Power Voltage for digital circuit | |
| 3 | VDD | P | Power Voltage for digital circuit | |
| 4 | NC | --- | No connection | |
| 5 | Reset | I | Global reset pin | |
| 6 | STBYB | I | Standby mode, Normally pulled high STBYB = "1", normal operation STBYB = "0", timing controller, source driver will turn off, all output are GND | |
| 7 | GND | P | Ground | |
| 8 | RXIN0- | I | - LVDS differential data input | |
| 9 | RXIN0+ | I | + LVDS differential data input | R[0]~G[0] |
| 10 | GND | P | Ground | |
| 11 | RXIN1- | I | - LVDS differential data input | |
| 12 | RXIN1+ | I | + LVDS differential data input | G[1]~B[1] |
| 13 | GND | P | Ground | |
| 14 | RXIN2- | I | - LVDS differential data input | |
| 15 | RXIN2+ | I | + LVDS differential data input | DE/VS/HS/ B[2]~B[5] |
| 16 | GND | P | Ground | |
| 17 | RXCLKIN- | I | - LVDS differential clock input | |
| 18 | RXCLKIN + | I | + LVDS differential clock input | |
| 19 | GND | P | Ground | |
| 20 | RXIN3- | I | - LVDS differential data input | |
| 21 | RXIN3+ | I | + LVDS differential data input | R[6]/R[7]/G[6]/G[7]/B[6]/B[7] |
| 22 | GND | P | Ground | |
| 23 | NC | --- | No connection | |
| 24 | NC | --- | No connection | |
| 25 | GND | P | Ground | |
| 26 | NC | --- | No connection | |
| 27 | DIMO | O | Backlight CABC controller signal output | Note1 |
| 28 | SELB | I | 6bit/8bit mode select No | Note2 |
| 29 | AVDD | P | Power for Analog Circuit | |
| 30 | GND | P | Ground | |
| 31 | LED- | P | LED Cathode | |
| 32 | LED- | P | LED Cathode | |
| 33 | L/R | I | Horizontal inversion | Note3 |
| 34 | U/D | I | Vertical inversion N | Note3 |
| 35 | VGL | P | Gate OFF Voltage | |
| 36 | CABCEN1 | I | CABC H/W enable pin | Note4 |
| 37 | CABCEN0 | --- | CABC H/W enable pin | Note4 |

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| | | | | |
|----|------|---|-----------------|--|
| 38 | VGH | P | Gate ON Voltage | |
| 39 | LED+ | P | LED Anode | |
| 40 | LED+ | P | LED Anode | |

I/O----definition, I----Input, O----Output, P----Power, No used I/O pin please fix to GND level

Note1: PWM output after CABC function;

Note2: LVDS mode 6bits/8bits input select pin,If LVDS input data in 6 bits,SELB must be set

To high,If LVDS input data in 8 bits,SELB must be set to low,

Note3: When L/R="0",set right to left scan direction, L/R="1" set left to right scan direction

When U/D="0",set top to bottom scan direction, U/D="1" set bottom to top scan direction

Note4:

| | | |
|--------------|---|---|
| CABC_EN[1:0] | I | CABC H/W enable pin. Normally pull low. When CABC_EN="00", CABC off. (Default mode) When CABC_EN="01", user interface Image. When CABC_EN="10", still Picture. When CABC_EN="11", moving Image. |
|--------------|---|---|

3 Absolute Maximum Ratings

GND=0V

| Item | Symbol | MIN | MAX | Unit | Remark |
|----------------------------|--------|--------|------|------------------|------------------|
| Power Voltage | VCC | -0.3 | 7.0 | V | Note1 |
| Power Supply Voltage 2 | AVDD | -0.5 | 15 | V | Base on IC Spec |
| Power Supply Voltage 3 | VGH | -0.3 | +42 | V | Base on IC Spec |
| Power Supply Voltage 4 | VGL | VGH-42 | +0.3 | V | Base on IC Spec |
| Power Supply Voltage 4 | VCOM | 2.75 | 4.75 | V | Base on Test |
| Operating Temperature | Top | -20 | 70 | °C | |
| Storage Temperature | Tst | -30 | 80 | °C | |
| Relative Humidity Note2 | RH | -- | ≤95 | % | Ta≤40°C |
| | | -- | ≤85 | % | 40°C < Ta ≤ 50°C |
| | | -- | ≤55 | % | 50°C < Ta ≤ 60°C |
| | | -- | ≤36 | % | 60°C < Ta ≤ 70°C |
| | | -- | ≤24 | % | 70°C < Ta ≤ 80°C |
| Absolute Humidity | AH | -- | ≤70 | g/m ³ | Ta>70°C |

Table 3 Absolute Maximum Ratings

Note1: Input voltage include RxIN0±, RxIN1±, RxIN2±, RxCLKI±.

Note2: Ta means the ambient temperature.

It is necessary to limit the relative humidity to the specified temperature range.
Condensation on the module is not allowed.

4 Electrical Characteristics

4.1 Recommended Operating Condition

AGND=GND=0V, Ta = 25°C

| Item | Symbol | Min | Typ. | Max | Unit | Remark |
|---------------------------------|--------|------|------|------|------|--------|
| Digital Supply Voltage | DVDD | 2.7 | 3.3 | 3.6 | V | - |
| Analog Supply Voltage | AVDD | 11.3 | 11.5 | 11.7 | V | - |
| Gate On Voltage | VGH | 19.5 | 20.0 | 20.5 | V | - |
| Gate Off Voltage | VGL | -7.5 | -7.0 | -6.5 | V | - |
| Common Electrode Driving Signal | VCOM | 3.87 | 3.97 | 4.07 | V | - |

4.2 Power Consumption

AGND=GND=0V, Ta = 25°C

| Item | Symbol | Condition | Min | Typ. | Max | Unit | Remark |
|------------------------|-------------------|------------|-----|--------|-----|------|--------|
| Digital Supply Current | I _{VCC} | DVDD=3.3V | - | 42.181 | | mA | - |
| Analog Supply Current | I _{AVDD} | AVDD=11.5V | - | 52.33 | | mA | - |
| Gate On Current | I _{VGH} | VGH=20.0V | - | 0.804 | | mA | - |
| Gate Off Current | I _{VGL} | VGL=-7.0V | - | 0.832 | | mA | - |
| Power Consumption | Pane I& Gamma | | - | 753 | | mW | - |

Note1: Checkered Black pattern for Typ.

4.3 Recommended Driving Condition for Backlight

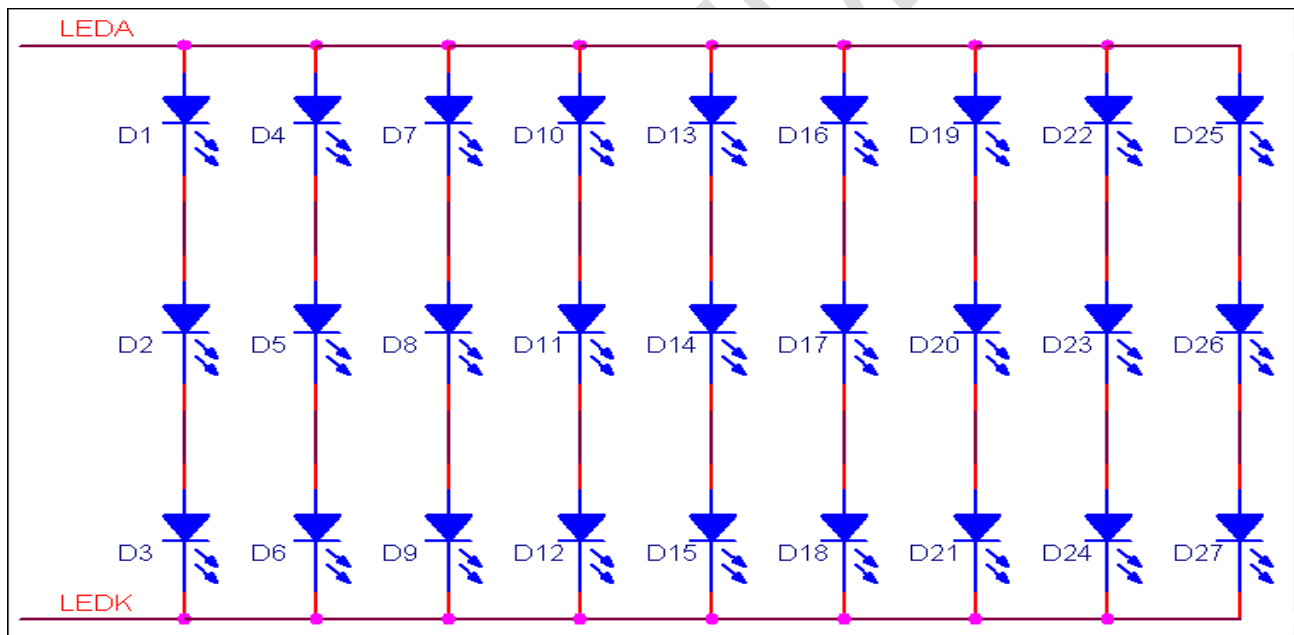
Ta=25℃

| Item | Symbol | Min | Typ | Max | Unit | Remark |
|-----------------------------|----------|--------|--------|------|------|---|
| Forward Current | I_F | - | 180 | 225 | mA | 27LEDs (3 LED Serial, 9 LED Parallel) |
| Forward Voltage | V_F | 9.0 | 9.9 | 10.5 | V | |
| Backlight Power Consumption | W_{BL} | - | 1.782 | | W | |
| Operating Life Time | - | 20,000 | 30,000 | - | Hrs | $I_F = 20\text{mA}$ |

Note1: The LED driving condition is defined for each LED module (3 LED Serial, 9 LED Parallel). For each LED: $I_F (1/9) = 20\text{mA}$, $V_F (1/3) = 3.3\text{V}$.

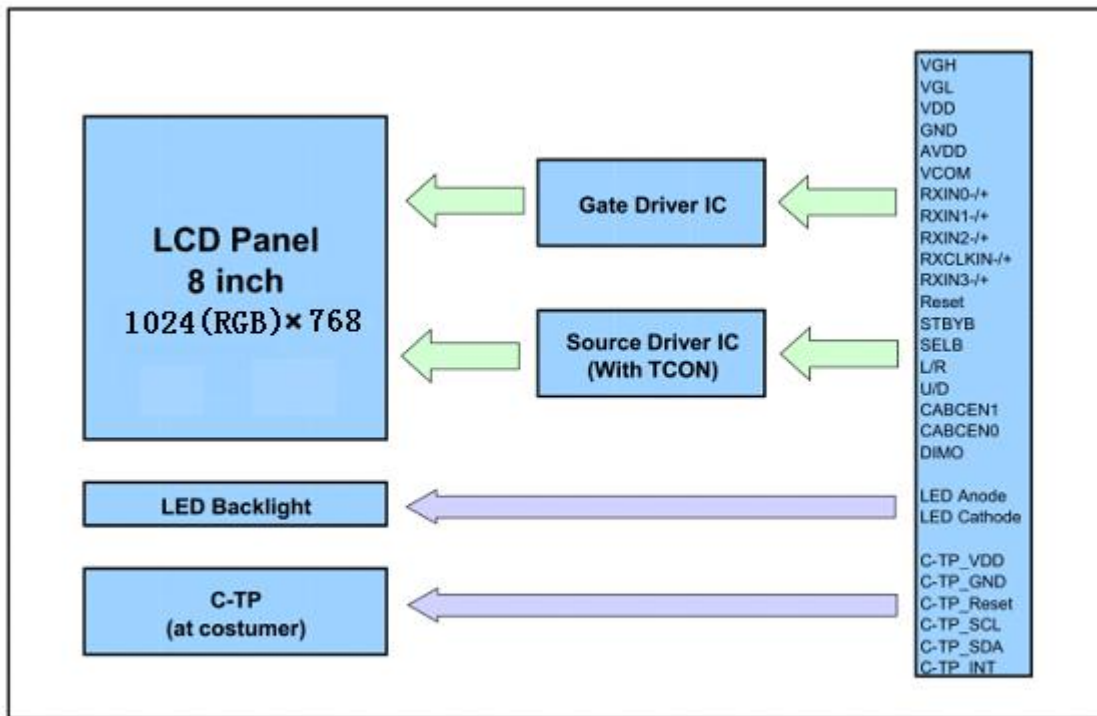
Note2: Under LCM operating, the stable forward current should be inputted. And forward voltage is for reference only.

Note3: I_F is defined for one channel LED. Optical performance should be evaluated at Ta=25℃ only. If LED is driven by high current, high ambient temperature & humidity condition. The life time of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.



Note4: The LED driving condition is defined for each LED module

4.4 Block Diagram

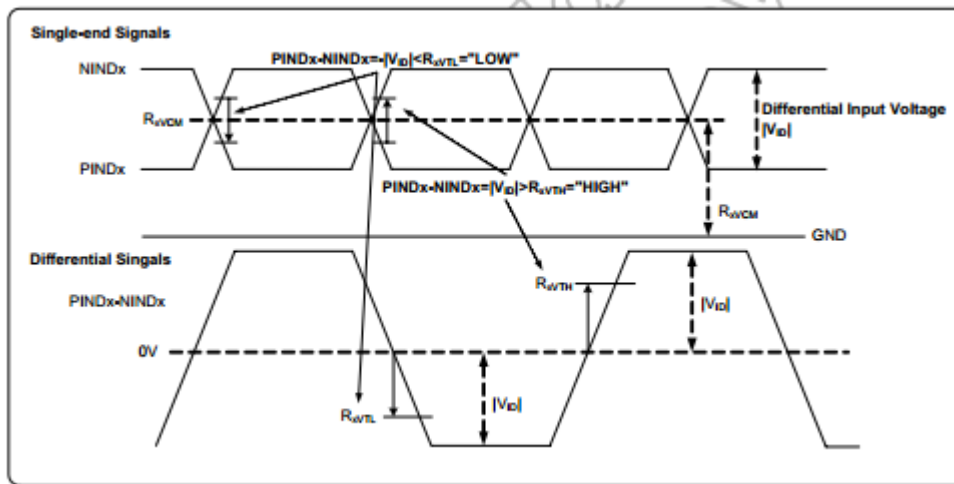


LCD module diagram

5 Timing Chart

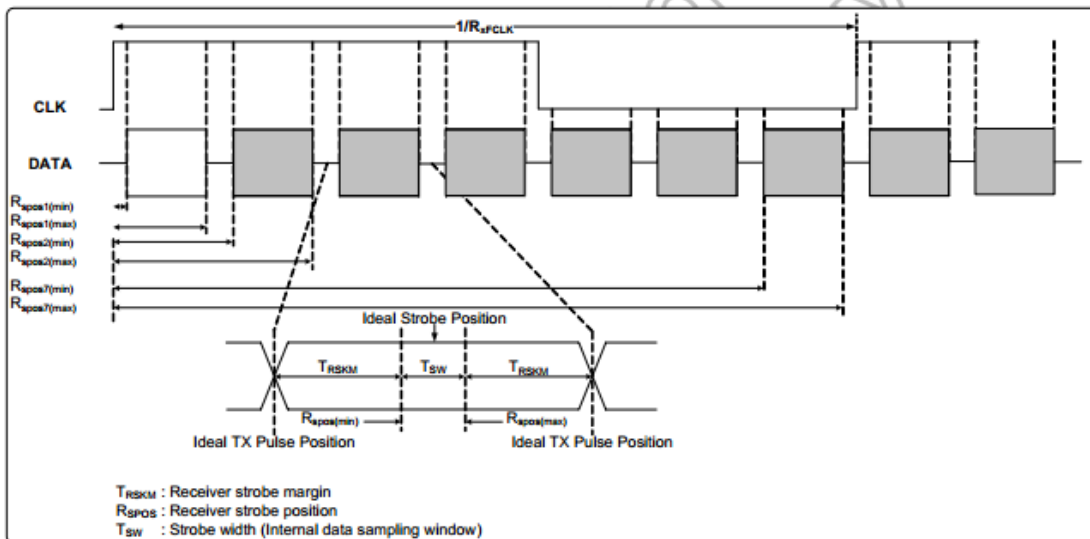
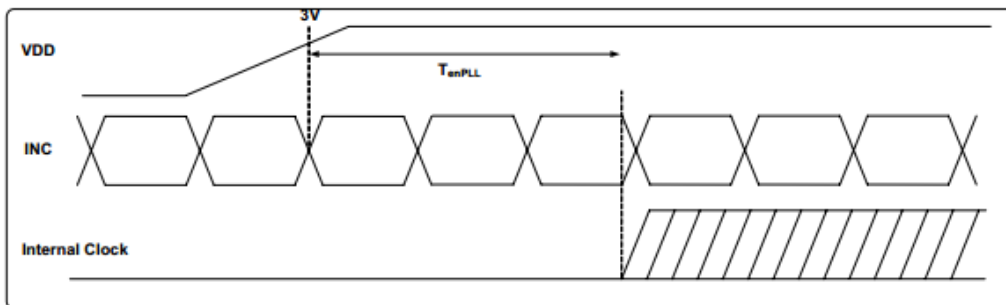
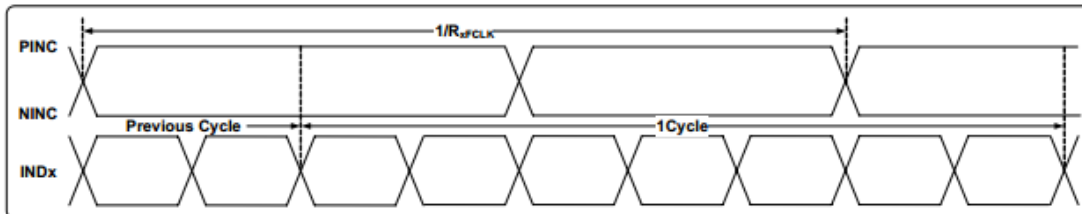
5.1 LVDS mode DC electrical characteristics

| Parameter | Symbol | Min. | Spec. Typ. | Max. | Unit | Condition |
|---|---------------|--------------|------------|----------------------|---------|-----------------------------------|
| Differential input high Threshold voltage | R_{xvth} | - | - | +0.1 | V | $R_{xvcm}=1.2V$ |
| Differential input low threshold voltage | R_{xvtl} | -0.1 | - | - | V | |
| Input voltage range (singled-end) | R_{xvin} | 0 | - | $VDD-1.2+ V_{ID} /2$ | V | - |
| Differential input common Mode voltage | R_{xvcm} | $ V_{ID} /2$ | - | $VDD-1.2$ | V | - |
| Differential input voltage | $ V_{ID} $ | 0.2 | - | 0.6 | V | - |
| Differential input leakage Current | $R_{V_{ISZ}}$ | -10 | - | +10 | μA | - |
| LVDS Digital Operating Current | I_{ddlvds} | - | 15 | 30 | mA | Fclk=65MHz, VDD=3.3V |
| LVDS Digital Stand-by Current | I_{stlvds} | - | 10 | 50 | μA | Clock & all Functions are stopped |



5.2 LVDS mode AC electrical characteristics

| Parameter | Symbol | Min. | Spec. Typ. | Max. | Unit | Condition |
|------------------------|-------------|------|-------------------------|------|---------|--|
| Clock frequency | R_{XFCLK} | 20 | - | 71 | MHz | - |
| Input data skew margin | T_{RSKM} | 500 | - | - | pS | $ V_{ID} =400mV$ $R_{XVCM}=1.2V$ $R_{XFCLK}=71MHz$ |
| Clock high time | T_{LVCH} | - | $4/(7 \cdot R_{XFCLK})$ | - | ns | - |
| Clock low time | T_{LVCL} | - | $3/(7 \cdot R_{XFCLK})$ | - | ns | - |
| PLL wake-up time | T_{enPLL} | - | - | 150 | μs | - |



| Parameter | Symbol | Min. | Spec. Typ. | Max. | Unit | Condition |
|----------------------|------------|------|------------|---------|------|---------------------------------|
| Modulation Frequency | SSC_{MF} | 23 | - | 93 | KHz | - |
| Modulation Rate | SSC_{MR} | - | - | ± 3 | % | LVDS clock =71MHz center spread |

5.3 Data input format

5.3.1 LVDS data mapping

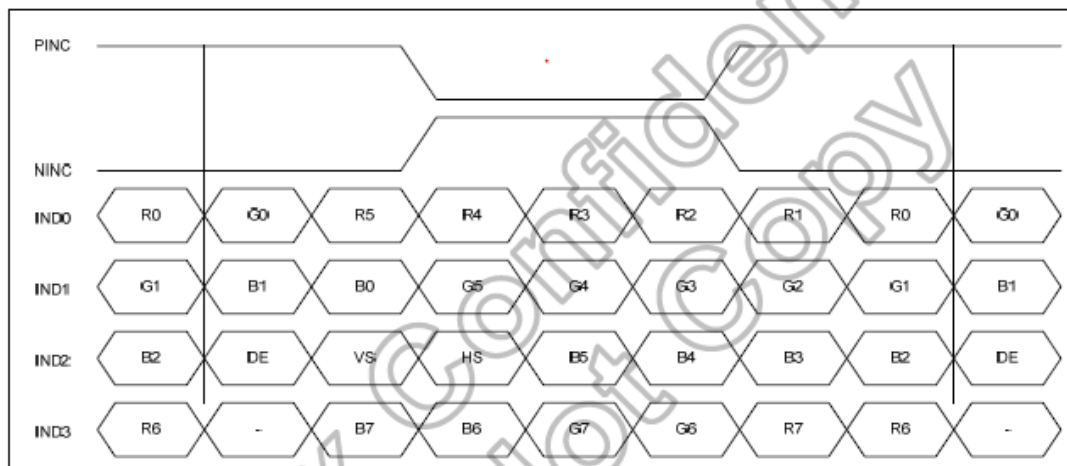


Figure 10.5: 8-bit LVDS Input

5.3.2 Parallel RGB input timing table

● DE mode

| Parameter | Symbol | Spec. | | | Unit |
|-------------------------|------------|-------|------|------|----------------|
| | | Min. | Typ. | Max. | |
| DCLK Frequency | fclk | 52 | 65 | 71 | MHz |
| Horizontal Display Area | thd | 1024 | | | DCLK |
| HSD Period | th | 1114 | 1344 | 1400 | DCLK |
| HSD Blanking | thb+ thfp | 90 | 320 | 376 | DCLK |
| Vertical Display Area | tvd | 768 | | | T _H |
| VSD Period | tv | 778 | 806 | 845 | T _H |
| VSD Blanking | tvbp+ tvfp | 10 | 38 | 77 | T _H |

Table 10.7: DE mode (1024x768)

● HV mode

Horizontal timing

| Parameter | Symbol | Spec. | | | Unit |
|-------------------------|--------|-------|------|------|------|
| | | Min. | Typ. | Max. | |
| DCLK Frequency | fclk | 57 | 65 | 70.5 | MHz |
| Horizontal Display Area | thd | 1024 | | | DCLK |
| HSD Period | th | 1200 | 1344 | 1400 | DCLK |
| HSD Pulse Width | thpw | 1 | - | 140 | DCLK |
| HSD Back Porch | thbp | 160 | | | DCLK |
| HSD Front Porch | thfp | 16 | 160 | 216 | DCLK |

Table 10.8: HV mode horizontal timing (1024x768)

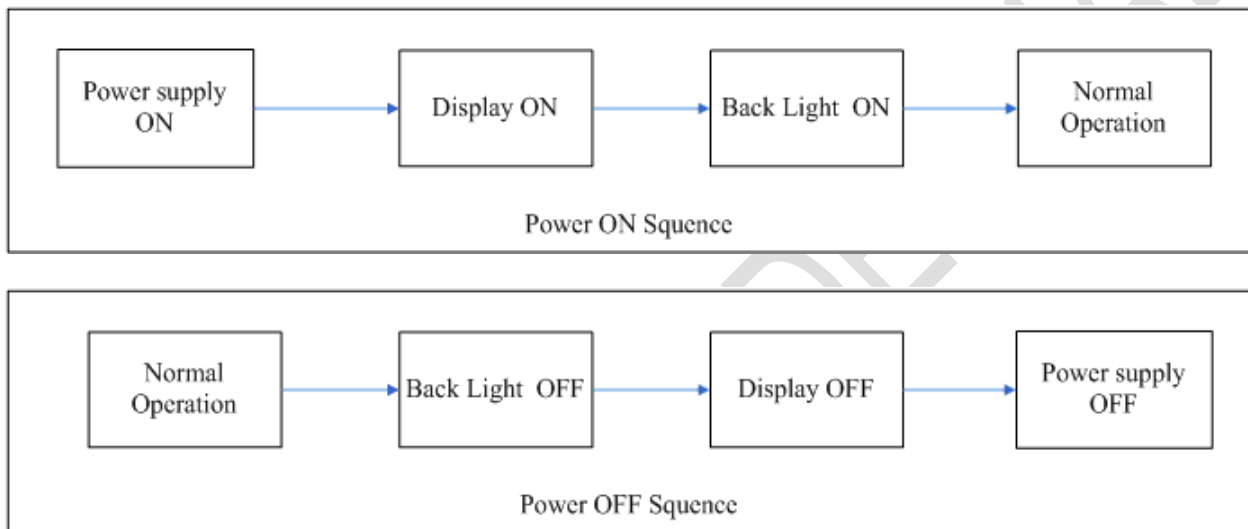
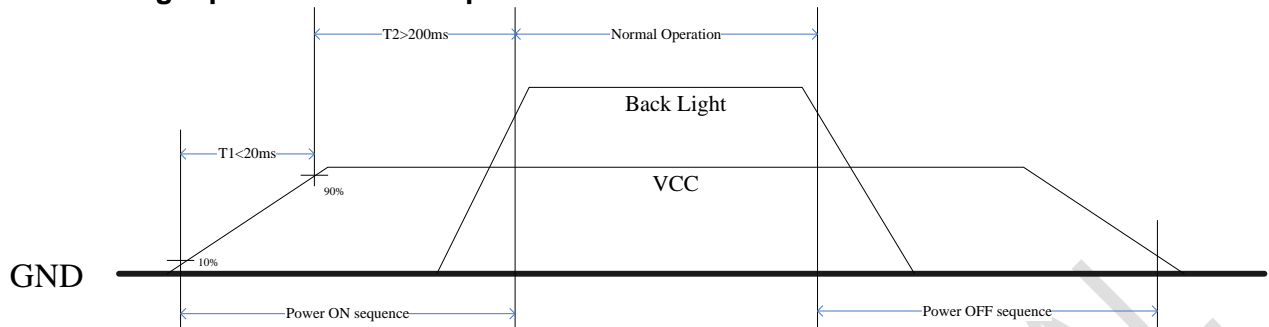
Vertical timing

| Parameter | Symbol | Spec. | | | Unit |
|-----------------------|--------|-------|------|------|----------------|
| | | Min. | Typ. | Max. | |
| Vertical Display Area | tvd | 768 | | | T _H |
| VSD Period | tv | 792 | 806 | 840 | T _H |
| VSD Pulse Width | tvpw | 1 | - | 20 | T _H |
| VSD Back Porch | tvbp | 23 | | | T _H |
| VSD Front Porch | tvfp | 1 | 15 | 49 | T _H |

Table 10.9: HV mode vertical timing (1024x768)

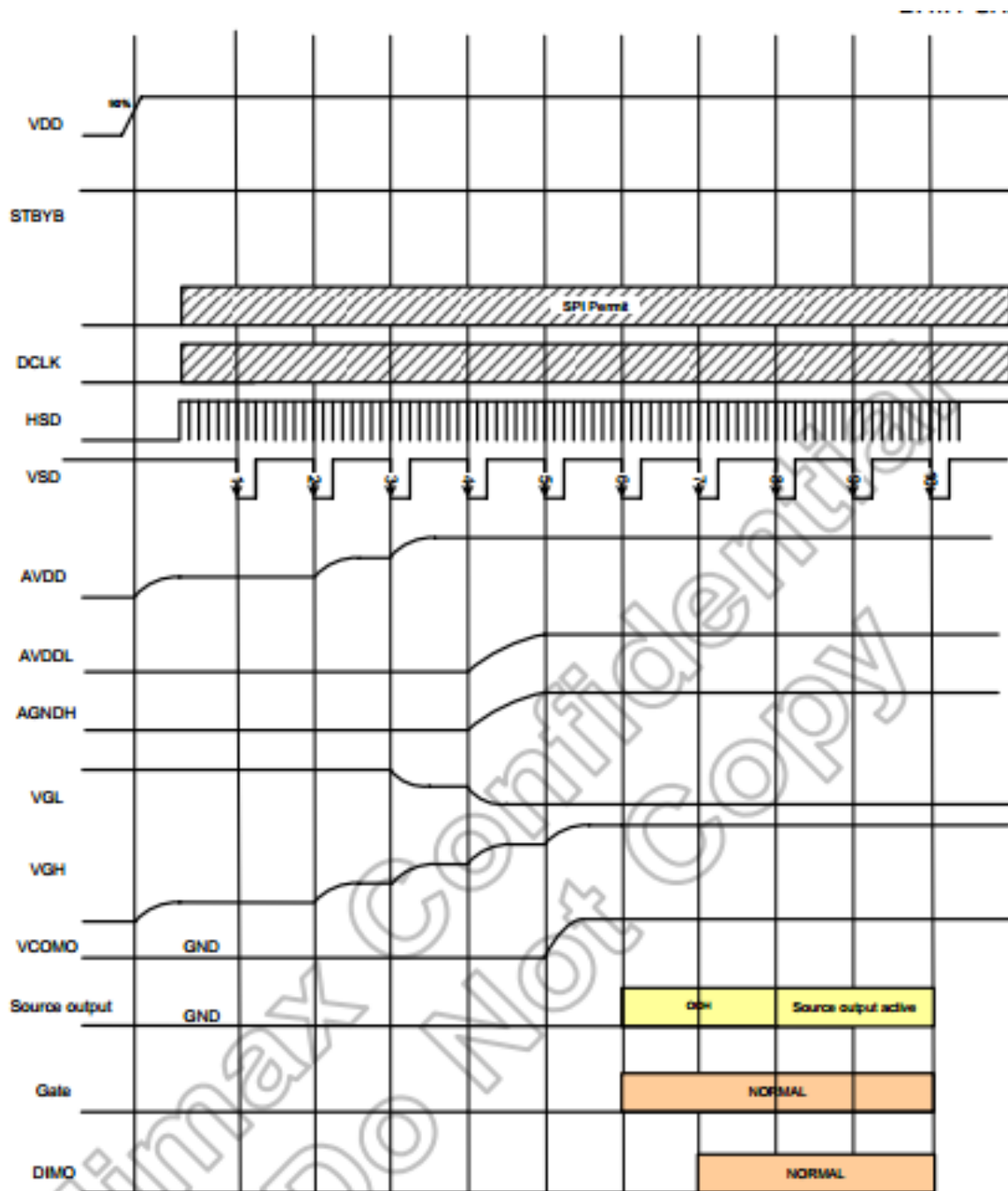
5.4 Power ON/OFF Sequence

5.4.1 Back Light power ON/OFF sequence



Back Light Power ON/OFF sequence

5.4.2 System power ON/OFF sequence



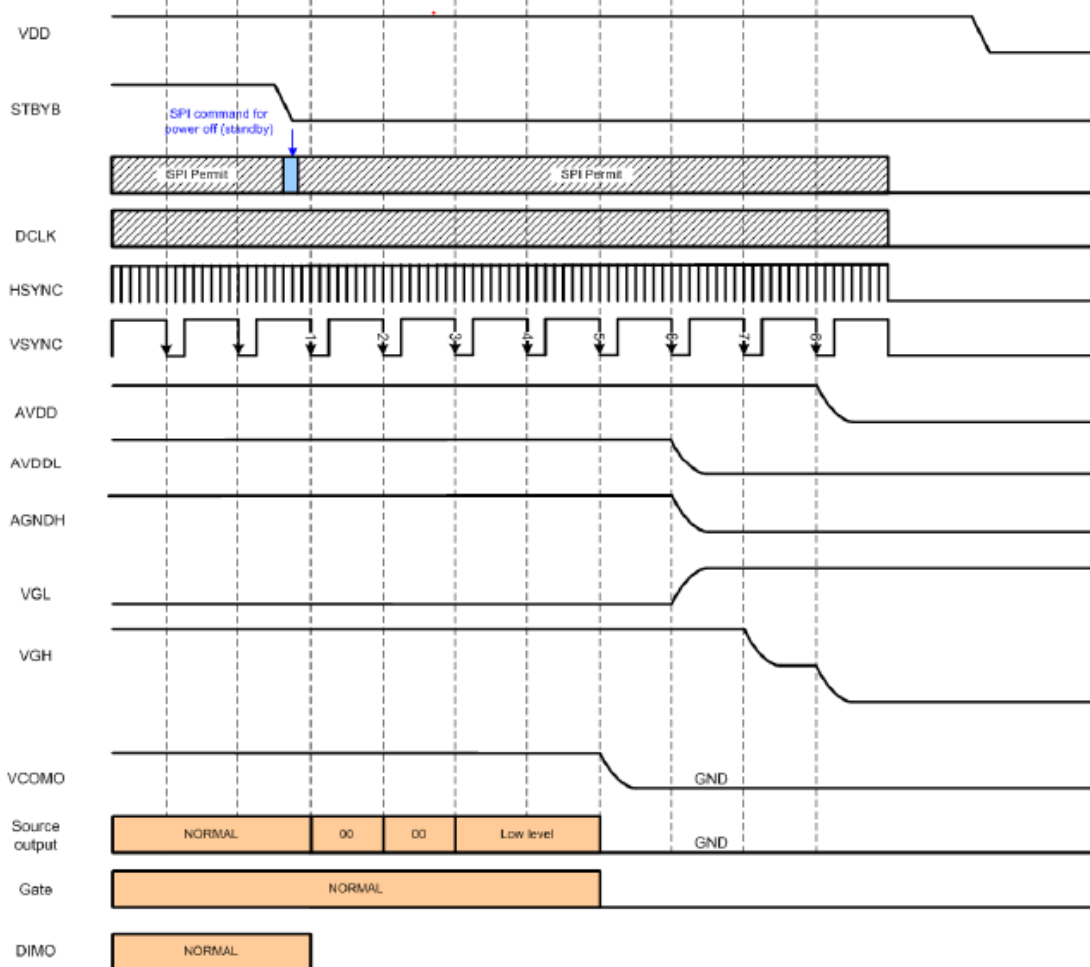
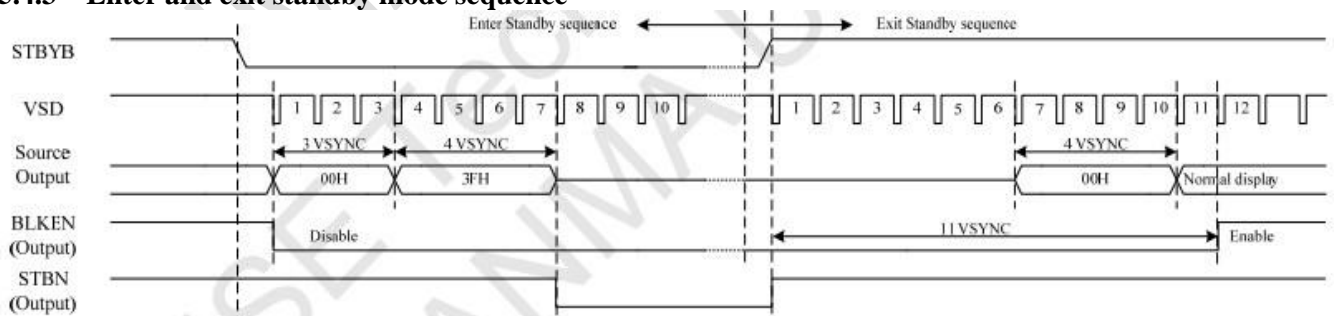


Figure 8.2: Power off timing sequence

Note: Low level=3FH, when NBW=L (Normally white)
Low level=00H, when NBW=H (Normally black)

5.4.3 Enter and exit standby mode sequence



6 Optical Characteristics

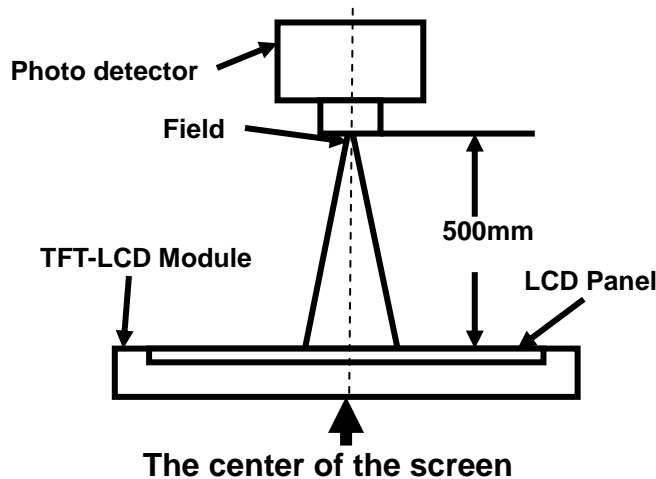
| Item | | Symbol | Condition | Min | Typ | Max | Unit | Remark |
|----------------|-------|------------------|-----------------|-------|-------|-------|-------------------|----------|
| View Angles | | θT | CR ≧ 10 | 70 | 80 | - | Degree | Note2,3 |
| | | θB | | 70 | 80 | - | | |
| | | θL | | 70 | 80 | - | | |
| | | θR | | 70 | 80 | - | | |
| Contrast Ratio | | CR | θ=0° | 600 | 700 | - | | Note 3 |
| Response Time | | T _{ON} | 25℃ | - | 20 | 30 | ms | Note 4 |
| | | T _{OFF} | | | | | | |
| Chromaticity | White | x | Backlight is on | 0.258 | 0.308 | 0.358 | | Note 1,5 |
| | | y | | 0.275 | 0.325 | 0.375 | | |
| | Red | x | | 0.530 | 0.580 | 0.630 | | Note 1,5 |
| | | y | | 0.291 | 0.341 | 0.391 | | |
| | Green | x | | 0.302 | 0.352 | 0.402 | | Note 1,5 |
| | | y | | 0.533 | 0.583 | 0.633 | | |
| | Blue | x | | 0.107 | 0.157 | 0.207 | | Note 1,5 |
| | | y | | 0.048 | 0.098 | 0.148 | | |
| Uniformity | | U | | 70 | 75 | | % | Note 6 |
| NTSC | | | | 45 | 50 | | % | Note 5 |
| Luminance | | L | | 350 | 400 | | cd/m ² | Note 7 |

Test Conditions:

1. IF= 180 mA, and the ambient temperature is 25℃.
2. The test systems refer to Note 1 and Note 2.

Note 1: Definition of optical measurement system.

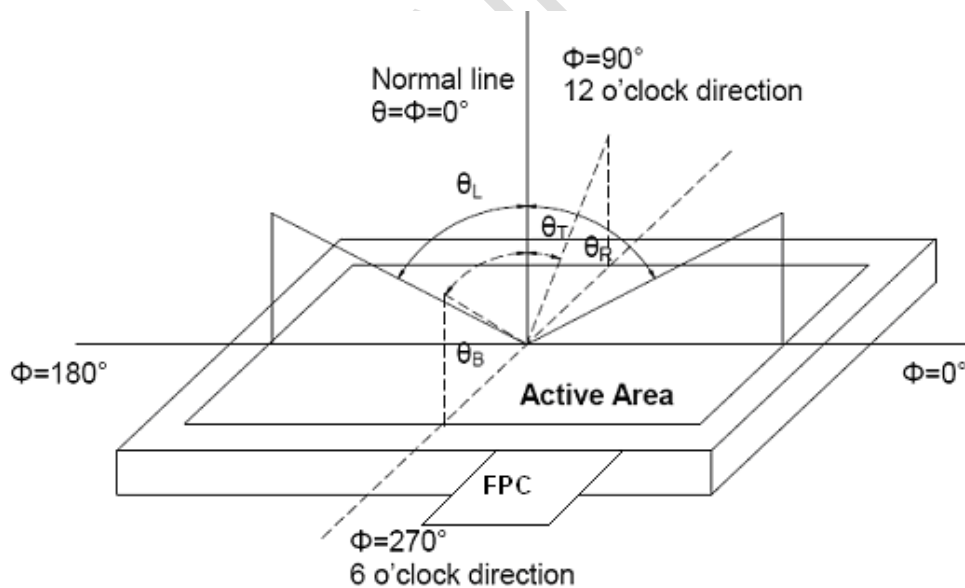
The optical characteristics should be measured in dark room. After 5 Minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



| Item | Photo detector | Field |
|----------------|----------------|-------|
| Contrast Ratio | SR-3A | 1° |
| Luminance | | |
| Chromaticity | | |
| Lum Uniformity | | |
| Response Time | BM-7A | 2° |

Note 2: Definition of viewing angle range and measurement system.

viewing angle is measured at the center point of the LCD by CONOSCOPE(ergo-80).



Note 3: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD is on the "White" state}}{\text{Luminance measured when LCD is on the "Black" state}}$$

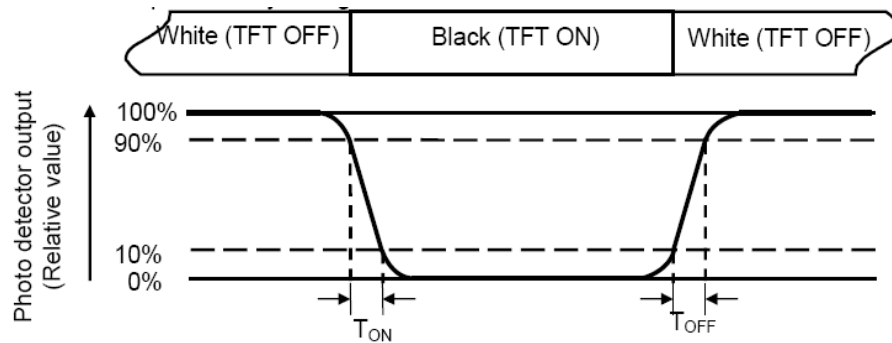
“White state “: The state is that the LCD should drive by Vwhite.

“Black state”: The state is that the LCD should drive by Vblack.

V_{white}: To be determined V_{black}: To be determined.

Note 4: Definition of Response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (T_{ON}) is the time between photo detector output intensity changed from 90% to 10%. And fall time (T_{OFF}) is the time between photo detector output intensity changed from 10% to 90%.



Note 5: Definition of color chromaticity (CIE1931)

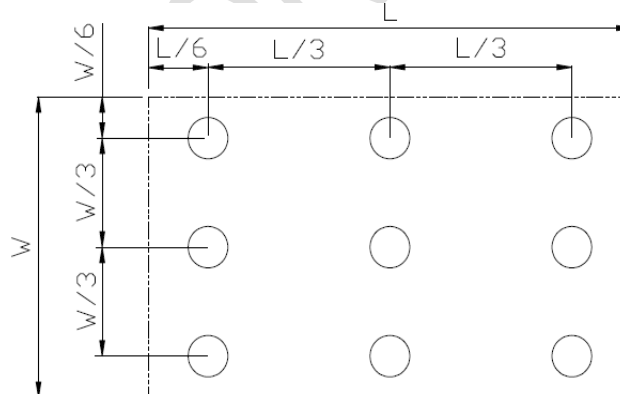
Color coordinates measured at center point of LCD.

Note 6: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer Fig. 2). Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity (U)} = L_{\min} / L_{\max}$$

L-----Active area length W----- Active area width



L_{max}: The measured Maximum luminance of all measurement position.

L_{min}: The measured Minimum luminance of all measurement position.

Note 7: Definition of Luminance:

Measure the luminance of white state at center point.

7 Environmental / Reliability Test

| No | Test Item | Condition | Remarks |
|----|--|---|---|
| 1 | High Temperature Operation | Ts = +70℃, 120 hours (Note1) | IEC60068-2-1:2007 GB2423.2-2008 |
| 2 | Low Temperature Operation | Ta = -20℃, 120 hours (Note2) | IEC60068-2-1:2007 GB2423.1-2008 |
| 3 | High Temperature Storage | Ta = +80℃, 120 hours | IEC60068-2-1:2007 GB2423.2-2008 |
| 4 | Low Temperature Storage | Ta = -30℃, 120 hours | IEC60068-2-1:2007 GB2423.1-2008 |
| 5 | Storage at High Temperature and Humidity | Ta = +60℃, 90% RH max, 120hours | IEC60068-2-78 :2001 GB/T2423.3—2006 |
| 6 | Thermal Shock (non-operation) | -30℃ 30 min ~ +80℃ 30 min, Change time:5min, 20 Cycle | Start with cold temperature, End with high temperature, IEC60068-2-14:1984,G B2423.22-2002 |
| 7 | ESD | C=150pF, R=330Ω, 5point/panel Air: ±8Kv, 5times; Contact: ±4Kv, 5times (Environment: 15℃~35℃, 30%~60%. 86Kpa~106Kpa) | IEC61000-4-2:2001 GB/T17626.2-2006 |
| 8 | Vibration Test | Frequency range: 10~55Hz Stroke: 1.5mm Sweep: 10Hz~55Hz~10Hz 2 hours for each direction of X.Y.Z. (6 hours for total) | IEC60068-2-6:1982 GB/T2423.10—1995 |
| 9 | Mechanical Shock (Non OP) | Half Sine Wave 60G 6ms, ±X, ±Y, ±Z 3times for each direction | IEC60068-2-27:1987 GB/T2423.5—1995 |
| 10 | Package Drop Test | Height: 80cm, 1corner, 3edges, 6surfaces | IEC60068-2-32:1990 GB/T2423.8—1995 |

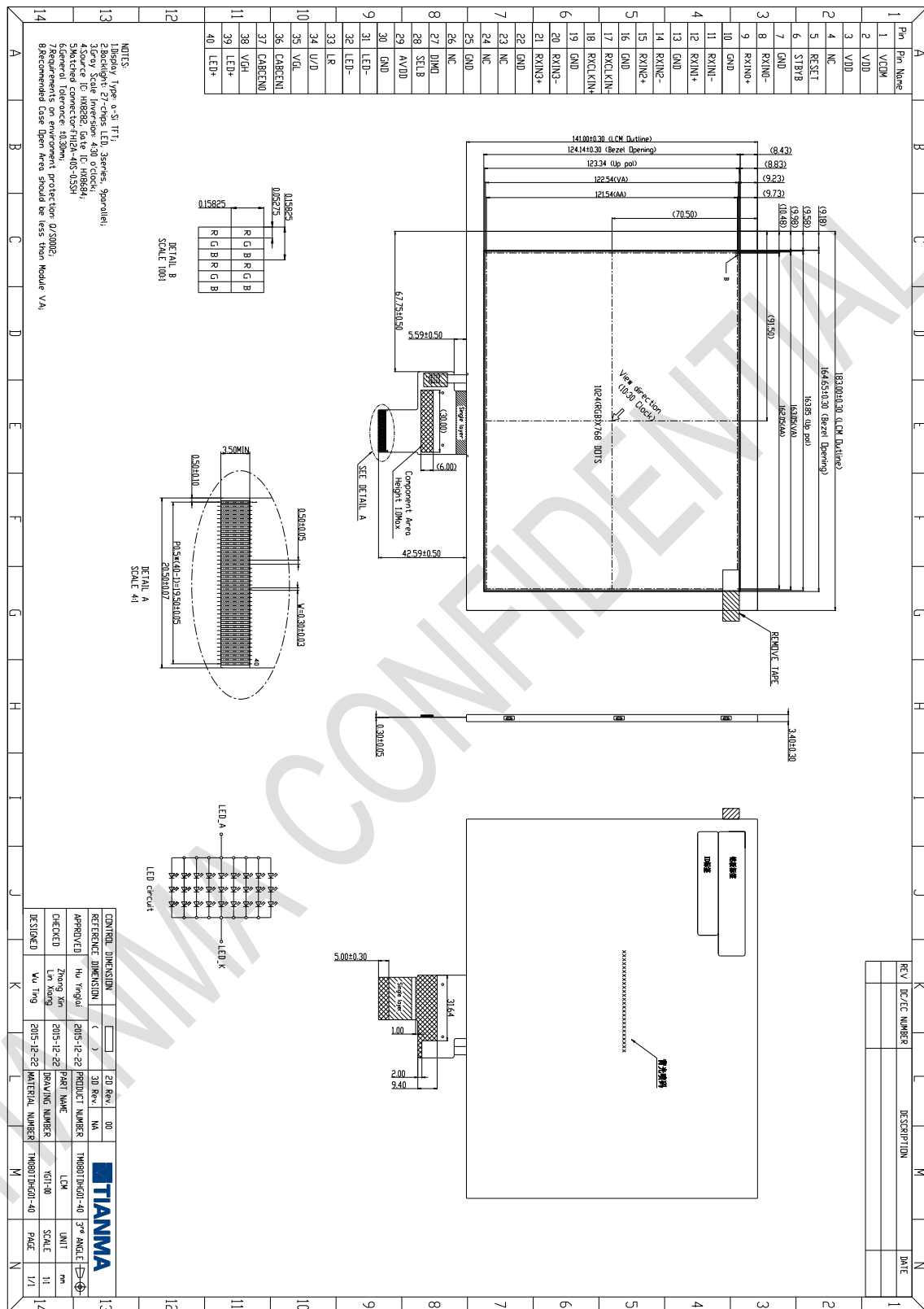
Note1: Ts is the temperature of panel's surface.

Note2: Ta is the ambient temperature of sample.

Note3: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

Note 4: In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.

8 Mechanical Drawing



9 Packing Drawing

9.1 包装材料规格表(Packaging Material)

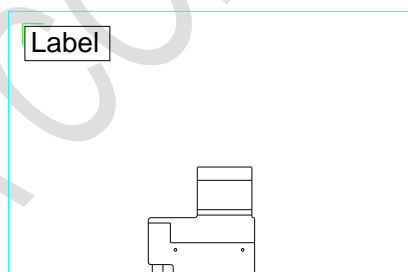
Per Carton

| No | Item | Model (Material) | Dimensions(mm) | Unit Weight(Kg) | Quantity | Remark |
|----|-----------------|------------------|----------------|-----------------|----------|-------------|
| 1 | LCM module | TM080TDHG01-40 | 183X141X3.4 | 0.189 | 48 | |
| 2 | Partition_1 | Corrugated paper | 527X348X217 | 1.323 | 1 | |
| 3 | Anti-static Bag | PE | 161X253X0.05 | 0.001 | 48 | Anti-static |
| 4 | Dust-Proof Bag | PE | 700X545 | 0.06 | 1 | |
| 5 | Partition_2 | Corrugated Paper | 505X332X4.0 | 0.098 | 2 | |
| 6 | Corrugated Bar | Corrugated paper | 348X173 | 0.028 | 6 | |
| 7 | Carton | Corrugated paper | 544X365X250 | 1.12 | 1 | |
| 8 | Total weight | TBD | | | | |

9.2 包装说明图示

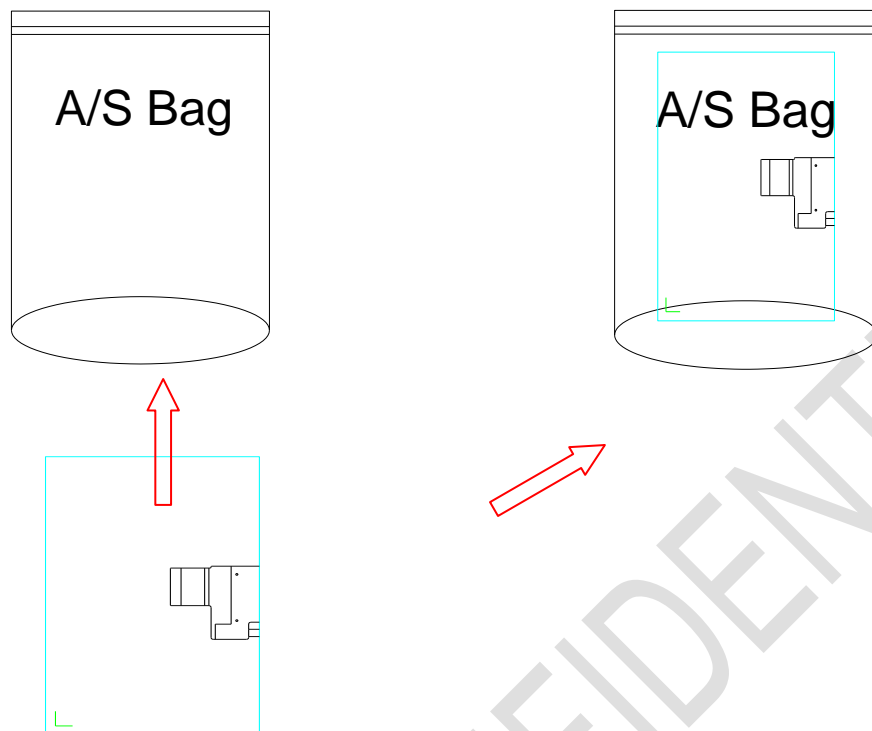
9.2.1 天马 Module Label 帖附

Module Label请按照下图所示位置与**Mark line**对齐贴附。



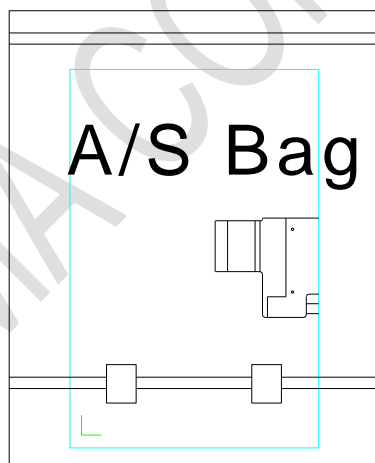
9.2.2 单片模组包装

将模组按照下图所示方法装入静电袋中：



9.2.3 静电袋包装

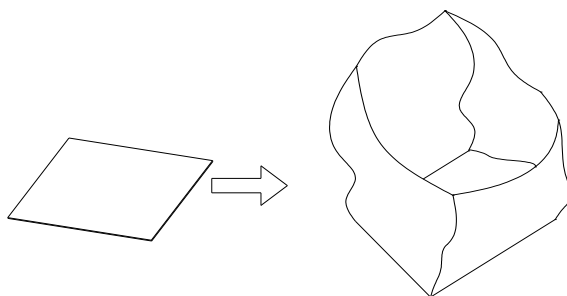
静电袋按照下图方式，并用美纹胶带（2张）将静电袋的开口贴好。



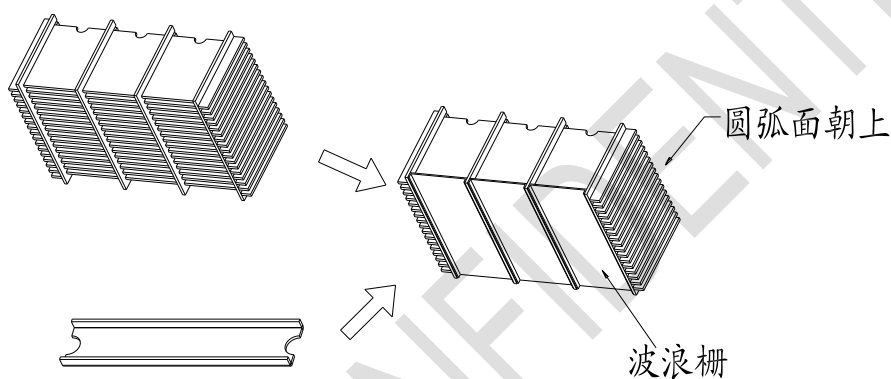
注：先弯折Main FPC平贴于下铁框，然后再向模组背面方向弯折抗静电袋。

9.2.4 Dummy Packing 组装

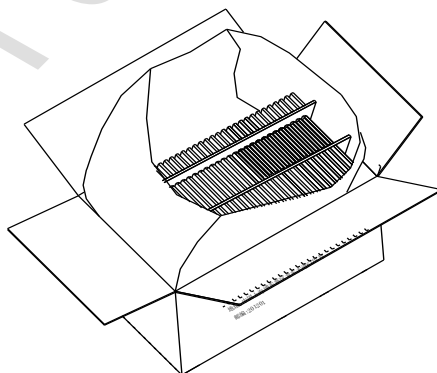
A. 将压线卡_2装入防尘袋里面，如下图所示：



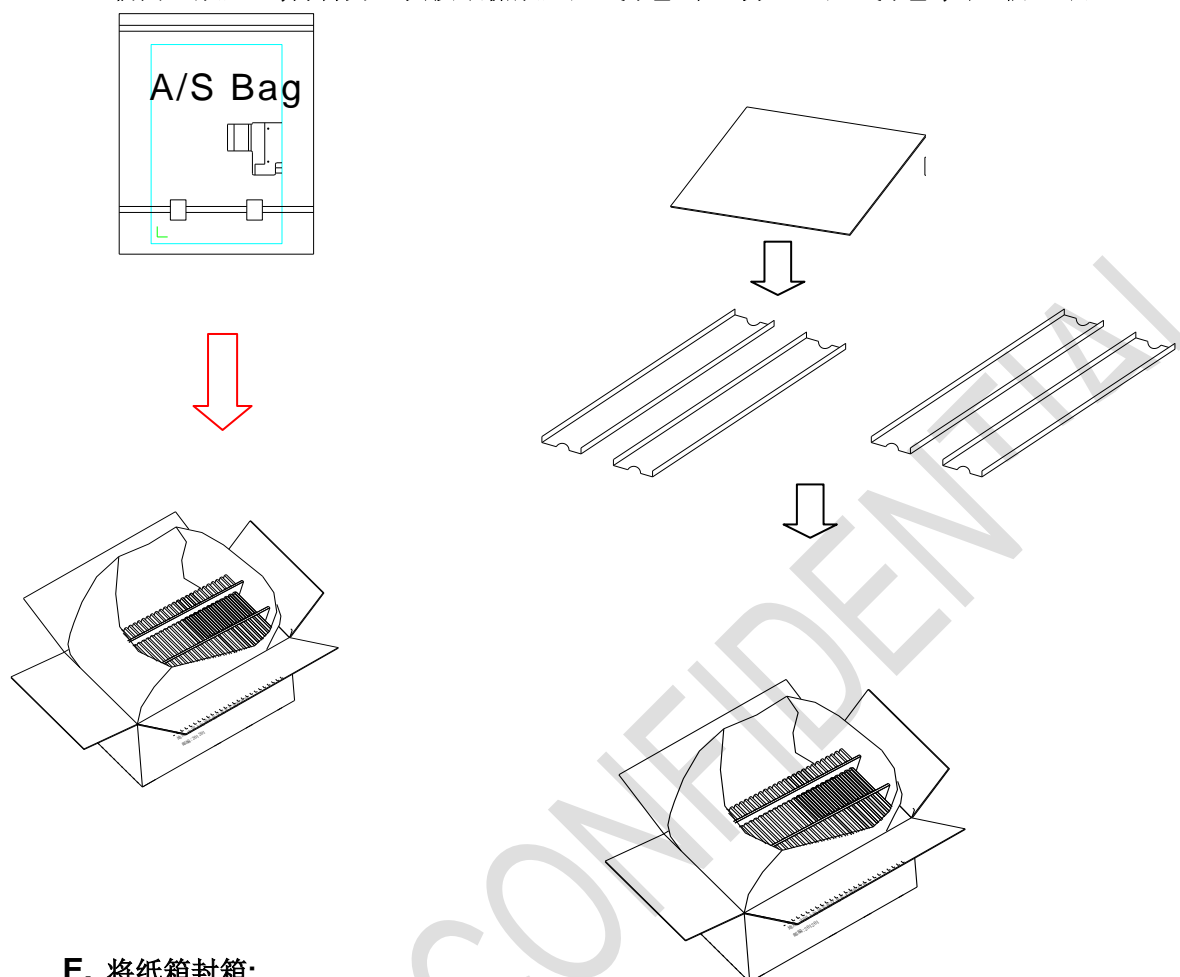
B. 将CORRUGATED BAR 按照下图所示放入压线卡_1下面（压线卡_1未做半圆弧的那一面）



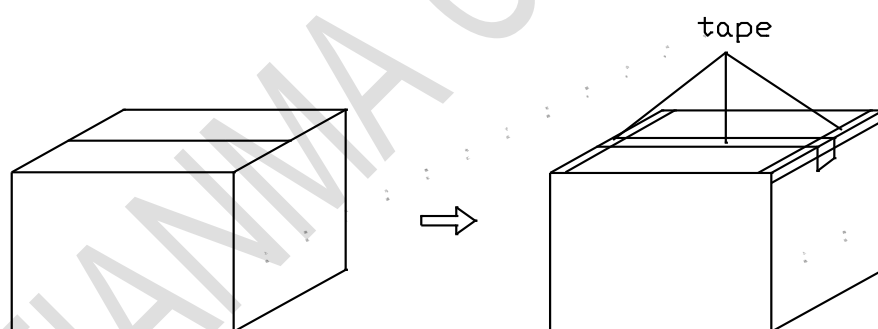
C. 将STEP B组装好的部件放入防尘袋中，再将防尘袋放入纸箱当中：



- D. 将模组的有撕离胶带的一面朝上，放入纸箱当中（显示面朝向内部，每排最后一个模组将显示面朝向里放置）；再将另三块波浪栅放入压线卡_1中，并盖上压线卡_2,封上防尘袋：

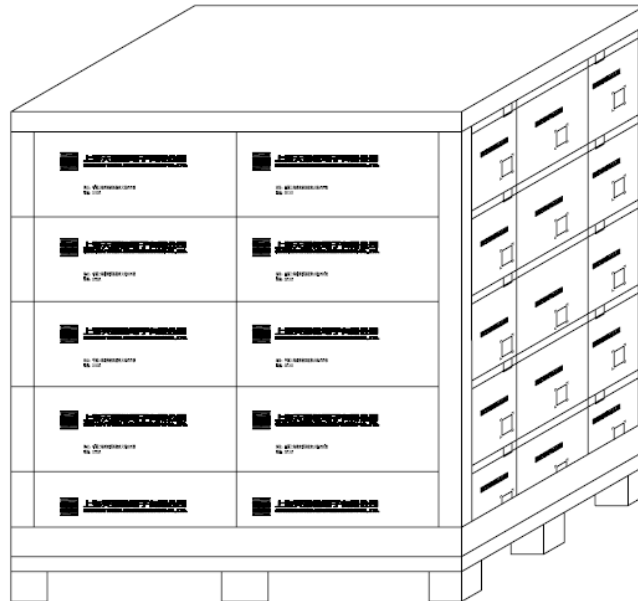


- E. 将纸箱封箱：



9.2.5 堆栈放置

纸箱堆叠数案2*3/每层*共5层



10 Precautions for Use of LCD Modules

10.1 Handling Precautions

10.1.1 The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

10.1.2 If the display panel is damaged and the liquid crystal substance inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.

10.1.3 Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

10.1.4 The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

10.1.5 If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:

- Isopropyl alcohol
- Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer. Especially, do not use the following:

- Water
- Ketone
- Aromatic solvents

10.1.6 Do not attempt to disassemble the LCD Module.

10.1.7 If the logic circuit power is off, do not apply the input signals.

10.1.8 To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

10.1.8.1 Be sure to ground the body when handling the LCD Modules.

10.1.8.2 Tools required for assembly, such as soldering irons, must be properly ground.

10.1.8.3 To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.

10.1.8.4 The LCD Module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

10.2 Storage precautions

10.2.1 When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

10.2.2 The LCD modules should be stored under the storage temperature range. If the LCD modules will be stored for a long time, the recommend condition is:

Temperature : 0℃ ~ 40℃ Relatively humidity: ≤80%

10.2.3 The LCD modules should be stored in the room without acid, alkali and harmful gas.

10.3 Transportation Precautions

10.3.1 The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.