**KENTEC DISPLAY**

# FOR APPROVAL

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YOUR MODULE NO.: _____     OUR MODULE NO.: _____K350QVG-V2-F_____

YOUR SPEC NO.: _____     OUR FULL SPEC NO.: _FS-K350QVG-V2-F-04_

Remark:
   **K350QVG-V2-F** is fully compatible with **K350QVG-V1-F** and can be used to replace the K350QVG-V1-F (K350QVG-V1-F already phased out as the EOL of tft cell.), no need to changing software and hardware. (Already approved by TI on Stellaris M3 Evaluation board. )

| APPROVED BY | | |
|---|---|---|
| | | |

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# KENTEC DISPLAY

# K350QVG-V2-F

**Product**

Standard LCD Module
320 x RGB x 240 Dots
3.5" 262K colors TFT display
Wide temperature
With white LED backlight
With Touch Panel

# CONTENTS

# KENTEC DISPLAY

## 1. Document revision history :

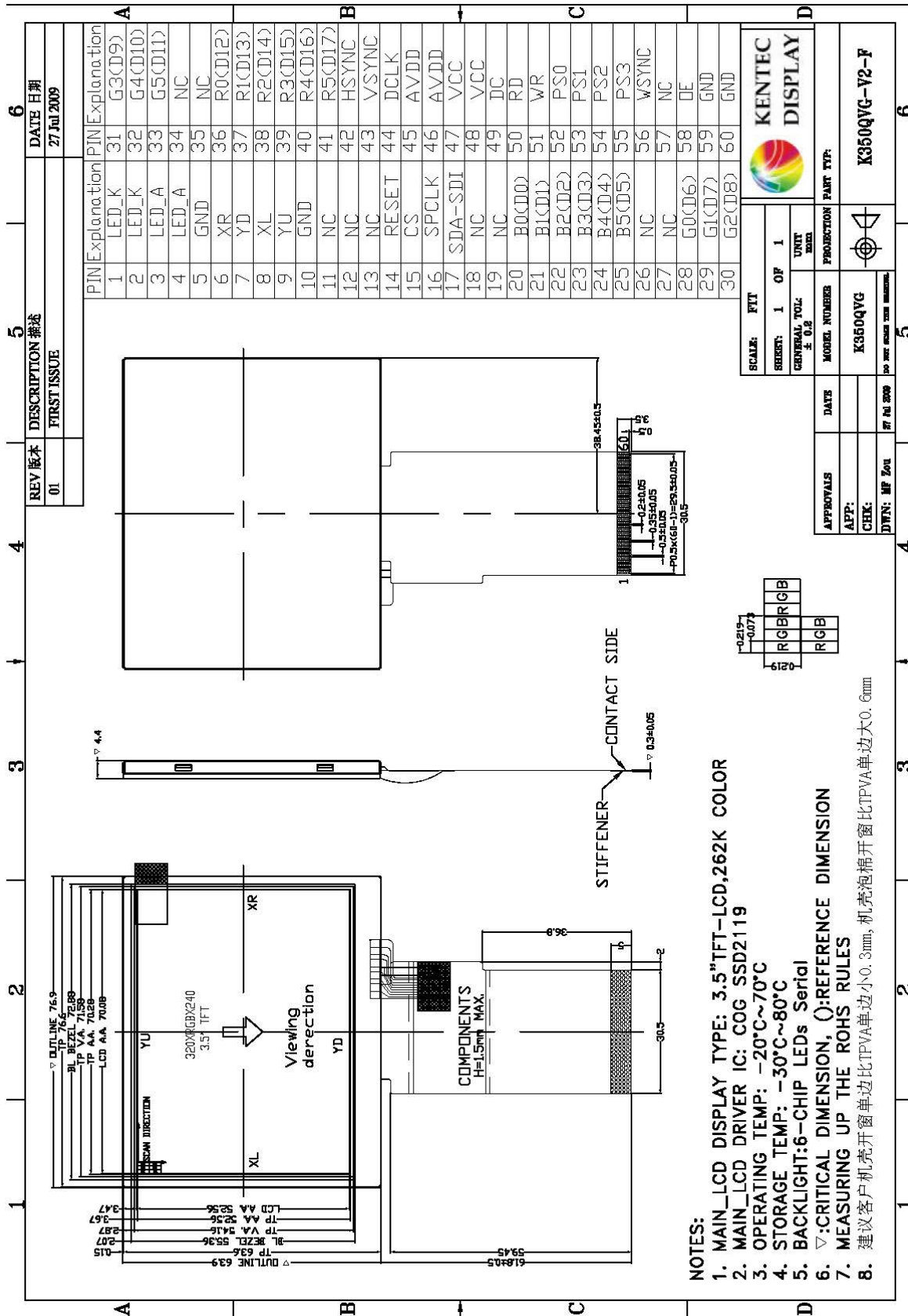| DOCUMENT REVISION | DATE | DESCRIPTION | PREPARED BY | APPROVED BY |
|---|---|---|---|---|
| 01 | 2008.04.28 | First Release. | MF Zou | |
| 02 | 2010.06.30 | Revised typing error | MF Zou | |
| 03 | 2010.07.15 | Update packing reference | MF Zou | |
| 04 | 2012.05.28 | Revised typing error | MF Zou | |

## 2. General Description

- 3.5"(diagonal), 320 x RGB x 240 dots, 262K colors, Transmissive, TFT LCD module.
- Viewing Direction: 12 o'clock.
- Driving IC: SSD2119 or equivalent TFT controller/driver.
- 18-bit/16-bit/8-bit data bus (parallel RGB interface/8080 parallel system interface).
  4-wire/3-wire SPI interface.
- With Touch Panel.
- With internal voltage booster.
- Logic voltage: 3.3V (typ.).

## 3. Mechanical Specifications

The mechanical detail is shown in Fig. 1 and summarized in Table 1 below.

Table 1

| Parameter | | Specifications | Unit |
|---|---|---|---|
| Outline dimensions | | 76.9(W) x 63.9(H) x 4.4(D) (Exclude FPC, cables of backlight) | mm |
| Color TFT 320xRGBx240 | View area | 72.88(W) x 55.36(H) | mm |
| | TP view area | 71.58 (W) x 54.2(H) | mm |
| | LCD active area | 70.08(W) x 52.56(H) | mm |
| | Display format | 320 x RGB x 240 | dots |
| | Color configuration | RGB stripes | - |
| | Dot size | 0.219(RGB)(W) x 0.219(H) | mm |
| Weight | | ~40 | grams |

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| PIN | Explanation | PIN | Explanation |
|---|---|---|---|
| 1 | LED_K | 31 | G3(D9) |
| 2 | LED_K | 32 | G4(D10) |
| 3 | LED_A | 33 | G5(D11) |
| 4 | LED_A | 34 | NC |
| 5 | GND | 35 | NC |
| 6 | XR | 36 | R0(D12) |
| 7 | YD | 37 | R1(D13) |
| 8 | XL | 38 | R2(D14) |
| 9 | YU | 39 | R3(D15) |
| 10 | GND | 40 | R4(D16) |
| 11 | NC | 41 | R5(D17) |
| 12 | NC | 42 | HSYNC |
| 13 | NC | 43 | VSYNC |
| 14 | RESET | 44 | DCLK |
| 15 | CS | 45 | AVDD |
| 16 | SPCLK | 46 | AVDD |
| 17 | SDA-SDI | 47 | VCC |
| 18 | NC | 48 | VCC |
| 19 | NC | 49 | DC |
| 20 | B0(D0) | 50 | RD |
| 21 | B1(D1) | 51 | WR |
| 22 | B2(D2) | 52 | PS0 |
| 23 | B3(D3) | 53 | PS1 |
| 24 | B4(D4) | 54 | PS2 |
| 25 | B5(D5) | 55 | PS3 |
| 26 | NC | 56 | WSYNC |
| 27 | NC | 57 | NC |
| 28 | G0(D6) | 58 | DE |
| 29 | G1(D7) | 59 | GND |
| 30 | G2(D8) | 60 | GND |

| REV 版本 | DESCRIPTION 描述 | DATE 日期 |
|---|---|---|
| 01 | FIRST ISSUE | 27 Jul 2009 |

SCALE: FYT
SHEET: 1 OF 1 UNIT mm
GENERAL TOL: ± 0.2 PROJECTION
MODEL NUMBER: K350QVG
PART TYP: K350QVG-V2-F

| APPROVALS | DATE | |
|---|---|---|
| APP: | | |
| CHK: | | |
| DWN: MP Zou | 27 Jul 2009 | DO NOT SCALE THE DRAWING. |

NOTES:
1. MAIN_LCD DISPLAY TYPE: 3.5"TFT-LCD,262K COLOR
2. MAIN_LCD DRIVER IC: COG SSD2119
3. OPERATING TEMP: -20°C~70°C
4. STORAGE TEMP: -30°C~80°C
5. BACKLIGHT:6-CHIP LEDs Serial
6. ▽:CRITICAL DIMENSION, ():REFERENCE DIMENSION
7. MEASURING UP THE ROHS RULES
8. 建议客户机壳亮边开窗单边比TPVA单边小0.3mm，机壳泡棉开窗比TPVA单边大0.6mm

Viewing derection

320(RGB)X240
3.5' TFT

STIFFENER
CONTACT SIDE

COMPONENTS
H=1.5mm MAX.

**Figure 1: Outline Drawing**

## 4. Interface signals

Table 2: Pin assignment

| Pin No. | Symbol | Description |
|---------|--------|-------------|
| 1-2 | LED_K | Power supply for LED backlight |
| 3-4 | LED_A | |
| 5 | GND | Power supply (system ground) |
| 6 | XR | Terminal of touch panel. |
| 7 | YD | |
| 8 | XL | |
| 9 | YU | |
| 10 | GND | Power supply (system ground) |
| 11-13 | NC | No connection |
| 14 | RESET | System reset pin |
| 15 | CS | Chip select pin |
| 16 | SPCLK | Clock pin of serial interface |
| 17 | SDA-SDI | Data pin of serial interface |
| 18-19 | NC | No connection |
| 20-25 | B[0-5] | Blue data 6-bit/18bit bi-directional (D0-D5) |
| 26-27 | NC | No connection |
| 28-33 | G[0-5] | Green data 6-bit/18bit bi-directional (D6-D11) |
| 34-35 | NC | No connection |
| 36-41 | R[0-5] | Red data 6-bit/18bit bi-directional (D12-D17) |
| 42 | HSYNC | Line synchronization signal input |
| 43 | VSYNC | Frame /Ram synchronization signal input |
| 44 | DCLK | Dot clock signal |
| 45-46 | AVDD | Supply voltage for lcd driving |
| 47-48 | VCC | Supply voltage for logic |
| 49 | DC | Parallel Interface |
| 50 | RD | I80 system: Serves as a read signal and reads data at the low level. |
| 51 | WR | I80 system: Serves as a write signal and writes data at the rising edge. |

| Pin No. | Symbol | Interface selection pin | | | | |
|---------|--------|------|------|------|------|------|
| | | PS3 | PS2 | PS1 | PS0 | Interface mode |
| | | 0 | 0 | 1 | 0 | 16-bit 8080 parallel interface, D[17:10]&D[8:1] |
| | | 0 | 0 | 1 | 1 | 8-bit 8080 parallel interface, D[17:10] |
| | | 0 | 1 | 0 | 0 | 9-bit RGB(262 colour) + 3-wire SPI, D[17:9] |
| 52-55 | PS[0:3] | 0 | 1 | 0 | 1 | 16-bit RGB(262K colour) + 3-wire SPI, D[17:10]&D[8:1] |
| | | 0 | 1 | 1 | 0 | 18-bit RGB(262K colour) + 3-wire SPI, D[17:0] |
| | | 0 | 1 | 1 | 1 | 6-bit RGB(262K colour) + 3-wire SPI, D[17:12] |
| | | 1 | 0 | 1 | 0 | 18-bit 8080 parallel interface, D[17:0] |
| | | 1 | 0 | 1 | 1 | 9-bit 8080 parallel interface, D[17:9] |
| | | 1 | 1 | 1 | 0 | 3-wire SPI |
| 56 | WSYNC | Ram Write Synchronization output |
| 57 | NC | No connection |
| 58 | OE | Display enable pin from controller |
| 59-60 | GND | Power supply (system ground) |

# 5. Absolute Maximum Ratings

## 5.1 Electrical Maximum Ratings – for IC Only

Table 3: Electrical Maximum Ratings – for IC

| Parameter | Symbol | Min. | Max. | Unit | Note |
|---|---|---|---|---|---|
| Supply voltage | VCC | -0.3 | +4.0 | V | 1 |
| Input voltage | AVDD | -0.3 | +5.0 | V | |

Note:

1. VCC, GND must be maintained.

2. The modules may be destroyed if they are used beyond the absolute maximum ratings.

## 5.2 Environmental Condition

Table 4

| Item | Operating temperature (Topr) | | Storage temperature (Tstg) (Note 1) | | Remark |
|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | |
| Ambient temperature | -20°C | +70°C | -30°C | +80°C | Dry |
| Humidity (Note 1) | 80% max. RH for Ta $\leq$ 40°C<br>< 50% RH for 40°C < Ta $\leq$ Maximum operating temperature | | | | No condensation |

Note 1: Product cannot sustain at extreme storage conditions for long time.

# 6. Electrical Specifications

### Typical Electrical Characteristics

At Ta = 25 °C, VCC=IOVCC= 3.3V, GND=0V.

Table 5

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Supply voltage (logic) | VCC-GND | | 1.4 | - | 3.6 | V |
| Supply voltage (lcd driving) | AVDD | | 2.5 or VDDIO | - | 3.6 | V |
| Output voltage(LCD) | VGH | | 9 | - | 18.0 | V |
| | VGL | | **-15.0** | - | -6 | V |
| | VCOM | | **-1** | - | 6 | V |
| Supply current (Logic & LCD) | ICC | VDD=3.3V | - | - | 10 | mA |
| Supply voltage of white LED backlight | VLED | Forward current =20 mA | - | 19.2 | 21.6 | V |
| Luminance (on the module surface) | | Number of LED dies = 6 | 230 | 270 | - | cd/m$^2$ |

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## 7. Optical Characteristics

Table 7: Optical specifications

| Items | | Symbol | Condition | Specifications | | | Unit | |
|---|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | | |
| Contrast Ratio | | CR | | 150 | 300 | - | - | |
| Response Time | | $T_F + T_R$ | | - | 35 | 50 | ms | |
| Chromaticity | Red | $X_R$ | | 0.588 | 0.618 | 0.648 | - | Note |
| | | $Y_R$ | | 0.306 | 0.336 | 0.366 | - | |
| | Green | $X_G$ | | 0.275 | 0.305 | 0.335 | - | |
| | | $Y_G$ | | 0.534 | 0.564 | 0.594 | - | |
| | Blue | $X_B$ | | 0.116 | 0.146 | 0.176 | - | |
| | | $Y_B$ | | 0.077 | 0.107 | 0.137 | - | |
| | White | $X_W$ | | - | 0.307 | - | - | |
| | | $Y_W$ | | - | 0.328 | - | - | |
| Viewing angle | Hor. | φ1(3 o'clock) | Center CR≥10 | - | 45 | - | deg. | |
| | | φ2(9 o'clock) | | - | 45 | - | | |
| | Ver. | θ2(12 o'clock) | | - | 15 | - | | |
| | | θ1(6 o'clock) | | - | 35 | - | | |
| NTSC ratio | | | | | 61.5 | | % | |

Note 1: Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L63 / L0

L63: Luminance of gray level 63

L0: Luminance of gray level 0

CR = CR (10)

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note 5.

Note 2: Definition of Response Time (TR, TF):
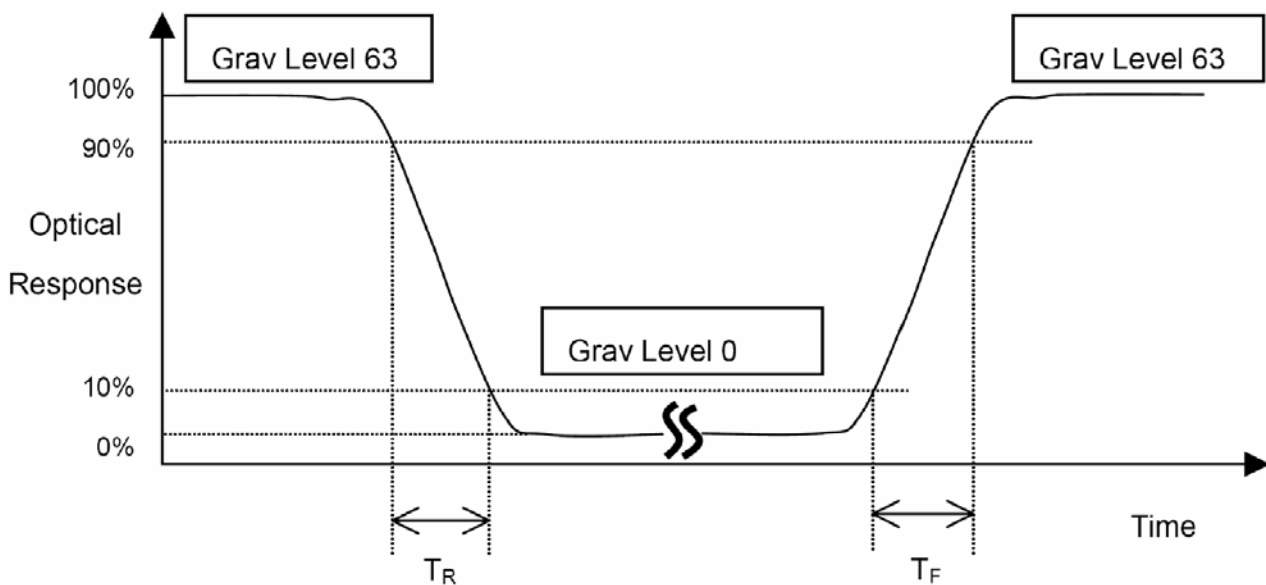


Figure 3

Note 3: Viewing Angle
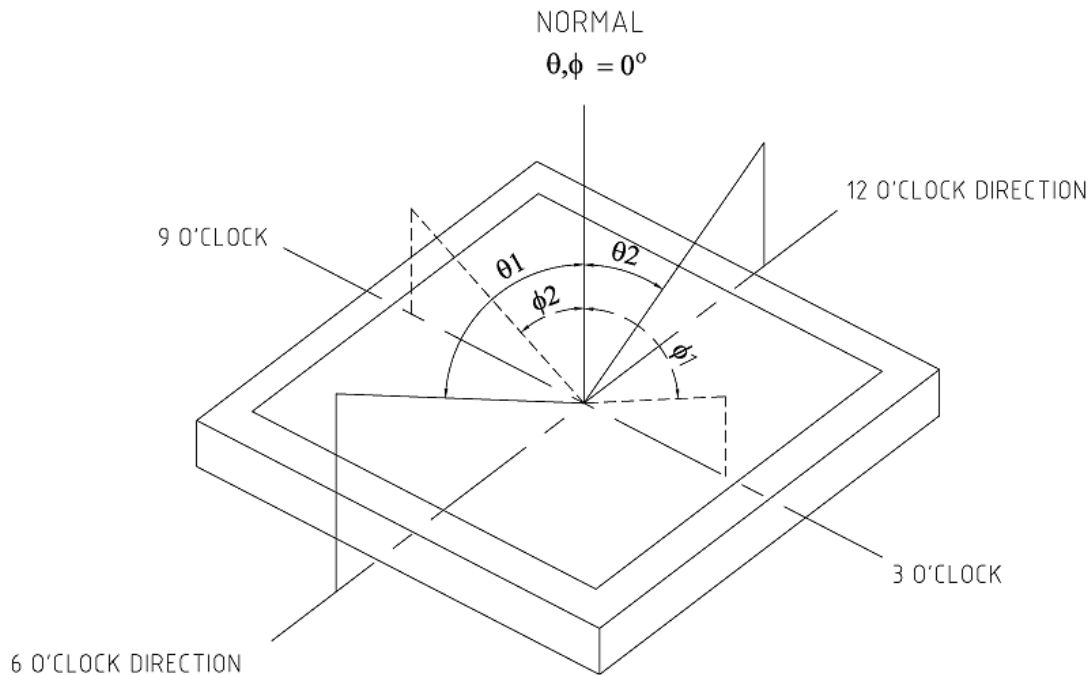


Figure 4

The above "Viewing Angle" is the measuring position with Largest Contrast Ratio; not for good image quality. View Direction for good image quality is 6 O'clock. Module maker can increase the "Viewing Angle" by applying Wide View Film.

Note 4: Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.



Figure 5

# KENTEC DISPLAY
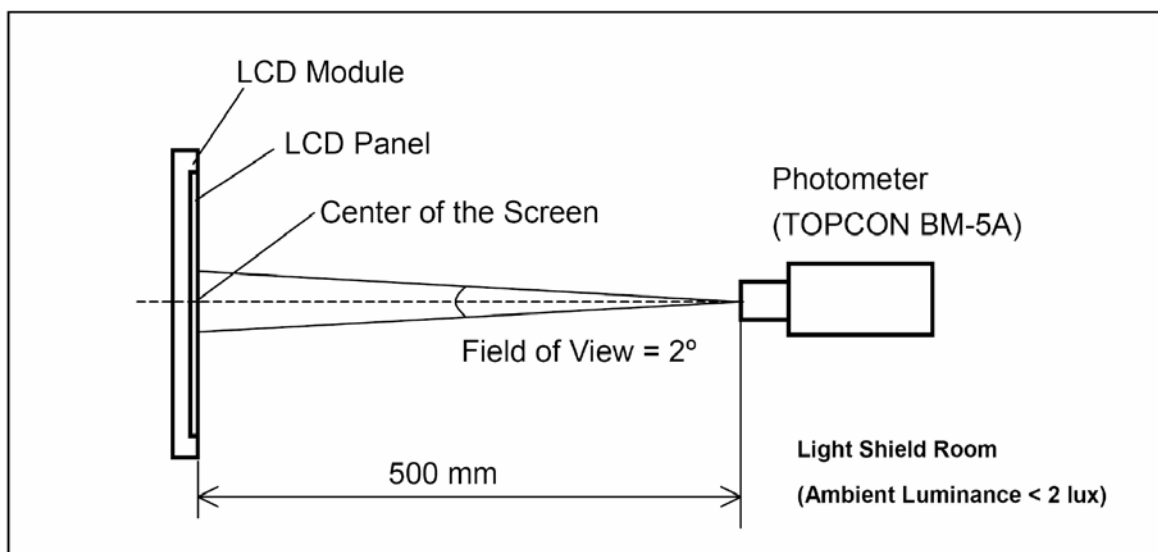
## 8. AC Characteristics

**Please refer SSD2119 datasheet.**

## 9. Reliability Test Item

| Test Item | Sample Type | Test    Condition | Test result determinant gist |
|---|---|---|---|
| High temperature storage | Normal temperature | 70±3 ℃;96H | the inspection of appearance and    function character. |
| | Wide temperature | 80±3 ℃;96H | |
| Low temperature storage | Normal temperature | -20±3 ℃;120H | |
| | Wide temperature | -30±3 ℃;120H | |
| High temperature /humidity storage | Normal temperature | 50 ℃;96H | |
| | Wide temperature | 60 ℃;96H | |
| High temperature operation | Normal temperature | 60±3 ℃;96H | no objection of    the function character; no fatal objection of the appearance. |
| | Wide temperature | 70±3 ℃;96H | |
| Low temperature operation | Normal temperature | 0±3 ℃;96H | |
| | Wide temperature | -20±3 ℃;96H | |
| High temperature /humidity operation | Normal temperature | 40 ℃ | |
| | Wide temperature | 50 ℃ | |
| Temperature Shock | Normal temperature | -20±3℃,30min→70±3℃,30min;10cycle | inspect the objections appearance、 function & the whole structure |
| | Wide temperature | -30±3℃,30min 80±3,30min;10cycle | The inspection of appearance、 function & the whole structure |

## 10. Suggestions for using LCD modules

### 10.1 Handling of LCM

1. The LCD screen is made of glass. Don't give excessive external shock, or drop from a high place.

2. If the LCD screen is damaged and the liquid crystal leaks out, do not lick and swallow. When the liquid is attach to your hand, skin, cloth etc, wash it off by using soap and water thoroughly and immediately.

3. Don't apply excessive force on the surface of the LCM.

4. If the surface is contaminated ,clean it with soft cloth. If the LCM is severely contaminated , use Isopropyl alcohol/Ethyl alcohol to clean. Other solvents may damage the polarizer . The following solvents is especially prohibited: water , ketone Aromatic solvents etc.

5. Exercise care to minimize corrosion of the electrode. Corrosion of the electrodes is accelerated by

water droplets, moisture condensation or a current flow in a high-humidity environment.

6. Install the LCD Module by using the mounting holes. When mounting the LCD module make sure it is free of twisting, warping and distortion. In particular, do not forcibly pull or bend the I/O cable or the backlight cable.

7. Don't disassemble the LCM.

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

- Be sure to ground the body when handling the LCD modules.

- Tools required for assembling, such as soldering irons, must be properly grounded.

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

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

9. Do not alter, modify or change the the shape of the tab on the metal frame.

10. Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.

11. Do not damage or modify the pattern writing on the printed circuit board.

12. Absolutely do not modify the zebra rubber strip (conductive rubber) or heat seal connector

13. Except for soldering the interface, do not make any alterations or modifications with a soldering iron.

14. Do not drop, bend or twist LCM.

**10.2 Cautions for installing and assemabling if the module has Touch Panel**

1. Use a buffer material (Gasket) between the touch panel and Front-case to protect damage and wrong operating. The dimension of the buffer material's edge between the TP V.A. edge is Min. 0.3mm.

2. We recommend to design a case that it can't over the boundary of the active area Max. 0.5mm in order to prevent an operation at outside of the active area which can't guarantee the specified durability,

because operation at the outside of the active area cause serious damage of a transparent.

3. When design case for installing Module, you would consider give a distance about $0.2\pm0.15$mm between the module edge to case inside.

4. The corners of the product are not chamfered. When positioning and fixing the product on the case, we sugguest that you would provide a R part on the conner of the case so as not to apply load on the corner of the transparent module.
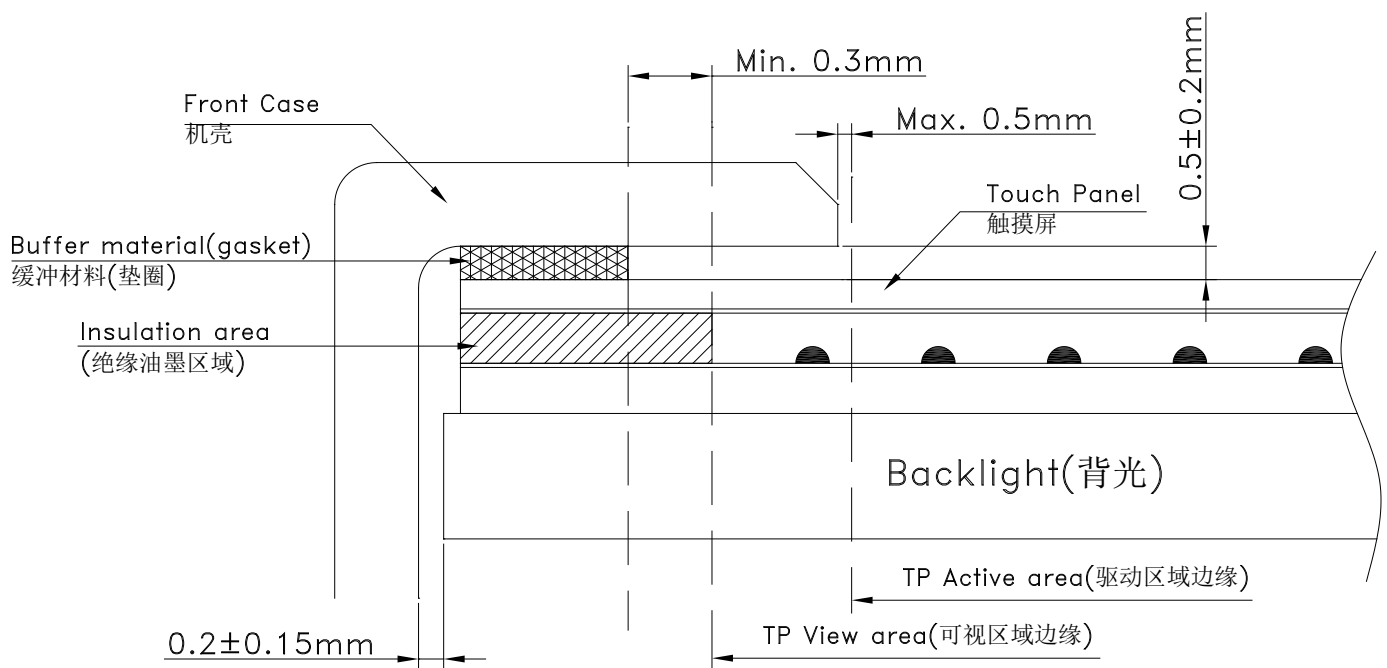


## 10.3 Storage

1. Store in an ambient temperature of 5 to 45 ℃, and in a relative humidity of 40% to 60%. Don't expose to sunlight or fluorescent light.

2. Storage in a clean environment, free from dust, active gas, and solvent.

3. Store in antistatic container.

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## 11. Inspection Standard

This specification is made to be used as the standard acceptance/rejection criteria for Color mobile phone LCM with touch pannel.

### 11.1 Sample plan and Inspection condition
11.1.1 Sample plan

Sampling plan according to MIL-STD-105E , normal level 2 and based on:

Major defect: AQL 0.65;

Minor defect: AQL 1.5.

11.1.2 Inspection condition

Viewing distance for cosmetic inspection is about 30cm with bare eyes, and under an environment of 20~40W light intensity, all directions for inspecting the sample should be within 45 against perpendicular line.

### 11.2 Definition of inspection zone in LCD
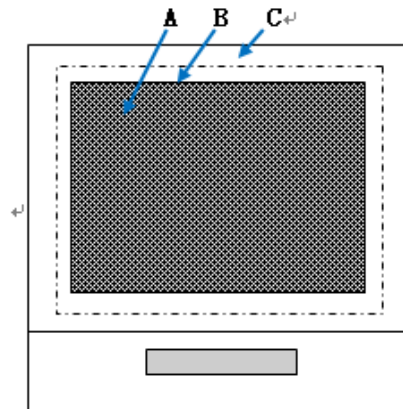


Inspection zones in an LCD

Zone A: character/Digit area;

Zone B: viewing area except Zone A (ZoneA+ZoneB=minimum Viewing area);

Zone C: Outside viewing area (invisible area after assembly in customer's product);

Note: As a general rule, visual defects in Zone C are permissible, when it is no trouble for quality and assembly of customer's product. Defects are classified as major defects and minor defects according to the degree of defectiveness defined herein.

### 11.3 Major defects and Minor defects
11.3.1 Major defects

A major defect is a defect that is likely to result in failure, or to reduce the usability of the product for its intended purpose.

11.3.1.1 Abnormal operation: modules cannot display normally;

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11.3.1.2 Line defect;

11.3.1.3 There is serious distortion or sharp burr on mechanical housing;

11.3.1.4 Glass breakage.

11.3.2 Minor defects:

A minor defect is a defect that is not likely to reduce the usability of the product for its intended purpose.

11.3.2.1 Dot defect:

11.3.2.1.1 Inspection pattern : Full white, full black, red, green and blue screens;

11.3.2.1.2 Criteria :(acceptable);
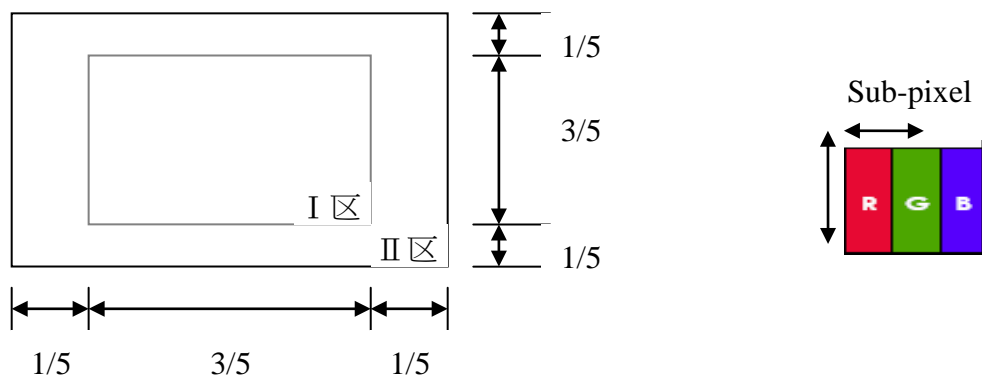


Note: 1. Dot defect is defined as the defective area of the dot area is larger than 50% of the dot area . And the bright dot defect must be visible through 5% ND filter.

2. Except for the allowed numbers of adjacent dots, the distance between dot defects should be more than 3mm apart.

11.3.2.1.3 The definitions of the inner display area and outer display area.
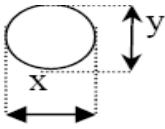
**11.4 Inspection standards table:**

11.4.1 Major defect

| Item No. | Items to be | Inspection Standard | Classification of defects |
|---|---|---|---|
| 11.4.1.1 | All functional defects | 1) No display<br>2) Display abnormally<br>3) Missing vertical/horizontal segment<br>4) Short circuit<br>5) Back-light no lighting, flickering and abnormal lighting. | Major |
| 11.4.1.2 | Missing | Missing component | |
| 11.4.1.3 | Outline dimension | Overall outline dimension beyond the drawing is not allowed. | |
| 11.4.1.4 | linearity | No more than 1.5% | |

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11.4.2 Cosmetic Defect (spot defect)

| Item No | Itemsto be | Inspection Standard | | | | Classification of defects |
|---|---|---|---|---|---|---|
| 11.4.2.1 | **Clear Spots** Black and white Spot defect Pinhole, Foreign Particle, polarizer Dirt | For dark/white spot, sizeΦis defined as $\Phi=( x +y )/2$  | | | | Minor |

| Zone / Size(mm) | Acceptable Qty | | | Classification |
|---|---|---|---|---|
| | A | B | C | |
| Φ≤0.1 | Ignore | | | Minor |
| 0.10＜Φ≤0.15 | 2 | | Ignore | |
| 0.15＜Φ≤0.20 | 1 | | | |
| Φ＞0.20 | 0 | | | |

| 11.4.2.2 | **Clear Spots** TP Dirt |

| Zone / Size(mm) | Acceptable Qty | | | Classification |
|---|---|---|---|---|
| | A | B | C | |
| Φ≤0.1 | Ignore | | | Minor |
| 0.10＜Φ≤0.15 | 2 | | Ignore | |
| 0.15＜Φ≤0.25 | 1 | | | |
| Φ＞0.25 | 0 | | | |

| 11.4.2.3 | **Dim Spots** Circle shaped and dim edged defects |

| Zone / Size(mm) | Acceptable Qty | | | Classification |
|---|---|---|---|---|
| | A | B | C | |
| Φ≤0.2 | Ignore | | | Minor |
| 0.20＜Φ≤0.4 | 2 | | Ignore | |
| 0.4＜Φ≤0.6 | 1 | | | |
| Φ＞0.6 | 0 | | | |

| 11.4.2.4 | **Dot defect** | dot =sub-pixel | | | | Minor |

| | Acceptable Qty | |
|---|---|---|
| | I | II |
| Bright dot | 0 | 2 |
| Dark dot | 1 | 2 |

The distance of two point >5mm
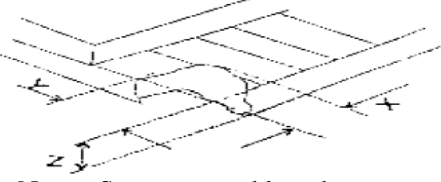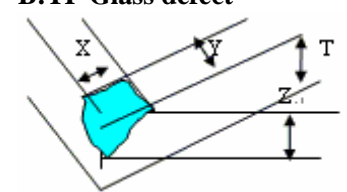
11.4.3 Cosmetic Defect (linear defect)

| Item No | Items to be | Inspection Standard | | | | | Classification of defects |
|---|---|---|---|---|---|---|---|

| 11.4.3.1 | **Line defect** Black line, White line, Foreign material on polarizer |

| Size(mm) | | Acceptable Qty | | | Classification |
|---|---|---|---|---|---|
| | | zone | | | |
| L(Length) | W(Width) | A | B | C | |
| Ignore | W≤0.02 | Ignore | | | Minor |
| L≤3.0 | 0.02＜W≤0.03 | 2 | | Ignore | |
| L≤2.0 | 0.03＜W≤0.05 | 1 | | | |
| | W＞0.05 | Define as spot defect | | | |

| 11.4.3.2 | Foreign Material on TP film | The line can be seen after mobile phone in the operating condition: | | | | | Minor |

The line can be seen after mobile phone in the operating condition:

| Size(mm) | | Acceptable Qty | | | |
|---|---|---|---|---|---|
| L(Length) | W(Width) | zone | | | |
| | | A | B | C | |
| Ignore | W≤0.03 | Ignore | | | |
| L≤3.0 | 0.03 < | 3 | | | Ignore |
| | W>0.05 | Define as spot defect | | | |

**11.4.3.3 — Dim line defect** — Polarizer &BL scratch TP film scratch — Minor

If the scratch can be seen after mobile phone cover assembling or in the operating condition, judge by the line defect of 11.4.3.1. If the scratch can be seen only in non-operating condition or some special angle, judge by the following.

| Size(mm) | | Acceptable Qty | | | |
|---|---|---|---|---|---|
| L(Length) | W(Width) | zone | | | |
| | | A | B | C | |
| Ignore | W≤0.02 | Ignore | | | |
| L≤3.0 | 0.02 < W≤0.03 | 2 | | | Ignore |
| L≤2.0 | 0.03 < W≤0.05 | 1 | | | |
| | W>0.05 | Define as spot defect | | | |

**11.4.3.4 — Polarize Air bubble — Minor**

Air bubbles between glass & polarizer

| | Acceptable Qty | | |
|---|---|---|---|
| | A | B | C |
| Φ≤0.2 | Ignore | | |
| 0.20< Φ≤0.3 | 2 | | Ignore |
| 0.3< Φ≤0.5 | 1 | | |
| Φ>0.5 | 0 | | |

11.4.4 Chipping Defect

| Item No | Items to be | Inspection Standard | Classification of defects |
|---|---|---|---|
| 11.4.4.1 | Glass defect | Chips on corner<br>**A:LCD Glass defect**<br><br>Notes: S=contact pad length<br>Chips on the corner of terminal shall not be allowed to extend into the ITO pad or expose perimeter seal.<br>**B:TP Glass defect**<br> | Minor |

A:LCD Glass defect

| X | Y | Z |
|---|---|---|
| ≤0.2 | ≤S | Disregard |

B:TP Glass defect

| X | Y | Z |
|---|---|---|
| ≤3.0 | ≤3.0 | Disregard |

Usual surface cracks
**A:LCD Glass defect**
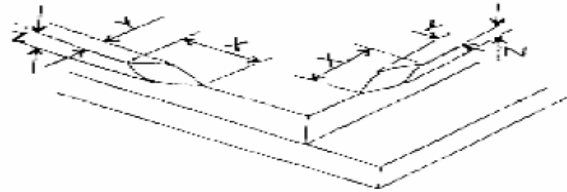


| X | Y | Z |
|------|-----------------------------|-----------|
| ≤3.0 | <Inner border line of the seal | Disregard |

**B:TP Glass defect**
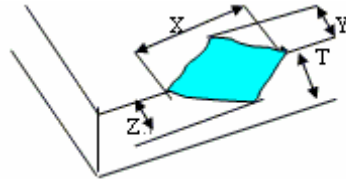


| X | Y | Z |
|------|------|-----------|
| ≤6.0 | ≤2.0 | Disregard |
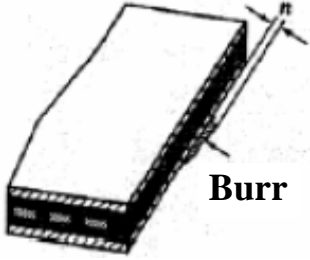
Crack: Cracks tend to break are not allowed.
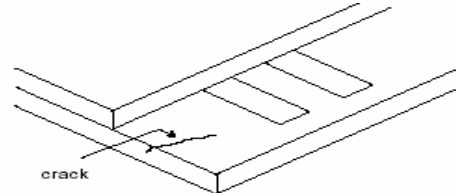


11.4.5 Parts Defect

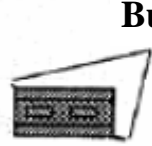| Item No | Items to be | Inspection Standard | Classification of defects |
|---------|-------------|---------------------|---------------------------|
| 11.4.5.1 | Parts contra position | 1                                Not allow Chip and FPC heat 50% beyond lead pattern. 2                                                    、N 50% of the pad outline. | Major |
| 11.4.5.2 | SMT | According to the <Acceptability of electronic assemblies>IPC-A-610C class 2 standard. Component missing or function defect are Major defect, the others are Minor defect. | Major |
| 11.4.5.3 | TP Defect | 1                                、Pattern font: Pattern fonts are clear and symmetrical                                , pat lightly are allowed; The fort line is not allow to thinner or thicker than 1/3 of normal size, and swing is not more than 0.1mm. the line is smooth and not broken.  **Pattern font** 2                                                    、The wing forw The length of wing forward inside of the Visual Area: n                                                                ≤0. | Major |

**KENTEC DISPLAY**

**Burr**

**Burr**

3      operation, press to be With sibility.

4                                             `
allowed.

**TP knob**

5         、 Newton ring
Without operation, the color circle of Regularity or
Non-regularity from the normal or slope angle of view.

1       it Regular                                  : The
area of the touch panel; and no character affected and line
distorted after touch panel lightening. It's ok.

2       Non-regularity                                : T
the 1/2 area of touch panel with lightening. And no character
affected and line

**Regular**                        **Irregular**

| 11.4.5.4 | Backlight elements | 1 Illumination source flickers when lit.<br>2 Spots or scratches that appear when lit must be judged using LCD spot, lines and contamination standards.<br>3 Backlight doesn't light or color is wrong | Major |
|---|---|---|---|
| 11.4.5.5 | Soldering | 1 No unmelted solder paste may be present on the FPC<br>2 No cold solder joints, missing solder connections, oxidation or icicle.<br>3 No short circuits in components on FPC | Major |

**KENTEC DISPLAY**

# 11. Packing (Reference only)
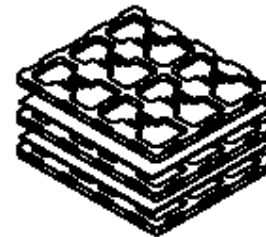
**Packing Method**

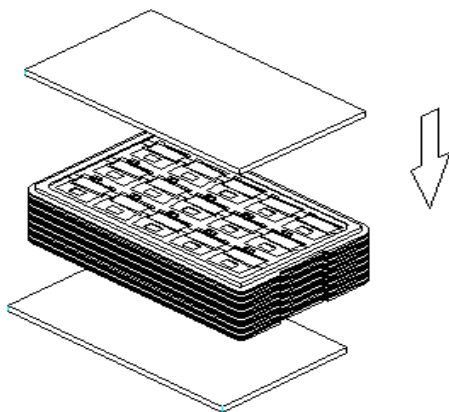(1) 6pcs modules/tray

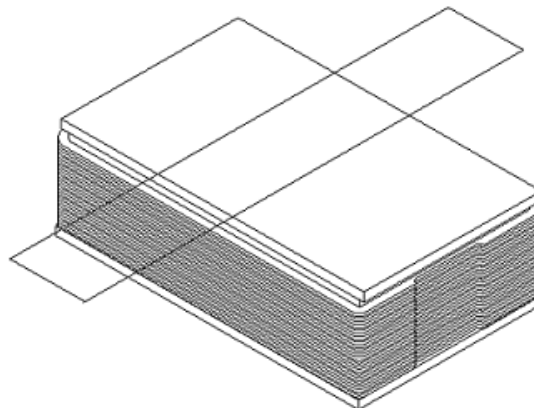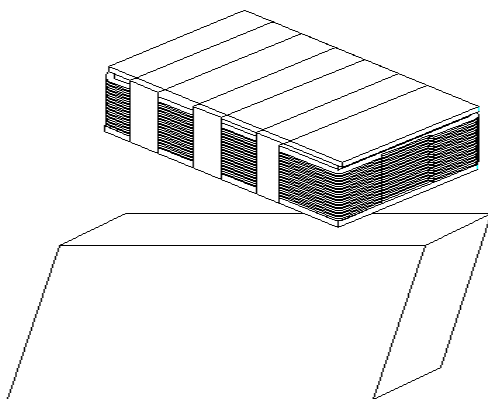(2) 6 tray stacking/lot
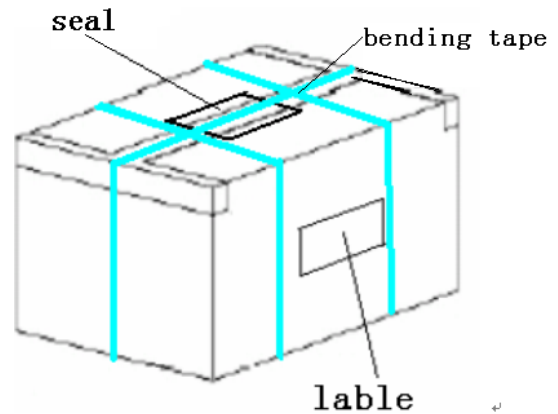
Coverd by empty tray

6tray /lot

(3) 2 EPE cushion/lot

(4) Fixing by type

(5) 2 lot/internal box (72PCS)

(6) 2 internal boxs/out box

seal

bending tape

lable

Size: 400.0x350.0x400.0mm

Total: 144pcs module/out box