



SHENZHEN APTUS INTERNATIONAL CO., LIMITED

# PRODUCT SPECIFICATION

**4.2" TFT-LCD 1860×2400 MODULE**

**MODEL NAME: DBM042M2K01**

**DOC VERSION: 1.0**

**TOTAL PAGES: 13**

**DATE: 2026.07.14**

|                          |  |
|--------------------------|--|
| <b>FOR CUSTOMER</b>      |  |
| <b>CUSTOMER APPROVED</b> |  |

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## Catalog:

| NO. | Contents                 | Page  |
|-----|--------------------------|-------|
| 1   | History Version          | 1     |
| 2   | Mechanical Description   | 2     |
| 3   | Mechanical Drawing       | 3     |
| 4   | Interface Definition     | 4     |
| 5   | Interface Timing         | 5-6   |
| 6   | Absolute Maximum Ratings | 7     |
| 7   | DC Characteristics       | 7     |
| 8   | Optical Specification    | 7-8   |
| 9   | Reliability testing      | 10    |
| 10  | Inspection Standard      | 11-12 |
| 11  | Precaution               | 12-13 |
|     |                          |       |
|     |                          |       |
|     |                          |       |

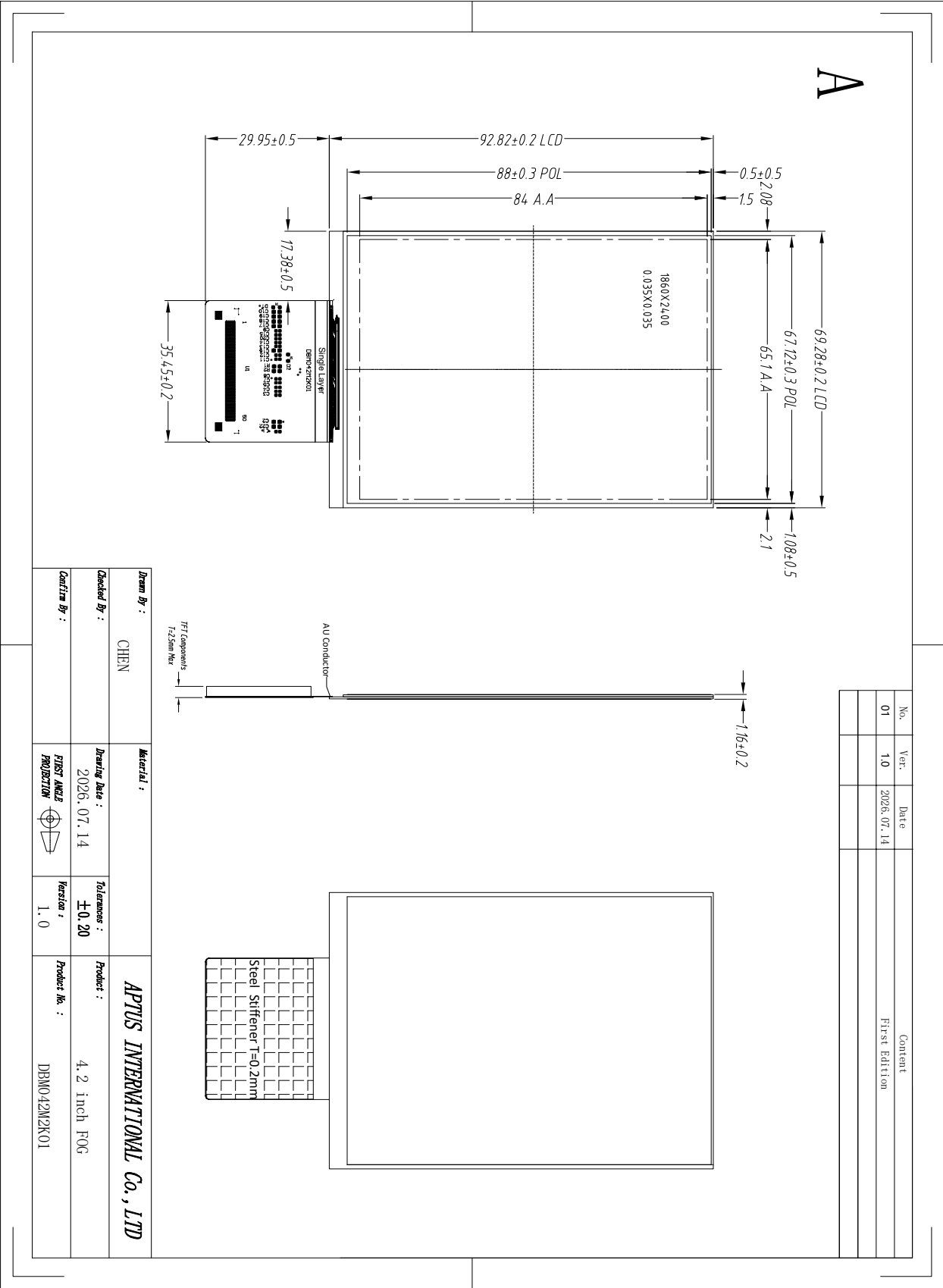
## 1. History Version

| Sample version | Doc. version | Date       | Description | Modify |
|----------------|--------------|------------|-------------|--------|
| V1.0           | V1.0         | 2026-07-14 | First issue | CHEN   |

## 2. Mechanical Description

| Name           | Content                         | Unit |
|----------------|---------------------------------|------|
| Outline Size   | 69.28 (W) * 92.82 (H) * 1.16(T) | mm   |
| Module size    | 4.2 (A.A)                       | inch |
| Resolution     | 1860* 2400 Pixels               | –    |
| Viewing size   | 65.1(W) * 84.00(H)              | mm   |
| Pixel size     | 0.035 * 0.035                   | mm   |
| LCD Type       | TFT (MONO)/ Transmissive        | –    |
| Viewing Angle  | ALL                             | –    |
| Driver IC      | –                               | –    |
| Backlight Type | –                               | –    |
| Interface Type | 4 LANE MIPI                     | –    |

### 3. Mechanical Drawing



#### 4. Interface Definition

| PIN NO. | PIN Name    | Function Description                                  |
|---------|-------------|-------------------------------------------------------|
| 1       | GND         | Power Ground                                          |
| 2       | MIPI_D2P_M  | MASTER MIPI-DSI Data2 differential signal input pins. |
| 3       | MIPI_D2N_M  | MASTER MIPI-DSI Data2 differential signal input pins. |
| 4       | GND         | Ground                                                |
| 5       | MIPI_D1P_M  | MASTER MIPI-DSI Data1 differential signal input pins. |
| 6       | MIPI_D1N_M  | MASTER MIPI-DSI Data1 differential signal input pins. |
| 7       | GND         | Ground                                                |
| 8       | MIPI_CLKP_M | MASTER MIPI-DSI CLOCK differential signal input pins  |
| 9       | MIPI_CLKN_M | MASTER MIPI-DSI CLOCK differential signal input pins  |
| 10      | GND         | Ground                                                |
| 11      | MIPI_D0P_M  | MASTER MIPI-DSI Data0 differential signal input pins. |
| 12      | MIPI_D0N_M  | MASTER MIPI-DSI Data0 differential signal input pins. |
| 13      | GND         | Ground                                                |
| 14      | MIPI_D3P_M  | MASTER MIPI-DSI Data3 differential signal input pins. |
| 15      | MIPI_D3N_M  | MASTER MIPI-DSI Data3 differential signal input pins. |
| 16      | GND         | Ground                                                |
| 17-37   | NC          |                                                       |
| 38      | GND         | Ground                                                |
| 39      | IOVCC       | Power                                                 |
| 40      | GND         | Ground                                                |
| 41      | GND         | Ground                                                |
| 42      | NC          |                                                       |
| 43      | VSN         | Power, -5.5V                                          |
| 44      | NC          |                                                       |
| 45      | VSP         | Power, +5.5V                                          |
| 46      | NC          |                                                       |
| 47      | NC          |                                                       |
| 48      | NC          |                                                       |
| 49      | NC          |                                                       |
| 50      | GND         | Ground                                                |

## 5. Interface Timing:

### 5.1 Reset Timing

When RESETB of the reset pin equals to Low, it will be in the condition of reset. When it is in the condition of reset, it will make the device recover the initial set.

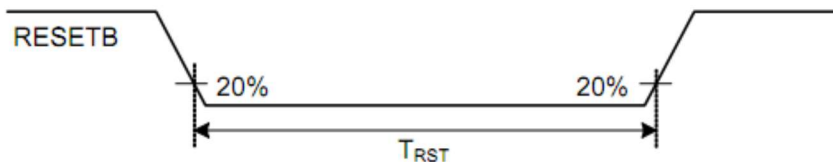
However, in order to avoid the reset noise cause reset, there is a mechanism to judge about whether the reset is needed or not.

The closed interval of Low can be shown as the following.

(VDDI=1.65V~3.6V, VSS=0V, T<sub>A</sub>=-20℃~+85℃)

| Parameter             | Symbol           | Condition | Spec. |      |      | Unit |
|-----------------------|------------------|-----------|-------|------|------|------|
|                       |                  |           | Min.  | Typ. | Max. |      |
| Reset low pulse width | T <sub>RST</sub> | -         | 20    | -    | -    | μs   |

Table 13.3: Reset timing



MIPI Timing 请咨询

## 6. Absolute Maximum Ratings:

| Name                  | symbol          | Min | Type | Max | Unit |
|-----------------------|-----------------|-----|------|-----|------|
| Operation Temperature | T <sub>OP</sub> | -20 | –    | 70  | °C   |
| Storage Temperature   | T <sub>ST</sub> | -30 | –    | 80  | °C   |

## 7. DC Characteristics

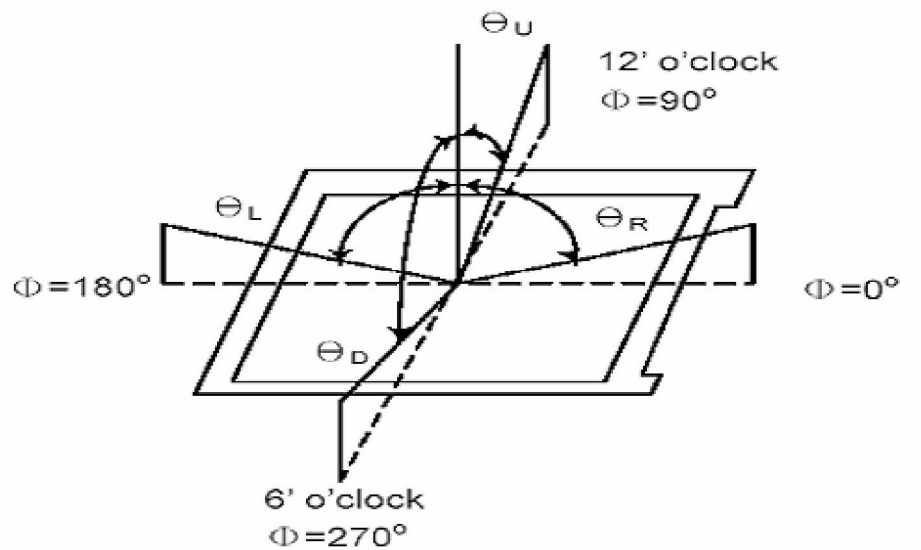
| Name                | Symbol | Min | Type | Max | Unit |
|---------------------|--------|-----|------|-----|------|
| Logical Voltage     | VDD    | –   | –    | –   | V    |
| Logical Voltage     | IOVCC  | 1.7 | –    | 1.9 | V    |
| Logical Voltage     | VSN    | –   | -5.5 | –   | V    |
| Logical Voltage     | VSP    | –   | +5.5 | –   | V    |
| –                   | –      | –   | –    | –   | V    |
| Current Consumption | IDD    | –   | –    | 150 | mA   |

## 8. Optical Specification

| Name                    | Symbol | Min | Type | Max | Unit               |
|-------------------------|--------|-----|------|-----|--------------------|
| Transmittance rate(405) | T(%)   | 6   | 7    | –   | %                  |
| Contrast ratio(405)     | C/R    | 380 | 400  | –   | –                  |
| Response time           | Tr+Tf  | –   | 25   | –   | ms                 |
| Viewing Angle           | θ U    | 80  | 85   | –   | degree<br>(C/R>10) |
|                         | θ D    | 80  | 85   | –   |                    |
|                         | θ L    | 80  | 85   | –   |                    |
|                         | θ R    | 80  | 85   | –   |                    |



\*Viewing angle descriptin:

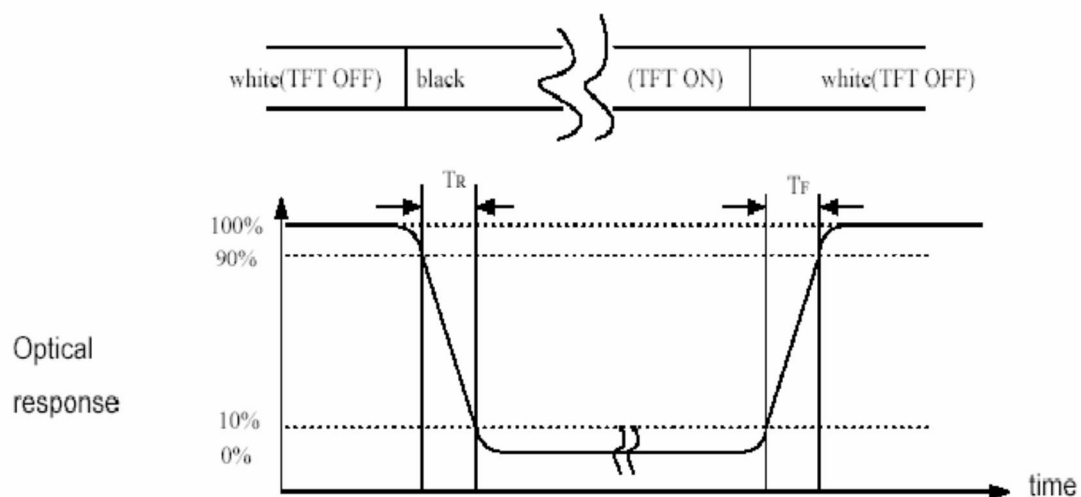


\*Contrast rate description(CR) :

Tested in the center of the LCM panel

$$CR = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$

\*Response time description : Sum of TR and TF



## 9 . Reliability testing:

| Item No | Name                                 | Condition                                                                                                            | Remark                          |
|---------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------|
| 1       | High temperature Operating           | 70° C , 168Hours                                                                                                     | Finish product (With polarizer) |
| 2       | Low temperature Operating            | -20° C , 168 Hours                                                                                                   | Finish product (With polarizer) |
| 3       | High temperature Storage             | 80° C , 168 Hours                                                                                                    | Finish product (With polarizer) |
| 4       | Low temperature Storage              | -30° C , 168 Hours                                                                                                   | Finish product (With polarizer) |
| 5       | High temperature & humidity Storage  | 60° C , 90%RH, 168 Hours                                                                                             | Finish product (With polarizer) |
| 6       | Thermal Shock Storage (No operation) | -20° C , 30min. <=> 70° C , 30min.<br>10 Cycles                                                                      | Finish product (With polarizer) |
| 7       | ESD test                             | Voltage:+8KV<br>R:330 ohm, C:150pF<br>Air discharge, 10 times                                                        | Finish product (With polarizer) |
| 8       | Vibration test                       | 10 => 55 => 10 => 55 => 10 Hz,<br>within 1 minute; Amplitude: 1.5mm.<br>15 minutes for each Direction<br>( X, Y, Z ) | Finish product (With polarizer) |
| 9       | Drop test                            | Packed, 100CM free fall<br>6 sides, 1 corner, 3 edges                                                                | Finish product (With polarizer) |

\*One single product test for only one item.

\* Judgment after test: keep in room temperature for more than 2 hours.

- Current consumption < 2 times of initial value
- Contrast > 1/2 initial value
- Function: work normally

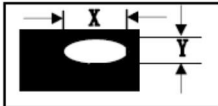
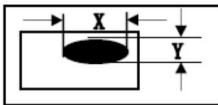
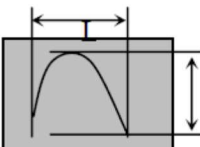
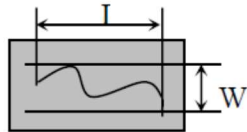
## 10. Inspection Standard

### 10.1 Defect Definition

| No. | Defect Class | Defination        | Content                   |
|-----|--------------|-------------------|---------------------------|
| 1   | 重缺陷 (MA)     | 影响显示的功能缺陷         | 短路、断路、缺划、大电流、视角错、漏液、显示不清等 |
|     |              | 严重外观缺陷            | 产品尺寸不符、漏部品等               |
| 2   | 轻缺陷 (MI)     | 不影响产品功能，但对产品外观有影响 | 反黑 / 反白点、偏光片缺陷、针孔、污点      |

### 10.2 Standard

| No. | Item | Inspection Standard                                   | Classifi<br>cation<br>of<br>defects |
|-----|------|-------------------------------------------------------|-------------------------------------|
| 1   | 显示状态 | 不显、显示乱码、多划、少划、少画面、视角错、闪烁等均不允许                         | 重缺陷                                 |
|     |      | 无法用文字描述的现象，必要时制定限度样板进行参考。如：显示不均、显示浓淡、斜纹等              |                                     |
|     |      | 显示的颜色效果参照开发、工程样品或按限度样板判定                              |                                     |
|     |      | 画面切换过程中可见(但非画异)之不良现象(暂停画面时不良现象不可见)不作管控，客户有特殊要求时依客户要求； | 轻缺陷                                 |
|     |      | 仅点背光不显示画面下可见不良现象（但显示画面时不良现象不可见)不作管控，客户有特殊要求时依客户要求；    | 轻缺陷                                 |
| 2   | 背光   | LED 灯不亮或闪烁不稳定不允许                                      | 重缺陷                                 |
|     |      | 背光电流：超出规格范围不允许                                        |                                     |
|     |      | 亮眼、漏光：进入 LCD 的 A、B 区不允许，必要时按限度样板做判定                   | 轻缺陷                                 |
|     |      | 背光颜色：根据样品、规格书判定                                       | 轻缺陷                                 |
|     |      | 亮度与发光均匀度参照开发、工程或限度样板判定                                | 轻缺陷                                 |

| No. | Item                     | Inspection Standard                                              |          |                                                                                      | Classifi<br>cation<br>of<br>defects |
|-----|--------------------------|------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------|-------------------------------------|
| 3   | 显示黑点<br><br>白点<br><br>针孔 | 直径( $\Phi = (X+Y) / 2$ )                                         | 允收数      | 图示                                                                                   | 轻缺陷                                 |
|     |                          | $\Phi \leq 0.05$ （密集不可）                                          | 不计       |   |                                     |
|     |                          | $0.1 < \Phi \leq 0.3$ [注2]                                       | 2        |                                                                                      |                                     |
|     |                          | $0.3 < \Phi \leq 0.5$                                            | 1        |                                                                                      |                                     |
|     |                          | $\Phi > 0.5$                                                     | 0        |                                                                                      |                                     |
|     |                          | 注1. 包括：黑点、白点、针孔、异物。<br>注2. 整个产品不允许超过2个点, 且<br>间距必须在10mm以上。       |          |   |                                     |
| 4   | 显示黑线<br><br>白线           | 尺 寸（L：线长；W：线宽）                                                   | 允收数      | 图示                                                                                   | 轻缺陷                                 |
|     |                          | L 不计 W<0.05（密集不可）                                                | 不计       |   |                                     |
|     |                          | $L \leq 2$ $0.05 \leq W \leq 0.1$ [注 2]                          | 2        |                                                                                      |                                     |
|     |                          | L 不计 W>0.1                                                       | 以点判<br>断 |  |                                     |
|     |                          | 注1. 包括：显示黑线、白线、线状异物。<br>注2. 单个产品不允许超过2个线状缺陷，且<br>缺陷距离必须大于10mm以上。 |          |                                                                                      |                                     |
| 5   | 触摸屏                      | 点击触摸屏测试点画面无转换不允许                                                 |          |                                                                                      | 重缺陷                                 |

## 11. Precaution

### 11.1 Handling

- (1) Protect the panel from static, it may cause damage to the CMOS Gate Array IC.
- (2) Use fingerstalls with soft gloves in order to keep display clean during the incoming inspection and assembly process.
- (3) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, legs or clothes, it must be washed away thoroughly with soap.
- (4) The desirable cleaners are water, IPA (Isopropyl Alcohol) or Hexane. Don't use Ketone type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanent damage to the polarizer due to chemical reaction.

- 
- (5) Pins of I/F connector shall not be touched directly with bare hands.
  - (6) Refrain from strong mechanical shock and / or any force to the panel. In addition to damage, this may cause improper operation or damage to the panel.
  - (7) Note that polarizers are very fragile and could be easily damaged. Do not press or scratch the surface harder than a B pencil lead.
  - (8) Wipe off water droplets or oil immediately. If you leave the droplets for a long time, staining and discoloration may occur.
  - (9) If the surface of the polarizer is dirty, clean it using some absorbent cotton or soft cloth.

### **11.2 Storage**

- (1) Do not leave the panel in high temperature, and high humidity for a long time. It is highly recommended to store the panel with temperature from 0 to 35°C and relative humidity of less than 70%.
- (2) The panel shall be stored in a dark place. It is prohibited to apply sunlight or fluorescent light during the store.

### **11.3 Operation**

- (1) The LCD shall be operated within the limits specified. Operation at values outside of these limits may shorten life, and/or harm display images.
- (2) Do not exceed the absolute maximum rating value. (the supply voltage variation, Input voltage variation in part contents and environmental temperature and so on). Otherwise the panel may be damaged.
- (3) If the panel displays the same pattern continuously for a long period of time, it can be the situation when the image "Sticks" to the screen.