

# 深圳市正晶浩电子有限公司

SHEN ZHEN ZHENG JING HAO ELECTRONICS CO.,LTD.

网址: [www.zjhlcd.com](http://www.zjhlcd.com) 电话: 0755-29355801, 133-9284-8764

MODEL NO(产品型号): **YT180S016**

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## 1.8 inch LCD TFT

(1.8英寸彩色液晶显示屏)

## 128RGBx160 Resolution and 65K color

(128x160分辨率, 6万5千种色)

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## 1. General Description 基本描述

|                           |  |
|---------------------------|--|
| MODEL NO<br>产品型号          | <b>YT180S016</b>                               |
| Display Mode<br>显示模式      | Transmissive 全透                                |
| Display Format<br>显示格式    | Graphic 128RGB*160 Dot-matrix 128xRGBx160 图形点阵 |
| Input Data<br>显示屏接口类型     | 8080-8 位并口 8 位并连接口                             |
| Viewing Direction<br>视角方向 | 12 o'clock 12 点钟                               |
| Drive<br>显示屏驱动芯片          | ST7735S (台湾矽创)                                 |

## 2. Mechanical Specification 机械规格

| Item                           | Specifications  | Unit |
|--------------------------------|---|------|
| Dimensional outline<br>显示屏外围尺寸 | 34.00(W)*45.83(H)*2.40MAX(T) 不带触摸厚度<br>34.00(W)*45.83(H)*3.65MAX(T) 带触摸厚度 | mm   |
| Resolution<br>分辨率              | 128RGB*160  | dots |
| LCD Active area<br>显示尺寸        | 28.03 (W)*35.04 (H)   | mm   |
| Pixel size<br>像素尺寸             | 0.219(W)*0.219(H)   | mm   |

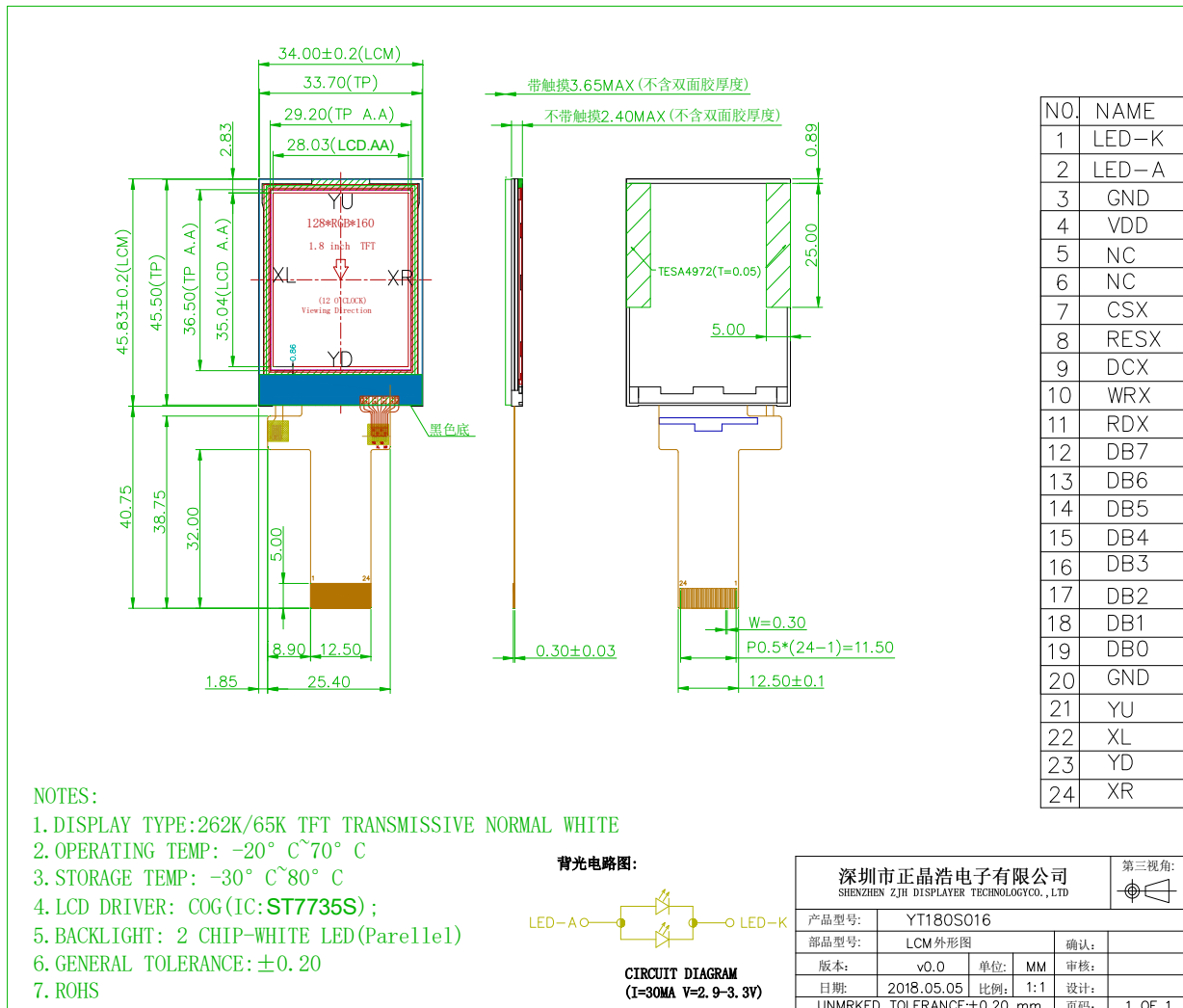
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## 3.Mechanical Dimension 机械尺寸图



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## 4. Electrical Maximum Ratings 电气极限

| Item<br>项目                          | Symbol<br>符号     | Min<br>最小值 | Max<br>最大值 | Unit<br>单位 | Note<br>备注 |
|-------------------------------------|------------------|------------|------------|------------|------------|
| Supply voltage (VDDI)<br>工作电压(VDDI) | V                | 1.8        | 3.3        | V          | -          |
| Supply voltage (VDD)<br>工作电压(VDD)   | V                | 2.8        | 3.3        | V          | -          |
| Operating temperature 工<br>作温度范围    | T <sub>OPR</sub> | -20        | 70         | °C         | -          |
| Storage temperature<br>存储温度范围       | T <sub>STR</sub> | -30        | 80         | °C         | -          |

※NOTE: VDDI 和 VDD 可以直接连一起, 共用一组 (2.8V~3.3V) 电压供电。

## 5. Brightness characteristic&Power dissipation 亮度特性&功耗

| Item<br>项目                                   | Symbol<br>符号     | Min<br>最小值 | Typical<br>典型值 | Max<br>最大值 | Unit              |
|--|------------------|------------|----------------|------------|-------------------|
| LED module Forward voltage<br>LED 背光源正向电压    | V <sub>LED</sub> | 2.9        | 3.1            | 3.3        | V                 |
| LED module current<br>LED 背光源电流              | I <sub>LED</sub> | -          | 18             | -          | mA                |
| LCD Surface Luminance<br>显示屏表面亮度             | L <sub>S</sub>   | 180        | 200            | -          | Cd/m <sup>2</sup> |
| LCD Surface brightness uniform<br>LED 背光源均匀度 | L <sub>D</sub>   | 80         | -              | -          | %                 |
| LCD power dissipation<br>显示屏总功耗              | P <sub>LCD</sub> | -          | 0.11           | -          | W                 |

※NOTE:  $P_{LCD} = VDD * (I_{LED} + I_{LCD})$

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## 6. Module Function Description 显示屏脚位定义

| 引脚序号<br>PIN No. | 引脚名称<br>Symbol | 作用描述<br>Description  | 备注<br>Notes |
|-----------------|----------------|--|-------------|
| 1               | LED-K          | Cathode of Backlight<br>(背光负极供电脚)  |             |
| 2               | LED-A          | Anode of Backlight (2.9V-3.3V Typical:3.1V)<br>(背光正极供电脚,电压范围:2.9-3.3V,典型值:3.1V)  |             |
| 3               | GND            | Ground<br>(接地脚)  |             |
| 4               | VDD            | Power Supply for LCD.<br>(显示屏电源供电脚 2.8-3.3V)   |             |
| 5-6             | NC             | No connection<br>(空脚)  |             |
| 7               | CSX            | -Chip selection pin<br>Low enable.<br>High disable.<br>(显示屏驱动芯片选脚,低电平使能)   |             |
| 8               | RESX           | -This signal will reset the device and it must be applied to properly initialize the chip.<br>-Signal is active low.<br>(显示屏复位脚,低电平有效)   |             |
| 9               | DCX            | -Display data/command Selection Pin in MCU Interface.<br>(并连接口显示数据或显示指令选择脚)<br>DCX='1': display data or parameter.<br>(DCX=1:选择显示数据或参数寄存器)<br>DCX='0': command data<br>(DCX=0:选择指令寄存器) |             |
| 10              | WRX            | -Write enable in MCU parallel interface.<br>(并口的写使能信号)   |             |
| 11              | RDX            | -Read enable in 8080 MCU parallel interface.<br>-If not used, please fix this pin at VDDI or GND.<br>(并口的读使能信号,不需要用时接VDDI或GND)   |             |
| 12-19           | DB7-DB0        | MCU parallel interface data bus.<br>(MCU并连接口数据线)   |             |

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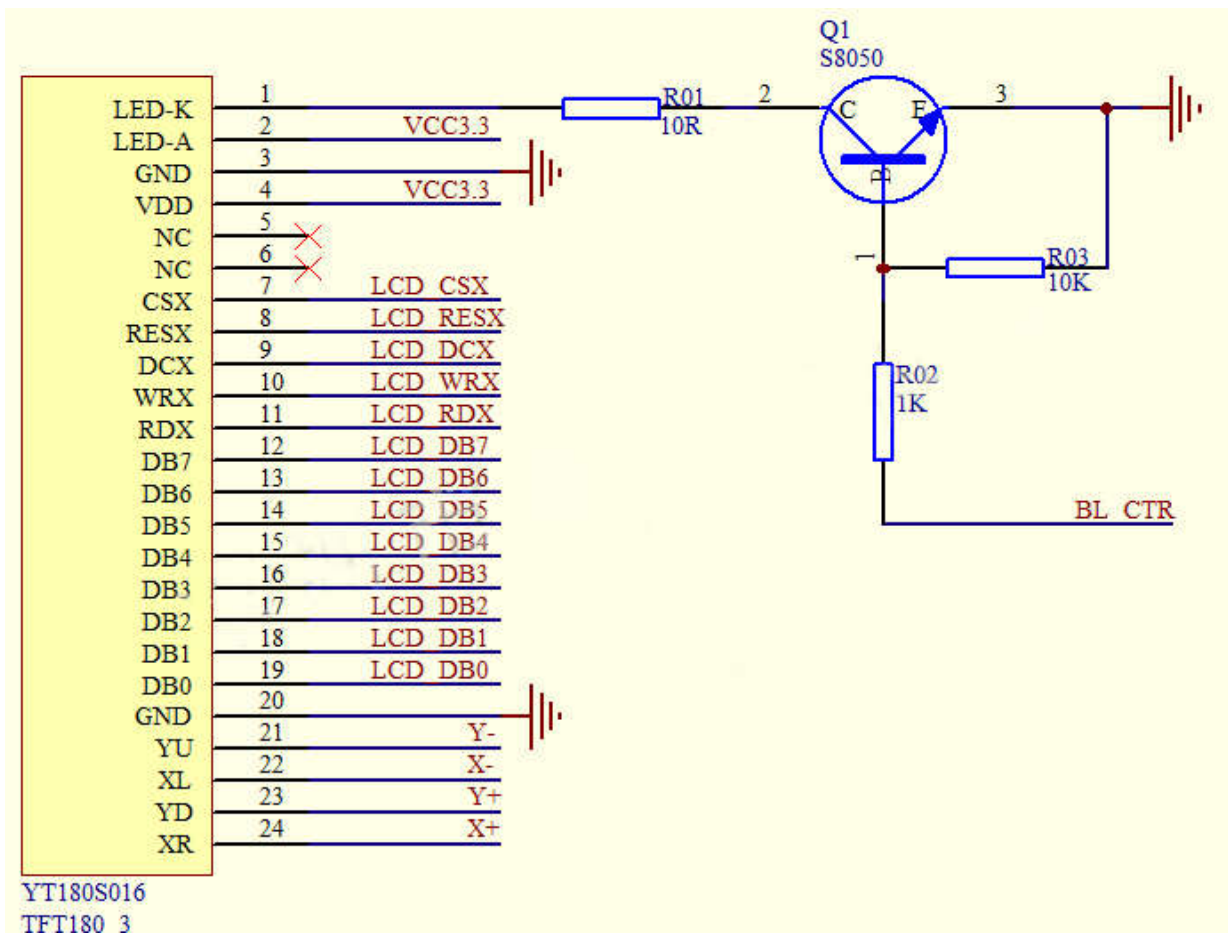
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|    |     |  |  |
|----|-----|--|--|
| 20 | GND | Ground<br>(接地脚)                          |  |
| 21 | YU  | Touch panel Logical foot<br>(四线电阻触摸屏逻辑脚) |  |
| 22 | XL  | Touch panel Logical foot<br>(四线电阻触摸屏逻辑脚) |  |
| 23 | YD  | Touch panel Logical foot<br>(四线电阻触摸屏逻辑脚) |  |
| 24 | XR  | Touch panel Logical foot<br>(四线电阻触摸屏逻辑脚) |  |

附图 6-1: 显示屏 YT180S016 参考应用电路



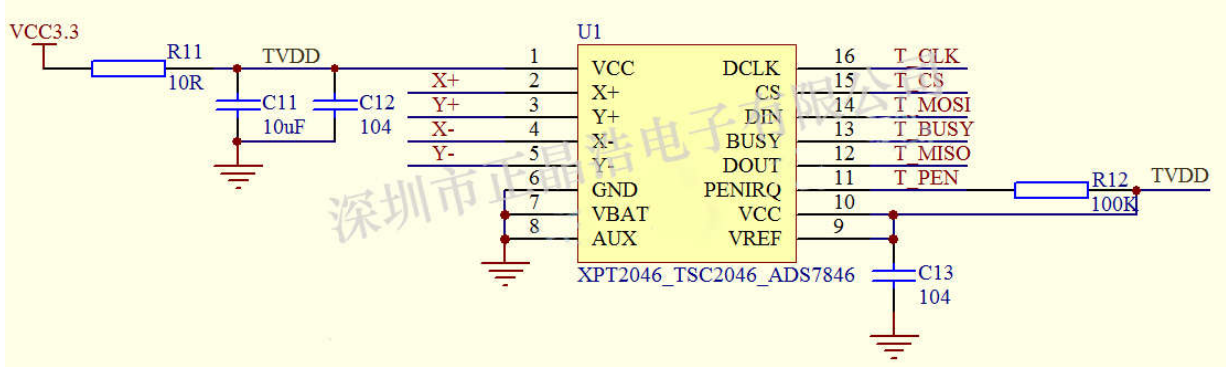
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附图 6-2: 触摸屏参考应用电路



## ※NOTE:

- 1.若为不带触摸版本,参考附图 6-1 连接电路,把显示屏的 YU、XL、YD、XR 四个触摸脚悬空即可。
- 2.若为带触摸版本,参考附图 6-1 和附图 6-2 连接电路。



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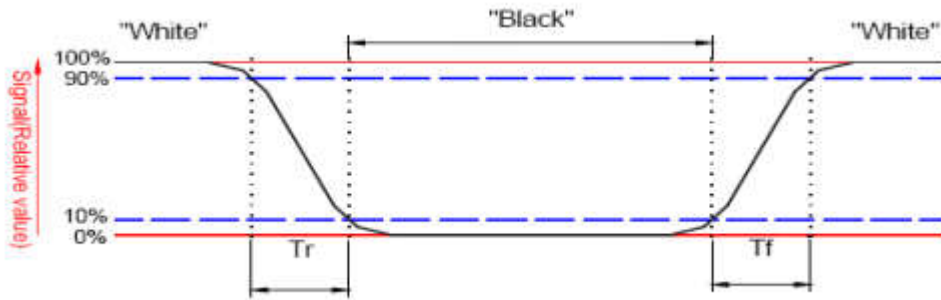
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## 7.Response time&Contrast ratio 响应时间与对比度

| Item<br>项目            | Symbol<br>符号 | Condition<br>条件    | Remark      |             |             | Unit<br>单位 |
|-----------------------|--------------|--------------------|-------------|-------------|-------------|------------|
|                       |              |                    | Min.<br>最小值 | Typ.<br>典型值 | Max.<br>最大值 |            |
| Response time<br>响应时间 | Tr+Tf        | $\theta = 0^\circ$ | -           | 30          | 60          | ms         |
| Contrast ratio<br>对比度 | CR           | $\theta = 0^\circ$ | 200         | 300         | -           | -          |



响应时间图示

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "white" state}}{\text{Brightness on the "black" state}}$$

对比度计算公式

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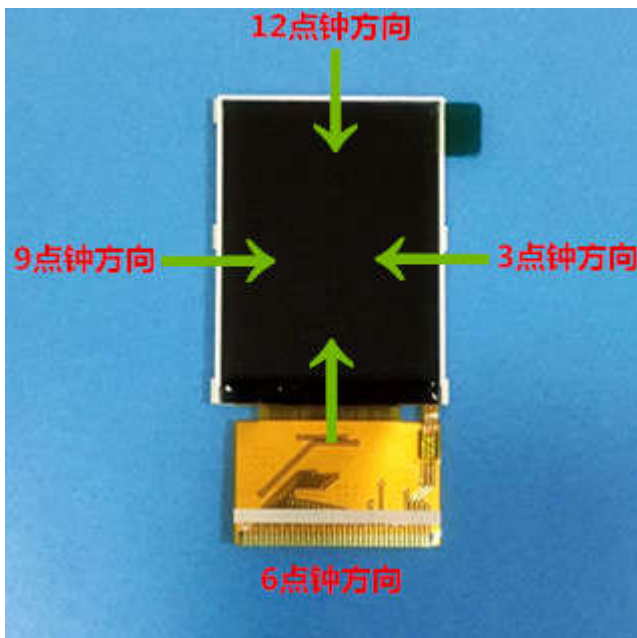
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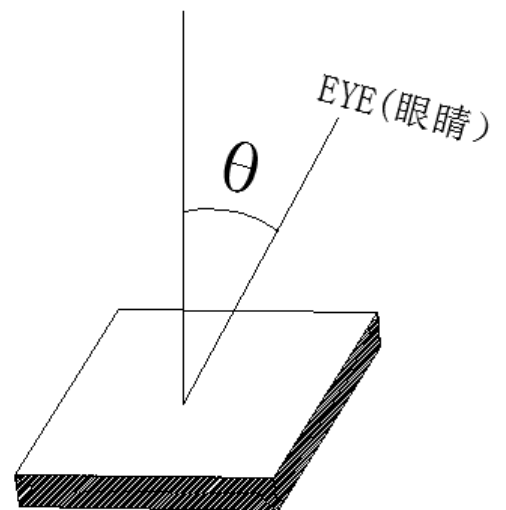
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## 8.Viewing Angle 视角宽度

| Item<br>项目            | Symbol<br>符号    | Condition<br>条件            | Remark      |             |             | Unit<br>单位 |
|-----------------------|-----------------|----------------------------|-------------|-------------|-------------|------------|
|                       |                 |                            | Min.<br>最小值 | Typ.<br>典型值 | Max.<br>最大值 |            |
| Viewing angle<br>视角宽度 | Top<br>12点钟方向   | $CR \geq 10$<br>对比度大于等于 10 | 30          | 40          | -           | Deg.<br>度  |
|                       | Bottom<br>6点钟方向 | $CR \geq 10$<br>对比度大于等于 10 | 40          | 50          | -           |            |
|                       | Left<br>9点钟方向   | $CR \geq 10$<br>对比度大于等于 10 | 40          | 50          | -           |            |
|                       | Right<br>3点钟方向  | $CR \geq 10$<br>对比度大于等于 10 | 40          | 50          | -           |            |



垂直于屏表面



NOTE:3点,6点,9点,12点方向视角的大小指的是垂直于屏表面的线眼睛视线之间的夹角( $\theta$ )。

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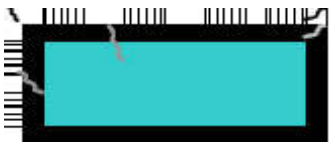
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## 9. Reliability Trial 可靠性实验

| NO.<br>序号 | ITEM<br>实验项目   | CONDITION<br>实验环境                          | CRITERION<br>实验规范  |
|-----------|--|--|--|
| 1         | High Temperature Non-Operating Test<br>高温存储实验          | 80°C*120Hrs                                | No Defect Of<br>Operational<br>Function In Room<br>Temperature Are<br>Allowable<br>室温运行功能无缺陷 |
| 2         | Low Temperature Non-Operating Test<br>低温存储实验           | -30°C*120Hrs                               |  |
| 3         | High Temperature/Humidity Non Operating Test<br>高温高湿实验 | 60°C*90%RH*120Hrs                          |  |
| 4         | High Temperature Operating Test<br>高温工作实验              | 70°C*72Hrs                                 |  |
| 5         | Low Temperature Operating Test<br>低温工作实验               | -20°C*72Hrs                                |  |
| 6         | Thermal Shock Test<br>热冲实验                             | -20 °C (30Min) ↔70 °C<br>(30Min) *10CYCLES |  |

## 10. Inspection standards 检验标准

### 10.1 Glass defect

| NO | Defect item                                 | Criteria   | Remark  |
|----|---|--|---|
| 1  | Dimension<br>Unconformity<br>(Major defect) | By Engineering Drawing   |   |
| 2  | Cracks<br>(Major defect)                    | 1. Linear cracks panel<br>【Reject】<br>2. Nonlinear crack contrast by<br>limited sample |  |
| 3  | Glass extrude the<br>conductive area        | a: disregards and no influence<br>assemblage.  | A: Length, b: Width   |

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|   |   |   |                                       |
|---|---|---|---------------------------------------|
|   | (minor defect)  | 1) $b \leq 1/3$ Pin width (non bonding area)<br>【Accept】<br>2) bonding area $\leq 0.5$ mm<br>【Accept】   |                                       |
| 4 | Pin-side ,conductive area damaged<br>(minor defect)     | (a c: disregards)<br>$b \leq 1/3$ of effective length for bonding electrode<br>【Accept】   | a: length, b: Width, c: Thickness<br> |
| 5 | Pin-side, non-conductive area damaged<br>(minor defect) | 1) Damage area don't touch the ITO (Including contraposition mark, except scribing mark)<br>【Accept】<br>2) $C < T$ $b \leq BM/3$ of width<br>【Accept】<br>3) $c = T$<br>b not touch the seal glue<br>【Accept】<br>4) a disregards | a: Length, b: Width c: Thickness<br>  |
| 6 | Non-pin-side damage<br>(minor defect)                   | $c < T$<br>1) b exceeds $1/3 B_m$<br>【Reject】<br>$c = T$<br>b not touch the seal glue<br>【Reject】   | c: Thickness b: width of<br>          |

## 10.2 LCD appearance defect (View area)

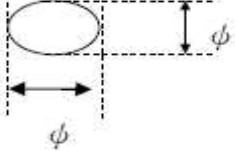
| NO | Defect item   | Criteria   |           | Remark  |
|----|---|--|-----------|---|
|    |   | Specification                                    | Allowable |   |
| 1  | Fiber、 glass cratch、 polarizer scratch/folded<br>(minor defect) | $W \leq 0.03$ mm                                 | disregard | note1: L: Length, W: Width<br>note2: disregard if out of AA<br> |
|    |   | $0.03$ mm $< W \leq 0.05$ mm;<br>$L \leq 3.0$ mm | 2         |   |
|    |   | $0.05$ mm $< W \leq 0.1$ mm;<br>$L \leq 3.0$ mm  | 1         |   |
|    |   | $W > 0.1$ mm; $L > 3.0$ mm                       | 0         |   |

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|   |   |   |           |   |
|---|---|---|-----------|---|
| 2 | Polarizer bubble,<br>concave and convex<br>(minor defect)           | $\phi \leq 0.2\text{mm}$                  | disregard | note1: $\phi = (L+W)/2$ , L:Length,<br>W :Width<br>note2:disregard if out of AA                                     |
|   |   | $0.2\text{mm} < \phi \leq 0.3\text{mm}$   | 2         |   |
|   |   | $0.3\text{mm} < \phi \leq 0.5\text{mm}$   | 1         |   |
|   |   | $0.5\text{mm} < \phi$                     | 0         |   |
| 3 | Black dots, dirty dots,<br>impurities, eye winker<br>(minor defect) | $\phi \leq 0.15\text{mm}$                 | disregard | note2:disregard if out of AA<br> |
|   |   | $0.15\text{mm} < \phi \leq 0.25\text{mm}$ | 2         |   |
|   |   | $0.25\text{mm} < \phi \leq 0.3\text{mm}$  | 1         |   |
|   |   | $0.3\text{mm} < \phi$                     | 0         |   |
| 4 | Polarizer prick<br>(minor defect)                                   | $\phi \leq 0.1\text{mm}$                  | disregard | note1: $\phi = (L+W)/2$ , L=Length,<br>W=Width<br>note2:the distance between two<br>dots>5mm                        |
|   |   | $0.1\text{mm} < \phi \leq 0.25\text{mm}$  | 3         |   |
|   |   | $\phi > 0.25\text{mm}$                    | 0         |   |

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## 11.Package Method 包装方法

显示屏出货包装示意图:

