

深圳市正晶浩电子有限公司

SHENZHEN ZJH DISPLAYER TECHNOLOGYCO., LTD

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

MODEL NO(产品型号): YT240L010

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## 2.4 inch LCD TFT

(2.4 英寸真彩色液晶显示屏)

## 240RGBx320 Resolution and 65K color

(240x320 分辨率, 6 万 5 千种色)

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## 1. General Description 基本描述

MODEL NO 产品型号	<b>YT240L010</b>
Display Mode 显示模式	Transmissive 全透
Display Format 显示格式	Graphic 240RGB*320 Dot-matrix 240xRGBx320 图形点阵
Input Data 显示屏接口类型	4 Line-SPI interface 4 线-SPI 串口
Viewing Direction 视角方向	12 o'clock 12 点钟
Drive 显示屏驱动芯片	ILI9341V (台湾奕力)

## 2. Mechanical Specification 机械规格

Item	Specifications	Unit
Dimensional outline 显示屏外围尺寸	42.72(W)*60.26(H)*2.55(T) (不带触摸) 42.72(W)*60.26(H)*3.75(T) (带触摸) (FPC not include)	mm
Resolution 分辨率	240RGB*320	dots
LCD Active area 显示尺寸	36.72(W)*48.96 (H)	mm
Pixel size 像素尺寸	0.153(W)*0.153(H)	mm

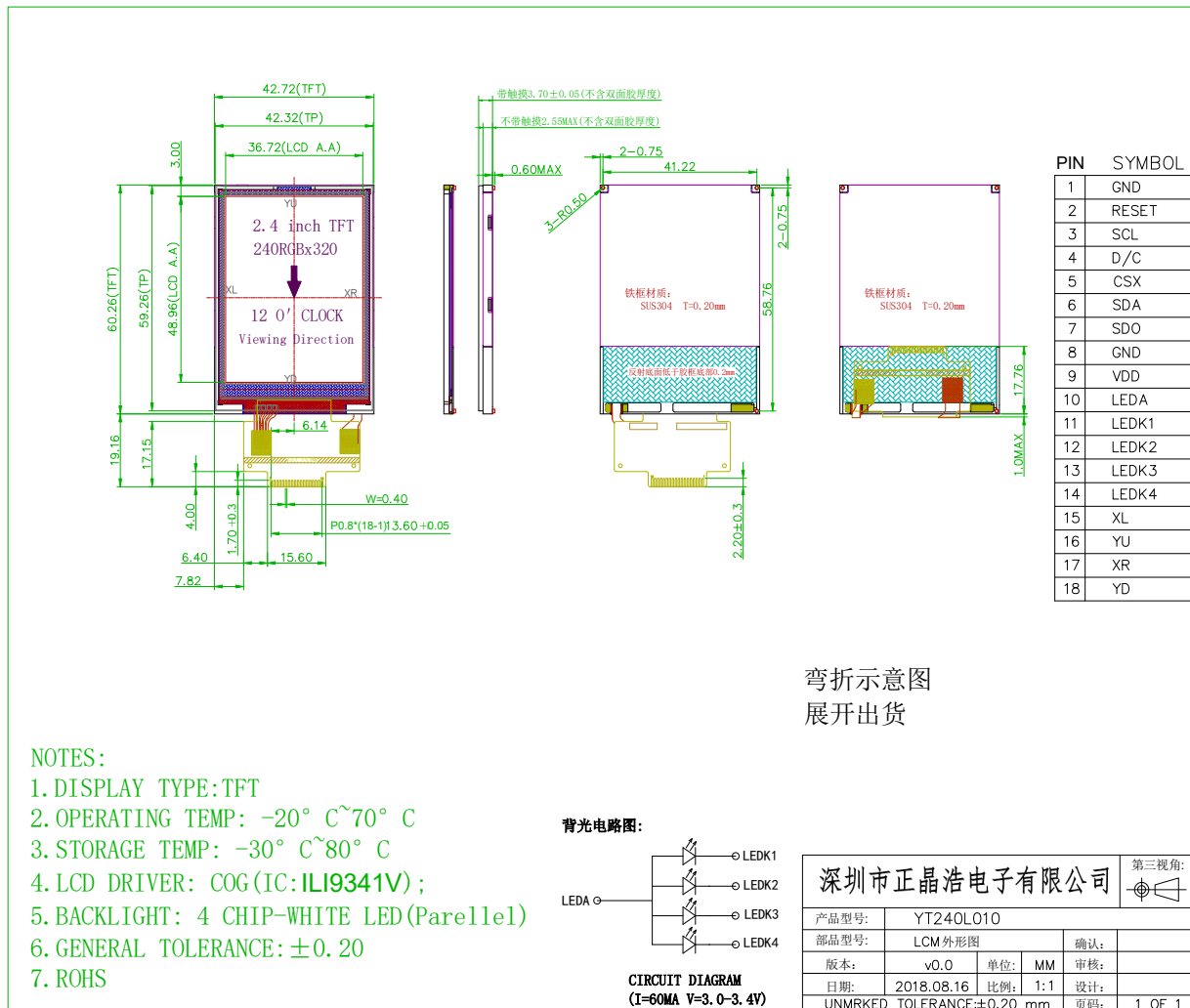
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## 3.Mechanical Dimension 机械尺寸图



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## 4. Electrical Maximum Ratings 电气极限

Item 项目	Symbol 符号	Min 最小值	Max 最大值	Unit 单位	Note 备注
Supply voltage (VDDI) 工作电压(VDDI)	V	1.8	3.3	V	-
Supply voltage (VDD) 工作电压(VDD)	V	2.8	3.3	V	-
Operating temperature 工 作温度范围	T <sub>OPR</sub>	-20	70	°C	-
Storage temperature 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 项目	Symbol 符号	Min 最小值	Typical 典型值	Max 最大值	Unit
LED module Forward voltage LED 背光源正向电压	V <sub>LED</sub>	2.9	3.1	3.3	V
LED module current LED 背光源电流	I <sub>LED</sub>	-	60	-	mA
LCD Surface Luminance 显示屏表面亮度	L <sub>S</sub>	250	300	-	Cd/m <sup>2</sup>
LCM Surface brightness uniform LED 背光源均匀度	L <sub>D</sub>	80	-	-	%
LCD power dissipation 显示屏总功耗	P <sub>LCD</sub>	-	0.22	-	W

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

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

PIN No. 引脚序号	Symbol 引脚名称	Description 作用描述	Notes 备注
1	<b>GND</b>	Ground (接地脚)	-
2	<b>RESET</b>	-This signal will reset the device and it must be applied to properly initialize the chip. -Signal is active low. (显示屏复位脚, 低电平有效)	-
3	<b>SCL</b>	-This pin is used to be serial interface clock. (4线-SPI 串口时钟)	-
4	<b>D/C</b>	- Display data/command selection pin in 4-line serial interface. (4线-SPI 数据/指令选择选择脚)	-
5	<b>CSX</b>	-Chip selection pin Low enable. High disable. (显示屏驱动芯片选脚, 低电平使能)	-
6	<b>SDA</b>	SPI interface input pin. -The data is latched on the rising edge of the SCL signal. -If not used, please fix this pin at VDDI or DGND level. (4线-SPI 数据输入, 不用时接 VDDI 或 GND)	-
7	<b>SDO</b>	-SPI interface output pin. -The data is output on the falling edge of the SCL signal. -If not used, let this pin open. (4线-SPI 数据输出, 不用时悬空)	-
8	<b>GND</b>	Ground (接地脚)	-

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9	<b>VDD</b>	Power Supply for Analog, Digital System and Booster Circuit. (显示屏主电源供电脚 2.8-3.3V)	-
10	<b>LEDA</b>	Anode of Backlight (2.9V-3.3V Typical:3.1V) (背光正极供电脚, 电压范围:2.9-3.3V, 典型值:3.1V)	-
11	<b>LEDK1</b>	Cathode of Backlight (背光负极供电脚)	-
12	<b>LEDK2</b>	Cathode of Backlight (背光负极供电脚)	-
13	<b>LEDK3</b>	Cathode of Backlight (背光负极供电脚)	-
14	<b>LEDK4</b>	Cathode of Backlight (背光负极供电脚)	-
15	<b>XL</b>	Touch panel Logical foot (四线电阻触摸屏逻辑脚)	-
16	<b>YU</b>	Touch panel Logical foot (四线电阻触摸屏逻辑脚)	-
17	<b>XR</b>	Touch panel Logical foot (四线电阻触摸屏逻辑脚)	-
18	<b>YD</b>	Touch panel Logical foot (四线电阻触摸屏逻辑脚)	-

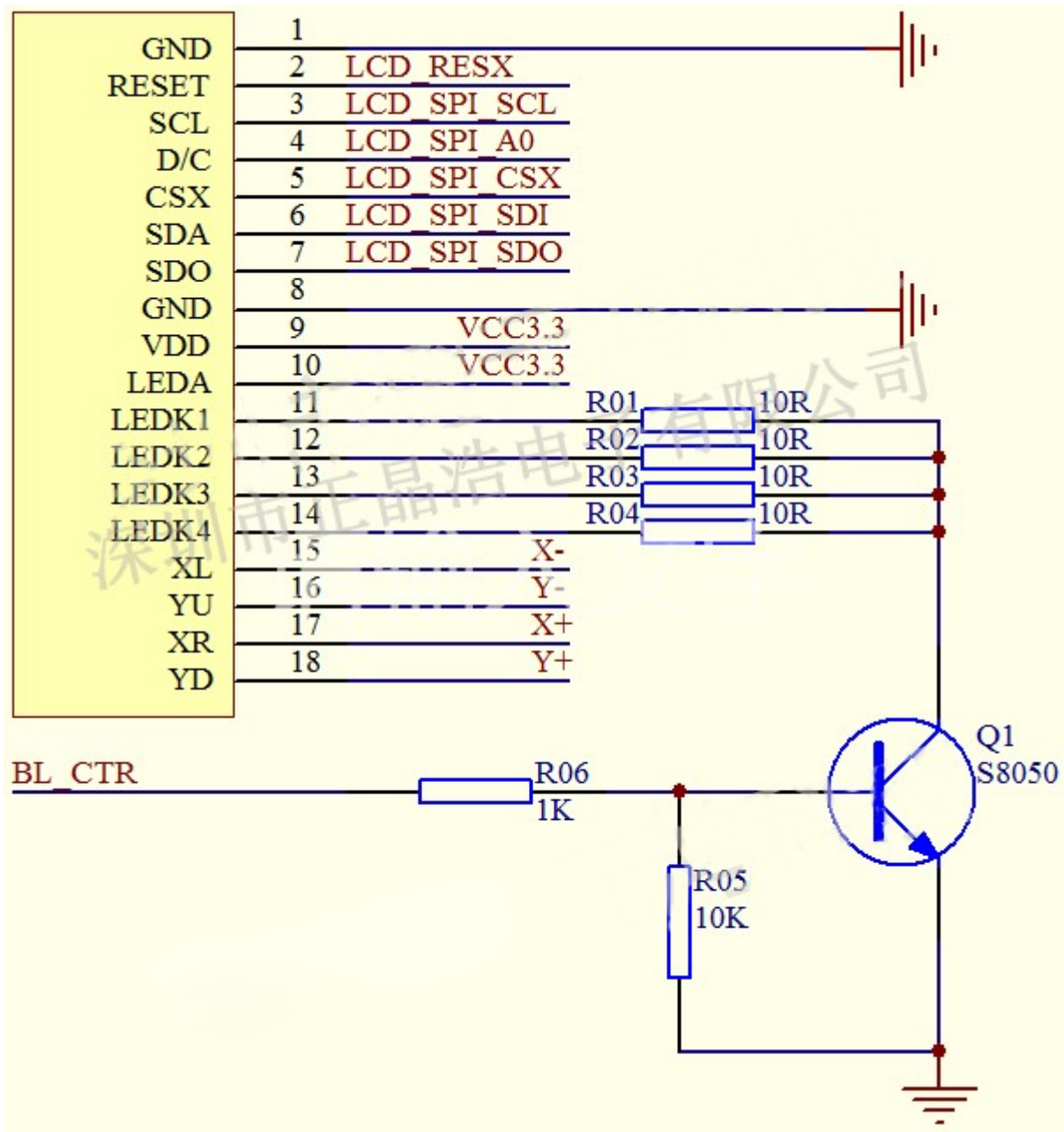
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附图 6-1: 显示屏 YT240L010\_4 线-SPI 串口参考应用电路





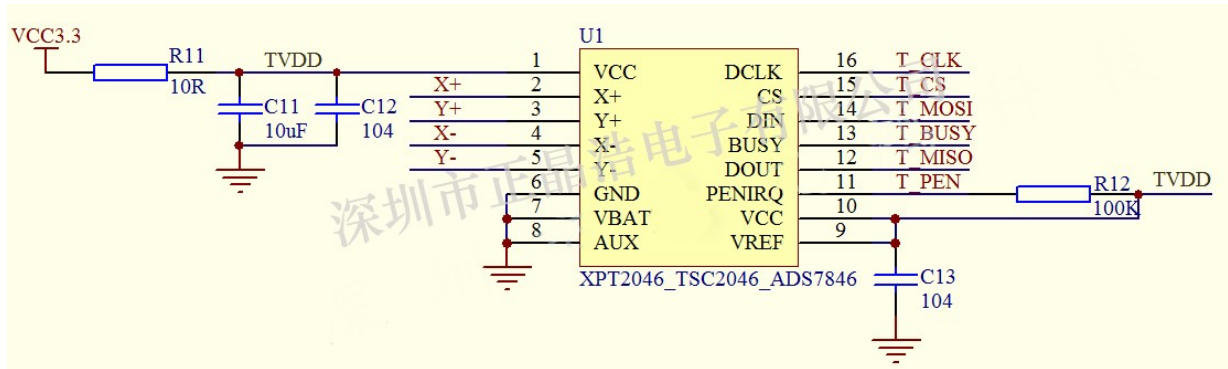
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附图 6-2: 触摸屏参考应用电路



## ※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 XL、YU、XR、YD 四个触摸脚悬空即可。
- 2.若为带触摸版本, 参考附图 6-2 触摸应用连接电路。

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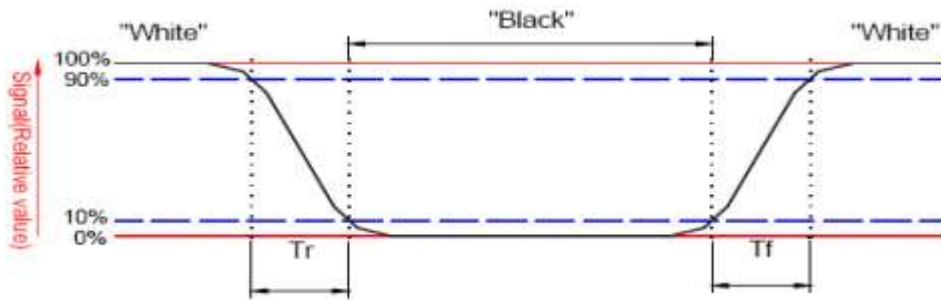
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## 7.Response time&Contrast ratio 响应时间与对比度

Item 项目	Symbol 符号	Condition 条件	Remark			Unit 单位
			Min. 最小值	Typ. 典型值	Max. 最大值	
Response time 响应时间	Tr+Tf	$\theta = 0^\circ$	-	25	40	ms
Contrast ratio 对比度	CR	$\theta = 0^\circ$	350	500	-	-



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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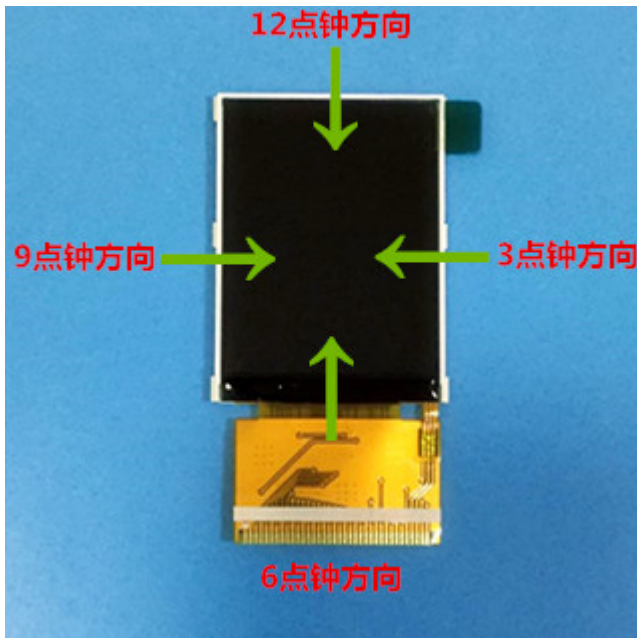
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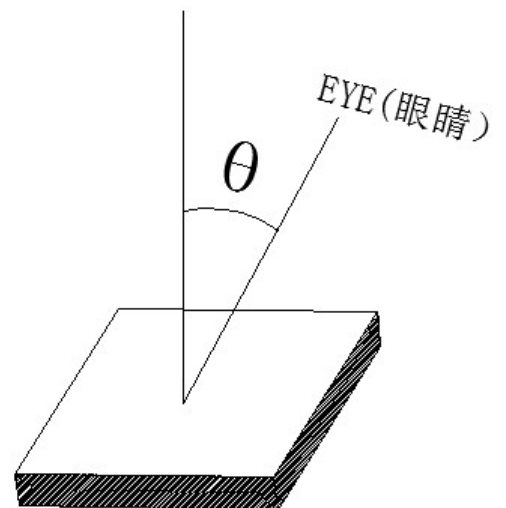
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## 8.Viewing Angle 视角宽度

Item 项目	Symbol 符号	Condition 条件	Remark			Unit 单位
			Min. 最小值	Typ. 典型值	Max. 最大值	
Viewing angle 视角宽度	Top 12点钟方向	$CR \geq 10$ 对比度大于等于 10	40	50	-	Deg. 度
	Bottom 6点钟方向	$CR \geq 10$ 对比度大于等于 10	55	65	-	
	Left 9点钟方向	$CR \geq 10$ 对比度大于等于 10	55	65	-	
	Right 3点钟方向	$CR \geq 10$ 对比度大于等于 10	55	65	-	



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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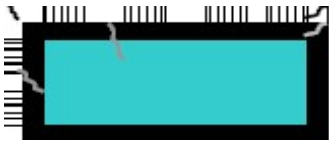
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## 9. Reliability Trial 可靠性实验

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

## 10. Inspection standards 检验标准

### 10.1 Glass defect

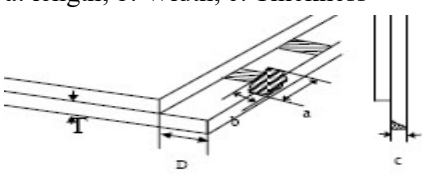
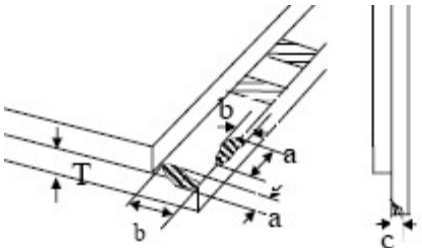
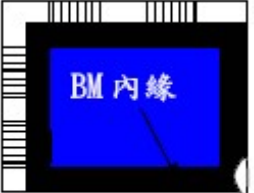
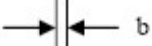
NO	Defect item	Criteria	Remark
1	Dimension Unconformity (Major defect)	By Engineering Drawing	
2	Cracks (Major defect)	1. Linear cracks panel 【Reject】 2. Nonlinear crack contrast by limited sample	
3	Glass extrude the conductive area (minor defect)	a: disregards and no influence assemblage. 1) $b \leq 1/3$ Pin width(non bonding area) 【Accept】 2) bonding area $\leq 0.5$ mm 【Accept】	A: Length, b: Width

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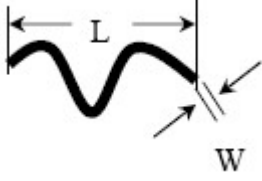
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4	Pin-side ,conductive area damaged (minor defect)	(a c: disregards) $b \leq 1/3$ of effective length for bonding electrode 【Accept】	a: length, b: Width, c: Thickness 
5	Pin-side,non-conductive area damaged (minor defect)	1)Damage area don't touch the ITO (Including contraposition mark, except scribing mark) 【Accept】 2) $C < T$ $b \leq BM1/3$ of width 【Accept】 3) $c = T$ b not touch the seal glue 【Accept】 4)a disregards	a: Length, b: Width c: Thickness 
6	Non-pin-side damage (minor defect)	$c < T$ 1)b exceeds $1/3Bm$ 【Reject】 $c = T$ b not touch the seal glue 【Reject】	c: Thickness b: width of  damage 

## 10.2LCD appearance defect(View area)

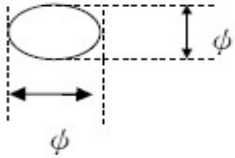
NO	Defect item	Criteria		Remark
		Specification	Allowable	
1	Fiber、 glass cratch、 polarizer scratch/folded (minor defect)	$W \leq 0.03mm$	disregard	note1:L: Length, W: Width note2: disregard if out of AA 
		$0.03mm < W \leq 0.05mm$ ; $L \leq 3.0mm$	2	
		$0.05mm < W \leq 0.1mm$ ; $L \leq 3.0mm$	1	
		$W > 0.1mm$ ; $L > 3.0mm$	0	
2	Polarizer bubble、 concave and convex (minor defect)	$\phi \leq 0.2mm$	disregard	note1: $\phi = (L+W)/2$ , L:Length, W :Width note2:disregard if out of AA
		$0.2mm < \phi \leq 0.3mm$	2	
		$0.3mm < \phi \leq 0.5mm$	1	
		$0.5mm < \phi$	0	
3	Black dots、 dirty dots、	$\phi \leq 0.15mm$	disregard	note2:disregard if out of AA

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	impurities、eye winker (minor defect)	$0.15\text{mm} < \phi \leq 0.25\text{mm}$	2	
		$0.25\text{mm} < \phi \leq 0.3\text{mm}$	1	
		$0.3\text{mm} < \phi$	0	
4	Polarizer prick (minor defect)	$\phi \leq 0.1\text{mm}$	disregard	note1: $\phi = (L+W)/2$ , L=Length, W=Width note2:the distance between two dots>5mm
		$0.1\text{mm} < \phi \leq 0.25\text{mm}$	3	
		$\phi > 0.25\text{mm}$	0	

## 11.Package Method 包装方法

显示屏出货包装示意图:

