

PRODUCT LCD MODULE

产品名称：液晶显示模块

MODELNO

模块型号：LY17028C10

SUPPLIER

供应商：LIYUAN

DATE

日期：2021-09-16

Customer number

客户编号：



## SPECIFICATION

### 产品规格书

Version: V0

版本: V0

This module uses ROHS material

模块用环保材料

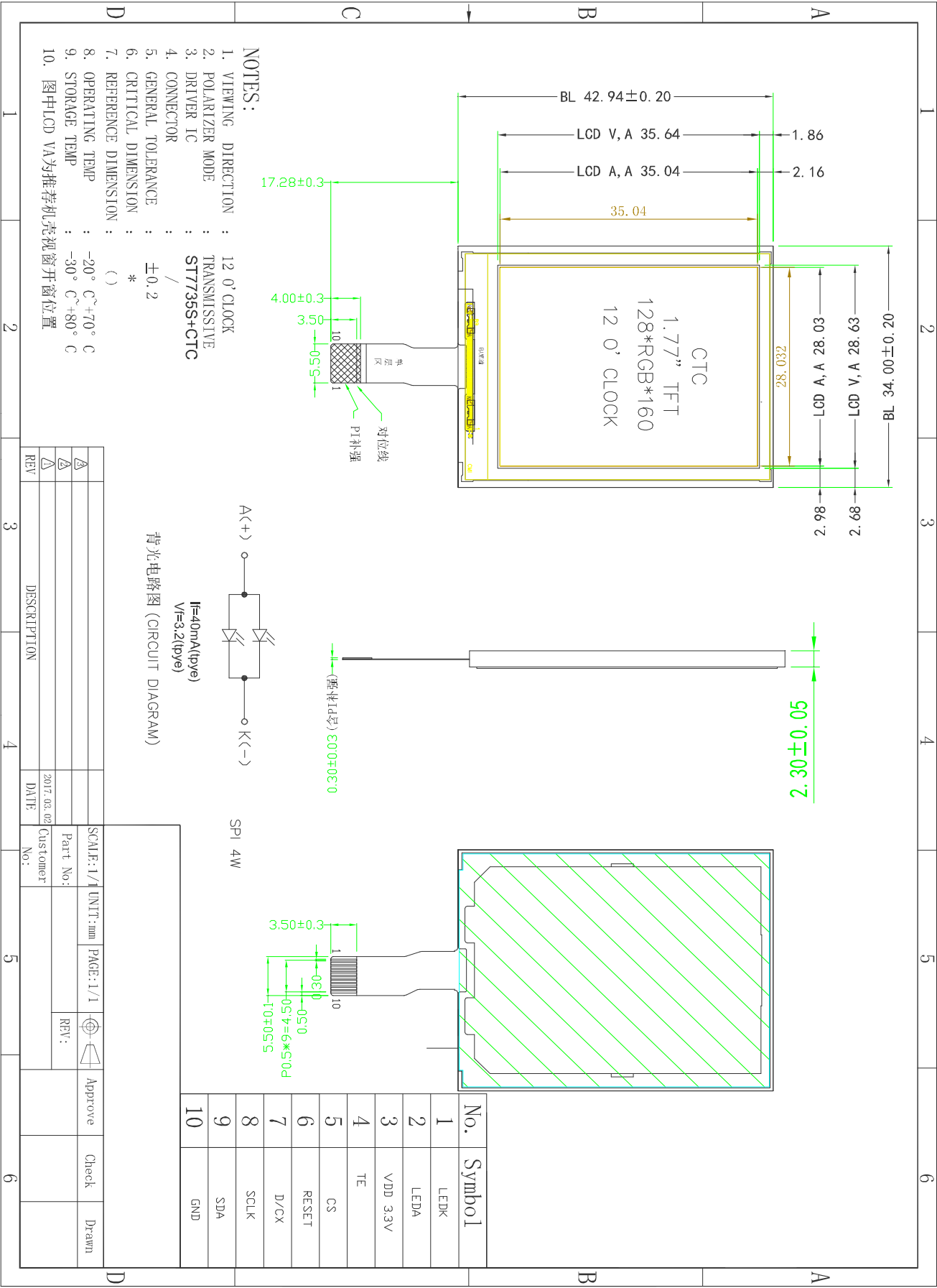
| LIYUAN                   |  | Customer（客户）                 |
|--------------------------|--|------------------------------|
| PREPARED BY<br>制定        |  | <div>Approved By _____</div> |
| CHECKED BY<br>审核         |  |                              |
| Quality Department<br>品质 |  |                              |
| Approved by<br>批准        |  |                              |

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## 1. GENERAL INFORMATION 主要特征描述

| Item<br>项目                                       | Contents<br>内容            | Unit<br>单位 |
|--------------------------------------------------|---------------------------|------------|
| LCD Type 液晶显示类型                                  | TFT/TRANSMISSIVE          | ---        |
| Viewing Direction<br>视角方向                        | 12:00                     | O'Clock    |
| Outline Dimensions (W × H×T)<br>外形尺寸 (宽 x 高 x 厚) | 34 (W ) ×42.94(H)×2.30(T) | mm         |
| Viewing area<br>可视区域                             | 28.63 x35.64              | mm         |
| Active area<br>有效区域 (宽 × 高)                      | 28.03(W) x35.04(H)        | mm         |
| Number of Dots 点阵                                | 128RGB x 160 Dots         | ---        |
| Pixel pitch (W × H)<br>像素点尺寸                     | 0.073*0.219               | mm         |
| Driver IC 驱动 IC                                  | ST7735S+CTC               | ---        |
| Interface Type 接口类型                              | SPI4W1L                   | ---        |
| Input voltage 输入电压                               | 2.8V                      | —          |
| Module Power consumption<br>模块功耗                 | TBD                       | MW         |
| Colors 色彩                                        | 262K                      | ---        |
| Backlight Type 背光类型                              | LED                       | ---        |

2. OUTLINE DRAWING 外形尺寸



### 3. ABSOLUTE MAXIMUM RATINGS 极限参数

| Item<br>项目                       | Symbol<br>符号 | Min<br>最小值 | Max<br>最大值    | Unit<br>单位 |
|----------------------------------|--------------|------------|---------------|------------|
| Supply voltage for logic<br>逻辑电压 | VDD          | -0.3       | 4.6           | V          |
| Input voltage<br>输入电平            | VIN          | -0.3       | VDD+ 0.3      | V          |
| Operating temperature<br>使用温度    | TOP          | -20        | 70            | °C         |
| Storage temperature<br>存储温度      | TST          | -30        | 80            | °C         |
| Humidity<br>湿度                   | RH           |            | 90%(Max60 °C) | RH         |

### 4. ELECTRICAL CHARACTERISTICS 模块电气特性

#### 4.1DC CHARACTERISTICS 直流特性

| Item<br>项目                        | Symbol<br>符号 | Min<br>最小值 | Typ<br>典型值 | Max<br>最大值 | Unit<br>单位 |
|-----------------------------------|--------------|------------|------------|------------|------------|
| Supply voltage for logic<br>逻辑电压  | VDD          | 2.7        | 2.8        | 3.3        | V          |
| Input Current<br>输入电流             | Idd          |            | TBD        | TBD        | mA         |
| Input voltage 'H' level<br>输入高电平  | VIH          | 0.7VDD     | —          | VDD        | V          |
| Input voltage 'L' level<br>输入低电平  | VIL          | VSS        |            | 0.3VDD     | V          |
| Output voltage 'H' level<br>输出高电平 | VOH          | 0.8VDD     |            | VDD        | V          |
| Output voltage 'L' level<br>输出低电平 | VOL          | VSS        |            | 0.2VDD     | V          |

#### 4.2 BACKLIGHT CHARACTERISTICS 背光电气特性

| Item<br>项目           | Symbol<br>符号 | Min<br>最小值 | Typ<br>典型值 | Max<br>最大值 | Unit<br>单位 | Condition<br>条件 |
|----------------------|--------------|------------|------------|------------|------------|-----------------|
| Forward voltage 正向电压 | Vf           | 3.0        | 3.2        | 3.4        | V          | If=2*20mA       |
| Number of LED LED数量  |              |            | 2          |            | Piece      |                 |
| Connection mode 连接类型 | P            |            | Parallel   |            |            |                 |

Using condition: constant current driving method If=40mA(+/-10%).

使用条件：恒流的驱动方式是 If=40mA(+/-10%).

### 5.ELECTRO-OPTICAL CHARACTERISTICS 光电参数

| Parameter                  | Symbol | Values |        |        | Unit              | Notes |
|----------------------------|--------|--------|--------|--------|-------------------|-------|
|                            |        | Min    | Typ    | Max    |                   |       |
| Transmittance(LCM)         | T(%)   | -      | 5      | -      | %                 |       |
| Contrast Ratio (LCM)       | C/R    | -      | 150    | -      |                   |       |
| Response Time (TFT)        | Tr+Tf  | -      | 50     | -      | msec              |       |
| Surface Luminance (LCM)    | lv     | 100    |        |        | cd/m <sup>2</sup> |       |
| CIE Color Coordinate (LCM) | Rx     | 0.5156 | 0.5656 | 0.6156 | -                 |       |
|                            | Ry     | 0.2620 | 0.3120 | 0.3620 | -                 |       |
|                            | Gx     | 0.2714 | 0.3214 | 0.3714 | -                 |       |
|                            | Gy     | 0.5400 | 0.5900 | 0.6400 | -                 |       |
|                            | Bx     | 0.0946 | 0.1446 | 0.1946 | -                 |       |
|                            | By     | 0.0415 | 0.0915 | 0.1415 | -                 |       |
|                            | Wx     | 0.2054 | 0.2754 | 0.3454 | -                 |       |
|                            | Wy     | 0.2441 | 0.3141 | 0.3841 | -                 |       |
| Viewing Angle (TFT)        | θ l    | -      | 45     | -      | Degree            |       |
|                            | θ r    | -      | 45     | -      |                   |       |
|                            | θ u    | -      | 35     | -      |                   |       |
|                            | θ d    | -      | 15     | -      |                   |       |

## 6. INTERFACE DESCRIPTION 接口定义

| No. | Symbol   |
|-----|----------|
| 1   | LEDK     |
| 2   | LEDA     |
| 3   | VDD 3.3V |
| 4   | TE       |
| 5   | CS       |
| 6   | RESET    |
| 7   | D/CX     |
| 8   | SCLK     |
| 9   | SDA      |
| 10  | GND      |

**Note:** The voltage power of the interface logic pin depend on IOVCC and GND, Such as DBn, IMn and function pins

## 7. REFERENCE APPLICATION CIRCUIT

### 参考应用电路

Please consult our technical department for detail information.

详细信息请联系我们的技术部门

## 8. RELIABILITY TEST CONDITIONS 可靠性试验条件

| No.<br>序号 | Test Item<br>试验项目                          | Test condition<br>试验条件                                                                   | Inspection after test<br>判断标准                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------|--------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | High Temperature Storage<br>高温存放           | 80℃±2℃ 120H                                                                              | <p>Inspection after 2~4hours storage at room temperature, the sample shall be free from defects:</p> <p>试验结束后, 已测试的 LCD 样品必须在室内正常温湿度环境下放置</p> <p>2~4 个小时以上才能进行功能和外观检查, 样品不允许有以下缺陷:</p> <p>1.Air bubble in the LCD; 模块中有气泡;</p> <p>2.Sealleak; 封口松脱;</p> <p>3.Non-display; 不显示;</p> <p>4.missing segments; 漏笔</p> <p>5.Glass crack; 玻璃破碎;</p> <p>6.Current Idd is twice higher than initial value. 电流 Idd 大于初时值的 2 倍</p> |
| 2         | Low Temperature Storage<br>低温存放            | -30℃±2℃ 120H                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 3         | High Temperature Operation<br>高温操作         | 70℃±2℃ 120H                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 4         | Low Temperature Operation<br>低温操作          | -20℃±2℃ 120H                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 5         | High Temperature /Humidity Storage<br>高温高湿 | 60℃±2℃ 90%RH 120H                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 6         | Temperature Cycle<br>冷热循环                  | 低温: -30℃; 时间: 30min<br>高温: 70℃; 时间: 30min<br>循环次数: 24 个循环 (从低<br>始做循环)<br>温度转换时间: 小于5min |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 7         | Vibration Test<br>(package state)<br>振荡试验  | 10Hz~55Hz~10Hz, X/Y/Z 下各10min,扫频周期1min                                                   | Not allowed cosmetic and electrical defects.                                                                                                                                                                                                                                                                                                                                                                            |
| 8         | Dropping test<br>跌落试验                      | 08m LCD≥3.0inch                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                         |

## 9.INSPECTION CRITERION 检查标准

**Please consult our Quality Department for detail information.**  
**详细信息请联系我们的品质部门**

## 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

Solvents other than those mentioned above may damage the polarizer.

Especially, do not use the following:

#### 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.

- a. Be sure to ground the body when handling the LCD Modules.
- b. Tools required for assembly, such as soldering irons, must be properly ground.
- c. To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.
- d. 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 :  $0^{\circ}\text{C} \sim 40^{\circ}\text{C}$

Relatively humidity:  $\leq 80\%$

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

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