

## 0.96 inch TFT LCD



### PROFILE

- Type: IPS TFT/Normal Black
- Display format: 80(RGB)×160
- Controller IC: ST7735S
- Interface: 4-wire SPI
- Input Voltage: 2.5~3.3V

### FEATURES

| NO. | ITEM                          | SPECIFICATION                               | UNIT              |
|-----|-------------------------------|---------------------------------------------|-------------------|
| 1   | Panel Size                    | 0.96                                        | inch              |
| 2   | Outline Dimension             | 13.5(W) x 27.95(H) x 1.5(T) (Excluding FPC) | mm                |
| 3   | Active Area                   | 10.8(H) x 21.7(V)                           | mm                |
| 4   | Number of Pixels              | 80(H) × 3(RGB) × 160(V)                     | pixels            |
| 5   | Pixel Pitch                   | 0.135(H) x 0.1356(V)                        | mm                |
| 6   | Pixel arrangement             | RGB vertical stripe                         | -                 |
| 7   | Display Mode                  | Normal Black                                | -                 |
| 8   | Viewing Direction             | ALL                                         | -                 |
| 9   | Luminance(cd/m <sup>2</sup> ) | 400(TYP.)                                   | cd/m <sup>2</sup> |
| 10  | Contrast Ratio                | 800(TYP.)                                   | -                 |
| 11  | Interface                     | 4-wire SPI                                  | -                 |
| 12  | Backlight                     | White LED                                   | -                 |
| 13  | Drive IC                      | GC9D01                                      | -                 |
| 14  | Operation Temperature         | -20~70                                      | °C                |
| 15  | Storage Temperature           | -30~80                                      | °C                |

## ABSOLUTE MAXIMUM RATINGS

| ITEM                     | SYMBOL            | MIN  | MAX                    | UNIT |
|--------------------------|-------------------|------|------------------------|------|
| Supply Voltage for Logic | V <sub>DD</sub>   | -0.3 | 4.6                    | V    |
| Analog Supply Voltage    | V <sub>DDIO</sub> | -0.3 | 4.6                    | V    |
| Logic Input Voltage      | V <sub>IN</sub>   | -0.3 | V <sub>DD</sub> +0.3 V | V    |
| Operating Temperature    | T <sub>OP</sub>   | -20  | 70                     | °C   |
| Storage Temperature      | T <sub>STG</sub>  | -30  | 80                     | °C   |

## ELECTRICAL CHARACTERISTICS

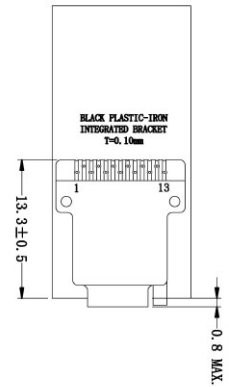
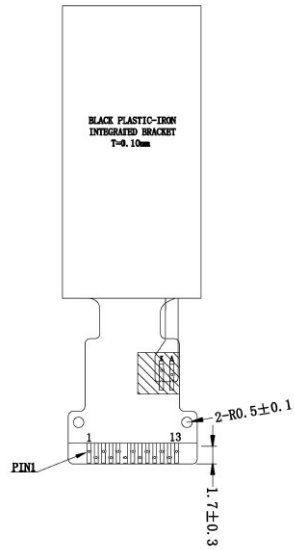
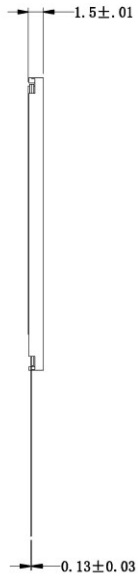
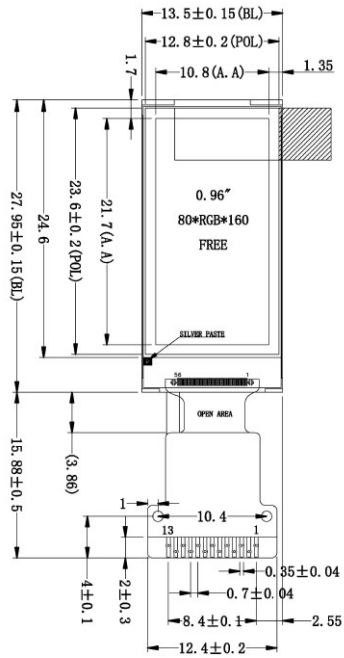
| ITEM                                        | SYMBOL            | CONDITION | MIN  | TYP | MAX  | UNIT              |
|---------------------------------------------|-------------------|-----------|------|-----|------|-------------------|
| Supply Voltage for Logic                    | V <sub>DD</sub>   | Ta =25°C  | 2.5  | 2.8 | 3.3  | V                 |
| Interface Operation Voltage                 | V <sub>DDIO</sub> |           | 1.65 | 1.8 | 3.3  |                   |
| Gate Driver High Voltage                    | V <sub>GH</sub>   |           | 10   | -   | 15   |                   |
| Gate Driver Low Voltage                     | V <sub>GL</sub>   |           | -13  | -   | -7.5 |                   |
| Voltage for LED backlight                   | V <sub>LED</sub>  |           | 2.9  | 3.0 | 3.1  |                   |
| Operating Current for V <sub>DD</sub>       | I <sub>DD</sub>   |           | -    | 2   | 3    | mA                |
| Current for LED backlight                   | I <sub>LED</sub>  | 1 LED     | 15   | -   | 20   | mA                |
| Brightness of LCM                           | L <sub>br</sub>   |           | 350  | 400 | -    | cd/m <sup>2</sup> |
| Sleep In Mode Current for V <sub>DD</sub>   | I <sub>dd</sub>   |           | --   | 15  | 30   | μA                |
| Sleep In Mode Current for V <sub>DDIO</sub> | I <sub>ddio</sub> |           | --   | 5   | 10   | μA                |

For detailed information, please refer to the “Product Numbering System” document.

## PIN DESCRIPTION

| NO. | SYMBOL          | FUNCTION                                                       |
|-----|-----------------|----------------------------------------------------------------|
| 1   | NC              | No connection                                                  |
| 2   | NC              | No connection                                                  |
| 3   | SDA             | SPI interface input/output pin.                                |
| 4   | SCL             | This pin is used to be serial interface clock                  |
| 5   | RS              | Display data/command selection pin in 4-line serial interface. |
| 6   | RES             | This signal will reset the device, signal is active low.       |
| 7   | CS              | CS Chip selection pin, low enable, high disable.               |
| 8   | GND             | Power Ground                                                   |
| 9   | NC              | No connection                                                  |
| 10  | V <sub>DD</sub> | Power Supply for Analog                                        |
| 11  | LEDK            | LED Cathode                                                    |
| 12  | LEDA            | LED Anode                                                      |
| 13  | GND             | Power Ground                                                   |

**DIMENSIONS in millimeters**



### LED BACKLIGHT CIRCUIT DIAGRAM



BACKLIGHT DRIVING CONDITION:  
Vf=3.0V If=20mA

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