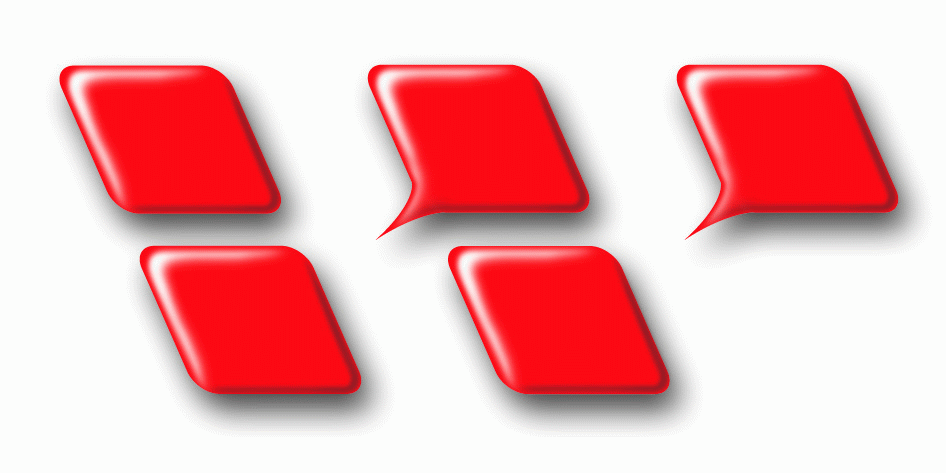
* Winstar Display Co., LTD*

***華凌光電股份有限公司***

|  |  |
| --- | --- |
| *WEB:* [*https://www.winstar.com.tw*](https://www.winstar.com.tw) | *E-mail: sales@winstar.com.tw* |

|  |
| --- |
|  |

**SPECIFICATION**

|  |  |
| --- | --- |
| **CUSTOMER :** | **Winstar** |
| **MODEL NO. :** | **WL0F00043000UGFAAEA00** |

|  |  |
| --- | --- |
| APPROVED BY:  ( FOR CUSTOMER USE ONLY ) |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **SALES BY** | **APPROVED BY** | **CHECKED BY** | **PREPARED BY** |
|  |  | TingWei Lee  Erick Chung | Kyra Chen |

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| VERSION | DATE | REVISED  PAGE NO. | SUMMARY |
| 1 | 2022/12/20 | P.6, P.7 | Increase external flash size into 16M |

TFT Display Inspection Specification: <https://www.winstar.com.tw/technology/download.html>

Precaution in use of TFT module: <https://www.winstar.com.tw/technology/download/declaration.html>

|  |  |  |  |
| --- | --- | --- | --- |
| 未命名 - 4*Winstar Display Co., LTD*  ***華凌光電股份有限公司*** | | | MODLE NO：  WL0F00043000UGFAAEA00 |
| RECORDS OF REVISION | | | DOC. FIRST ISSUE |
| VERSION | DATE | REVISED  PAGE NO. | SUMMARY |
| 0 | 2022/07/14 |  | First issue |
| 1 | 2022/12/20 | P.6, P.7 | Increase external flash size into 16M |

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13. **Smart Display Classification Information**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| W | L | 0F | 000430 | 00U | G | F | AA | **E** | A | 00 |
|  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | W: WINSTAR products | | | |
|  | Type: L:Standard K:Customization | | | |
|  | Display Type: | Standard: | 0H: Character STN  0X: Graphic STN (TAB/COF)  0F: TFT  EH: Character OLED  EX: OLED (TAB/COF) | 0G: Graphic STN  0P: Graphic STN (COG)  EG: Graphic OLED  EP: OLED (COG) |
| Customization: | DH: Character  DN: Graphic  ED: OLED | DG: Graphic STN  0J: TFT |
|  | Display size:  (diagonal) /  Display format:  (resolution) | Character STN:  Graphic STN: | e.g., 8x1: 000801 16x2: 001602 24x4: 002404  e.g., 128x64: 012864 320x240: 320240 | |
| TFT Size (inch): | 000096-0.96” / 000350-3.5” / 000430-4.3” / 000570-5.7”  000700-7.0” / 000800-8.0” / 001020-10.2” / 001210-12.1”  (The last two digits are two digits after the decimal point) | |
| OLED: | e.g., 128x64: 012864 Customization: 0001XX | |
|  | Serial No: | 0A1 ~ 0ZZ | Customization STN: 000 | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Touch Panel Type: | N: Without TP T: RTP G: CTP | | |
|  | Model Interface: | A: CAN  B: Bluetooth  C:Controller Specified  D: RS485  E: RS232  F: USART  G: Logic I/O | H: HDMI  R: Memory Specified  P: RS422  N: Ethernet  J: Analog I/O  K: USB  L: WIFI  M: Zigbee | X: Combined  Y: Proprietary interface |
|  | Interface Serial No.: | AA ~ ZZ | | |
|  | Control Category: | S: Smart Display N: Non-specified E: Entry | | |
|  | Special Code: | A ~ Z | | |
|  | Model code: | 00 ~ ZZ | | |

1. **Summary**

**WL0F00043000UGFAAEA00 is built in TFT 4.3” TN display with capacitive touch. The features describe as below:**

**4.3 Inch Smart Display Feature**

1. DC 5V working voltage.
2. UART Interface with customized UART protocol, default baud rate at 19200 bit/Sec.
3. Built in 16M flash memory.
4. Supports PCAP touch screen.
5. WL0F00043000UGFAAEA00 is defined as a slave device, which is controlled by master device via customized command to render display content on the display screen and return touch event position.
6. **Product information**

**General information**

|  |  |  |
| --- | --- | --- |
| **Item** | **Standard Value** | **Unit** |
| Operating voltage | 5 | Vdc |
| Communication Interface | UART | N/A |
| MCU | ITE9866 | N/A |
| Flash Memory | 16 | MB |
| SDRAM Frequency | Up to 800MHz internal MCU | MHz |
| LCD display size | 4.3 | inch |
| Dot Matrix | 480 x RGBx272(TFT) | dot |
| Module dimension | 125.5(W)\*67.2(H)\*9.35(D) | mm |
| Active area | 95.04 x 53.856 | mm |
| Dot pitch | 0.066 x 0.198 | mm |
| Brightness | 400min, 480typ | cd/m2 |
| LCD type | TFT, Normally White, Transmissive | |
| View Direction | 12 o’clock | |
| Aspect Ratio | 16:9 | |
| With /Without TP | With CTP | |
| Surface | Glare | |

1. **Contour Drawing**

C:\Users\Welcome\Documents\WXWork\1688851340998400\Cache\File\2022-07\WL0F00043000UGFAAEA00_20220714.wmf

1. **Absolute Maximum Ratings**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item** | **Symbol** | **Min** | **Typ** | **Max** | **Unit** |
| Operating Temperature | TOP | -20 | － | +70 | ℃ |
| Storage Temperature | TST | -30 | － | +80 | ℃ |

Note: Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above

1. Temp. ≦60℃, 90% RH MAX. Temp.＞60℃, Absolute humidity shall be less than 90% RH at 60℃

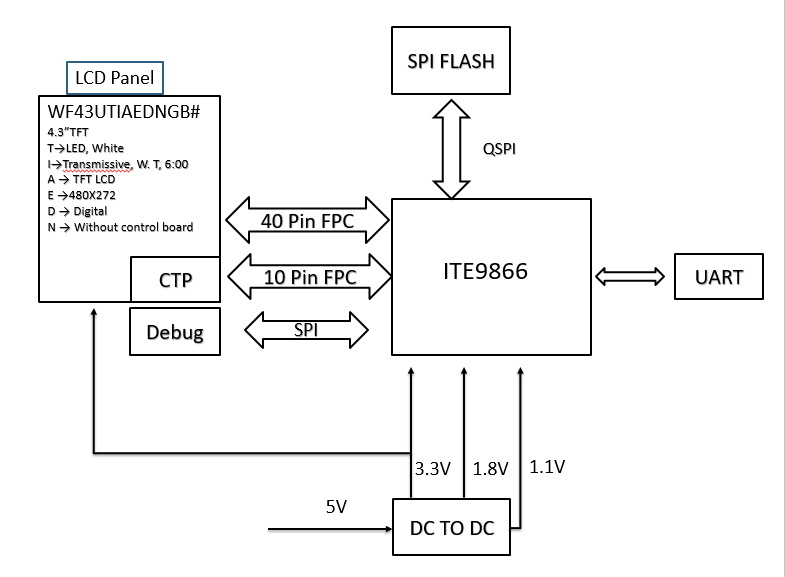
1. **Electrical Characteristics**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item** | **Symbol** | **Min** | **Typ** | **Max** | **Unit** |
| Supply Voltage | VCC | 4.5 | 5- | 5.5 | V |
| Supply current | ICC | - | 340 |  | mA |

1. **BOM**

|  |  |  |
| --- | --- | --- |
| **Item** | **Description** | **Remark** |
| LCM | WF43UTIAEDNGB# |  |
| PCBA | SV10004R300UA00N0100 |  |

1. **Block diagram**



1. **Interface**

**CON2 definition:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Pin** | **Symbol** | **Function** | **Remark** |
| 1 | GND | Power Ground |  |
| 2 | UART\_TX | UART TX |  |
| 3 | UART\_RX | UART RX |  |
| 4 | +5V | Power supply 5V |  |
| 5 | D+ | USB Data+ |  |
| 6 | D- | USB Data- |  |
| 7 | GND | Power Ground |  |
| 8 | /REST | Reset (active Low) |  |
| 9 | GND | Power Ground |  |
| 10 | PWM | Pulse width modulation |  |
| 11 | GND | Power Ground |  |
| 12 | +5V | Power supply : 5V |  |

**CON3 definition:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Pin** | **Symbol** | **Function** | **Remark** |
| 1 | GND | Power Ground |  |
| 2 | SW1 | Switch ( active low) |  |
| 3 | SW2 | Switch ( active low) |  |
| 4 | SW3 | Switch ( active low) |  |
| 5 | SW4 | Switch ( active low) |  |
| 6 | GND | Power Ground |  |
| 7 | NC | Reserved |  |
| 8 | NC | Reserved |  |
| 9 | NC | Reserved |  |
| 10 | NC | Reserved |  |
| 11 | INT | Interrupt output for CTP or external switch |  |
| 12 | +5V | Power supply : 5V |  |

1. **Reliability**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Environmental Test | | | | |
| Test Item | Content of Test | | Test Condition | Note |
| High Temperature storage | Endurance test applying the high storage temperature for a long time. | | 80℃  96hrs | 2 |
| Low Temperature  storage | Endurance test applying the low storage temperature for a long time. | | -30℃  96hrs | 1,2 |
| High Temperature  Operation | Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time. | | 70℃  240hrs | —— |
| Low Temperature  Operation | Endurance test applying the electric stress under low temperature for a long time. | | -20℃  240hrs | 1 |
| High Temperature/  Humidity Operation | The module should be allowed to stand at 40℃,90%RH max | | 40℃,90%RH  96hrs | 1,2 |
| Thermal shock resistance | The sample should be allowed stand the following 10 cycles of operation  -20℃ 25℃ 70℃    30min 5min 30min  1 cycle | | -20℃/70℃  10 cycles | —— |
| Vibration test | Endurance test applying the vibration during transportation and using. | | Total fixed amplitude : 1.5mm  Vibration Frequency : 10~55Hz  One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes | 3 |
| Static electricity test | Endurance test applying the electric stress to the terminal. | VS=±2KV~±6KV(contact),±2KV~±8KV (air),  RS=330Ω  CS=150pF  10 times | | —— |

Content of Reliability Test (Wide temperature, -20℃~70℃)

Note1: No dew condensation to be observed.

Note2: The function test shall be conducted after 4 hours storage at the normal

Temperature and humidity after remove from the test chamber.

Note3: The packing have to including into the vibration testing.

1. **Product inspection check list**

**Check samples by meter VIN, Isystem**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **No 1** | **No 2** | **No 3** | **Note** |
| VIN (V) | 4.82 | 4.79 | - |  |
| I System(mA) | 341 | 346 | - |  |

**Check sample Reliability Test**

|  |  |  |
| --- | --- | --- |
| **Item** | **Result** | **Note** |
| Thermal shock | PASS\_2021 | -20℃/70℃ 20 cycles |
| High Temperature  Operation | PASS\_2021 | 70℃  96hrs |
| Low Temperature  Operation | PASS\_2021 | -20℃  96hrs |
| Static electricity test | PASS\_2021 | VS=±2KV~±6KV(contact),±2KV~±8KV (air),  RS=330Ω  CS=150pF  10 times |
| Vibration test | \_ | Total fixed amplitude : 1.5mm  Vibration Frequency : 10~55Hz  One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes |

* Prepare sets for testing

1. **Display Usage**

Please refer to ***SmartDisplay Entry User Guide*** for the details of UART commands and Clever System User API.