



**WINSTAR Display Co.,Ltd.**  
**華凌光電股份有限公司**



**Winstar Display Co., LTD**  
**華凌光電股份有限公司**



WEB: <https://www.winstar.com.tw> E-mail: sales@winstar.com.tw

## SPECIFICATION

**CUSTOMER :** \_\_\_\_\_

**MODULE NO.:** **WF101KTYAPLNGO#**

|                                                      |                     |              |
|------------------------------------------------------|---------------------|--------------|
| <b>APPROVED BY:</b><br><br>( FOR CUSTOMER USE ONLY ) |                     |              |
|                                                      | <b>PCB VERSION:</b> | <b>DATA:</b> |

| SALES BY                | APPROVED BY | CHECKED BY | PREPARED BY |
|-------------------------|-------------|------------|-------------|
|                         |             |            | 葉虹蘭         |
| ISSUED DATE: 2021/11/09 |             |            |             |

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>



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MODLE NO :

**RECORDS OF REVISION**

**DOC. FIRST ISSUE**

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# 1.Module Classification Information

W F 101 K T Y A P L N G 0 #  
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|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                         |                                          |   |         |                       |                                                                                                                           |                                                                                                                                                                                                                                              |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
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| ①  | Brand : WINSTAR DISPLAY CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                         |                                          |   |         |                       |                                                                                                                           |                                                                                                                                                                                                                                              |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| ②  | Display Type : F→TFT Type, J→Custom TFT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                         |                                          |   |         |                       |                                                                                                                           |                                                                                                                                                                                                                                              |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| ③  | Display Size : 10.1” TFT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                         |                                          |   |         |                       |                                                                                                                           |                                                                                                                                                                                                                                              |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| ④  | Model serials no.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                         |                                          |   |         |                       |                                                                                                                           |                                                                                                                                                                                                                                              |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| ⑤  | Backlight Type :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | F→CCFL, White<br>S→LED, High Light White                                                                                                                                                                                |                                          |   |         |                       |                                                                                                                           | T→LED, White<br>Z→Nichia LED, White                                                                                                                                                                                                          |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| ⑥  | LCD Polarize Type/<br>Temperature range/ Gray Scale Inversion Direction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | A→Transmissive, N.T, IPS TFT<br>C→Transmissive, N. T, 6:00 ;<br>F→Transmissive, N.T,12:00 ;<br>I→Transmissive, W. T, 6:00<br>K→Transflective, W.T,12:00<br>L→Transmissive, W.T,12:00<br>N→Transmissive, Super W.T, 6:00 |                                          |   |         |                       |                                                                                                                           | Q→Transmissive, Super W.T, 12:00<br>R→Transmissive, Super W.T, O-TFT<br>V→Transmissive, Super W.T, VA TFT<br>W→Transmissive, Super W.T, IPS TFT<br>X→Transmissive, W.T, VA TFT<br>Y→Transmissive, W.T, IPS TFT<br>Z→Transmissive, W.T, O-TFT |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| ⑦  | A : TFT LCD<br>B : TFT+SCREW HOLES+CONTROL BOARD<br>C : TFT+ SCREW HOLES +A/D BOARD<br>D : TFT+ SCREW HOLES +A/D BOARD+CONTROL BOARD<br>E : TFT+ SCREW HOLES +POWER BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                         |                                          |   |         |                       | F : TFT+CONTROL BOARD<br>G : TFT+ SCREW HOLES<br>H : TFT+D/V BOARD<br>I : TFT+ SCREW HOLES +D/V BOARD<br>J : TFT+POWER BD |                                                                                                                                                                                                                                              |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| ⑧  | Resolution: <table><tr><td>A</td><td>128160</td><td>B</td><td>320234</td><td>C</td><td>320240</td><td>D</td><td>480234</td><td>E</td><td>480272</td><td>F</td><td>640480</td></tr><tr><td>G</td><td>800480</td><td>H</td><td>1024600</td><td>I</td><td>320480</td><td>J</td><td>240320</td><td>K</td><td>800600</td><td>L</td><td>240400</td></tr><tr><td>M</td><td>1024768</td><td>N</td><td>128128</td><td>P</td><td>1280800</td><td>Q</td><td>480800</td><td>R</td><td>640320</td><td>S</td><td>480128</td></tr><tr><td>T</td><td>800320</td><td>U</td><td>8001280</td><td>V</td><td>176220</td><td>W</td><td>1280398</td><td>X</td><td>1024250</td><td>Y</td><td>1920720</td></tr><tr><td>Z</td><td>800200</td><td>2</td><td>1024324</td><td>3</td><td>7201280</td><td>4</td><td>19201200</td><td>5</td><td>1366768</td><td>6</td><td>1280320</td></tr></table> |                                                                                                                                                                                                                         |                                          |   |         |                       |                                                                                                                           |                                                                                                                                                                                                                                              |         |                                |         |  | A | 128160                | B | 320234 | C | 320240 | D                     | 480234 | E | 480272 | F                              | 640480 | G | 800480        | H                            | 1024600 | I | 320480 | J | 240320        | K  | 800600                             | L   | 240400 | M | 1024768 | N                                  | 128128 | P | 1280800 | Q | 480800 | R  | 640320                           | S | 480128 | T | 800320 | U                                | 8001280 | V | 176220 | W | 1280398 | X | 1024250    | Y | 1920720 | Z | 800200 | 2 | 1024324 | 3 | 7201280 | 4 | 19201200 | 5 | 1366768 | 6 | 1280320 |
| A  | 128160                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | B                                                                                                                                                                                                                       | 320234                                   | C | 320240  | D                     | 480234                                                                                                                    | E                                                                                                                                                                                                                                            | 480272  | F                              | 640480  |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| G  | 800480                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | H                                                                                                                                                                                                                       | 1024600                                  | I | 320480  | J                     | 240320                                                                                                                    | K                                                                                                                                                                                                                                            | 800600  | L                              | 240400  |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| M  | 1024768                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | N                                                                                                                                                                                                                       | 128128                                   | P | 1280800 | Q                     | 480800                                                                                                                    | R                                                                                                                                                                                                                                            | 640320  | S                              | 480128  |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| T  | 800320                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | U                                                                                                                                                                                                                       | 8001280                                  | V | 176220  | W                     | 1280398                                                                                                                   | X                                                                                                                                                                                                                                            | 1024250 | Y                              | 1920720 |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| Z  | 800200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2                                                                                                                                                                                                                       | 1024324                                  | 3 | 7201280 | 4                     | 19201200                                                                                                                  | 5                                                                                                                                                                                                                                            | 1366768 | 6                              | 1280320 |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| ⑨  | D: Digital L : LVDS M:MIPI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                         |                                          |   |         |                       |                                                                                                                           |                                                                                                                                                                                                                                              |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| ⑩  | Interface: <table><tr><td>N</td><td colspan="3">Without control board</td><td>A</td><td>8Bit</td><td>B</td><td colspan="2">16Bit</td><td>H</td><td colspan="2">HDMI</td></tr><tr><td>I</td><td colspan="3">I2C Interface</td><td>R</td><td>RS232</td><td>S</td><td colspan="2">SPI Interface</td><td>U</td><td colspan="2">USB</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                         |                                          |   |         |                       |                                                                                                                           |                                                                                                                                                                                                                                              |         |                                |         |  | N | Without control board |   |        | A | 8Bit   | B                     | 16Bit  |   | H      | HDMI                           |        | I | I2C Interface |                              |         | R | RS232  | S | SPI Interface |    | U                                  | USB |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| N  | Without control board                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                         |                                          | A | 8Bit    | B                     | 16Bit                                                                                                                     |                                                                                                                                                                                                                                              | H       | HDMI                           |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| I  | I2C Interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                         |                                          | R | RS232   | S                     | SPI Interface                                                                                                             |                                                                                                                                                                                                                                              | U       | USB                            |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| ⑪  | TS: <table><tr><td>N</td><td colspan="4">Without TS</td><td>T</td><td colspan="3">Resistive touch panel</td><td>C</td><td colspan="3">Capacitive touch panel (G-F-F)</td></tr><tr><td>G</td><td colspan="6">Capacitive touch panel (G-G)</td><td>C1</td><td colspan="4">Capacitive touch panel (G-F-F)+OCA</td></tr><tr><td>C2</td><td colspan="6">Capacitive touch panel (G-F-F)+OCR</td><td>G1</td><td colspan="4">Capacitive touch panel (G-G)+OCA</td></tr><tr><td>G2</td><td colspan="6">Capacitive touch panel (G-G)+OCR</td><td>B</td><td colspan="4">CTP+GG+USB</td></tr></table>                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                         |                                          |   |         |                       |                                                                                                                           |                                                                                                                                                                                                                                              |         |                                |         |  | N | Without TS            |   |        |   | T      | Resistive touch panel |        |   | C      | Capacitive touch panel (G-F-F) |        |   | G             | Capacitive touch panel (G-G) |         |   |        |   |               | C1 | Capacitive touch panel (G-F-F)+OCA |     |        |   | C2      | Capacitive touch panel (G-F-F)+OCR |        |   |         |   |        | G1 | Capacitive touch panel (G-G)+OCA |   |        |   | G2     | Capacitive touch panel (G-G)+OCR |         |   |        |   |         | B | CTP+GG+USB |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| N  | Without TS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                         |                                          |   | T       | Resistive touch panel |                                                                                                                           |                                                                                                                                                                                                                                              | C       | Capacitive touch panel (G-F-F) |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| G  | Capacitive touch panel (G-G)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                         |                                          |   |         |                       | C1                                                                                                                        | Capacitive touch panel (G-F-F)+OCA                                                                                                                                                                                                           |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| C2 | Capacitive touch panel (G-F-F)+OCR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                         |                                          |   |         |                       | G1                                                                                                                        | Capacitive touch panel (G-G)+OCA                                                                                                                                                                                                             |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| G2 | Capacitive touch panel (G-G)+OCR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                         |                                          |   |         |                       | B                                                                                                                         | CTP+GG+USB                                                                                                                                                                                                                                   |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| ⑫  | Version: X:Raspberry pi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                         |                                          |   |         |                       |                                                                                                                           |                                                                                                                                                                                                                                              |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |
| ⑬  | Special Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                         | #:Fit in with ROHS directive regulations |   |         |                       |                                                                                                                           |                                                                                                                                                                                                                                              |         |                                |         |  |   |                       |   |        |   |        |                       |        |   |        |                                |        |   |               |                              |         |   |        |   |               |    |                                    |     |        |   |         |                                    |        |   |         |   |        |    |                                  |   |        |   |        |                                  |         |   |        |   |         |   |            |   |         |   |        |   |         |   |         |   |          |   |         |   |         |

## **2.Summary**

TFT 10.1" is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT LCD panel, a driving circuit and a back light system. This TFT LCD has a 10.1 inch diagonally measured active display area with HD (1280 horizontal by 800 vertical pixel) resolution.

### **3.General Specifications**

| Item                         | Dimension               | Unit |
|------------------------------|-------------------------|------|
| Screen Diagonal              | 10.1                    | inch |
| Number of Pixels             | 1280 x 3(R GB) x 800    | dots |
| Module dimension             | 257.96 x 168.6 x 5.93   | mm   |
| Active area                  | 216.96 (H) x 135.6(V)   | mm   |
| Pixel pitch                  | 0.1695 × 0.1695         | mm   |
| Display Mode                 | Normally Black          |      |
| Pixel Arrangement            | R.G.B. Vertical Stripe  |      |
| TFT Drive IC                 | EK79202B1 or Equivalent |      |
| Backlight Type               | LED,Normally White      |      |
| Aspect Ratio                 | 16:10                   |      |
| Electrical Interface (Logic) | LVDS                    |      |
| CTP FW Version               | 80                      |      |
| CTP IC                       | GT928 or equivalent     |      |
| CTP Interface                | I2C                     |      |
| CTP Resolution               | 1280*800                |      |
| With /Without TP             | With CTP                |      |
| Surface                      | Glare                   |      |

\*Color tone slight changed by temperature and driving voltage.

## **4.Absolute Maximum Ratings**

| Item                  | Symbol | Min | Typ | Max | Unit |
|-----------------------|--------|-----|-----|-----|------|
| Operating Temperature | TOP    | -20 | —   | +70 | °C   |
| Storage Temperature   | TST    | -30 | —   | +80 | °C   |

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

1. Temp. □ 60°C, 90% RH MAX. Temp. > 60°C, Absolute humidity shall be less than 90% RH at 60°C



# 5. Electrical Characteristics

## 5.1. Typical Operation Conditions (Note 1)

| Item                           | Symbol | Values |      |      | Unit | Remark |
|--------------------------------|--------|--------|------|------|------|--------|
|                                |        | Min.   | Typ. | MAX. |      |        |
| Power voltage                  | VCC    | 3.0    | 3.3  | 3.5  | V    |        |
|                                | VGH    |        | 18   |      | V    | Note 1 |
|                                | VGL    |        | -10  |      | V    | Note 2 |
|                                | VSP    |        | 5.5  |      | V    | Note 3 |
|                                | VSN    |        | -5.5 |      | V    | Note 3 |
| Supply Voltage For Touch Logic | VDDT   | 2.8    | —    | 3.3  | V    |        |

Note:

1. VGH is TFT Gate operating Voltage.

2. VGL is TFT Gate operating Voltage.

3. VSP / VSN does not require an external power supply voltage, it is provided by IC on the PCB

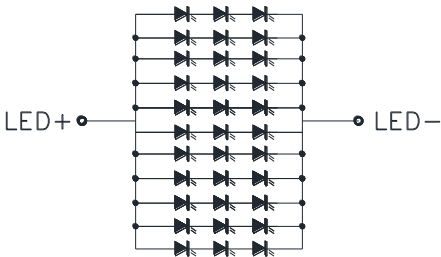
## 5.2. Current Consumption

| Item               | Symbol | Values |      |      | Unit | Remark     |
|--------------------|--------|--------|------|------|------|------------|
|                    |        | Min.   | Typ. | MAX. |      |            |
| Current for Driver | IGH    | —      | 7.7  | —    | mA   | VGH =18V   |
|                    | IGL    | —      | -7.7 | —    | mA   | VGL = -10V |
|                    | IVCC   | 95     | 84.9 | 79.8 | mA   | —          |

5.3. Backlight Characteristics

| Parameter                             | Symbol | Min.  | Typ. | Max. | Unit | Remark |
|---------------------------------------|--------|-------|------|------|------|--------|
| Supply voltage of white LED backlight | VLED   | 8.1   | 9.3  | 10.2 | V    | Note 1 |
| Current for LED backlight             | ILED   | —     | 220  | —    | mA   |        |
| LED life time                         | -      | 50000 | -    | -    | Hr   | Note 1 |

Note 1 : There are 1 Groups LED



Note 2 : Ta = 25 °C

Note 3 : Brightness to be decreased to 50% of the initial value

Note 4 : The single LED lamp case

# 6.AC Characteristics

## 6.1. LVDS mode AC electrical characteristics

| Parameter              | Symbol      | Spec. |                     |      | Unit | Condition                                                   |
|------------------------|-------------|-------|---------------------|------|------|-------------------------------------------------------------|
|                        |             | Min.  | Typ.                | Max. |      |                                                             |
| Clock frequency        | $R_{xFCLK}$ | 30    | -                   | TBD  | MHz  | Refer to input timing table for each display resolution     |
| Input data skew margin | $T_{RSKM}$  | 500   | ┤                   | -    | ps   | $ VID  = 200mV$<br>$R_{xVCM} = 1.2V$<br>$R_{xFCLK} = 81MHz$ |
| Clock high time        | $T_{LVCH}$  | -     | $4/(7 * R_{xFCLK})$ | -    | ns   |                                                             |
| Clock low time         | $T_{LVCL}$  | -     | $3/(7 * R_{xFCLK})$ | -    | ns   |                                                             |
| PLL wake-up time       | $T_{enPLL}$ | -     | -                   | 150  | us   |                                                             |

Table 1: LVDS mode AC electrical characteristics

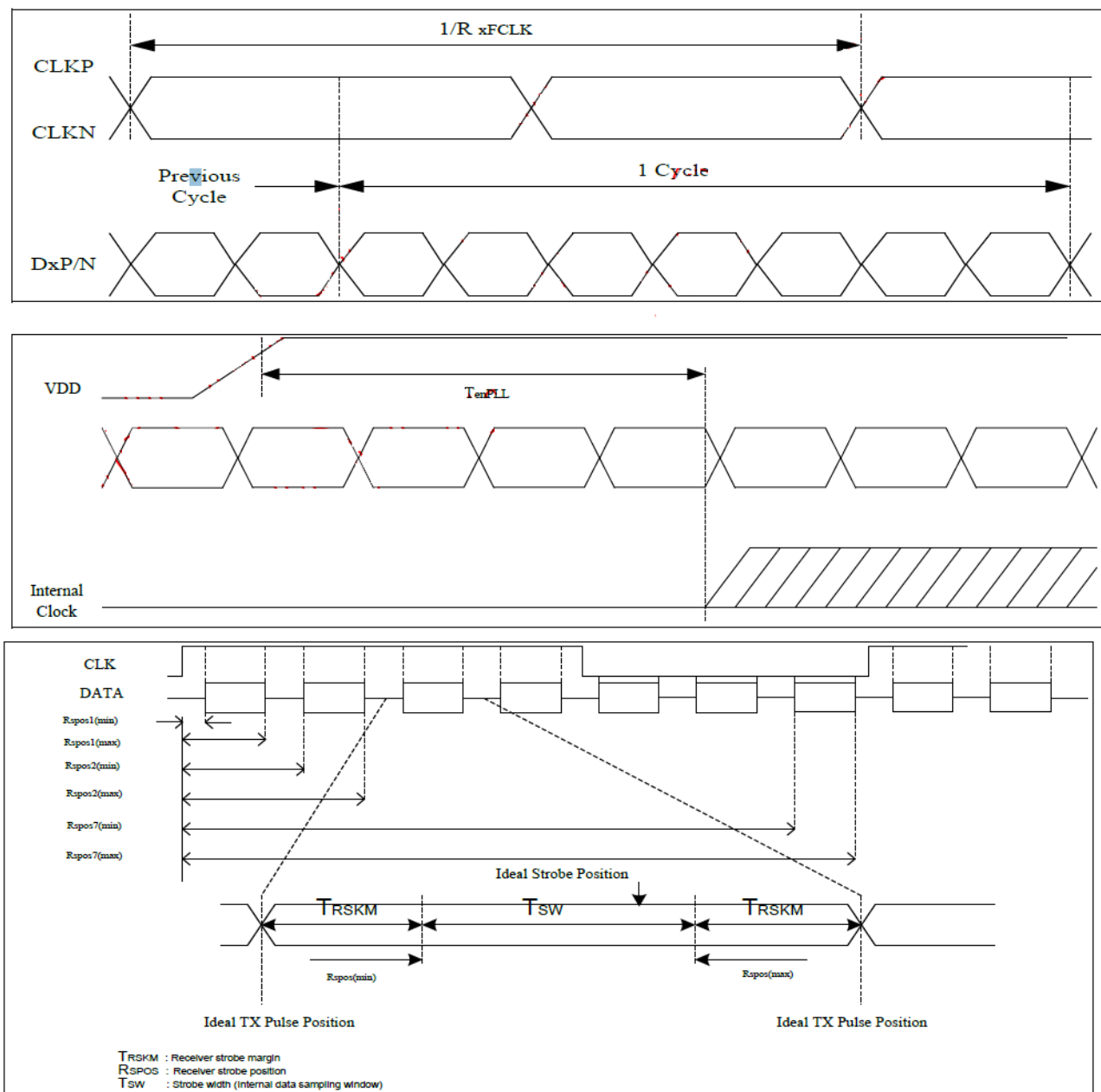
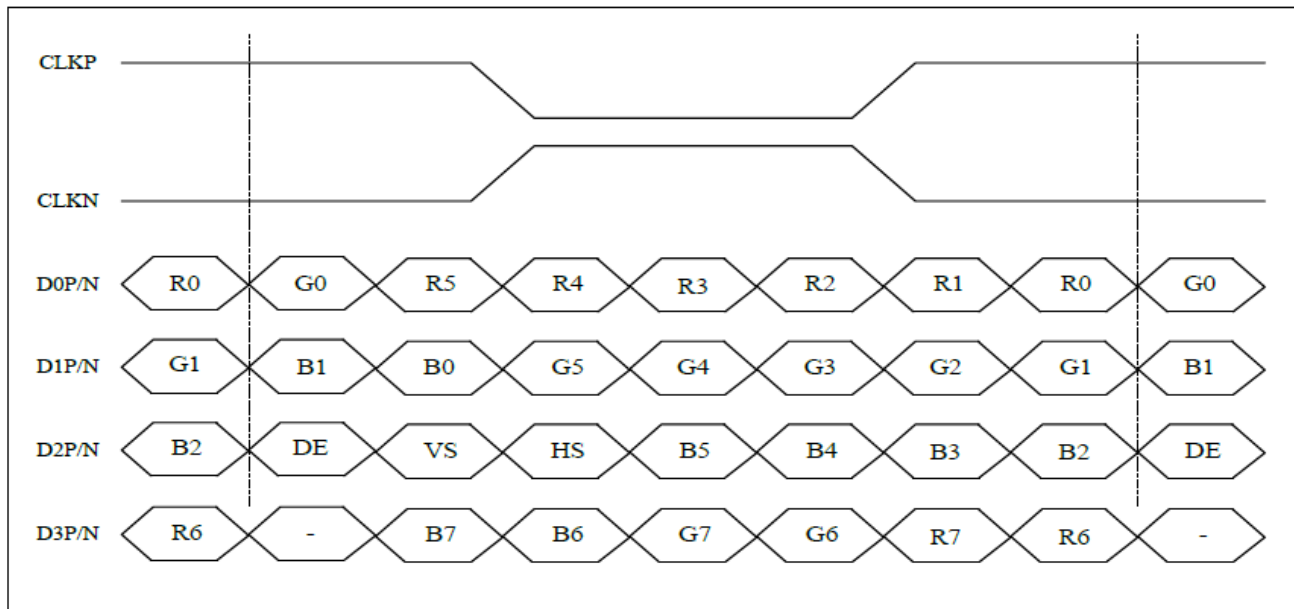


Figure 1: LVDS figure

# 7.LVDS Input Timing Table

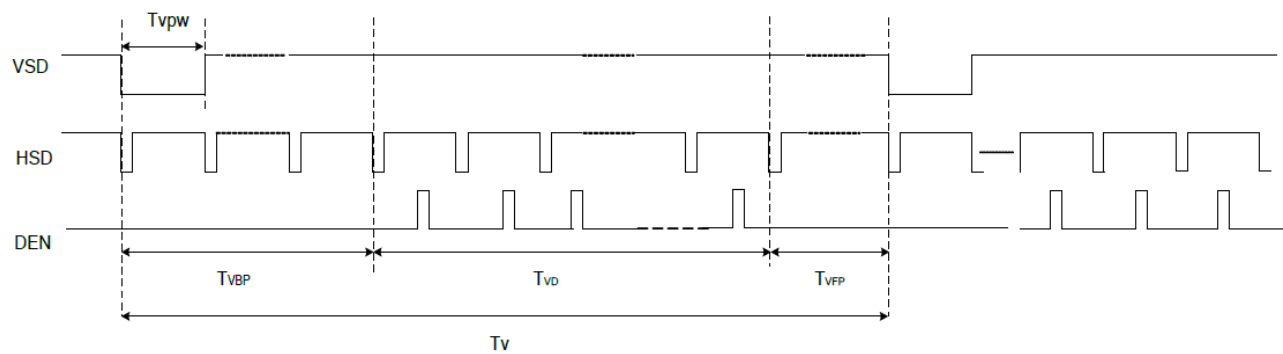
For 1280RGBx800 timing table

| Parameter                              | Symbol            | Value |      |      | Unit |
|----------------------------------------|-------------------|-------|------|------|------|
|                                        |                   | Min.  | Typ. | Max. |      |
| DCLK frequency @Frame rate=60Hz (LVDS) | $F_{DCLK}$        | 69.7  | 75   | 80.9 | MHz  |
| Horizontal display area                | $T_{HD}$          | 1280  |      |      | DCLK |
| HSYNC period time                      | $T_H$             | 1380  | 1440 | 1500 | DCLK |
| HSYNC blanking                         | $T_{HBP}+T_{HFP}$ | 100   | 160  | 220  | DCLK |
| Vertical display area                  | $T_{VD}$          | 800   |      |      | H    |
| VSYNC period time                      | $T_V$             | 842   | 838  | 872  | H    |
| VSYNC blanking                         | $T_{VBP}+T_{VFP}$ | 24    | 38   | 72   | H    |

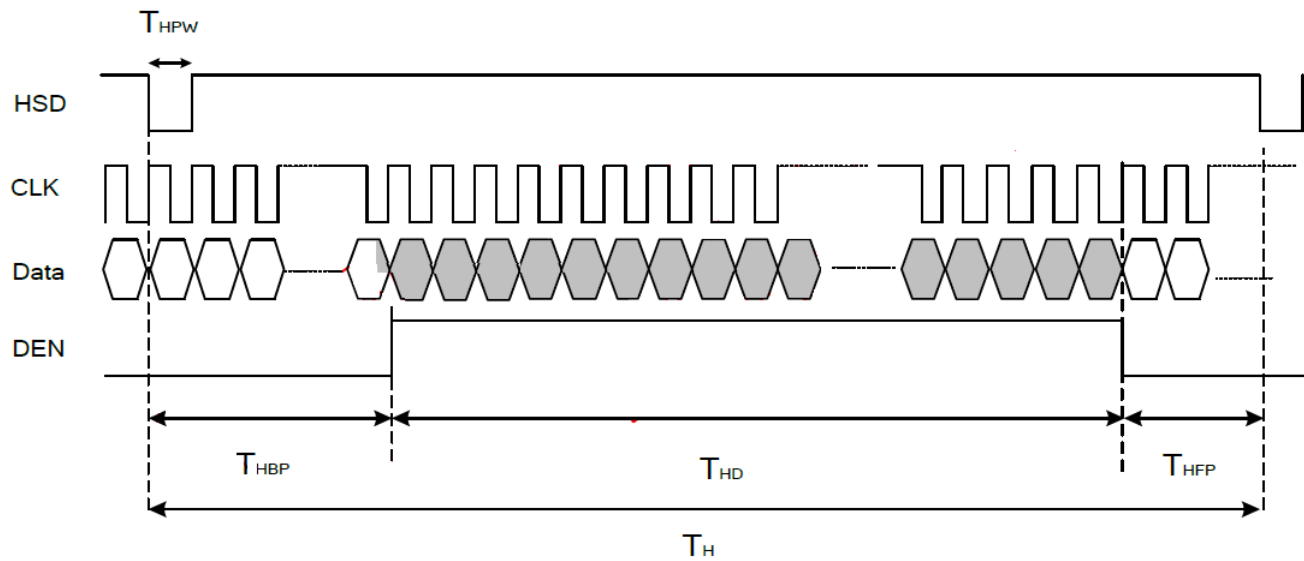


8-bit LVDS input

## Vertical timing



## Horizontal timing



# 8.Power Sequence

## 8.1. Power Generation

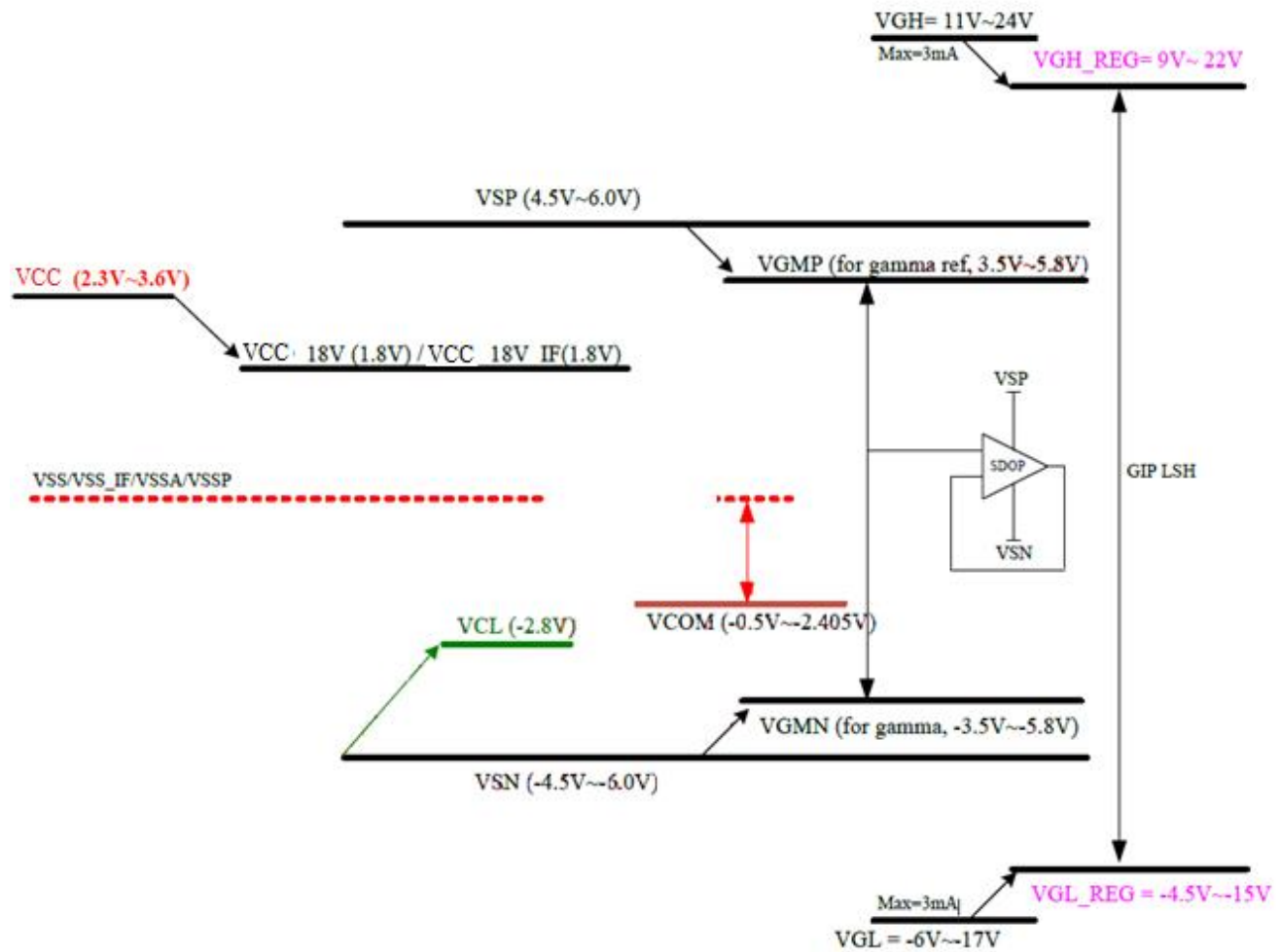
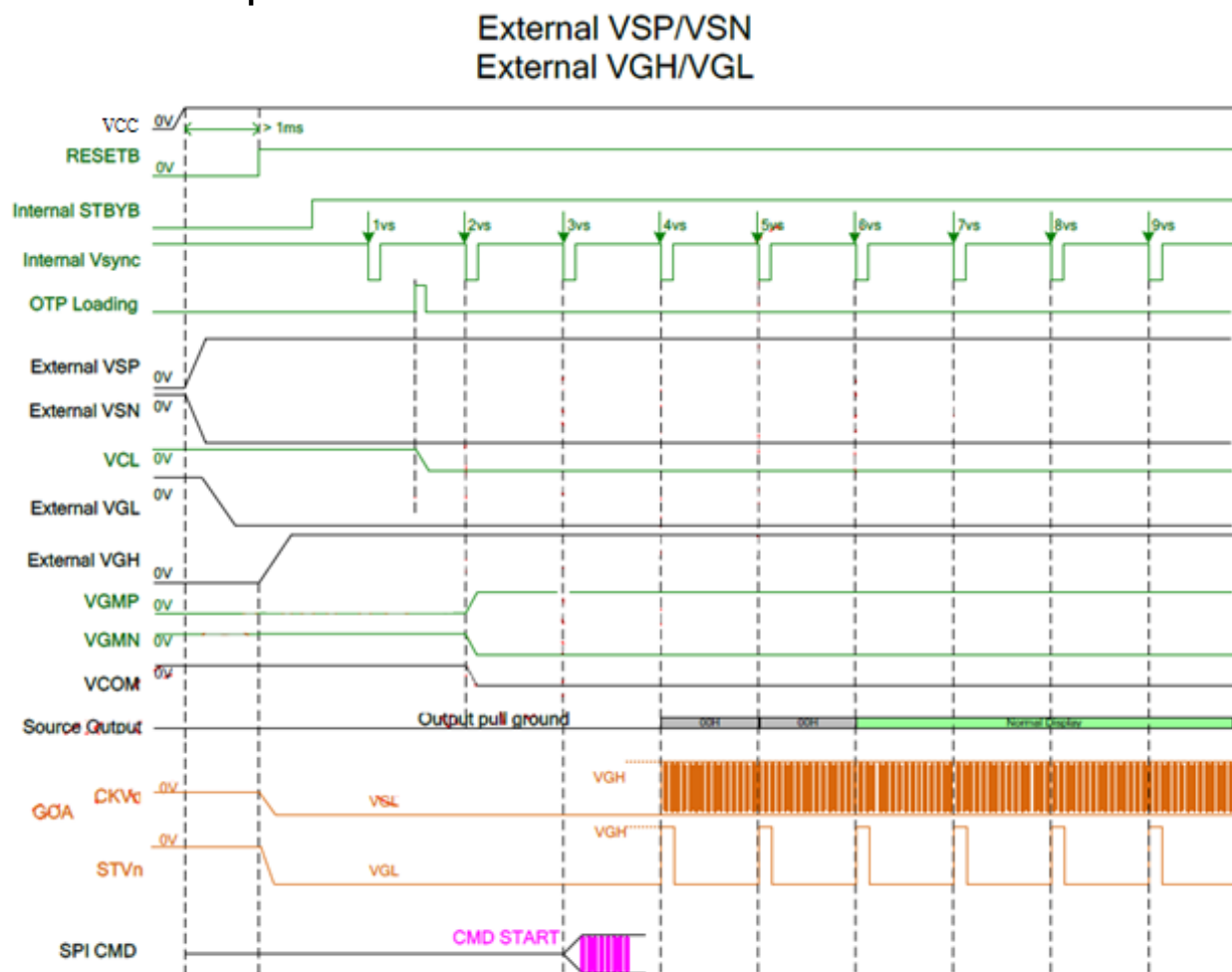
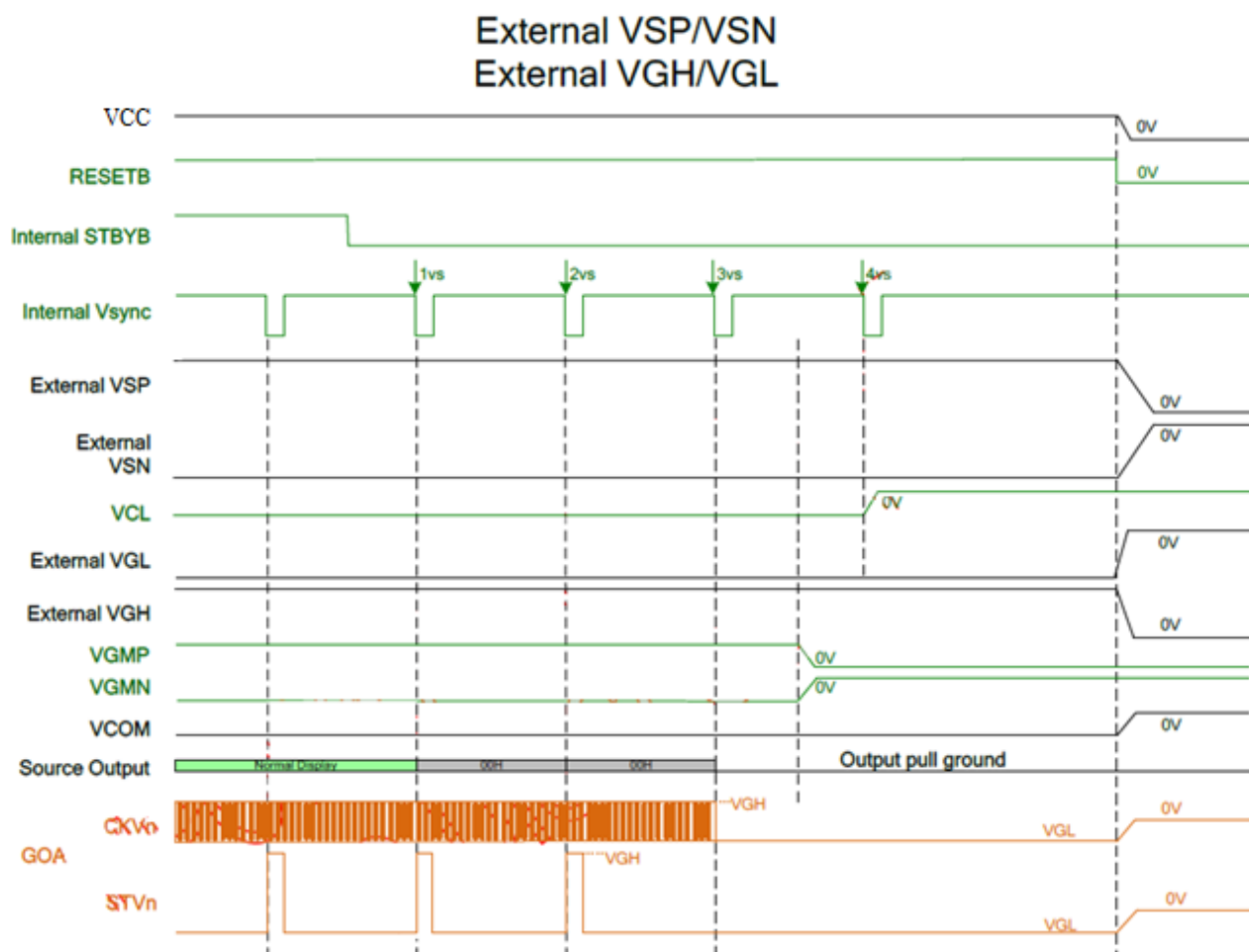


Figure 1 power generation

## 8.2. Power on sequence



### 8.3. Power off sequence





## 9. Optical Characteristics

| Item               | Symbol | Condition.                        | Min   | Typ.  | Max.  | Unit              | Remark            |
|--------------------|--------|-----------------------------------|-------|-------|-------|-------------------|-------------------|
| Response time      | Tr+ Tf | $\theta=0^\circ$ 、 $\phi=0^\circ$ | -     | 25    | 35    | .ms               | Note 3            |
| Contrast ratio     | CR     | At optimized viewing angle        | 800   | 1000  | -     | -                 | Note 4            |
| Color Chromaticity | White  | $\theta=0^\circ$ 、 $\phi=0^\circ$ | 0.272 | 0.322 | 0.372 | -                 | Note 2,6,7        |
|                    | Wy     |                                   | 0.294 | 0.344 | 0.394 | -                 |                   |
| Viewing angle      | Hor.   | $\Theta_R$                        | 70    | 80    | -     | Deg.              | Note 1            |
|                    |        | $\Theta_L$                        | 70    | 80    | -     |                   |                   |
|                    | Ver.   | $\Phi_T$                          | 70    | 80    | -     |                   |                   |
|                    |        | $\Phi_B$                          | 70    | 80    | -     |                   |                   |
| Brightness         | -      | -                                 | 300   | -     | -     | cd/m <sup>2</sup> | Center of display |
| Uniformity         | (U)    | -                                 | 70    | -     | -     | %                 | Note 5            |

Ta=25±2°C

Note 1: Definition of viewing angle range

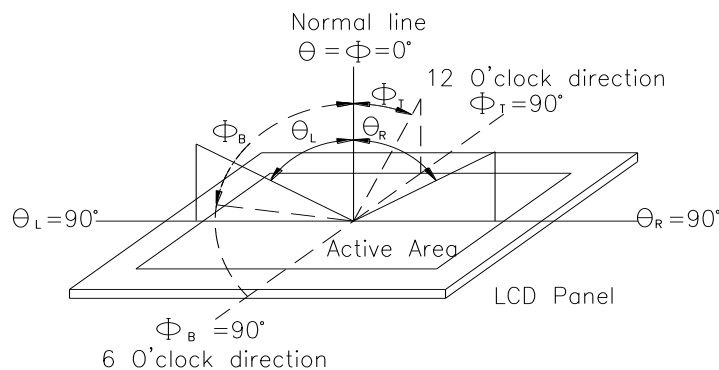


Fig. 9.1. Definition of viewing angle

Note 2: Test equipment setup:

After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7 or BM-5 luminance meter 1.0° field of view at a distance of 50cm and normal direction.

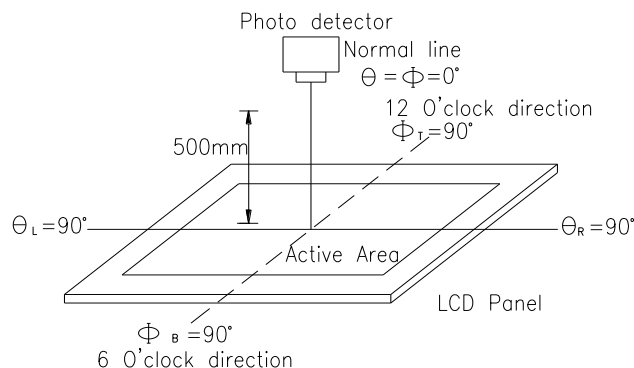
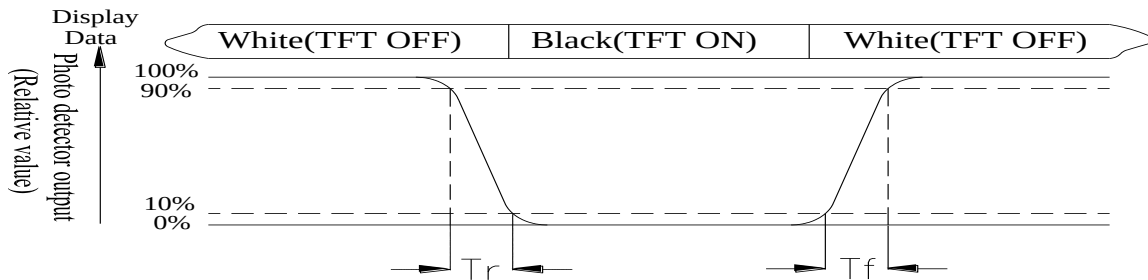


Fig. 9.2. Optical measurement system setup

**Note 3: Definition of Response time:**

The response time is defined as the LCD optical switching time interval between "White" state and "Black" state. Rise time,  $T_r$ , is the time between photo detector output intensity changed from 90% to 10%. And fall time,  $T_f$ , is the time between photo detector output intensity changed from 10% to 90%



**Note 4: Definition of contrast ratio:**

The contrast ratio is defined as the following expression.

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

**Note 5: Definition of Luminance Uniformity**

Active area is divided into 9 measuring areas (reference the picture in below). Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity (U)} = \frac{L_{\min}}{L_{\max}} \times 100\%$$

$L$  = Active area length

$W$  = Active area width

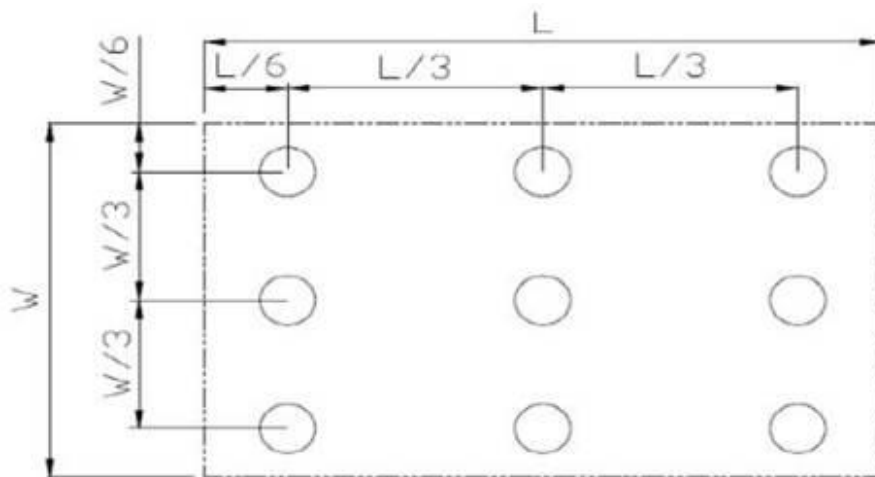


Fig9.3. Definition of uniformity

**Note 6: Definition of color chromaticity (CIE 1931)**

Color coordinates measured at the center point of LCD

**Note 7:** Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

# 10.Interface

## Interface Connector

A 40pin connector is used for the module electronics interface. The recommended model is F62240-H1210B manufactured by Vigorconn.

| Pin No. | Symbol | I/O | Function                       | Remark                |
|---------|--------|-----|--------------------------------|-----------------------|
| 1       | NC     | -   | No connection                  |                       |
| 2       | VCC    | P   | Power Supply                   |                       |
| 3       | VCC    | P   | Power Supply                   |                       |
| 4       | NC     | -   | No connection                  |                       |
| 5       | NC     | -   | No connection                  |                       |
| 6       | NC     | -   | No connection                  |                       |
| 7       | GND    | P   | Ground                         |                       |
| 8       | Rxin0- | I   | -LVDS Differential Data Input  | R0-R5,G0              |
| 9       | Rxin0+ | I   | +LVDS Differential Data Input  |                       |
| 10      | GND    | P   | Ground                         |                       |
| 11      | Rxin1- | I   | -LVDS Differential Data Input  | G1G5,B0,B1            |
| 12      | Rxin1+ | I   | +LVDS Differential Data Input  |                       |
| 13      | GND    | P   | Ground                         |                       |
| 14      | Rxin2- | I   | -LVDS Differential Data Input  | B2-B5,HS,VS,<br>DE    |
| 15      | Rxin2+ | I   | +LVDS Differential Data Input  |                       |
| 16      | GND    | P   | Ground                         |                       |
| 17      | RxCLK- | I   | -LVDS Differential Clock Input | LVDS CLK              |
| 18      | RxCLK+ | I   | +LVDS Differential Clock Input |                       |
| 19      | GND    | P   | Ground                         |                       |
| 20      | Rxin3- | I   | -LVDS Differential Data Input  | R6,R7,G6,G7,<br>B6,B7 |
| 21      | Rxin3+ | I   | +LVDS Differential Data Input  |                       |
| 22      | GND    | P   | Ground                         |                       |
| 23      | NC     | -   | No connection                  |                       |
| 24      | NC     | -   | No connection                  |                       |
| 25      | GND    | P   | Ground                         |                       |
| 26      | NC     | -   | No connection                  |                       |
| 27      | NC     | -   | No connection                  |                       |
| 28      | NC     | -   | No connection                  |                       |
| 29      | NC     | -   | No connection                  |                       |
| 30      | GND    | P   | Ground                         |                       |

|    |      |   |                  |  |
|----|------|---|------------------|--|
| 31 | LED- | P | LED Cathode      |  |
| 32 | LED- | P | LED Cathode      |  |
| 33 | NC   | - | No connection    |  |
| 34 | NC   | - | No connection    |  |
| 35 | VGL  | P | Gate OFF Voltage |  |
| 36 | NC   | - | No connection    |  |
| 37 | NC   | - | No connection    |  |
| 38 | VGH  | P | Gate ON Voltage  |  |
| 39 | LED+ | P | LED Anode        |  |
| 40 | LED+ | P | LED Anode        |  |

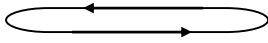
I: input, O: output, P: Power

#### 10.1. CTP PIN Definition

| Pin | Symbol | Function                       | Remark |
|-----|--------|--------------------------------|--------|
| 1   | SDA    | I2C data input and output      |        |
| 2   | SCL    | I2C clock input                |        |
| 3   | RST    | External Reset, Low is active  |        |
| 4   | INT    | External interrupt to the host |        |
| 5   | VDDT   | Power Supply : +3.3V           |        |
| 6   | VSS    | Ground for analog circuit      |        |

# 11. Reliability

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

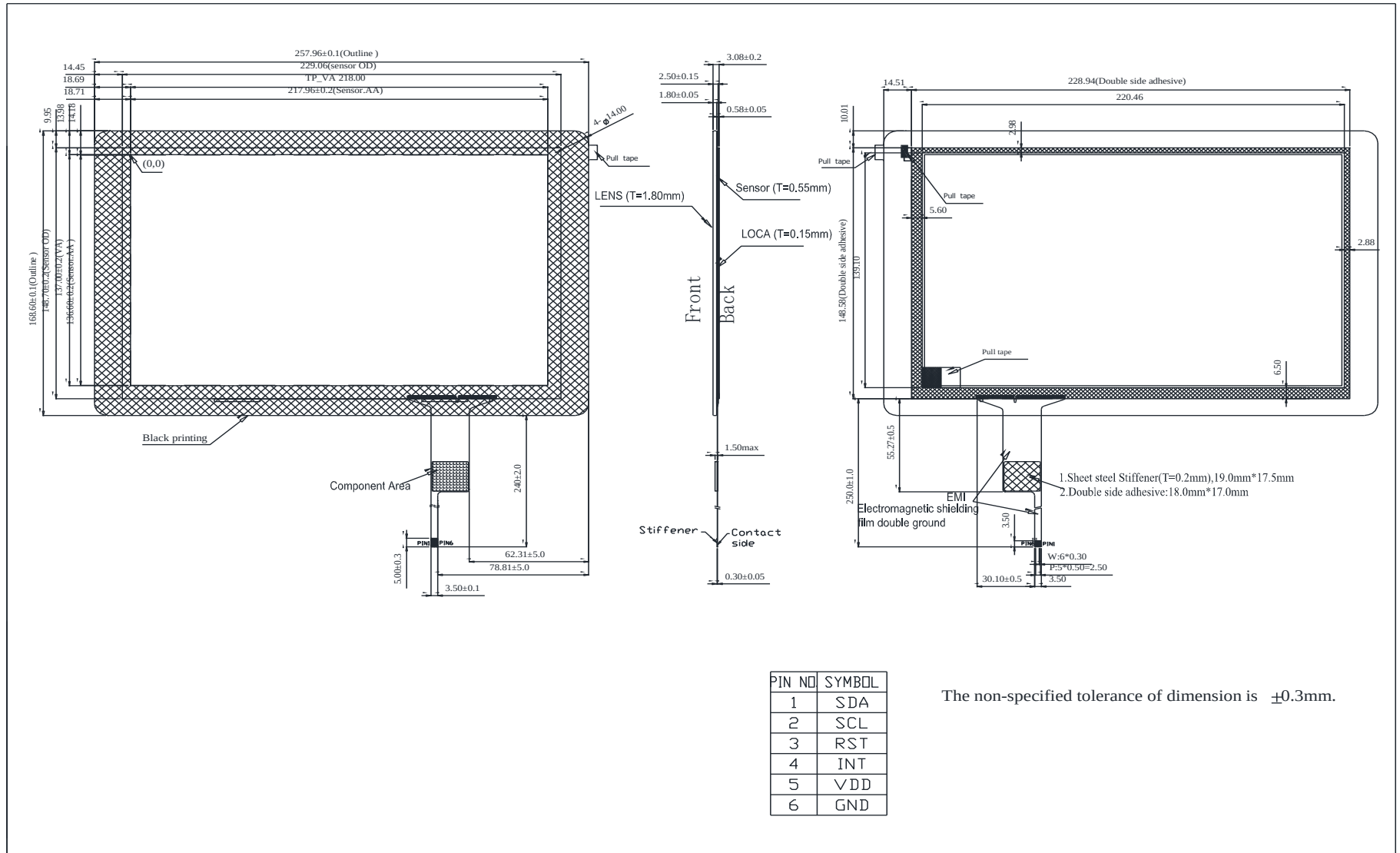
| Environmental Test                   |                                                                                                                                                                                                                                                                                                                     |                                                                                                                                        |      |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------|
| Test Item                            | Content of Test                                                                                                                                                                                                                                                                                                     | Test Condition                                                                                                                         | Note |
| High Temperature storage             | Endurance test applying the high storage temperature for a long time.                                                                                                                                                                                                                                               | 80°C<br>200hrs                                                                                                                         | 2    |
| Low Temperature storage              | Endurance test applying the low storage temperature for a long time.                                                                                                                                                                                                                                                | -30°C<br>200hrs                                                                                                                        | 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°C<br>200hrs                                                                                                                         | —    |
| Low Temperature Operation            | Endurance test applying the electric stress under low temperature for a long time.                                                                                                                                                                                                                                  | -20°C<br>200hrs                                                                                                                        | 1    |
| High Temperature/ Humidity Operation | The module should be allowed to stand at 60°C,90%RH max                                                                                                                                                                                                                                                             | 60°C,90%RH<br>96hrs                                                                                                                    | 1,2  |
| Thermal shock resistance             | <p>The sample should be allowed stand the following 10 cycles of operation</p> <p style="text-align: center;">           -20°C      25°C      70°C<br/> <br/>           30min    5min    30min<br/>           1 cycle         </p> | -20°C/70°C<br>10 cycles                                                                                                                | —    |
| Vibration test                       | Endurance test applying the vibration during transportation and using.                                                                                                                                                                                                                                              | Total fixed amplitude : 1.5mm<br>Vibration<br>Frequency : 10~55Hz<br>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=±600V(contact),<br>±800V(air),<br>RS=330Ω<br>CS=150pF<br>10 times                                                                   | —    |

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.

# 12.Touch Panel Information



## 12.1. Timing for Read Operation

First, set address pointer based on the aforesaid Write Operation timing sequence. Then, resend

Start condition to perform Read addressing and read data in the registers.



Address\_R: Slave address with Read control bit.

NACK: Host issues NACK after reading the last byte.

After setting Read addresses, the host can read one or more than one byte at a time.

GT927/GT928/GT9110 will automatically increase the address pointer and send subsequent data in sequence.

The Stop condition (the first E signal as shown in the above diagram) after setting the address pointer is optional. However, the repeated Start condition has to be sent.

## 12.2. Coordinate registers

| Addr   | Access | bit7                                | bit6 | bit5 | bit4 | bit3 | bit2 | bit1 | bit0 |
|--------|--------|-------------------------------------|------|------|------|------|------|------|------|
| 0x8140 | R      | Product ID( first Byte, ASCII )     |      |      |      |      |      |      |      |
| 0x8141 | R      | Product ID( second Byte, ASCII)     |      |      |      |      |      |      |      |
| 0x8142 | R      | Product ID( third Byte, ASCII)      |      |      |      |      |      |      |      |
| 0x8143 | R      | Product ID( forth Byte, ASCII)      |      |      |      |      |      |      |      |
| 0x8144 | R      | Firmware version(HEX.low byte)      |      |      |      |      |      |      |      |
| 0x8145 | R      | Firmware version (HEX.high byte)    |      |      |      |      |      |      |      |
| 0x8146 | R      | x coordinate resolution (low byte)  |      |      |      |      |      |      |      |
| 0x8147 | R      | x coordinate resolution (high byte) |      |      |      |      |      |      |      |
| 0x8148 | R      | y coordinate resolution (low byte)  |      |      |      |      |      |      |      |
| 0x8149 | R      | y coordinate resolution (high byte) |      |      |      |      |      |      |      |

|        |     |                                                             |              |          |         |                        |
|--------|-----|-------------------------------------------------------------|--------------|----------|---------|------------------------|
| 0x814A | R   | Vendor_id(ID of the current module)                         |              |          |         |                        |
| 0x814B | R   | Reserved                                                    |              |          |         |                        |
| 0x814C | R   | Reserved                                                    |              |          |         |                        |
| 0x814D | R   | Reserved                                                    |              |          |         |                        |
| 0x814E | R/W | buffer status                                               | large detect | Reserved | HaveKey | number of touch points |
| 0x814F | R   | track id as 32 indicates HotKnot proximity detection signal |              |          |         |                        |
| 0x8150 | R   | PxyOk                                                       | Reserved     |          |         |                        |
| 0x8151 | R   | PxyOk                                                       | Reserved     |          |         |                        |
| 0x8152 | R   | Reserved                                                    |              |          |         |                        |
| 0x8153 | R   | Reserved                                                    |              |          |         |                        |
| 0x8154 | R   | Reserved                                                    |              |          |         |                        |
| 0x8155 | R   | Reserved                                                    |              |          |         |                        |
| 0x8156 | R   | Reserved                                                    |              |          |         |                        |
| 0x8157 | R   | pen_sta                                                     | Reserved     |          |         | track id               |
| 0x8158 | R   | point 1 x coordinate (low byte)                             |              |          |         |                        |
| 0x8159 | R   | point 1 x coordinate (high byte)                            |              |          |         |                        |
| 0x815A | R   | point 1 y coordinate (low byte)                             |              |          |         |                        |
| 0x815B | R   | point 1 y coordinate (high byte)                            |              |          |         |                        |
| 0x815C | R   | Point 1 size (low byte)                                     |              |          |         |                        |
| 0x815D | R   | point 1 size (high byte)                                    |              |          |         |                        |
| 0x815E | R   | Reserved                                                    |              |          |         |                        |
| 0x815F | R   | track id                                                    |              |          |         |                        |
| 0x8160 | R   | point 2 x coordinate (low byte)                             |              |          |         |                        |
| 0x8161 | R   | point 2 x coordinate (high byte)                            |              |          |         |                        |
| 0x8162 | R   | point 2 y coordinate (low byte)                             |              |          |         |                        |
| 0x8163 | R   | point 2 y coordinate (high byte)                            |              |          |         |                        |
| 0x8164 | R   | point 2 size (low byte)                                     |              |          |         |                        |
| 0x8165 | R   | point 2 size (high byte)                                    |              |          |         |                        |
| 0x8166 | R   | Reserved                                                    |              |          |         |                        |
| 0x8167 | R   | track id                                                    |              |          |         |                        |
| 0x8168 | R   | point 3 x coordinate (low byte)                             |              |          |         |                        |
| 0x8169 | R   | point 3 x coordinate (high byte)                            |              |          |         |                        |
| 0x816A | R   | point 3 y coordinate (low byte)                             |              |          |         |                        |
| 0x816B | R   | point 3 y coordinate (high byte)                            |              |          |         |                        |
| 0x816C | R   | point 3 size (low byte)                                     |              |          |         |                        |
| 0x816D | R   | point 3 size (high byte)                                    |              |          |         |                        |
| 0x816F | R   | track id                                                    |              |          |         |                        |
| 0x8170 | R   | point 4 x coordinate (low byte)                             |              |          |         |                        |
| 0x8171 | R   | point 4 x coordinate (high byte)                            |              |          |         |                        |
| 0x8172 | R   | point 4 y coordinate (low byte)                             |              |          |         |                        |



|        |   |                                  |
|--------|---|----------------------------------|
| 0x8173 | R | point 4 y coordinate (high byte) |
| 0x8174 | R | point 4 size (low byte)          |
| 0x8175 | R | point 4 size (high byte)         |
| 0x8176 | R | Reserved                         |
| 0x8177 | R | track id                         |
| 0x8178 | R | point 5 x coordinate (low byte)  |
| 0x8179 | R | point 5 x coordinate (high byte) |
| 0x817A | R | point 5 y coordinate (low byte)  |
| 0x817B | R | point 5 y coordinate (high byte) |
| 0x817C | R | point 5 size (low byte)          |
| 0x817D | R | point 5 size (high byte)         |
| 0x817E | R | Reserved                         |
| 0x817F | R | track id                         |
| 0x8180 | R | point 6 x coordinate (low byte)  |
| 0x8181 | R | point 6 x coordinate (high byte) |
| 0x8182 | R | point 6 y coordinate (low byte)  |
| 0x8183 | R | point 6 y coordinate (high byte) |
| 0x8184 | R | point 6 size (low byte)          |
| 0x8185 | R | point 6 size (high byte)         |
| 0x8186 | R | Reserved                         |
| 0x8187 | R | track id                         |
| 0x8188 | R | point 7 x coordinate (low byte)  |
| 0x8189 | R | point 7 x coordinate (high byte) |
| 0x818A | R | point 7 y coordinate (low byte)  |
| 0x818B | R | point 7 y coordinate (high byte) |
| 0x818C | R | point 7 size (low byte)          |
| 0x818D | R | point 7 size (high byte)         |
| 0x818E | R | Reserved                         |
| 0x818F | R | track id                         |
| 0x8190 | R | point 8 x coordinate (low byte)  |
| 0x8191 | R | point 8 x coordinate (high byte) |
| 0x8192 | R | point 8 y coordinate (low byte)  |
| 0x8193 | R | point 8 y coordinate (high byte) |
| 0x8194 | R | point 8 size (low byte)          |
| 0x8195 | R | point 8 size (high byte)         |
| 0x8196 | R | Reserved                         |
| 0x8197 | R | track id                         |
| 0x8198 | R | point 9 x coordinate (low byte)  |
| 0x8199 | R | point 9 x coordinate (high byte) |
| 0x819A | R | point 9 y coordinate (low byte)  |
| 0x819B | R | point 9 y coordinate (high byte) |

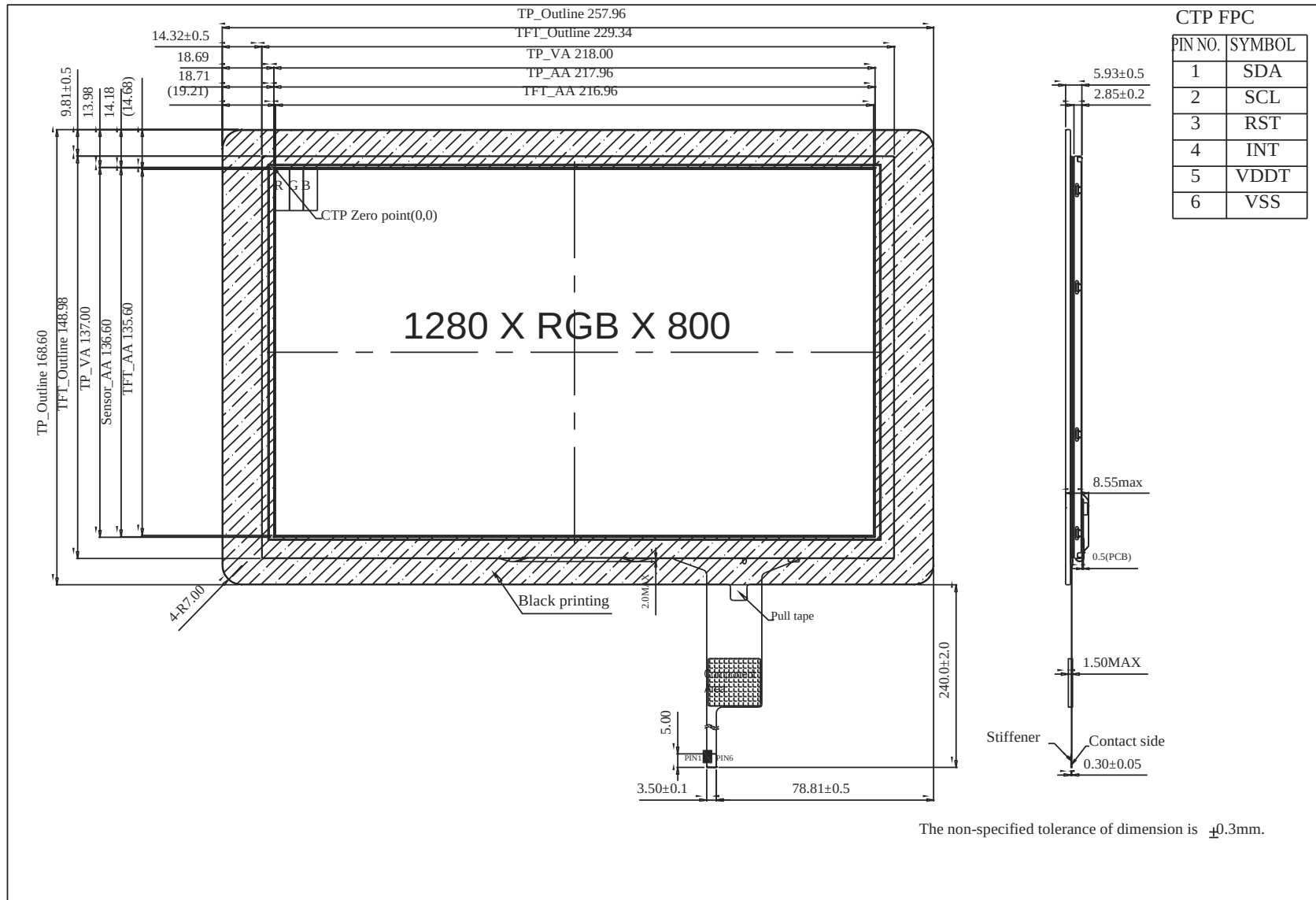
|        |   |                                   |
|--------|---|-----------------------------------|
| 0x819C | R | point 9 size (low byte)           |
| 0x819D | R | point 9 size (high byte)          |
| 0x819E | R | Reserved                          |
| 0x819F | R | track id                          |
| 0x81A0 | R | point 10 x coordinate (low byte)  |
| 0x81A1 | R | point 10 x coordinate (high byte) |
| 0x81A2 | R | point 10 y coordinate (low byte)  |
| 0x81A3 | R | point 10 y coordinate (high byte) |
| 0x81A4 | R | point 10 size (low byte)          |
| 0x81A5 | R | point 10 size (high byte)         |
| 0x81A6 | R | Reserved                          |
| 0x81A7 | R | KeyValue                          |

### 12.3. I2C protocol

3.3V ,400BPS ,pull high 2K ohm

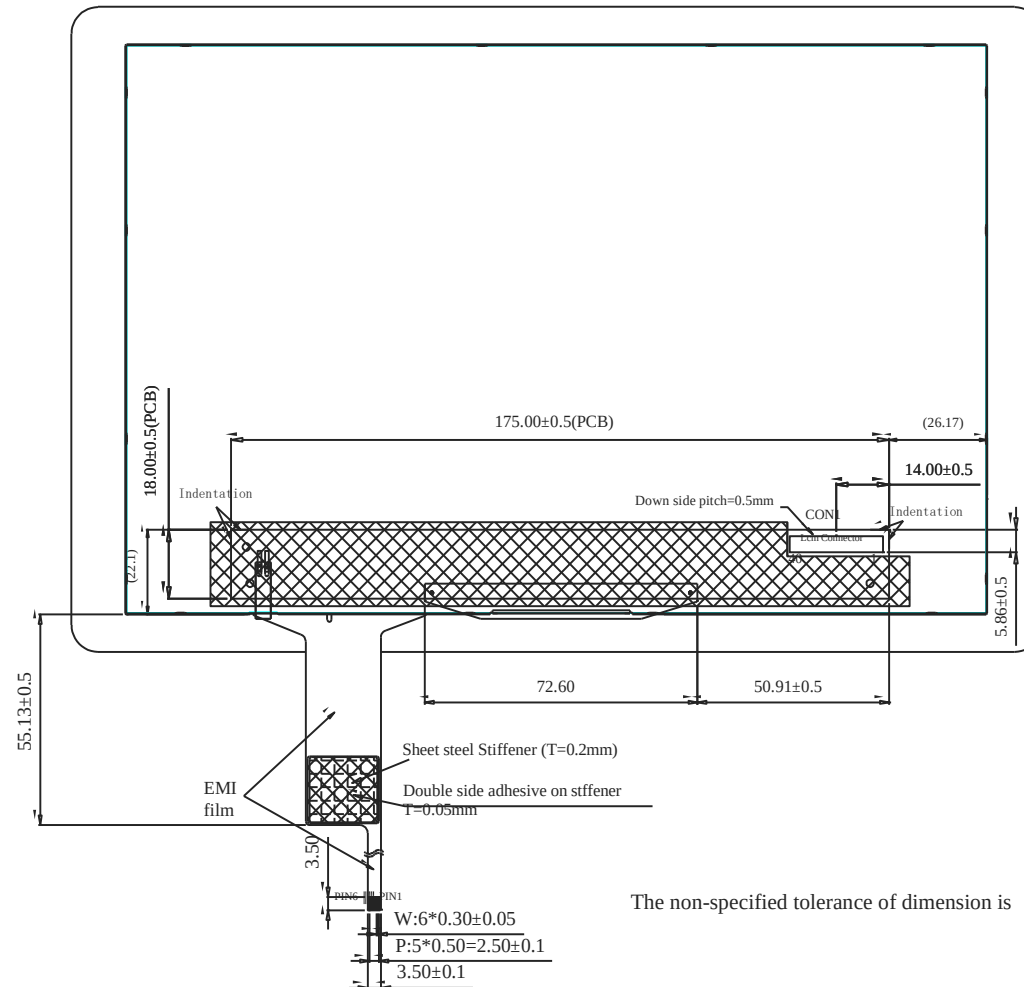
| Parameter                          | Symbol    | Min. | Max. | Unit |
|------------------------------------|-----------|------|------|------|
| SCL low period                     | $t_{lo}$  | 0.9  | -    | us   |
| SCL high period                    | $t_{hi}$  | 0.8  | -    | us   |
| SCL setup time for START condition | $t_{st1}$ | 0.4  | -    | us   |
| SCL setup time for STOP condition  | $t_{st3}$ | 0.4  | -    | us   |
| SCL hold time for START condition  | $t_{hd1}$ | 0.3  | -    | us   |
| SDA setup time                     | $t_{st2}$ | 0.4  | -    | us   |
| SDA hold time                      | $t_{hd2}$ | 0.4  | -    | us   |

# 13. Contour Drawing



CN1

| PIN NO | SYMBOL | PIN NO | SYMBOL |
|--------|--------|--------|--------|
| 1      | NC     | 21     | Rxin3+ |
| 2      | VCC    | 22     | GND    |
| 3      | VCC    | 23     | NC     |
| 4      | NC     | 24     | NC     |
| 5      | NC     | 25     | GND    |
| 6      | NC     | 26     | NC     |
| 7      | GND    | 27     | NC     |
| 8      | Rxin0- | 28     | NC     |
| 9      | Rxin0+ | 29     | NC     |
| 10     | GND    | 30     | GND    |
| 11     | Rxin1- | 31     | LED-   |
| 12     | Rxin1+ | 32     | LED-   |
| 13     | GND    | 33     | NC     |
| 14     | Rxin2- | 34     | NC     |
| 15     | Rxin2+ | 35     | VGL    |
| 16     | GND    | 36     | NC     |
| 17     | RxCLK- | 37     | NC     |
| 18     | RxCLK+ | 38     | VGH    |
| 19     | GND    | 39     | LED+   |
| 20     | Rxin3- | 40     | LED+   |



The non-specified tolerance of dimension is  $\pm 0.3\text{mm}$ .

**1、Panel Specification :**

- |                          |                               |                                     |
|--------------------------|-------------------------------|-------------------------------------|
| 1. Panel Type :          | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 2. View Direction :      | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 3. Numbers of Dots :     | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 4. View Area :           | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 5. Active Area :         | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 6. Operating             | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 7. Storage Temperature : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 8. Others :              | _____                         |                                     |

**2、Mechanical**

- |                             |                               |                                     |
|-----------------------------|-------------------------------|-------------------------------------|
| 1. PCB Size :               | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 2. Frame Size :             | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 3. Material of Frame :      | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 4. Connector Position :     | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 5. Fix Hole Position :      | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 6. Backlight Position :     | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 7. Thickness of PCB :       | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 8. Height of Frame to PCB : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 9. Height of Module :       | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 10. Others :                | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |

**3、Relative Hole Size :**

- |                             |                               |                                     |
|-----------------------------|-------------------------------|-------------------------------------|
| 1. Pitch of Connector :     | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 2. Hole size of Connector : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 3. Mounting Hole size :     | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 4. Mounting Hole Type :     | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 5. Others :                 | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |

**4、Backlight Specification :**

- |                                           |                               |                                     |
|-------------------------------------------|-------------------------------|-------------------------------------|
| 1. B/L Type :                             | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 2. B/L Color :                            | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 3. B/L Driving Voltage (Reference for LED | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 4. B/L Driving Current :                  | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 5. Brightness of B/L :                    | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 6. B/L Solder Method :                    | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 7. Others :                               | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |

>> **Go to page 2** <<



Winstar      Module Number : \_\_\_\_\_

Page: 2

**5、Electronic Characteristics of Module :**

- |                              |                               |                                     |
|------------------------------|-------------------------------|-------------------------------------|
| 1. Input Voltage :           | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 2. Supply Current :          | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 3. Driving Voltage for LCD : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 4. Contrast for LCD :        | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 5. B/L Driving Method :      | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 6. Negative Voltage Output : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 7. Interface Function :      | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 8. LCD Uniformity :          | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 9. ESD test :                | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 10. Others :                 | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |

**6、Summary :**

Sales signature : \_\_\_\_\_

Customer Signature : \_\_\_\_\_

Date :        /        /