



# Product Specification

AU OPTRONICS CORPORATION

- (j) Preliminary Specifications
- (v) Final Specifications

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|                   |                         |
|-------------------|-------------------------|
| <b>Module</b>     | 10.1 Inch Color TFT-LCD |
| <b>Model Name</b> | G101EAN02.2             |

| Customer              | Date |
|-----------------------|------|
| Checked & Approved by |      |
|                       |      |
|                       |      |

| Approved by  | Date              |
|--|-------------------|
| <u>Grace Hung</u>  | <u>2020/02/26</u> |
| Prepared by  |                   |
| <u>Jon Tseng</u>   | <u>2020/02/26</u> |
| General Display Business Unit/<br>AU Optronics corporation |                   |



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# Product Specification

AU OPTRONICS CORPORATION

AUO-General  
G101EAN02.2

## Record of Revision

| Version and Date                  | Page  | Old description  | New Description  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
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| 0.0 2019/07/01                    | All   | First draft specification  | -  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| 0.1 2019/07/16                    | 5   | <table border="1"> <tr> <td>Power Consumption<sup>⊖</sup></td> <td>[Watt]<sup>⊖</sup></td> <td>Logic Power : TBD(Max)@White pattern 3.3V input<sup>⊖</sup></td> </tr> <tr> <td>Weight (Max.)<sup>⊖</sup></td> <td>[Grams]<sup>⊖</sup></td> <td>LED power max TBD W<sup>⊖</sup></td> </tr> <tr> <td>Physical Size (typ.)<sup>⊖</sup></td> <td>[mm]<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> </tr> </table>   | Power Consumption <sup>⊖</sup>                               | [Watt] <sup>⊖</sup> | Logic Power : TBD(Max)@White pattern 3.3V input <sup>⊖</sup> | Weight (Max.) <sup>⊖</sup>   | [Grams] <sup>⊖</sup>           | LED power max TBD W <sup>⊖</sup> | Physical Size (typ.) <sup>⊖</sup> | [mm] <sup>⊖</sup> | TBD <sup>⊖</sup>     | <table border="1"> <tr> <td>Power Consumption<sup>⊖</sup></td> <td>[Watt]<sup>⊖</sup></td> <td>Logic Power : 1(Max)@White pattern 3.3V input<sup>⊖</sup></td> </tr> <tr> <td>Weight (Max.)<sup>⊖</sup></td> <td>[Grams]<sup>⊖</sup></td> <td>290<sup>⊖</sup></td> </tr> <tr> <td>Physical Size (typ.)<sup>⊖</sup></td> <td>[mm]<sup>⊖</sup></td> <td>227.91(H) x 148(V) x 7.25(T) Max PCBA side<sup>⊖</sup></td> </tr> </table> | Power Consumption <sup>⊖</sup> | [Watt] <sup>⊖</sup>           | Logic Power : 1(Max)@White pattern 3.3V input <sup>⊖</sup> | Weight (Max.) <sup>⊖</sup> | [Grams] <sup>⊖</sup>  | 290 <sup>⊖</sup>                                      | Physical Size (typ.) <sup>⊖</sup> | [mm] <sup>⊖</sup>   | 227.91(H) x 148(V) x 7.25(T) Max PCBA side <sup>⊖</sup> |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Power Consumption <sup>⊖</sup>  | [Watt] <sup>⊖</sup>  | Logic Power : TBD(Max)@White pattern 3.3V input <sup>⊖</sup> |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Weight (Max.) <sup>⊖</sup>  | [Grams] <sup>⊖</sup>   | LED power max TBD W <sup>⊖</sup>                             |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Physical Size (typ.) <sup>⊖</sup>   | [mm] <sup>⊖</sup>  | TBD <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Power Consumption <sup>⊖</sup>  | [Watt] <sup>⊖</sup>  | Logic Power : 1(Max)@White pattern 3.3V input <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Weight (Max.) <sup>⊖</sup>        | [Grams] <sup>⊖</sup>  | 290 <sup>⊖</sup>   |  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Physical Size (typ.) <sup>⊖</sup> | [mm] <sup>⊖</sup>   | 227.91(H) x 148(V) x 7.25(T) Max PCBA side <sup>⊖</sup>  |  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| 11                                | <table border="1"> <tr> <td>IDD<sup>⊖</sup></td> <td>VDD Current<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> </tr> <tr> <td>Irush<sup>⊖</sup></td> <td>LCD Inrush Current<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> </tr> <tr> <td>PDD<sup>⊖</sup></td> <td>VDD Power<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> </tr> <tr> <td>VDDrp<sup>⊖</sup></td> <td>Allowable Logic/LCD Drive Ripple Voltage<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> </tr> </table>   | IDD <sup>⊖</sup>   | VDD Current <sup>⊖</sup>                                     | ~ <sup>⊖</sup>      | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>   | Irush <sup>⊖</sup>             | LCD Inrush Current <sup>⊖</sup>  | ~ <sup>⊖</sup>                    | ~ <sup>⊖</sup>    | TBD <sup>⊖</sup>     | PDD <sup>⊖</sup>  | VDD Power <sup>⊖</sup>         | ~ <sup>⊖</sup>                | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>           | VDDrp <sup>⊖</sup>  | Allowable Logic/LCD Drive Ripple Voltage <sup>⊖</sup> | ~ <sup>⊖</sup>                    | ~ <sup>⊖</sup>      | TBD <sup>⊖</sup>  | <table border="1"> <tr> <td>IDD<sup>⊖</sup></td> <td>VDD Current<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>278.7<sup>⊖</sup></td> <td>303<sup>⊖</sup></td> </tr> <tr> <td>Irush<sup>⊖</sup></td> <td>LCD Inrush Current<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>1500<sup>⊖</sup></td> </tr> <tr> <td>PDD<sup>⊖</sup></td> <td>VDD Power<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>0.92<sup>⊖</sup></td> <td>1<sup>⊖</sup></td> </tr> <tr> <td>VDDrp<sup>⊖</sup></td> <td>Allowable Logic/LCD Drive Ripple Voltage<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>100<sup>⊖</sup></td> </tr> </table> | IDD <sup>⊖</sup>               | VDD Current <sup>⊖</sup>      | ~ <sup>⊖</sup>        | 278.7 <sup>⊖</sup> | 303 <sup>⊖</sup>     | Irush <sup>⊖</sup>               | LCD Inrush Current <sup>⊖</sup> | ~ <sup>⊖</sup>                  | ~ <sup>⊖</sup>       | 1500 <sup>⊖</sup>  | PDD <sup>⊖</sup>   | VDD Power <sup>⊖</sup> | ~ <sup>⊖</sup>  | 0.92 <sup>⊖</sup>   | 1 <sup>⊖</sup>     | VDDrp <sup>⊖</sup> | Allowable Logic/LCD Drive Ripple Voltage <sup>⊖</sup> | ~ <sup>⊖</sup>                  | ~ <sup>⊖</sup>        | 100 <sup>⊖</sup>   |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| IDD <sup>⊖</sup>                  | VDD Current <sup>⊖</sup>  | ~ <sup>⊖</sup>   | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>    |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Irush <sup>⊖</sup>                | LCD Inrush Current <sup>⊖</sup>   | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | TBD <sup>⊖</sup>    |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| PDD <sup>⊖</sup>                  | VDD Power <sup>⊖</sup>  | ~ <sup>⊖</sup>   | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>    |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| VDDrp <sup>⊖</sup>                | Allowable Logic/LCD Drive Ripple Voltage <sup>⊖</sup>   | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | TBD <sup>⊖</sup>    |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| IDD <sup>⊖</sup>                  | VDD Current <sup>⊖</sup>  | ~ <sup>⊖</sup>   | 278.7 <sup>⊖</sup>   | 303 <sup>⊖</sup>    |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Irush <sup>⊖</sup>                | LCD Inrush Current <sup>⊖</sup>   | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | 1500 <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| PDD <sup>⊖</sup>                  | VDD Power <sup>⊖</sup>  | ~ <sup>⊖</sup>   | 0.92 <sup>⊖</sup>  | 1 <sup>⊖</sup>      |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| VDDrp <sup>⊖</sup>                | Allowable Logic/LCD Drive Ripple Voltage <sup>⊖</sup>   | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | 100 <sup>⊖</sup>    |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| 13                                | <table border="1"> <tr> <td>T2<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> </tr> </table>   | T2 <sup>⊖</sup>  | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>    | TBD <sup>⊖</sup>   | <table border="1"> <tr> <td>T2<sup>⊖</sup></td> <td>30<sup>⊖</sup></td> <td>40<sup>⊖</sup></td> <td>50<sup>⊖</sup></td> </tr> </table> | T2 <sup>⊖</sup>                | 30 <sup>⊖</sup>                  | 40 <sup>⊖</sup>                   | 50 <sup>⊖</sup>   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T2 <sup>⊖</sup>                   | TBD <sup>⊖</sup>  | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T2 <sup>⊖</sup>                   | 30 <sup>⊖</sup>   | 40 <sup>⊖</sup>  | 50 <sup>⊖</sup>  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| 17                                | Manufacturer: STM   | Manufacturer: IPEX   |  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| 18                                | <table border="1"> <thead> <tr> <th>Signal<sup>⊖</sup></th> <th>Symbol<sup>⊖</sup></th> <th>Min.<sup>⊖</sup></th> <th>Typ.<sup>⊖</sup></th> <th>Max.<sup>⊖</sup></th> <th>Unit<sup>⊖</sup></th> </tr> </thead> <tbody> <tr> <td>Clock Frequency<sup>⊖</sup></td> <td>1/ TClock<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>71.1<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>MHz<sup>⊖</sup></td> </tr> <tr> <td rowspan="3">Vertical-Section<sup>⊖</sup></td> <td>Period<sup>⊖</sup></td> <td>TV<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>823<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> </tr> <tr> <td>Active<sup>⊖</sup></td> <td>TVD<sup>⊖</sup></td> <td colspan="2">800<sup>⊖</sup></td> <td rowspan="2">Vertical-Section<sup>⊖</sup></td> </tr> <tr> <td>Blanking<sup>⊖</sup></td> <td>TVB<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>23<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> </tr> <tr> <td rowspan="3">Horizontal-Section<sup>⊖</sup></td> <td>Period<sup>⊖</sup></td> <td>TH<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>1440<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> </tr> <tr> <td>Active<sup>⊖</sup></td> <td>THD<sup>⊖</sup></td> <td colspan="2">1280<sup>⊖</sup></td> <td rowspan="2">Horizontal-Section<sup>⊖</sup></td> </tr> <tr> <td>Blanking<sup>⊖</sup></td> <td>THB<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>160<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> </tr> </tbody> </table> | Signal <sup>⊖</sup>  | Symbol <sup>⊖</sup>  | Min. <sup>⊖</sup>   | Typ. <sup>⊖</sup>  | Max. <sup>⊖</sup>  | Unit <sup>⊖</sup>              | Clock Frequency <sup>⊖</sup>     | 1/ TClock <sup>⊖</sup>            | TBD <sup>⊖</sup>  | 71.1 <sup>⊖</sup>    | TBD <sup>⊖</sup>  | MHz <sup>⊖</sup>               | Vertical-Section <sup>⊖</sup> | Period <sup>⊖</sup>  | TV <sup>⊖</sup>            | TBD <sup>⊖</sup>  | 823 <sup>⊖</sup>                                      | TBD <sup>⊖</sup>                  | Active <sup>⊖</sup> | TVD <sup>⊖</sup>  | 800 <sup>⊖</sup>  |                                | Vertical-Section <sup>⊖</sup> | Blanking <sup>⊖</sup> | TVB <sup>⊖</sup>   | TBD <sup>⊖</sup>     | 23 <sup>⊖</sup>                  | TBD <sup>⊖</sup>                | Horizontal-Section <sup>⊖</sup> | Period <sup>⊖</sup>  | TH <sup>⊖</sup>    | TBD <sup>⊖</sup>   | 1440 <sup>⊖</sup>      | TBD <sup>⊖</sup>  | Active <sup>⊖</sup> | THD <sup>⊖</sup>   | 1280 <sup>⊖</sup>  |   | Horizontal-Section <sup>⊖</sup> | Blanking <sup>⊖</sup> | THB <sup>⊖</sup>   | TBD <sup>⊖</sup>   | 160 <sup>⊖</sup>     | TBD <sup>⊖</sup>   | <table border="1"> <thead> <tr> <th>Signal<sup>⊖</sup></th> <th>Symbol<sup>⊖</sup></th> <th>Min.<sup>⊖</sup></th> <th>Typ.<sup>⊖</sup></th> <th>Max.<sup>⊖</sup></th> <th>Unit<sup>⊖</sup></th> </tr> </thead> <tbody> <tr> <td>Clock Frequency<sup>⊖</sup></td> <td>1/ TClock<sup>⊖</sup></td> <td>68.9<sup>⊖</sup></td> <td>71.1<sup>⊖</sup></td> <td>80<sup>⊖</sup></td> <td>MHz<sup>⊖</sup></td> </tr> <tr> <td rowspan="3">Vertical-Section<sup>⊖</sup></td> <td>Period<sup>⊖</sup></td> <td>TV<sup>⊖</sup></td> <td>815<sup>⊖</sup></td> <td>823<sup>⊖</sup></td> <td>800<sup>⊖</sup></td> </tr> <tr> <td>Active<sup>⊖</sup></td> <td>TVD<sup>⊖</sup></td> <td colspan="2">800<sup>⊖</sup></td> <td rowspan="2">TLine<sup>⊖</sup></td> </tr> <tr> <td>Blanking<sup>⊖</sup></td> <td>TVB<sup>⊖</sup></td> <td>15<sup>⊖</sup></td> <td>23<sup>⊖</sup></td> <td>60<sup>⊖</sup></td> </tr> <tr> <td rowspan="3">Horizontal-Section<sup>⊖</sup></td> <td>Period<sup>⊖</sup></td> <td>TH<sup>⊖</sup></td> <td>1410<sup>⊖</sup></td> <td>1440<sup>⊖</sup></td> <td>1500<sup>⊖</sup></td> </tr> <tr> <td>Active<sup>⊖</sup></td> <td>THD<sup>⊖</sup></td> <td colspan="2">1280<sup>⊖</sup></td> <td rowspan="2">TClock<sup>⊖</sup></td> </tr> <tr> <td>Blanking<sup>⊖</sup></td> <td>THB<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>100<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> </tr> </tbody> </table> | Signal <sup>⊖</sup> | Symbol <sup>⊖</sup>  | Min. <sup>⊖</sup>  | Typ. <sup>⊖</sup>  | Max. <sup>⊖</sup>  | Unit <sup>⊖</sup>   | Clock Frequency <sup>⊖</sup> | 1/ TClock <sup>⊖</sup> | 68.9 <sup>⊖</sup>  | 71.1 <sup>⊖</sup>   | 80 <sup>⊖</sup>    | MHz <sup>⊖</sup>   | Vertical-Section <sup>⊖</sup> | Period <sup>⊖</sup>  | TV <sup>⊖</sup>    | 815 <sup>⊖</sup>   | 823 <sup>⊖</sup>   | 800 <sup>⊖</sup>     | Active <sup>⊖</sup> | TVD <sup>⊖</sup>   | 800 <sup>⊖</sup>   |                | TLine <sup>⊖</sup> | Blanking <sup>⊖</sup> | TVB <sup>⊖</sup> | 15 <sup>⊖</sup>   | 23 <sup>⊖</sup> | 60 <sup>⊖</sup> | Horizontal-Section <sup>⊖</sup> | Period <sup>⊖</sup>  | TH <sup>⊖</sup>        | 1410 <sup>⊖</sup>  | 1440 <sup>⊖</sup> | 1500 <sup>⊖</sup> | Active <sup>⊖</sup> | THD <sup>⊖</sup>  | 1280 <sup>⊖</sup> |                   | TClock <sup>⊖</sup> | Blanking <sup>⊖</sup> | THB <sup>⊖</sup> | TBD <sup>⊖</sup> | 100 <sup>⊖</sup>  | TBD <sup>⊖</sup> |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Signal <sup>⊖</sup>               | Symbol <sup>⊖</sup>   | Min. <sup>⊖</sup>  | Typ. <sup>⊖</sup>  | Max. <sup>⊖</sup>   | Unit <sup>⊖</sup>  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Clock Frequency <sup>⊖</sup>      | 1/ TClock <sup>⊖</sup>  | TBD <sup>⊖</sup>   | 71.1 <sup>⊖</sup>  | TBD <sup>⊖</sup>    | MHz <sup>⊖</sup>   |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Vertical-Section <sup>⊖</sup>     | Period <sup>⊖</sup>   | TV <sup>⊖</sup>  | TBD <sup>⊖</sup>   | 823 <sup>⊖</sup>    | TBD <sup>⊖</sup>   |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Active <sup>⊖</sup>   | TVD <sup>⊖</sup>   | 800 <sup>⊖</sup>   |                     | Vertical-Section <sup>⊖</sup>                                |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Blanking <sup>⊖</sup>   | TVB <sup>⊖</sup>   | TBD <sup>⊖</sup>   | 23 <sup>⊖</sup>     |  | TBD <sup>⊖</sup>   |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Horizontal-Section <sup>⊖</sup>   | Period <sup>⊖</sup>   | TH <sup>⊖</sup>  | TBD <sup>⊖</sup>   | 1440 <sup>⊖</sup>   | TBD <sup>⊖</sup>   |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Active <sup>⊖</sup>   | THD <sup>⊖</sup>   | 1280 <sup>⊖</sup>  |                     | Horizontal-Section <sup>⊖</sup>                              |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Blanking <sup>⊖</sup>   | THB <sup>⊖</sup>   | TBD <sup>⊖</sup>   | 160 <sup>⊖</sup>    |  | TBD <sup>⊖</sup>   |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Signal <sup>⊖</sup>               | Symbol <sup>⊖</sup>   | Min. <sup>⊖</sup>  | Typ. <sup>⊖</sup>  | Max. <sup>⊖</sup>   | Unit <sup>⊖</sup>  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Clock Frequency <sup>⊖</sup>      | 1/ TClock <sup>⊖</sup>  | 68.9 <sup>⊖</sup>  | 71.1 <sup>⊖</sup>  | 80 <sup>⊖</sup>     | MHz <sup>⊖</sup>   |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Vertical-Section <sup>⊖</sup>     | Period <sup>⊖</sup>   | TV <sup>⊖</sup>  | 815 <sup>⊖</sup>   | 823 <sup>⊖</sup>    | 800 <sup>⊖</sup>   |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Active <sup>⊖</sup>   | TVD <sup>⊖</sup>   | 800 <sup>⊖</sup>   |                     | TLine <sup>⊖</sup>   |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Blanking <sup>⊖</sup>   | TVB <sup>⊖</sup>   | 15 <sup>⊖</sup>  | 23 <sup>⊖</sup>     |  | 60 <sup>⊖</sup>  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Horizontal-Section <sup>⊖</sup>   | Period <sup>⊖</sup>   | TH <sup>⊖</sup>  | 1410 <sup>⊖</sup>  | 1440 <sup>⊖</sup>   | 1500 <sup>⊖</sup>  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Active <sup>⊖</sup>   | THD <sup>⊖</sup>   | 1280 <sup>⊖</sup>  |                     | TClock <sup>⊖</sup>  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Blanking <sup>⊖</sup>   | THB <sup>⊖</sup>   | TBD <sup>⊖</sup>   | 100 <sup>⊖</sup>    |  | TBD <sup>⊖</sup>   |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| 21                                |   |  |  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| 0.2 2019/09/03                    | 5   | LED power max TBD W  | LED power max 3.024 W  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | 5   | Physical Size<br>7.25(T) (typ.) PCBA side  | Physical Size<br>7.75(T) (max.) PCBA side                    |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | 6   | I <sub>LED</sub> = 30mA  | I <sub>LED</sub> = 28mA                                      |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | 6   | <table border="1"> <tr><td>Red x<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td></tr> <tr><td>Red y<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td></tr> <tr><td>Green x<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td></tr> <tr><td>Green y<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td></tr> <tr><td>Blue x<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td></tr> <tr><td>Blue y<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td><td>TBD<sup>⊖</sup></td></tr> <tr><td>White x<sup>⊖</sup></td><td>0.263<sup>⊖</sup></td><td>0.313<sup>⊖</sup></td><td>0.363<sup>⊖</sup></td></tr> <tr><td>White y<sup>⊖</sup></td><td>0.279<sup>⊖</sup></td><td>0.329<sup>⊖</sup></td><td>0.379<sup>⊖</sup></td></tr> </table>  | Red x <sup>⊖</sup>   | TBD <sup>⊖</sup>    | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>   | Red y <sup>⊖</sup>             | TBD <sup>⊖</sup>                 | TBD <sup>⊖</sup>                  | TBD <sup>⊖</sup>  | Green x <sup>⊖</sup> | TBD <sup>⊖</sup>  | TBD <sup>⊖</sup>               | TBD <sup>⊖</sup>              | Green y <sup>⊖</sup>                                       | TBD <sup>⊖</sup>           | TBD <sup>⊖</sup>  | TBD <sup>⊖</sup>                                      | Blue x <sup>⊖</sup>               | TBD <sup>⊖</sup>    | TBD <sup>⊖</sup>  | TBD <sup>⊖</sup>  | Blue y <sup>⊖</sup>            | TBD <sup>⊖</sup>              | TBD <sup>⊖</sup>      | TBD <sup>⊖</sup>   | White x <sup>⊖</sup> | 0.263 <sup>⊖</sup>               | 0.313 <sup>⊖</sup>              | 0.363 <sup>⊖</sup>              | White y <sup>⊖</sup> | 0.279 <sup>⊖</sup> | 0.329 <sup>⊖</sup> | 0.379 <sup>⊖</sup>     | <table border="1"> <tr><td>Red x<sup>⊖</sup></td><td>0.551<sup>⊖</sup></td><td>0.601<sup>⊖</sup></td><td>0.651<sup>⊖</sup></td></tr> <tr><td>Red y<sup>⊖</sup></td><td>0.293<sup>⊖</sup></td><td>0.343<sup>⊖</sup></td><td>0.393<sup>⊖</sup></td></tr> <tr><td>Green x<sup>⊖</sup></td><td>0.274<sup>⊖</sup></td><td>0.324<sup>⊖</sup></td><td>0.374<sup>⊖</sup></td></tr> <tr><td>Green y<sup>⊖</sup></td><td>0.512<sup>⊖</sup></td><td>0.562<sup>⊖</sup></td><td>0.612<sup>⊖</sup></td></tr> <tr><td>Blue x<sup>⊖</sup></td><td>0.101<sup>⊖</sup></td><td>0.151<sup>⊖</sup></td><td>0.201<sup>⊖</sup></td></tr> <tr><td>Blue y<sup>⊖</sup></td><td>0.085<sup>⊖</sup></td><td>0.135<sup>⊖</sup></td><td>0.185<sup>⊖</sup></td></tr> <tr><td>White x<sup>⊖</sup></td><td>0.263<sup>⊖</sup></td><td>0.313<sup>⊖</sup></td><td>0.363<sup>⊖</sup></td></tr> <tr><td>White y<sup>⊖</sup></td><td>0.279<sup>⊖</sup></td><td>0.329<sup>⊖</sup></td><td>0.379<sup>⊖</sup></td></tr> </table> | Red x <sup>⊖</sup>  | 0.551 <sup>⊖</sup> | 0.601 <sup>⊖</sup> | 0.651 <sup>⊖</sup>                                    | Red y <sup>⊖</sup>              | 0.293 <sup>⊖</sup>    | 0.343 <sup>⊖</sup> | 0.393 <sup>⊖</sup> | Green x <sup>⊖</sup> | 0.274 <sup>⊖</sup> | 0.324 <sup>⊖</sup>   | 0.374 <sup>⊖</sup>  | Green y <sup>⊖</sup> | 0.512 <sup>⊖</sup> | 0.562 <sup>⊖</sup> | 0.612 <sup>⊖</sup> | Blue x <sup>⊖</sup> | 0.101 <sup>⊖</sup>           | 0.151 <sup>⊖</sup>     | 0.201 <sup>⊖</sup> | Blue y <sup>⊖</sup> | 0.085 <sup>⊖</sup> | 0.135 <sup>⊖</sup> | 0.185 <sup>⊖</sup>            | White x <sup>⊖</sup> | 0.263 <sup>⊖</sup> | 0.313 <sup>⊖</sup> | 0.363 <sup>⊖</sup> | White y <sup>⊖</sup> | 0.279 <sup>⊖</sup>  | 0.329 <sup>⊖</sup> | 0.379 <sup>⊖</sup> |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Red x <sup>⊖</sup>  | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>    |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Red y <sup>⊖</sup>  | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>    |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Green x <sup>⊖</sup>  | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>    |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Green y <sup>⊖</sup>  | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>    |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Blue x <sup>⊖</sup>   | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>    |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Blue y <sup>⊖</sup>   | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>    |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| White x <sup>⊖</sup>              | 0.263 <sup>⊖</sup>  | 0.313 <sup>⊖</sup>   | 0.363 <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| White y <sup>⊖</sup>              | 0.279 <sup>⊖</sup>  | 0.329 <sup>⊖</sup>   | 0.379 <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Red x <sup>⊖</sup>                | 0.551 <sup>⊖</sup>  | 0.601 <sup>⊖</sup>   | 0.651 <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Red y <sup>⊖</sup>                | 0.293 <sup>⊖</sup>  | 0.343 <sup>⊖</sup>   | 0.393 <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Green x <sup>⊖</sup>              | 0.274 <sup>⊖</sup>  | 0.324 <sup>⊖</sup>   | 0.374 <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Green y <sup>⊖</sup>              | 0.512 <sup>⊖</sup>  | 0.562 <sup>⊖</sup>   | 0.612 <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Blue x <sup>⊖</sup>               | 0.101 <sup>⊖</sup>  | 0.151 <sup>⊖</sup>   | 0.201 <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Blue y <sup>⊖</sup>               | 0.085 <sup>⊖</sup>  | 0.135 <sup>⊖</sup>   | 0.185 <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| White x <sup>⊖</sup>              | 0.263 <sup>⊖</sup>  | 0.313 <sup>⊖</sup>   | 0.363 <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| White y <sup>⊖</sup>              | 0.279 <sup>⊖</sup>  | 0.329 <sup>⊖</sup>   | 0.379 <sup>⊖</sup>   |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| 6                                 | Color Gamut 50%   | Color Gamut 45%  |  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| 14                                | <table border="1"> <tr> <td>Input Current<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>[mA]<sup>⊖</sup></td> </tr> <tr> <td>Power Consumption<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>TBD<sup>⊖</sup></td> <td>[Watt]<sup>⊖</sup></td> </tr> <tr> <td>LED Forward Current<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>30<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>[mA]<sup>⊖</sup></td> </tr> </table>   | Input Current <sup>⊖</sup>   | ~ <sup>⊖</sup>   | TBD <sup>⊖</sup>    | TBD <sup>⊖</sup>   | [mA] <sup>⊖</sup>  | Power Consumption <sup>⊖</sup> | ~ <sup>⊖</sup>                   | TBD <sup>⊖</sup>                  | TBD <sup>⊖</sup>  | [Watt] <sup>⊖</sup>  | LED Forward Current <sup>⊖</sup>  | ~ <sup>⊖</sup>                 | 30 <sup>⊖</sup>               | ~ <sup>⊖</sup>   | [mA] <sup>⊖</sup>          | <table border="1"> <tr> <td>Input Current<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>222<sup>⊖</sup></td> <td>252<sup>⊖</sup></td> <td>[mA]<sup>⊖</sup></td> </tr> <tr> <td>Power Consumption<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>2.664<sup>⊖</sup></td> <td>3.024<sup>⊖</sup></td> <td>[Watt]<sup>⊖</sup></td> </tr> <tr> <td>LED Forward Current<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>28<sup>⊖</sup></td> <td>~<sup>⊖</sup></td> <td>[mA]<sup>⊖</sup></td> </tr> </table> | Input Current <sup>⊖</sup>                            | ~ <sup>⊖</sup>                    | 222 <sup>⊖</sup>    | 252 <sup>⊖</sup>  | [mA] <sup>⊖</sup>   | Power Consumption <sup>⊖</sup> | ~ <sup>⊖</sup>                | 2.664 <sup>⊖</sup>    | 3.024 <sup>⊖</sup> | [Watt] <sup>⊖</sup>  | LED Forward Current <sup>⊖</sup> | ~ <sup>⊖</sup>                  | 28 <sup>⊖</sup>                 | ~ <sup>⊖</sup>       | [mA] <sup>⊖</sup>  |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Input Current <sup>⊖</sup>        | ~ <sup>⊖</sup>  | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>   | [mA] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Power Consumption <sup>⊖</sup>    | ~ <sup>⊖</sup>  | TBD <sup>⊖</sup>   | TBD <sup>⊖</sup>   | [Watt] <sup>⊖</sup> |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| LED Forward Current <sup>⊖</sup>  | ~ <sup>⊖</sup>  | 30 <sup>⊖</sup>  | ~ <sup>⊖</sup>   | [mA] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Input Current <sup>⊖</sup>        | ~ <sup>⊖</sup>  | 222 <sup>⊖</sup>   | 252 <sup>⊖</sup>   | [mA] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Power Consumption <sup>⊖</sup>    | ~ <sup>⊖</sup>  | 2.664 <sup>⊖</sup>   | 3.024 <sup>⊖</sup>   | [Watt] <sup>⊖</sup> |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| LED Forward Current <sup>⊖</sup>  | ~ <sup>⊖</sup>  | 28 <sup>⊖</sup>  | ~ <sup>⊖</sup>   | [mA] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| 14                                | (Ta=70°C), Note 2 <sup>⊖</sup><br>I <sub>F</sub> =30mA <sup>⊖</sup>   | (Ta=70°C), Note 2 <sup>⊖</sup><br>I <sub>F</sub> =28mA <sup>⊖</sup>  |  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| 21                                | --  | Add more dimension   |  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| 0.3 2019/10/16                    | 14  | <table border="1"> <thead> <tr> <th rowspan="2">Parameter<sup>⊖</sup></th> <th colspan="3">Value<sup>⊖</sup></th> <th rowspan="2">Unit<sup>⊖</sup></th> </tr> <tr> <th>Min.<sup>⊖</sup></th> <th>Typ.<sup>⊖</sup></th> <th>Max.<sup>⊖</sup></th> </tr> </thead> <tbody> <tr><td>T1<sup>⊖</sup></td><td>0.5<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>10<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T2<sup>⊖</sup></td><td>30<sup>⊖</sup></td><td>40<sup>⊖</sup></td><td>50<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T3<sup>⊖</sup></td><td>200<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T4<sup>⊖</sup></td><td>0.5<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>10<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T5<sup>⊖</sup></td><td>10<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T6<sup>⊖</sup></td><td>10<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T7<sup>⊖</sup></td><td>0<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T8<sup>⊖</sup></td><td>10<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T9<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>200<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T10<sup>⊖</sup></td><td>110<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T11<sup>⊖</sup></td><td>0<sup>⊖</sup></td><td>16<sup>⊖</sup></td><td>50<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T12<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>200<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T13<sup>⊖</sup></td><td>1000<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> </tbody> </table> | Parameter <sup>⊖</sup>                                       | Value <sup>⊖</sup>  |  |  | Unit <sup>⊖</sup>              | Min. <sup>⊖</sup>                | Typ. <sup>⊖</sup>                 | Max. <sup>⊖</sup> | T1 <sup>⊖</sup>      | 0.5 <sup>⊖</sup>  | ~ <sup>⊖</sup>                 | 10 <sup>⊖</sup>               | [ms] <sup>⊖</sup>  | T2 <sup>⊖</sup>            | 30 <sup>⊖</sup>   | 40 <sup>⊖</sup>                                       | 50 <sup>⊖</sup>                   | [ms] <sup>⊖</sup>   | T3 <sup>⊖</sup>   | 200 <sup>⊖</sup>  | ~ <sup>⊖</sup>                 | ~ <sup>⊖</sup>                | [ms] <sup>⊖</sup>     | T4 <sup>⊖</sup>    | 0.5 <sup>⊖</sup>     | ~ <sup>⊖</sup>                   | 10 <sup>⊖</sup>                 | [ms] <sup>⊖</sup>               | T5 <sup>⊖</sup>      | 10 <sup>⊖</sup>    | ~ <sup>⊖</sup>     | ~ <sup>⊖</sup>         | [ms] <sup>⊖</sup>   | T6 <sup>⊖</sup>     | 10 <sup>⊖</sup>    | ~ <sup>⊖</sup>     | ~ <sup>⊖</sup>  | [ms] <sup>⊖</sup>               | T7 <sup>⊖</sup>       | 0 <sup>⊖</sup>     | ~ <sup>⊖</sup>     | ~ <sup>⊖</sup>       | [ms] <sup>⊖</sup>  | T8 <sup>⊖</sup>  | 10 <sup>⊖</sup>     | ~ <sup>⊖</sup>       | ~ <sup>⊖</sup>     | [ms] <sup>⊖</sup>  | T9 <sup>⊖</sup>    | ~ <sup>⊖</sup>      | ~ <sup>⊖</sup>               | 200 <sup>⊖</sup>       | [ms] <sup>⊖</sup>  | T10 <sup>⊖</sup>    | 110 <sup>⊖</sup>   | ~ <sup>⊖</sup>     | ~ <sup>⊖</sup>                | [ms] <sup>⊖</sup>    | T11 <sup>⊖</sup>   | 0 <sup>⊖</sup>     | 16 <sup>⊖</sup>    | 50 <sup>⊖</sup>      | [ms] <sup>⊖</sup>   | T12 <sup>⊖</sup>   | ~ <sup>⊖</sup>     | ~ <sup>⊖</sup> | 200 <sup>⊖</sup>   | [ms] <sup>⊖</sup>     | T13 <sup>⊖</sup> | 1000 <sup>⊖</sup> | ~ <sup>⊖</sup>  | ~ <sup>⊖</sup>  | [ms] <sup>⊖</sup>               | <table border="1"> <thead> <tr> <th rowspan="2">Parameter<sup>⊖</sup></th> <th colspan="3">Value<sup>⊖</sup></th> <th rowspan="2">Unit<sup>⊖</sup></th> </tr> <tr> <th>Min.<sup>⊖</sup></th> <th>Typ.<sup>⊖</sup></th> <th>Max.<sup>⊖</sup></th> </tr> </thead> <tbody> <tr><td>T1<sup>⊖</sup></td><td>0.5<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>10<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T2<sup>⊖</sup></td><td>50<sup>⊖</sup></td><td>60<sup>⊖</sup></td><td>70<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T3<sup>⊖</sup></td><td>200<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T4<sup>⊖</sup></td><td>0.5<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>10<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T5<sup>⊖</sup></td><td>10<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T6<sup>⊖</sup></td><td>10<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T7<sup>⊖</sup></td><td>0<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T8<sup>⊖</sup></td><td>10<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T9<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>10<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T10<sup>⊖</sup></td><td>110<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T11<sup>⊖</sup></td><td>0<sup>⊖</sup></td><td>16<sup>⊖</sup></td><td>50<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T12<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>10<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> <tr><td>T13<sup>⊖</sup></td><td>1000<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>~<sup>⊖</sup></td><td>[ms]<sup>⊖</sup></td></tr> </tbody> </table> | Parameter <sup>⊖</sup> | Value <sup>⊖</sup> |                   |                   | Unit <sup>⊖</sup>   | Min. <sup>⊖</sup> | Typ. <sup>⊖</sup> | Max. <sup>⊖</sup> | T1 <sup>⊖</sup>     | 0.5 <sup>⊖</sup>      | ~ <sup>⊖</sup>   | 10 <sup>⊖</sup>  | [ms] <sup>⊖</sup> | T2 <sup>⊖</sup>  | 50 <sup>⊖</sup> | 60 <sup>⊖</sup> | 70 <sup>⊖</sup> | [ms] <sup>⊖</sup> | T3 <sup>⊖</sup> | 200 <sup>⊖</sup> | ~ <sup>⊖</sup> | ~ <sup>⊖</sup> | [ms] <sup>⊖</sup> | T4 <sup>⊖</sup> | 0.5 <sup>⊖</sup> | ~ <sup>⊖</sup> | 10 <sup>⊖</sup> | [ms] <sup>⊖</sup> | T5 <sup>⊖</sup> | 10 <sup>⊖</sup> | ~ <sup>⊖</sup> | ~ <sup>⊖</sup> | [ms] <sup>⊖</sup> | T6 <sup>⊖</sup> | 10 <sup>⊖</sup> | ~ <sup>⊖</sup> | ~ <sup>⊖</sup> | [ms] <sup>⊖</sup> | T7 <sup>⊖</sup> | 0 <sup>⊖</sup> | ~ <sup>⊖</sup> | ~ <sup>⊖</sup> | [ms] <sup>⊖</sup> | T8 <sup>⊖</sup> | 10 <sup>⊖</sup> | ~ <sup>⊖</sup> | ~ <sup>⊖</sup> | [ms] <sup>⊖</sup> | T9 <sup>⊖</sup> | ~ <sup>⊖</sup> | ~ <sup>⊖</sup> | 10 <sup>⊖</sup> | [ms] <sup>⊖</sup> | T10 <sup>⊖</sup> | 110 <sup>⊖</sup> | ~ <sup>⊖</sup> | ~ <sup>⊖</sup> | [ms] <sup>⊖</sup> | T11 <sup>⊖</sup> | 0 <sup>⊖</sup> | 16 <sup>⊖</sup> | 50 <sup>⊖</sup> | [ms] <sup>⊖</sup> | T12 <sup>⊖</sup> | ~ <sup>⊖</sup> | ~ <sup>⊖</sup> | 10 <sup>⊖</sup> | [ms] <sup>⊖</sup> | T13 <sup>⊖</sup> | 1000 <sup>⊖</sup> | ~ <sup>⊖</sup> | ~ <sup>⊖</sup> | [ms] <sup>⊖</sup> |
|                                   |   | Parameter <sup>⊖</sup>   |  | Value <sup>⊖</sup>  |  |  |                                | Unit <sup>⊖</sup>                |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Min. <sup>⊖</sup>                 | Typ. <sup>⊖</sup>   |  | Max. <sup>⊖</sup>  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T1 <sup>⊖</sup>                   | 0.5 <sup>⊖</sup>  | ~ <sup>⊖</sup>   | 10 <sup>⊖</sup>  | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T2 <sup>⊖</sup>                   | 30 <sup>⊖</sup>   | 40 <sup>⊖</sup>  | 50 <sup>⊖</sup>  | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T3 <sup>⊖</sup>                   | 200 <sup>⊖</sup>  | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T4 <sup>⊖</sup>                   | 0.5 <sup>⊖</sup>  | ~ <sup>⊖</sup>   | 10 <sup>⊖</sup>  | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T5 <sup>⊖</sup>                   | 10 <sup>⊖</sup>   | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T6 <sup>⊖</sup>                   | 10 <sup>⊖</sup>   | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T7 <sup>⊖</sup>                   | 0 <sup>⊖</sup>  | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T8 <sup>⊖</sup>                   | 10 <sup>⊖</sup>   | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T9 <sup>⊖</sup>                   | ~ <sup>⊖</sup>  | ~ <sup>⊖</sup>   | 200 <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T10 <sup>⊖</sup>                  | 110 <sup>⊖</sup>  | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T11 <sup>⊖</sup>                  | 0 <sup>⊖</sup>  | 16 <sup>⊖</sup>  | 50 <sup>⊖</sup>  | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T12 <sup>⊖</sup>                  | ~ <sup>⊖</sup>  | ~ <sup>⊖</sup>   | 200 <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T13 <sup>⊖</sup>                  | 1000 <sup>⊖</sup>   | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| Parameter <sup>⊖</sup>            | Value <sup>⊖</sup>  |  |  | Unit <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
|                                   | Min. <sup>⊖</sup>   | Typ. <sup>⊖</sup>  | Max. <sup>⊖</sup>  |                     |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T1 <sup>⊖</sup>                   | 0.5 <sup>⊖</sup>  | ~ <sup>⊖</sup>   | 10 <sup>⊖</sup>  | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T2 <sup>⊖</sup>                   | 50 <sup>⊖</sup>   | 60 <sup>⊖</sup>  | 70 <sup>⊖</sup>  | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T3 <sup>⊖</sup>                   | 200 <sup>⊖</sup>  | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T4 <sup>⊖</sup>                   | 0.5 <sup>⊖</sup>  | ~ <sup>⊖</sup>   | 10 <sup>⊖</sup>  | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T5 <sup>⊖</sup>                   | 10 <sup>⊖</sup>   | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T6 <sup>⊖</sup>                   | 10 <sup>⊖</sup>   | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T7 <sup>⊖</sup>                   | 0 <sup>⊖</sup>  | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T8 <sup>⊖</sup>                   | 10 <sup>⊖</sup>   | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T9 <sup>⊖</sup>                   | ~ <sup>⊖</sup>  | ~ <sup>⊖</sup>   | 10 <sup>⊖</sup>  | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T10 <sup>⊖</sup>                  | 110 <sup>⊖</sup>  | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T11 <sup>⊖</sup>                  | 0 <sup>⊖</sup>  | 16 <sup>⊖</sup>  | 50 <sup>⊖</sup>  | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T12 <sup>⊖</sup>                  | ~ <sup>⊖</sup>  | ~ <sup>⊖</sup>   | 10 <sup>⊖</sup>  | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |
| T13 <sup>⊖</sup>                  | 1000 <sup>⊖</sup>   | ~ <sup>⊖</sup>   | ~ <sup>⊖</sup>   | [ms] <sup>⊖</sup>   |  |  |                                |                                  |                                   |                   |                      |   |                                |                               |  |                            |   |   |                                   |                     |   |   |                                |                               |                       |                    |                      |                                  |                                 |                                 |                      |                    |                    |                        |   |                     |                    |                    |   |                                 |                       |                    |                    |                      |                    |  |                     |                      |                    |                    |                    |                     |                              |                        |                    |                     |                    |                    |                               |                      |                    |                    |                    |                      |                     |                    |                    |                |                    |                       |                  |                   |                 |                 |                                 |  |                        |                    |                   |                   |                     |                   |                   |                   |                     |                       |                  |                  |                   |                  |                 |                 |                 |                   |                 |                  |                |                |                   |                 |                  |                |                 |                   |                 |                 |                |                |                   |                 |                 |                |                |                   |                 |                |                |                |                   |                 |                 |                |                |                   |                 |                |                |                 |                   |                  |                  |                |                |                   |                  |                |                 |                 |                   |                  |                |                |                 |                   |                  |                   |                |                |                   |



# Product Specification

AU OPTRONICS CORPORATION

| 0.3 2019/10/16  | 19       | <table border="1"> <thead> <tr> <th>Signal</th> <th>Symbol</th> <th>Min.</th> <th>Typ.</th> <th>Max.</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>Clock Frequency</td> <td>1/TClock</td> <td>68.9</td> <td>71.1</td> <td>80</td> <td>MHz</td> </tr> <tr> <td rowspan="2">Vertical</td> <td>Period</td> <td>TV</td> <td>815</td> <td>823</td> <td>860</td> <td rowspan="2">TLine</td> </tr> <tr> <td>Active</td> <td>TVD</td> <td colspan="3">800</td> </tr> <tr> <td rowspan="2">Section</td> <td>Blanking</td> <td>TVB</td> <td>15</td> <td>23</td> <td>60</td> <td rowspan="2">TLine</td> </tr> <tr> <td>Period</td> <td>TH</td> <td>1410</td> <td>1440</td> <td>1550</td> </tr> <tr> <td rowspan="2">Horizontal</td> <td>Active</td> <td>THD</td> <td colspan="3">1280</td> <td rowspan="2">TClock</td> </tr> <tr> <td>Blanking</td> <td>THB</td> <td>130</td> <td>160</td> <td>270</td> </tr> <tr> <td>Frame Rate</td> <td>F</td> <td>---</td> <td>59.99</td> <td>---</td> <td>Hz</td> </tr> </tbody> </table> | Signal              | Symbol | Min. | Typ.   | Max. | Unit | Clock Frequency | 1/TClock | 68.9 | 71.1 | 80 | MHz | Vertical | Period | TV | 815 | 823 | 860 | TLine | Active | TVD | 800 |  |  | Section | Blanking | TVB | 15 | 23 | 60 | TLine | Period | TH | 1410 | 1440 | 1550 | Horizontal | Active | THD | 1280 |  |  | TClock | Blanking | THB | 130 | 160 | 270 | Frame Rate | F | --- | 59.99 | --- | Hz | <table border="1"> <thead> <tr> <th>Signal</th> <th>Symbol</th> <th>Min.</th> <th>Typ.</th> <th>Max.</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>Clock Frequency</td> <td>1/TClock</td> <td>68.9</td> <td>71.1</td> <td>74.5</td> <td>MHz</td> </tr> <tr> <td rowspan="2">Vertical</td> <td>Period</td> <td>TV</td> <td>815</td> <td>823</td> <td>840</td> <td rowspan="2">TLine</td> </tr> <tr> <td>Active</td> <td>TVD</td> <td colspan="3">800</td> </tr> <tr> <td rowspan="2">Section</td> <td>Blanking</td> <td>TVB</td> <td>15</td> <td>23</td> <td>40</td> <td rowspan="2">TLine</td> </tr> <tr> <td>Period</td> <td>TH</td> <td>1410</td> <td>1440</td> <td>1480</td> </tr> <tr> <td rowspan="2">Horizontal</td> <td>Active</td> <td>THD</td> <td colspan="3">1280</td> <td rowspan="2">TClock</td> </tr> <tr> <td>Blanking</td> <td>THB</td> <td>130</td> <td>160</td> <td>200</td> </tr> <tr> <td>Frame Rate</td> <td>F</td> <td>---</td> <td>59.99</td> <td>---</td> <td>Hz</td> </tr> </tbody> </table> | Signal | Symbol | Min. | Typ. | Max. | Unit | Clock Frequency | 1/TClock | 68.9 | 71.1 | 74.5 | MHz | Vertical | Period | TV | 815 | 823 | 840 | TLine | Active | TVD | 800 |  |  | Section | Blanking | TVB | 15 | 23 | 40 | TLine | Period | TH | 1410 | 1440 | 1480 | Horizontal | Active | THD | 1280 |  |  | TClock | Blanking | THB | 130 | 160 | 200 | Frame Rate | F | --- | 59.99 | --- | Hz |
|-----------------|----------|--|---------------------|--------|------|--------|------|------|-----------------|----------|------|------|----|-----|----------|--------|----|-----|-----|-----|-------|--------|-----|-----|--|--|---------|----------|-----|----|----|----|-------|--------|----|------|------|------|------------|--------|-----|------|--|--|--------|----------|-----|-----|-----|-----|------------|---|-----|-------|-----|----|--|--------|--------|------|------|------|------|-----------------|----------|------|------|------|-----|----------|--------|----|-----|-----|-----|-------|--------|-----|-----|--|--|---------|----------|-----|----|----|----|-------|--------|----|------|------|------|------------|--------|-----|------|--|--|--------|----------|-----|-----|-----|-----|------------|---|-----|-------|-----|----|
|                 | Signal   | Symbol   | Min.                | Typ.   | Max. | Unit   |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
| Clock Frequency | 1/TClock | 68.9   | 71.1                | 80     | MHz  |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
| Vertical        | Period   | TV   | 815                 | 823    | 860  | TLine  |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
|                 | Active   | TVD  | 800                 |        |      |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
| Section         | Blanking | TVB  | 15                  | 23     | 60   | TLine  |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
|                 | Period   | TH   | 1410                | 1440   | 1550 |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
| Horizontal      | Active   | THD  | 1280                |        |      | TClock |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
|                 | Blanking | THB  | 130                 | 160    | 270  |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
| Frame Rate      | F        | ---  | 59.99               | ---    | Hz   |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
| Signal          | Symbol   | Min.   | Typ.                | Max.   | Unit |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
| Clock Frequency | 1/TClock | 68.9   | 71.1                | 74.5   | MHz  |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
| Vertical        | Period   | TV   | 815                 | 823    | 840  | TLine  |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
|                 | Active   | TVD  | 800                 |        |      |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
| Section         | Blanking | TVB  | 15                  | 23     | 40   | TLine  |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
|                 | Period   | TH   | 1410                | 1440   | 1480 |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
| Horizontal      | Active   | THD  | 1280                |        |      | TClock |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
|                 | Blanking | THB  | 130                 | 160    | 200  |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
| Frame Rate      | F        | ---  | 59.99               | ---    | Hz   |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
|                 | 21       | --   | Add ESD Criteria    |        |      |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |
| 1.0 2020/02/26  | --       | --   | Final specification |        |      |        |      |      |                 |          |      |      |    |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |  |        |        |      |      |      |      |                 |          |      |      |      |     |          |        |    |     |     |     |       |        |     |     |  |  |         |          |     |    |    |    |       |        |    |      |      |      |            |        |     |      |  |  |        |          |     |     |     |     |            |   |     |       |     |    |





## 1. Operating Precautions

- 1) Since front polarizer is easily damaged, please be cautious and not to scratch it.
- 2) Be sure to turn off power supply when inserting or disconnecting from input connector.
- 3) Wipe off water drop immediately. Long contact with water may cause discoloration or spots.
- 4) When the panel surface is soiled, wipe it with absorbent cotton or soft cloth.
- 5) Since the panel is made of glass, it may be broken or cracked if dropped or bumped on hard surface.
- 6) To avoid ESD (Electro Static Discharge) damage, be sure to ground yourself before handling TFT-LCD Module.
- 7) Do not open nor modify the module assembly.
- 8) Do not press the reflector sheet at the back of the module to any direction.
- 9) In case if a module has to be put back into the packing container slot after it was taken out from the container, do not press the center of the LED light bar edge. Instead, press at the far ends of the LED light bar edge softly. Otherwise the TFT Module may be damaged.
- 10) At the insertion or removal of the Signal Interface Connector, be sure not to rotate nor tilt the Interface Connector of the TFT Module.
- 11) TFT-LCD Module is not allowed to be twisted & bent even force is added on module in a very short time. Please design your display product well to avoid external force applying to module by end-user directly.
- 12) Small amount of materials having no flammability grade is used in the LCD module. The LCD module should be supplied by power complied with requirements of Limited Power Source (IEC60950 or UL1950), or be applied exemption.
- 13) Severe temperature condition may result in different luminance, response time and lamp ignition voltage.
- 14) Continuous operating TFT-LCD display under low temperature environment may accelerate lamp exhaustion and reduce luminance dramatically.
- 15) The data on this specification sheet is applicable when LCD module is placed in landscape position.
- 16) Continuous displaying fixed pattern may induce image sticking. It's recommended to use screen saver or shuffle content periodically if fixed pattern is displayed on the screen.



## 2. General Description

G101EAN02.2 is a Color Active Matrix Liquid Crystal Display composed of a TFT LCD panel and LED backlight system. The screen format is intended to support the 16:10 WXGA, 1280(H) x 800(V) screen and 16.7M colors with LED backlight driving circuit. All input signals are LVDS interface compatible.

### 2.1 Display Characteristics

The following items are characteristics summary under 25 °C condition:

| Items                     | Unit    | Specifications   |
|---------------------------|---------|--|
| Screen Diagonal           | [inch]  | 10.1"  |
| Active Area               | [mm]    | 216.96(H) x 135.6(V)   |
| Pixels H x V              |         | 1280(RGB)x 800   |
| Pixel Pitch               | [mm]    | 0.1695X 0.1695   |
| Pixel Arrangement         |         | R.G.B. Vertical Stripe   |
| Display Mode              |         | AHVA, Normally Black   |
| Nominal Input Voltage VDD | [Volt]  | 3.3 (Typical)  |
| Power Consumption         | [Watt]  | Logic Power : 1(Max)@White pattern 3.3V input<br>LED power max 3.024 W |
| Weight (Max.)             | [Grams] | 290  |
| Physical Size (typ.)      | [mm]    | 227.91(H) x 148(V)x<br>7.75(T) (max.) PCBA side                        |
| Electrical Interface      |         | LVDS 1Port 8bit  |
| Surface Treatment         |         | HC   |
| Support Color             |         | 16.7M colors   |
| Temperature Range         |         |  |
| Operating                 | [°C]    | -20 to +70 (Front and rear surface)                                    |
| Storage (Non-Operating)   | [°C]    | -30 to +80   |
| RoHS Compliance           |         | RoHS Compliance  |

## 2.2 Optical Characteristics

The optical characteristics are measured under stable conditions at 25 °C (Room Temperature):

| Item  | Unit                 | Conditions                          | Min.  | Typ.  | Max.  | Note |
|---|----------------------|-------------------------------------|-------|-------|-------|------|
| White Luminance                             | [cd/m <sup>2</sup> ] | I <sub>LED</sub> = 28mA<br>(center) | 400   | 500   | ---   |      |
| Uniformity                                  | %                    | 5 points                            | 70%   |       | ---   |      |
| Contrast Ratio                              |                      |                                     | 600   | 800   | ---   |      |
| Response Time                               | [msec]               | Rising + Falling                    | ---   | 29    | 38    |      |
| Viewing Angle                               | [degree]             | Horizontal (Right)                  | 80    | 89    | ---   |      |
|   | [degree]             | CR = 10 (Left)                      | 80    | 89    | ---   |      |
|   | [degree]             | Vertical (Upper)                    | 80    | 89    | ---   |      |
|   | [degree]             | CR = 10 (Lower)                     | 80    | 89    | ---   |      |
| Color / Chromaticity Coordinates (CIE 1931) |                      | Red x                               | 0.551 | 0.601 | 0.651 |      |
|   |                      | Red y                               | 0.293 | 0.343 | 0.393 |      |
|   |                      | Green x                             | 0.274 | 0.324 | 0.374 |      |
|   |                      | Green y                             | 0.512 | 0.562 | 0.612 |      |
|   |                      | Blue x                              | 0.101 | 0.151 | 0.201 |      |
|   |                      | Blue y                              | 0.085 | 0.135 | 0.185 |      |
|   |                      | White x                             | 0.263 | 0.313 | 0.363 |      |
|   |                      | White y                             | 0.279 | 0.329 | 0.379 |      |
| Color Gamut                                 | %                    |                                     | ---   | 45    | ---   |      |

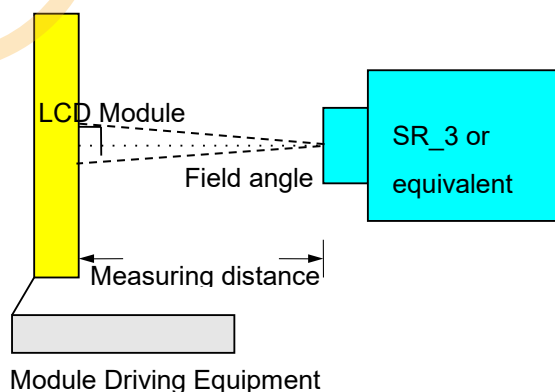
Note 1: Measurement method

Equipment Pattern Generator, Power Supply, Digital Voltmeter, Luminance meter (SR\_3 or equivalent)

Aperture Field angle 2° with 50cm measuring distance

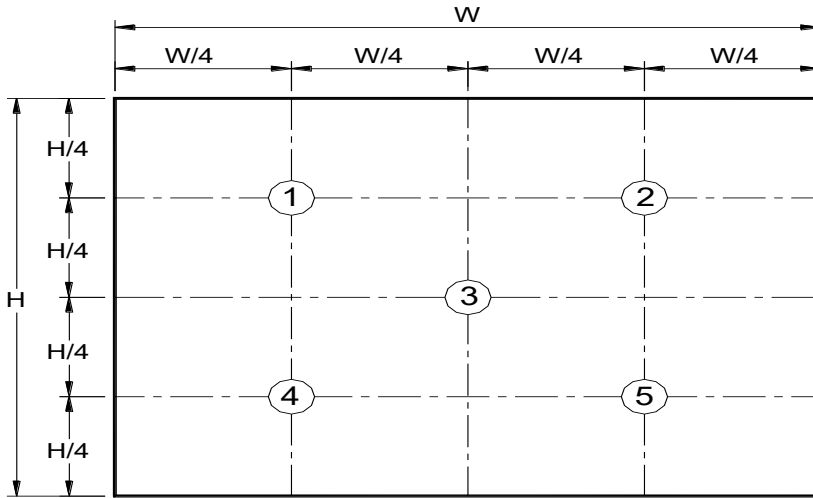
Test Point Follow Note 2 position

Environment < 1 lux





Note 2: Definition of 5 points position



Note 3: The luminance uniformity of 5 points is defined by dividing the minimum luminance values by the maximum test point luminance

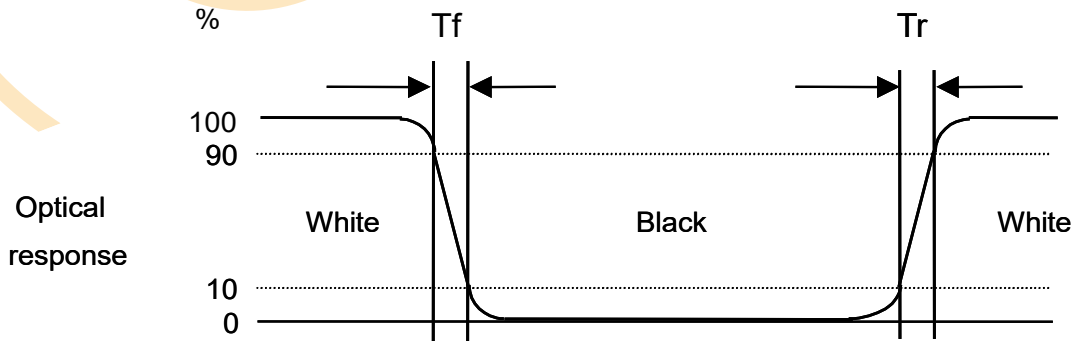
$$\delta_{w5} = \frac{\text{Minimum Brightness of five points}}{\text{Maximum Brightness of five points}}$$

Note 4: Definition of contrast ratio (CR):

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "White" state}}{\text{Brightness on the "Black" state}}$$

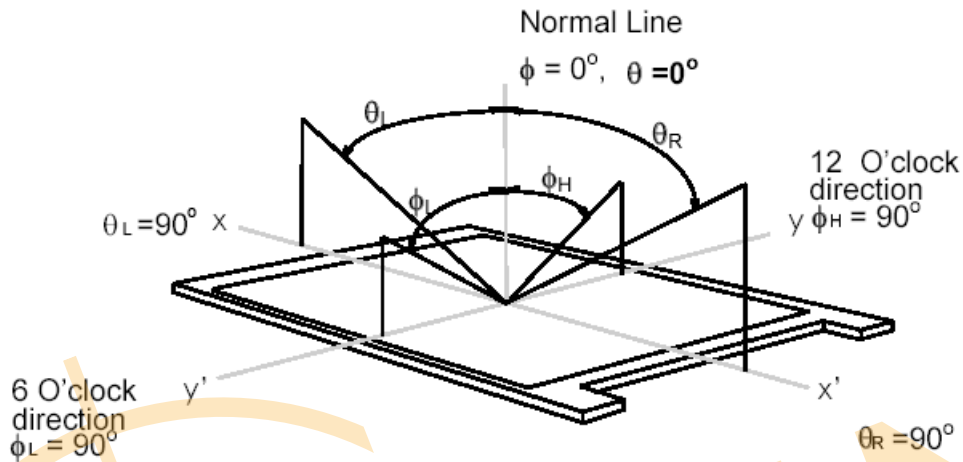
Note 5: Definition of response time:

The output signals of photo detector are measured when the input signals are changed from "White" to "Black" (falling time) and from "Black" to "White" (rising time), respectively. The response time interval is between 10% and 90% of amplitudes. Please refer to the figure as below.



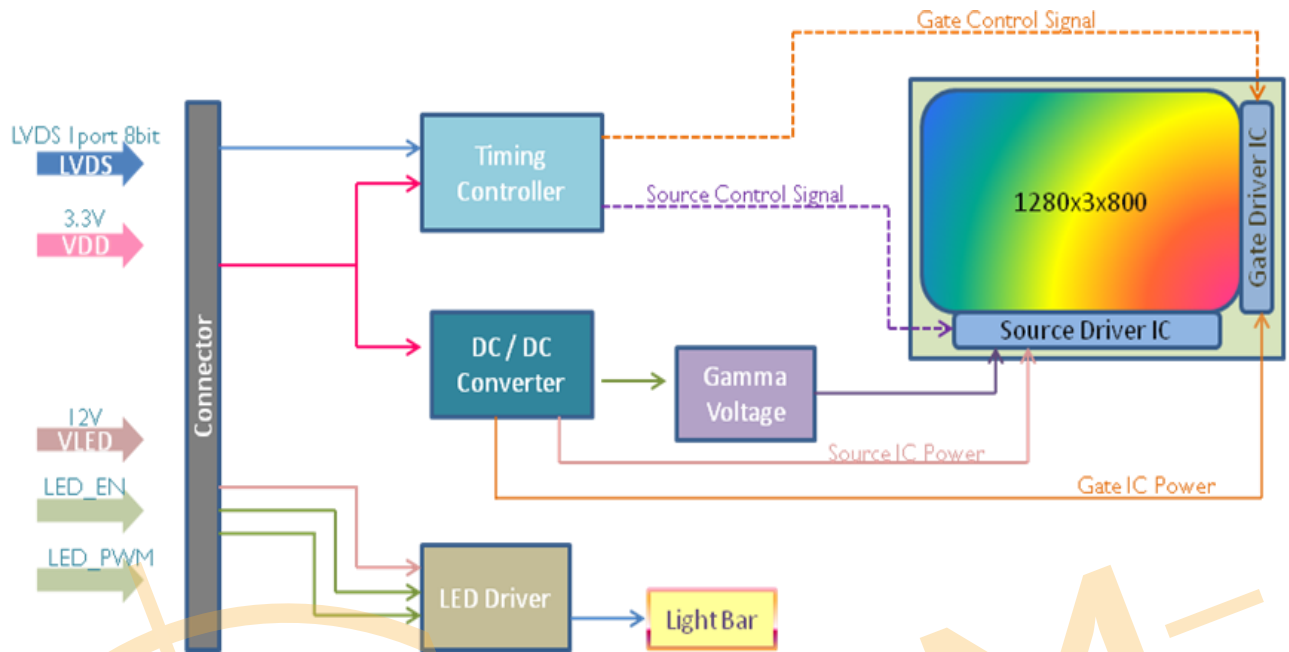
**Note 6: Definition of viewing angle**

Viewing angle is the measurement of contrast ratio  $\geq 10$ , at the screen center, over a  $180^\circ$  horizontal and  $180^\circ$  vertical range (off-normal viewing angles). The  $180^\circ$  viewing angle range is broken down as below:  $90^\circ$  ( $\theta$ ) horizontal left and right, and  $90^\circ$  ( $\Phi$ ) vertical high (up) and low (down). The measurement direction is typically perpendicular to the display surface with the screen rotated to its center to develop the desired measurement viewing angle.



## 3. Functional Block Diagram

The following diagram shows the functional block of the 10.1 inch color TFT/LCD module:



TEXIM-EUROPE



## 4. Absolute Maximum Ratings

### 4.1 Absolute Ratings of TFT LCD Module

| Item                     | Symbol              | Min  | Max | Unit   |
|--------------------------|---------------------|------|-----|--------|
| Logic/LCD drive Voltage  | VDD                 | -0.3 | 3.6 | [Volt] |
| LCD Input Signal Voltage | V <sub>SIGNAL</sub> | -0.3 | 3.6 | [Volt] |

### 4.2 Absolute Ratings of Environment

| Item                  | Symbol | Min | Max | Unit  |
|-----------------------|--------|-----|-----|-------|
| Operating Temperature | TOP    | -20 | +70 | [°C]  |
| Humidity              | HOP    | 5   | 90  | [%RH] |
| Storage Temperature   | TST    | -30 | +80 | [°C]  |
| Storage Humidity      | HST    | 5   | 90  | [%RH] |

Note 1: Permanent damage to the device may occur if exceed maximum values

Note 2: Maximum wet-bulb temperature is less than 39 oC and no condensation

Note 3: Operating temperature means "Front and rear surface" of panel

## 5. Electrical Characteristics

### 5.1 TFT LCD Module

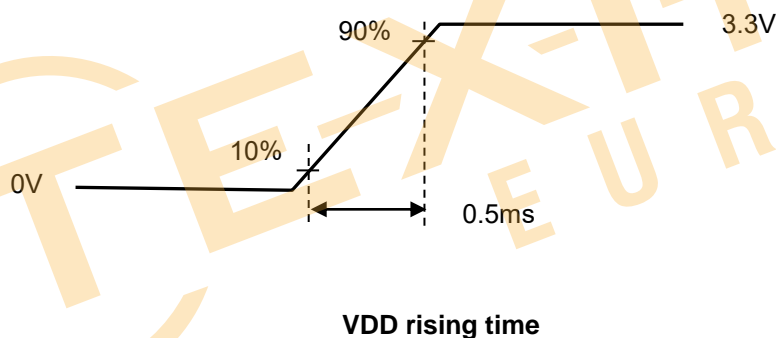
#### 5.1.1 Power Specification

The power specification are measured under 25°C and frame frequency under 59.99Hz

| Symbol | Parameter                                | Min | Typ   | Max  | Units       | Remark                                     |
|--------|--|-----|-------|------|-------------|--|
| VDD    | Logic/LCD Drive Voltage                  | 3.0 | 3.3   | 3.6  | [Volt]      |  |
| IDD    | VDD Current                              | -   | 278.7 | 303  | [mA]        | All White Pattern<br>(VDD=3.3V, at 59.9Hz) |
| Irush  | LCD Inrush Current                       | -   | -     | 1500 | [mA]        | Note 1                                     |
| PDD    | VDD Power                                | -   | 0.92  | 1    | [Watt]      | All White Pattern<br>(VDD=3.3V, at 59.9Hz) |
| VDDrp  | Allowable Logic/LCD Drive Ripple Voltage | -   | -     | 100  | [mV]<br>p-p | All White Pattern<br>(VDD=3.3V, at 59.9Hz) |

Note 1 : Maximum Measurement Condition : White Pattern at 3.3V driving voltage. ( $P_{max}=V_{3.3} \times I_{white}$ )

Note 2 : Measure Condition



## 5.1.2 Signal Electrical Characteristics

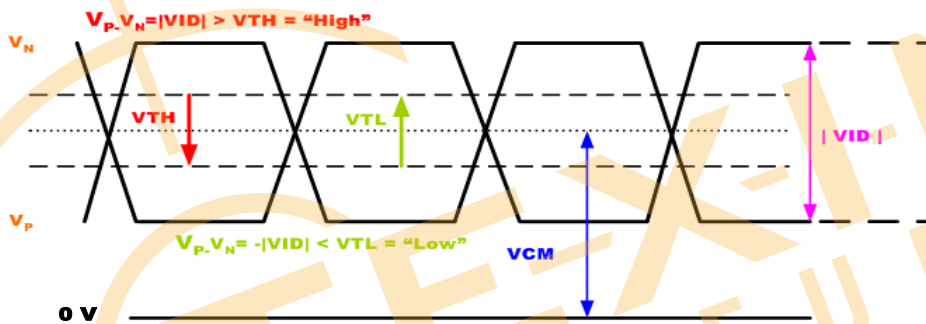
Input signals shall be low or Hi-Z state when VDD is off.

| Symbol | Item                                   | Min. | Typ. | Max. | Unit | Remark         |
|--------|--|------|------|------|------|----------------|
| VTH    | Differential Input High Threshold      | -    | -    | 100  | [mV] | VCM=1.2V       |
| VTL    | Differential Input Low Threshold       | -100 | -    | -    | [mV] | VCM=1.2V       |
| VID    | Input Differential Voltage             | 100  |      | 600  | [mV] |                |
| VICM   | Differential Input Common Mode Voltage | 1.0  | 1.2  | 1.5  | [V]  | VTH/VTL=±100mV |

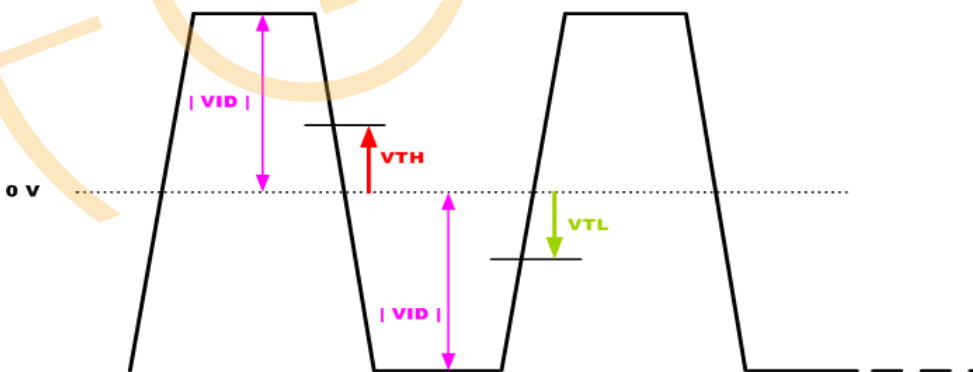
Note: LVDS Signal Waveform.

$V_P - V_N = |VID| > V_{TH} = \text{"High"}$   
 $V_P - V_N = -|VID| < V_{TL} = \text{"Low"}$

### Single-end Signal



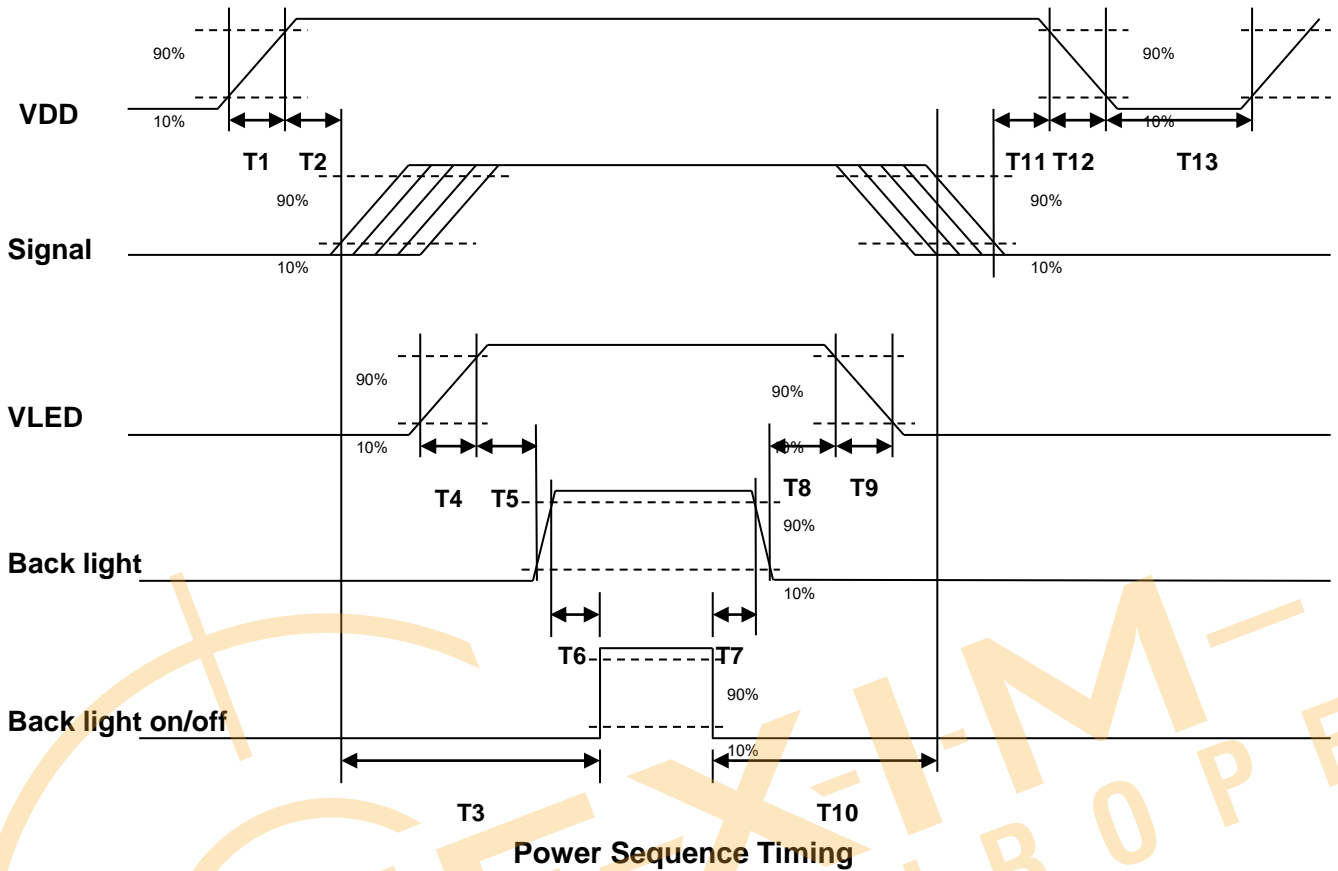
### Differential Signal





**5.1.3 Power ON/OFF Sequence**

VDD power and backlight on/off sequence is as below. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VDD is off.



| Parameter | Value |      |      | Unit |
|-----------|-------|------|------|------|
|           | Min.  | Typ. | Max. |      |
| T1        | 0.5   | -    | 10   | [ms] |
| T2        | 50    | 60   | 70   | [ms] |
| T3        | 200   | -    | -    | [ms] |
| T4        | 0.5   | -    | 10   | [ms] |
| T5        | 10    | -    | -    | [ms] |
| T6        | 10    | -    | -    | [ms] |
| T7        | 0     | -    | -    | [ms] |
| T8        | 10    | -    | -    | [ms] |
| T9        | -     | -    | 10   | [ms] |
| T10       | 110   | -    | -    | [ms] |
| T11       | 0     | 16   | 50   | [ms] |
| T12       | -     | -    | 10   | [ms] |
| T13       | 1000  | -    | -    | [ms] |

The above on/off sequence should be applied to avoid abnormal function in the display. Please make sure to turn off the power when you plug the cable into the input connector or pull the cable out of the connector.



## 5.2 Backlight Unit

### 5.2.1 Parameter guideline for LED

Following characteristics are measured under a stable condition using an inverter at 25°C (Room Temperature):

| Symbol                 | Parameter                      | Min.   | Typ.  | Max.  | Unit   | Remark                                    |
|------------------------|--------------------------------|--------|-------|-------|--------|---|
| VLED                   | Input Voltage                  | 10.8   | 12    | 13.2  | [Volt] |   |
| I <sub>VLED</sub>      | Input Current                  | ---    | 222   | 252   | [mA]   | 100% Brightness<br>(VLED = 12V)           |
| P <sub>VLED</sub>      | Power Consumption              | ---    | 2.664 | 3.024 | [Watt] | 100% Brightness<br>(VLED = 12V)           |
| I <sub>F</sub>         | LED Forward Current            | ---    | 28    | ---   | [mA]   | Ta = 25°C                                 |
| VEN                    | LED Enable Input<br>High Level | 2.3    | -     | 5.5   | [Volt] |   |
|                        | LED Enable Input<br>Low Level  | -      | -     | 0.3   | [Volt] |   |
| VPWM                   | PWM Logic Input<br>High Level  | 2.3    | -     | 5.5   | [Volt] |   |
|                        | PWM Logic Input<br>Low Level   | -      | -     | 0.3   | [Volt] |   |
| PWM Input<br>Frequency | FPWM                           | 200    | -     | 20K   | Hz     |   |
| PWM Duty<br>Ratio      | Duty                           | 5      |       | 100   | %      |   |
| Operation Life         | ---                            | 50,000 | ---   | ---   | Hrs    | (Ta=70°C), Note 2<br>I <sub>F</sub> =28mA |

Note 1: Ta means ambient temperature of TFT-LCD module.

Note 2: VLED, I<sub>VLED</sub>, P<sub>VLED</sub> are defined for LED backlight.(100% duty of PWM dimming)

Note 3: If G101EAN02.2 module is driven by high current or at high ambient temperature & humidity condition. The operating life will be reduced.

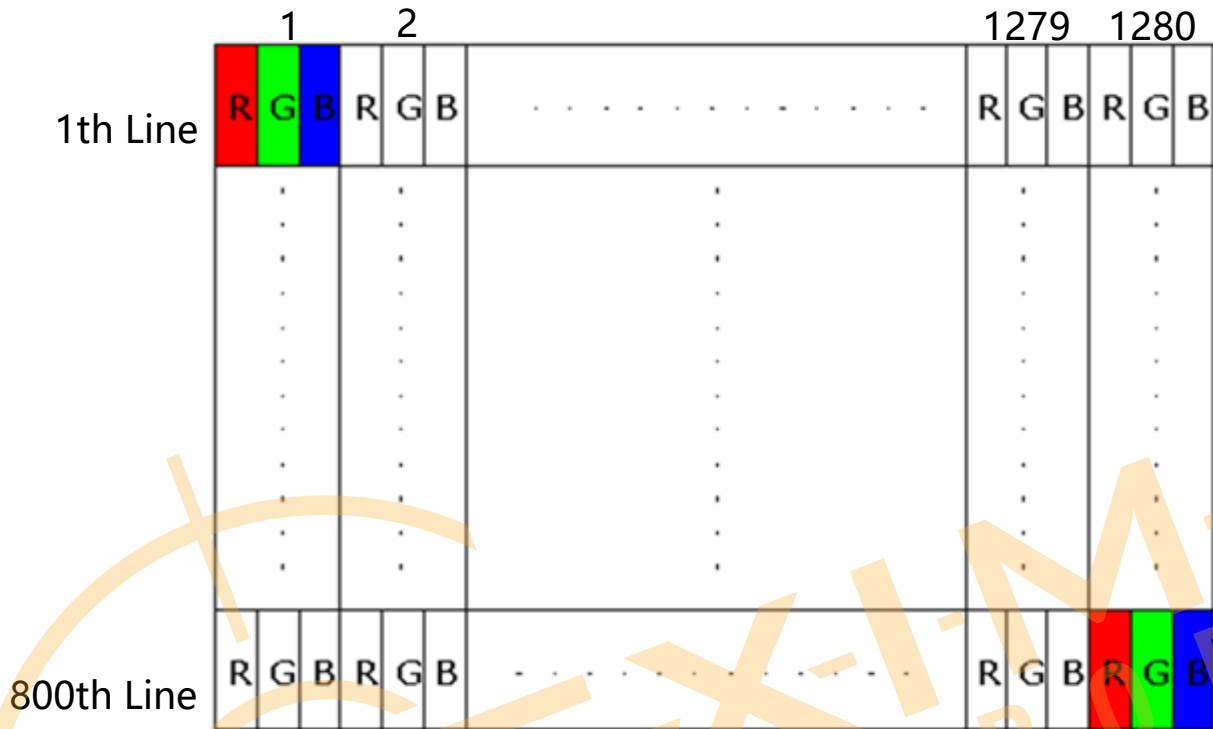
Note 4: Operating life means brightness goes down to 50% initial brightness. Minimum operating life time is estimated data.



## 6. Signal Characteristic

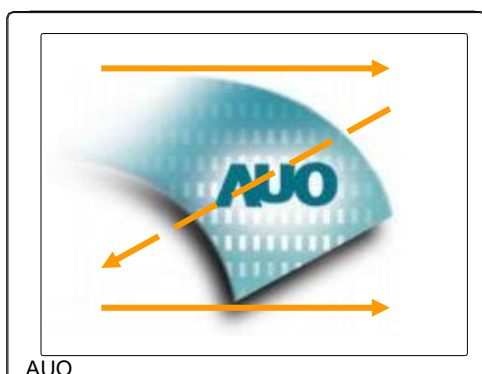
### 6.1 Pixel Format Image

Following figure shows the relationship between input signal and LCD pixel format.



## 6.2 Signal Description

The following figures show the image seen from the front view. The arrow indicates the direction of scan.



### 6.2.1 Pin Assignment

LVDS is a differential signal technology for LCD interface and high speed data transfer device.

| PIN NO | Symbol | Function                       |
|--------|--------|--------------------------------|
| 1      | GND    | Ground                         |
| 2      | VDD    | LCD Power Supply +3.3V         |
| 3      | VDD    | LCD Power Supply +3.3V         |
| 4      | VDD    | LCD Power Supply +3.3V         |
| 5      | NC     | AUO Self Test Pin              |
| 6      | NC     | AUO Self Test Pin              |
| 7      | NC     | AUO Self Test Pin              |
| 8      | Rxin0- | -LVDS differential data input  |
| 9      | Rxin0+ | +LVDS differential data input  |
| 10     | GND    | Ground                         |
| 11     | Rxin1- | -LVDS differential data input  |
| 12     | Rxin1+ | +LVDS differential data input  |
| 13     | GND    | Ground                         |
| 14     | Rxin2- | -LVDS differential data input  |
| 15     | Rxin2+ | +LVDS differential data input  |
| 16     | GND    | Ground                         |
| 17     | ClkIN- | -LVDS differential clock input |
| 18     | ClkIN+ | +LVDS differential clock input |
| 19     | GND    | Ground                         |
| 20     | Rxin3- | -LVDS differential data input  |



# Product Specification

AU OPTRONICS CORPORATION

|    |         |                               |
|----|---------|-------------------------------|
| 21 | Rxin3+  | +LVDS differential data input |
| 22 | GND     | Ground                        |
| 23 | NC      | No connect                    |
| 24 | NC      | No connect                    |
| 25 | GND     | Ground                        |
| 26 | NC      | No connect                    |
| 27 | NC      | No connect                    |
| 28 | GND     | Ground                        |
| 29 | NC      | No connect                    |
| 30 | NC      | No connect                    |
| 31 | BL_GND  | Ground for backlight          |
| 32 | BL_GND  | Ground for backlight          |
| 33 | BL_GND  | Ground for backlight          |
| 34 | NC      | No connect                    |
| 35 | LED_PWM | PWM Dimming                   |
| 36 | LED_EN  | LED ON/OFF                    |
| 37 | NC      | No connect                    |
| 38 | VLED    | LED Power Supply +12V         |
| 39 | VLED    | LED Power Supply +12V         |
| 40 | VLED    | LED Power Supply +12V         |

## 6.2.2 LVDS Connector

Physical interface is described as for the connector on module.

These connectors are capable of accommodating the following signals and will be following components.

| Connector Name / Designation | Signal Connector                  |
|------------------------------|-----------------------------------|
| Manufacturer                 | IPEX or compatible                |
| Connector Model Number       | IPEX 20765-040E-11A or compatible |
| Adaptable Plug               | IPEX 20453-040T-01 or compatible  |



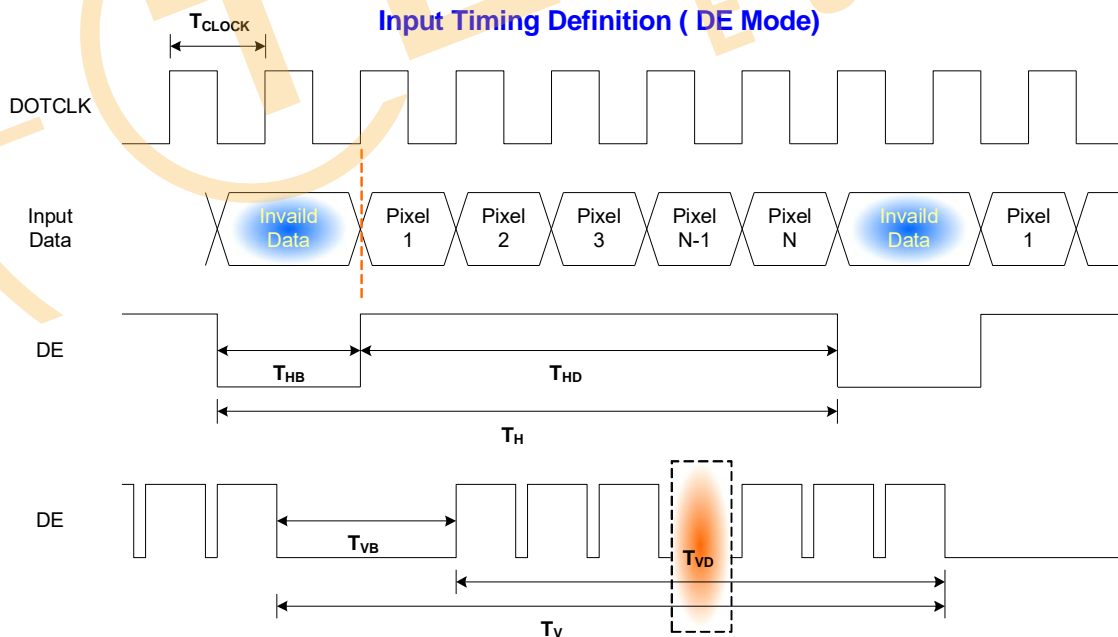
### 6.3 Interface Timing

#### 6.3.1 Timing Characteristics

| Signal             | Symbol    | Min. | Typ.  | Max. | Unit |        |
|--------------------|-----------|------|-------|------|------|--------|
| Clock Frequency    | 1/ TClock | 68.9 | 71.1  | 74.5 | MHz  |        |
| Vertical Section   | Period    | TV   | 815   | 823  | 840  | TLine  |
|                    | Active    | TVD  | 800   |      |      |        |
|                    | Blanking  | TVB  | 15    | 23   | 40   |        |
| Horizontal Section | Period    | TH   | 1410  | 1440 | 1480 | TClock |
|                    | Active    | THD  | 1280  |      |      |        |
|                    | Blanking  | THB  | 130   | 160  | 200  |        |
| Frame Rate         | F         | ---  | 59.99 | ---  | Hz   |        |

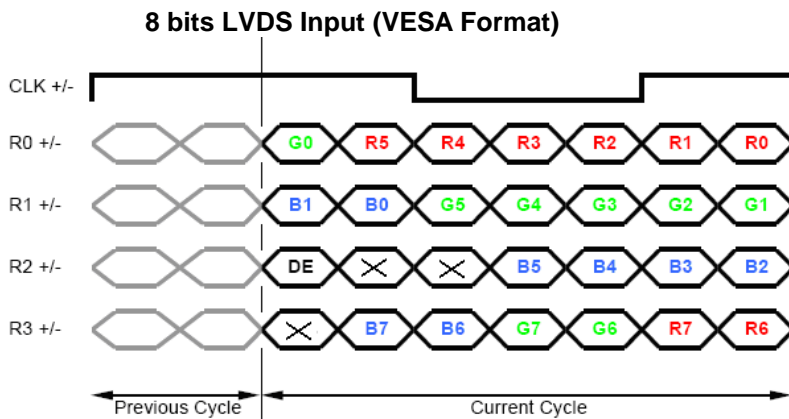
Note : DE mode.

#### 6.3.2 Input Timing Diagram





**6.3.3 The Input Data Format**



| Signal Name                                  | Description  |   |
|--|--|---|
| R7<br>R6<br>R5<br>R4<br>R3<br>R2<br>R1<br>R0 | Red Data 7 (MSB)<br>Red Data 6<br>Red Data 5<br>Red Data 4<br>Red Data 3<br>Red Data 2<br>Red Data 1<br>Red Data 0 (LSB)                 | Red-pixel Data<br><br>For 8Bits LVDS input<br>MSB: R7 ; LSB: R0   |
| G7<br>G6<br>G5<br>G4<br>G3<br>G2<br>G1<br>G0 | Green Data 7 (MSB)<br>Green Data 6<br>Green Data 5<br>Green Data 4<br>Green Data 3<br>Green Data 2<br>Green Data 1<br>Green Data 0 (LSB) | Green-pixel Data<br><br>For 8Bits LVDS input<br>MSB: R7 ; LSB: R0   |
| B7<br>B6<br>B5<br>B4<br>B3<br>B2<br>B1<br>B0 | Blue Data 7 (MSB)<br>Blue Data 6<br>Blue Data 5<br>Blue Data 4<br>Blue Data 3<br>Blue Data 2<br>Blue Data 1<br>Blue Data 0 (LSB)         | Blue-pixel Data<br><br>For 8Bits LVDS input<br>MSB: R7 ; LSB: R0  |
| RxCLKIN                                      | Data Clock   | The signal is used to strobe the pixel data and DE signals. All pixel data shall be valid at the falling edge when the DE signal is high. |
| DE   | Display Timing   | This signal is strobed at the falling edge of RxCLKIN. When the signal is high, the pixel data shall be valid to be displayed.            |

Note: Output signals from any system shall be low or High-impedance state when VDD is off.



## 7. Reliability Test Criteria

| Items                      | Required Condition   | Note              |
|----------------------------|--|-------------------|
| Temperature Humidity Bias  | 40 °C /90%,300Hr   |                   |
| High Temperature Operation | 70°C, 300Hr  | LCD Surface Temp. |
| Low Temperature Operation  | -20 °C, 300Hr  |                   |
| Hot Storage                | 80 °C, 300Hr   |                   |
| Cold Storage               | -30 °C, 300Hr  |                   |
| Thermal Shock Test         | -30 °C /30 min , 70 °C /30 min , 20cycles                                |                   |
| Hot Start Test             | 70 °C /1 Hr min. power on/off per 5 minutes, 5 times                     |                   |
| Cold Start Test            | -20 °C /1 Hr min. power on/off per 5 minutes, 5 times                    |                   |
| On/off test                | On/10 sec, Off/10 sec, 30,000 cycles                                     |                   |
| ESD                        | Contact : ± 8KV/ operation, Class B<br>Air : ± 15KV / operation, Class B | Note 1            |

Note1: According to EN61000-4-2 , ESD class B: Some performance degradation allowed. No data lost  
 . Self-recoverable. No hardware failures.

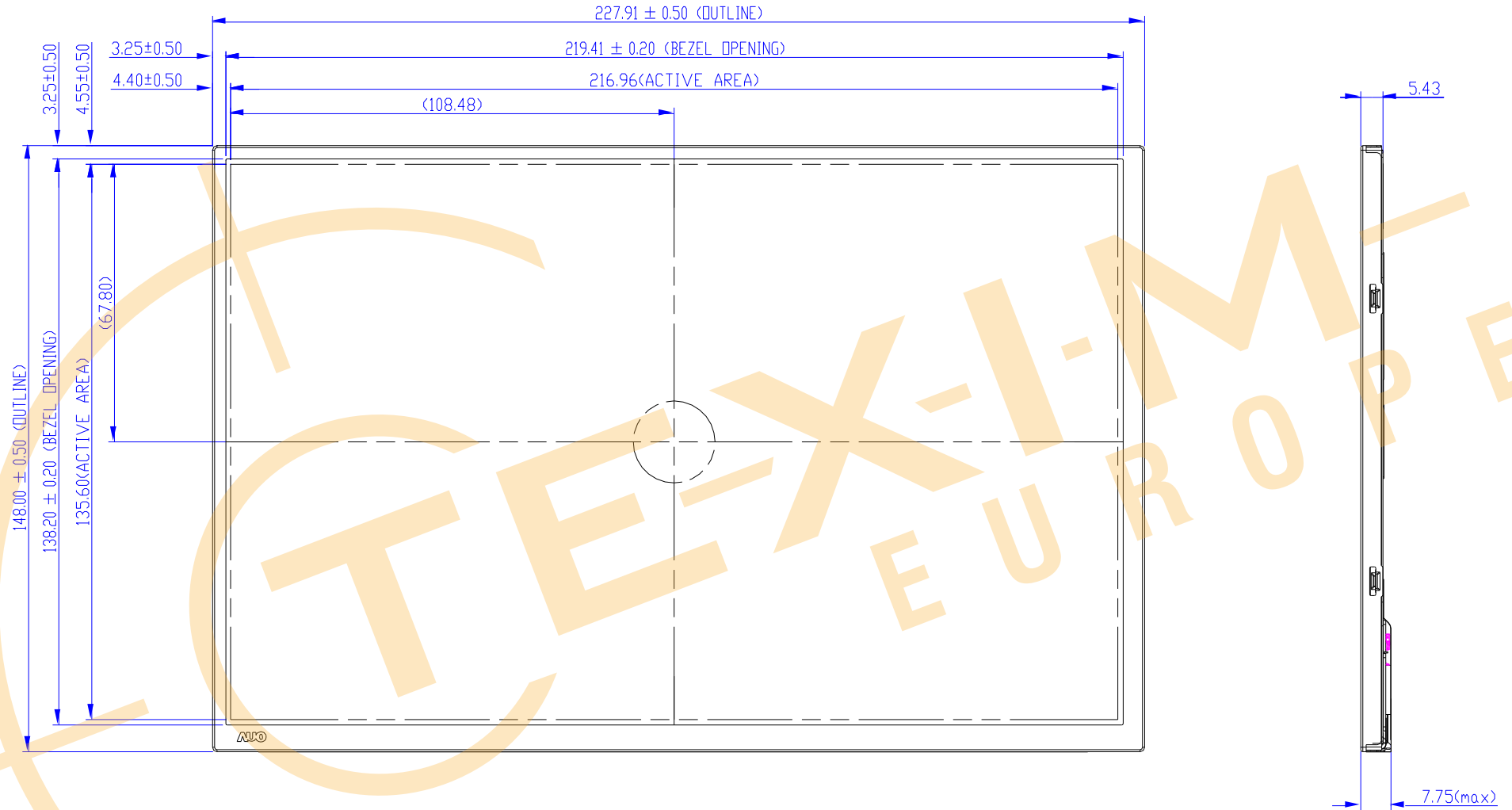
Note2:

- Water condensation is not allowed for each test items.
- Each test is done by new TFT-LCD module. Don't use the same TFT-LCD module repeatedly for reliability test.
- The reliability test is performed only to examine the TFT-LCD module capability.
- To inspect TFT-LCD module after reliability test, please store it at room temperature and room humidity for 24 hours at least in advance.



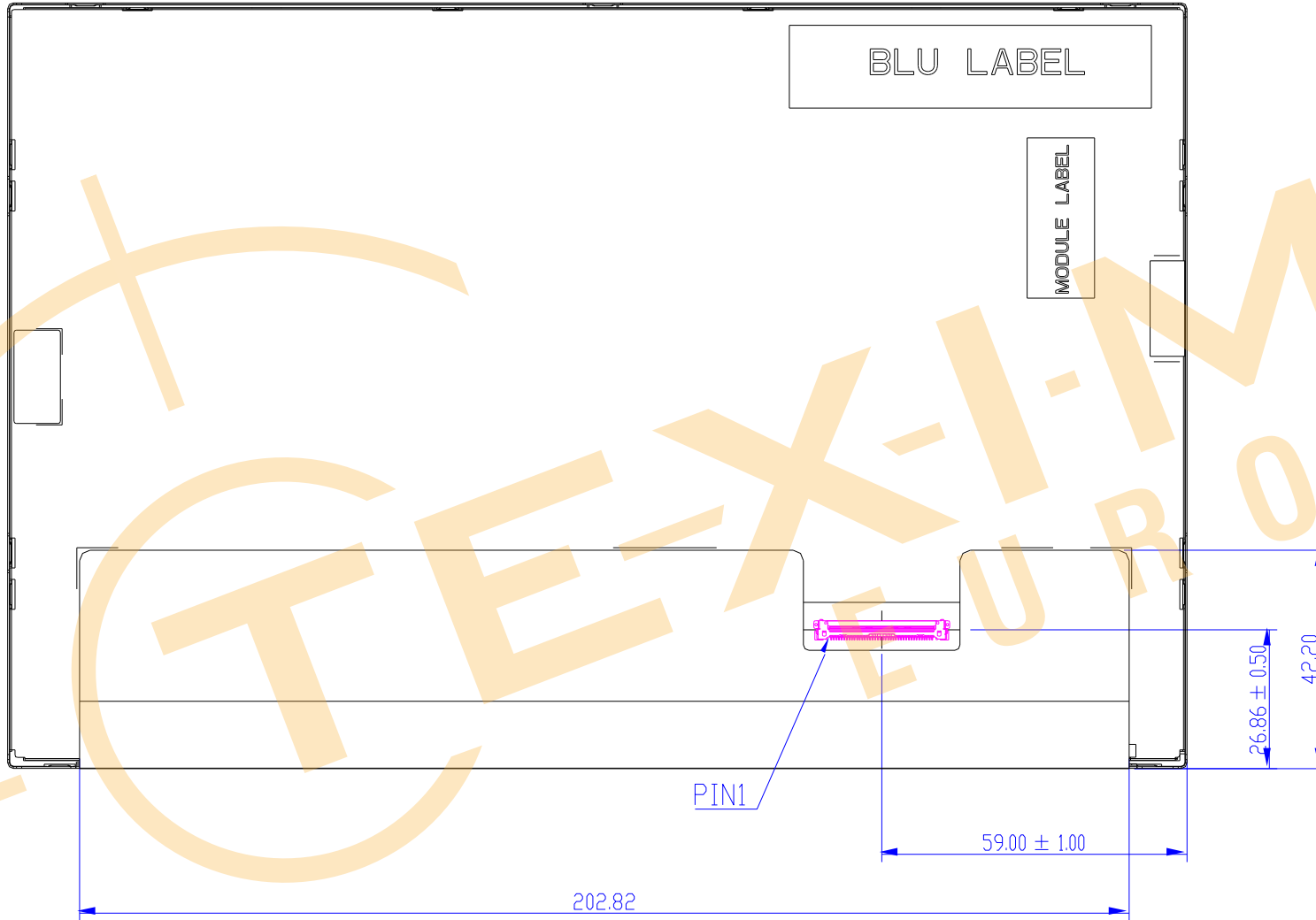
## 8. Mechanical Characteristics

### 8.1 Outline Dimension (Front View)





### 8.2 Outline Dimension (Rear View)

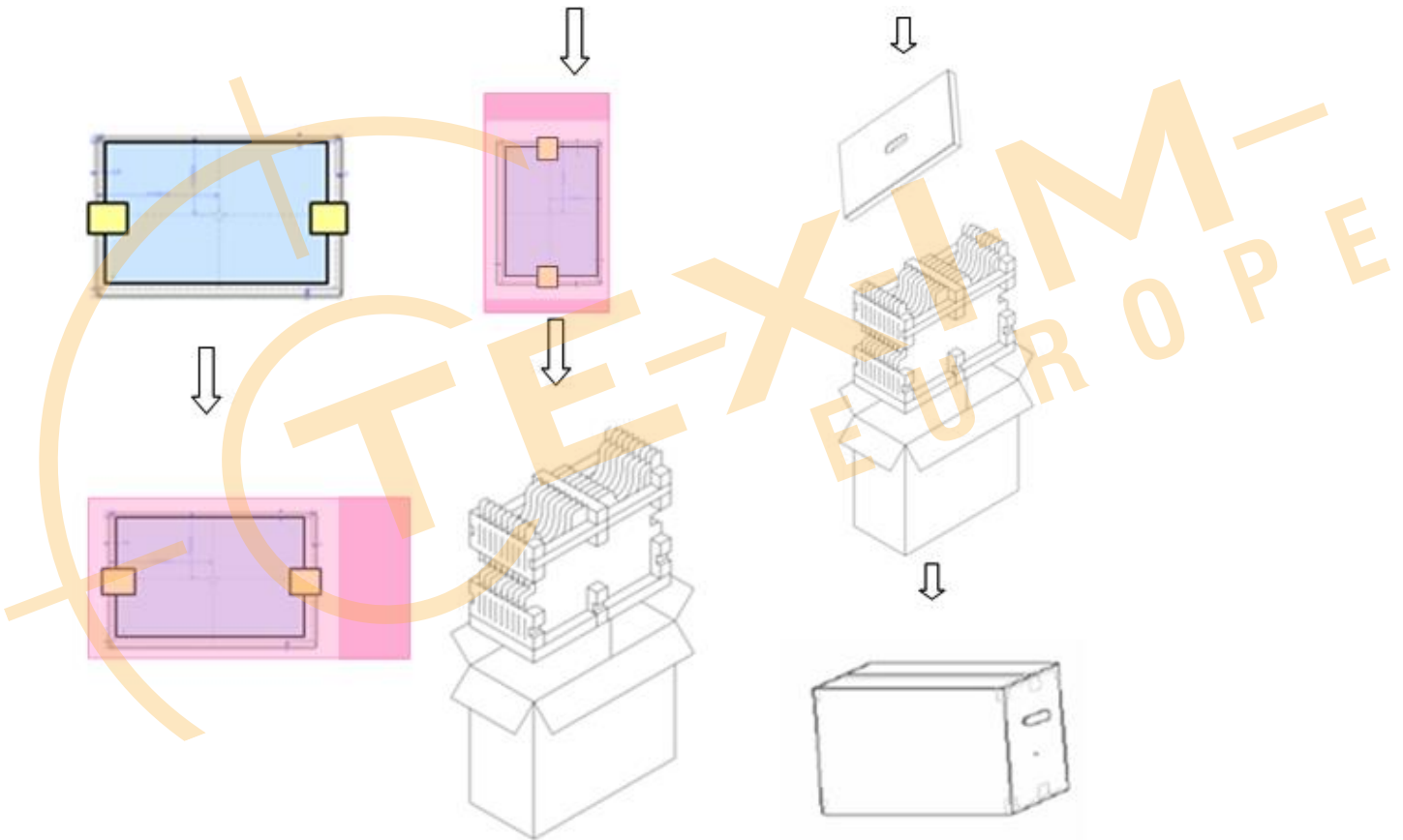


## 9. Label and Packaging

### 9.1 Shipping Label (on the rear side of TFT-LCD display)



### 9.2 Carton/Pallet Package



Max capacity : 44 TFT-LCD module per carton

Outside dimension of carton: 450\*375\*320mm

Pallet size : 1150 mm \* 910 mm \* 132mm

入库堆栈层数: 4层

Box stacked

Module by air : (2 \*3) \*4 layers , one pallet put 24 boxes , total 1056pcs module

Module by sea : One pallet (2 \*3) \*4 layers + One pallet (2 \*3) \*1 layers , total 1320pcs module

Module by sea\_HQ : One pallet (2 \*3) \*4 layers + One pallet (2 \*3) \*2 layers, Total 1584pcs module



## 10 Safety

### 10.1 Sharp Edge Requirements

There will be no sharp edges or comers on the display assembly that could cause injury.

### 10.2 Materials

#### 10.2.1 Toxicity

There will be no carcinogenic materials used anywhere in the display module. If toxic materials are used, they will be reviewed and approved by the responsible AUO toxicologist.

#### 10.2.2 Flammability

All components including electrical components that do not meet the flammability grade UL94-V1 in the module will complete the flammability rating exception approval process.

The printed circuit board will be made from material rated 94-V1 or better. The actual UL flammability rating will be printed on the printed circuit board.

### 10.3 Capacitors

If any polarized capacitors are used in the display assembly, provisions will be made to keep them from being inserted backwards.

### 10.4 National Test Lab Requirement

The display module will satisfy all requirements for compliance to:

UL 60950-1 second edition

U.S.A. Information Technology Equipment

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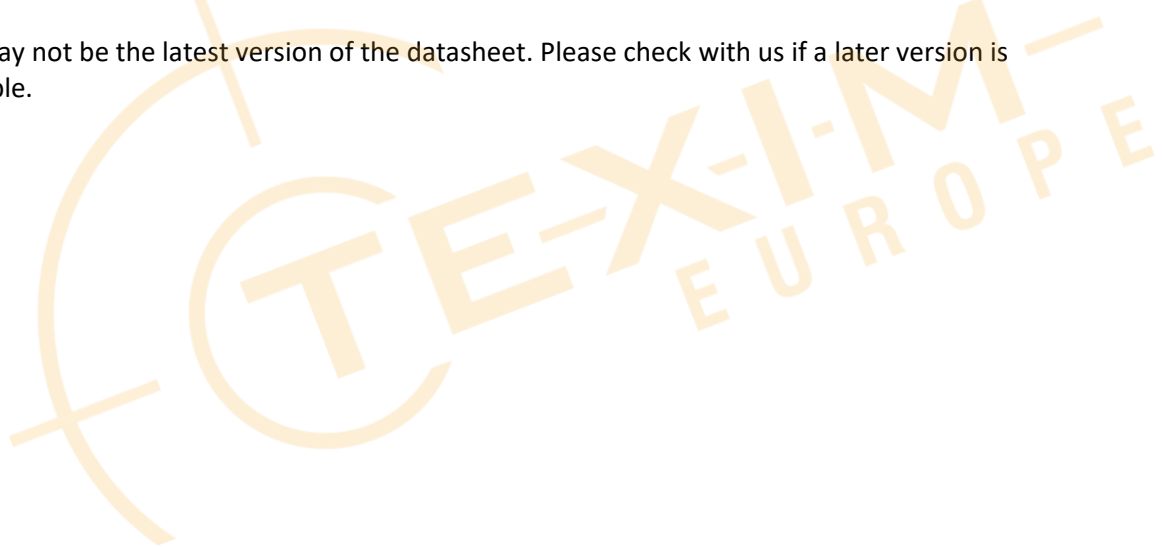
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