

|  |           |          |             |
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# Product Specification

**TP15MC01F**

CONFIDENTIAL

|  |                  |          |             |
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## 1. Features

|                    |                               |
|--------------------|-------------------------------|
| Display Format     | : 128(W) x RGB x 64(H) dots   |
| Display Color      | : 65K(5:6:5) Colors           |
| Driver Element     | : Transparent PMOLED          |
| Control (Drive) IC | : LD7138 (Manufacturer : LDT) |
| Interface          | : Serial Interface(SPI)       |
| Power supply       | : 16V(VCC)/2.8V(VDD) Typ.     |
| Polarizer          | : Without Polarizer           |

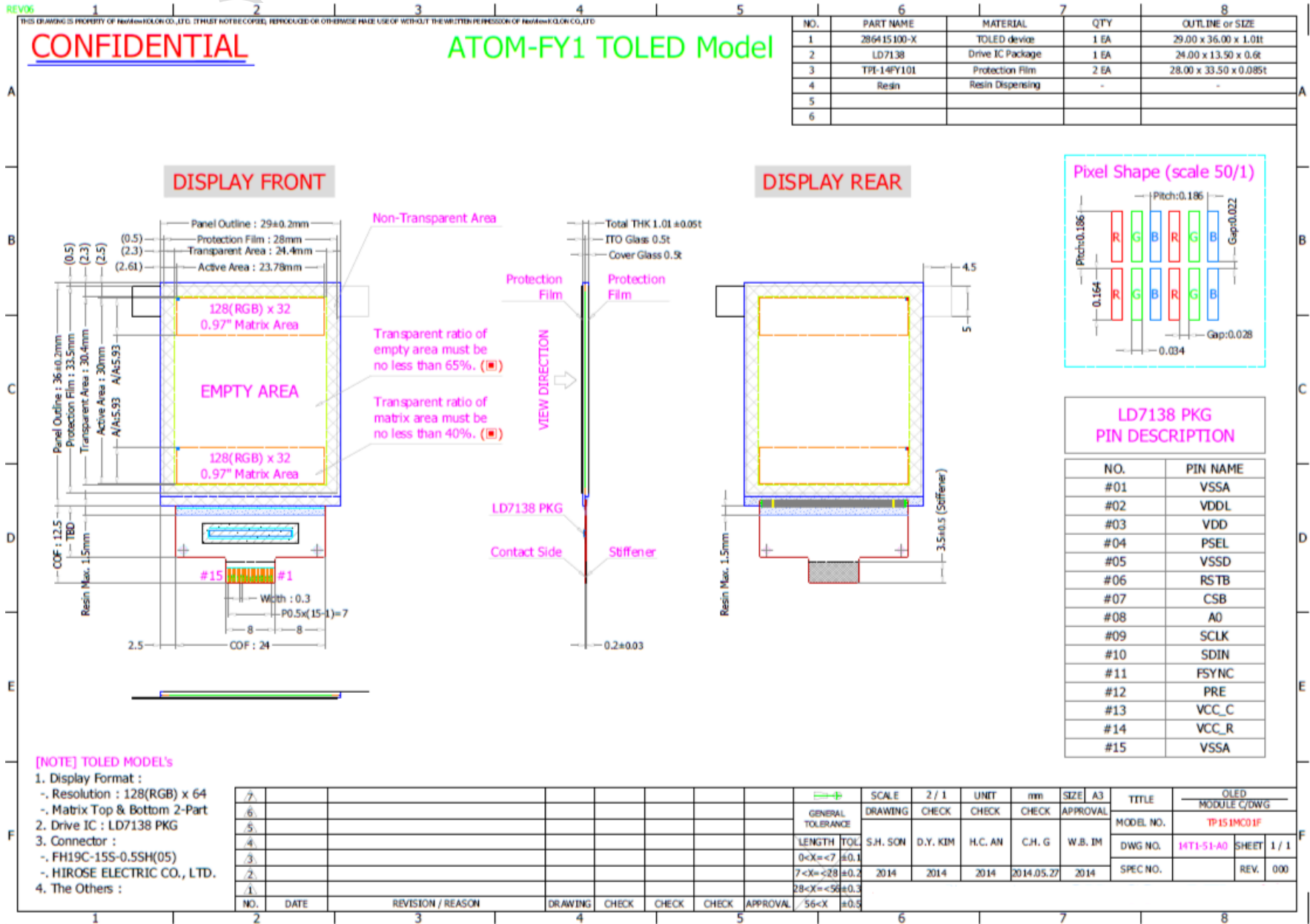
## 2. Mechanical Data

| Item              | Specification                | Unit | Note |
|-------------------|------------------------------|------|------|
| Number of Dots    | 128(W) x RGB x 64(H)         | dot  |      |
| Outline Dimension | 29(W) x 48.5(H) x 1.01(T)    | mm   | (1)  |
| Panel Outline     | 29(W) x 36(H) x 1.01(T)      | mm   |      |
| Transparent Area  | 24.4(W) x 30.4(H)            | mm   |      |
| Active Area       | 23.78(W) x 5.93(H) x 2 parts | mm   |      |
| Pixel Pitch       | 0.186(W) x 0.186(H)          | mm   |      |
| Dot Pitch         | 0.062(W) x 0.186(H)          | mm   |      |
| Dot Size          | 0.034(W) x 0.164(H)          | mm   |      |
| Weight            | 2.6                          | g    |      |

Note 1) COF Unfolded

Refer to the Outline Dimension at the page

14. Outline Dimension



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### 3. Absolute Maximum Ratings

(Ta =23±5℃, VCC=16V, VDD=2.8V, VSS=GND=0V)

| Item                    | Symbol | Min. | Max.    | Unit | Note |
|-------------------------|--------|------|---------|------|------|
| Logic & Interface Power | VDD    | -0.3 | 3.6     | V    | (1)  |
| OLED Power              | VCC    | -0.3 | 20      | V    | (1)  |
| Input Voltage           | VIN    | -0.3 | VDD+0.3 | V    |      |
| Operating Temp.         | Topr   | -20  | 70      | ℃    |      |
| Storage Temp.           | Tstg   | -30  | 80      | ℃    |      |
| Humidity                |        |      | 90      | %RH  | (2)  |

Note 1) Voltage relationship VCC > VDD > VSS must always be satisfied.

Note 2) Wet bulb temperature should be 29℃ max. and no condensation of water.

### 4. Electrical Characteristics

(Ta =23±5℃, VCC=16V, VDD=2.8V, VSS=GND=0V)

| Item                    |       | Symbol    | Min.    | Typ. | Max.    | Unit | Note   |
|-------------------------|-------|-----------|---------|------|---------|------|--------|
| Logic & Interface Power |       | VDD       | 2.6     | 2.8  | 3.0     | V    |        |
| OLED Power Supply       |       | VCC       | 15.5    | 16.0 | 16.5    | V    |        |
| Input Voltage           | High  | VIH       | 0.8*VDD | –    | VDD     | V    |        |
|                         | Low   | VIL       | VSS     | –    | 0.2*VDD | V    |        |
| Current Consumption     | Logic | IDD       | –       | 0.7  | –       | mA   | (3)(4) |
|                         | OLED  | ICC(100%) | –       | 13   | –       | mA   | (3)(4) |

Note 3) VDD=2.8V, VCC=16V, 150[cd/m<sup>2</sup>]

Note 4) Measurement Condition : 100% Lighting rate (128 x 64 pixels)

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## 5. Electro-optical Characteristics

(Ta =23±5℃, VCC=16V, VDD=2.8V, VSS=GND=0V)

| Item                         |       | Symbol | Min.  | Typ.  | Max.  | Unit  | Note         |
|------------------------------|-------|--------|-------|-------|-------|-------|--------------|
| Luminance                    | White | Lw     | 120   | 150   | –     | cd/m2 | (1)(2)(4)    |
| Color Chromaticity (CIE1931) | White | CIEWx  | 0.250 | 0.300 | 0.350 |       | (1)(2)(4)    |
|                              |       | CIEWy  | 0.300 | 0.350 | 0.400 |       | (1)(2)(4)    |
|                              | Red   | CIERx  | 0.615 | 0.665 | 0.715 |       | (1)(2)(4)    |
|                              |       | CIERy  | 0.278 | 0.328 | 0.378 |       | (1)(2)(4)    |
|                              | Green | CIEGx  | 0.244 | 0.294 | 0.344 |       | (1)(2)(4)    |
|                              |       | CIEGy  | 0.593 | 0.643 | 0.693 |       | (1)(2)(4)    |
|                              | Blue  | CIEBx  | 0.110 | 0.150 | 0.210 |       | (1)(2)(4)    |
|                              |       | CIEBy  | 0.192 | 0.242 | 0.292 |       | (1)(2)(4)    |
| Area in CIE Diagram          |       |        | 61    |       |       | %     | (1)(2)(4)    |
| Transmittance                |       | Matrix | 40    | –     | –     | %     | (5)          |
|                              |       | Empty  | 65    | –     | –     | %     | (5)          |
| Life Time                    | White | LFw    | –     | TBD   | –     | Hr    | (1)(2)(3)(4) |

Note 1) VDD=2.8V, VCC=16V, 150[cd/m<sup>2</sup>]

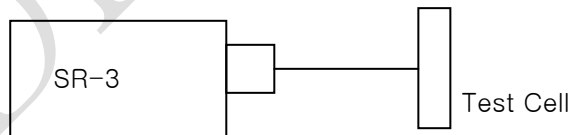
Note 2) Measurement Condition : 100% Lighting rate (128 x 64 pixels)

Note 3) Half value of initial luminance, 30% Display ON

Note 4) Measurement System

Measuring Instrument : SR-3

Environment : Inside a darkroom



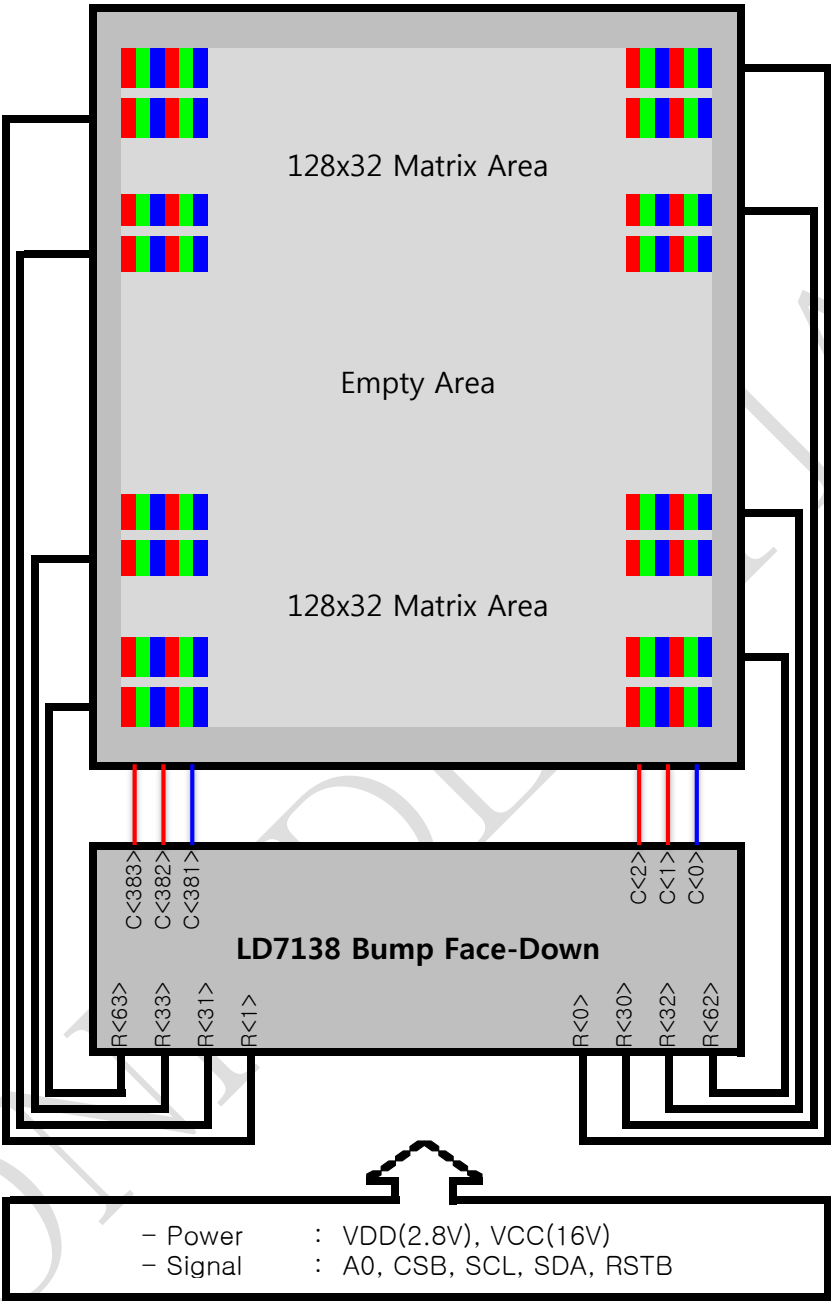
Note 5) Measurement System

Measuring Instrument : UV-1601PC(UV-Visible spectrophotometer)

Measuring Point : Maximum Peak of the Spectrum

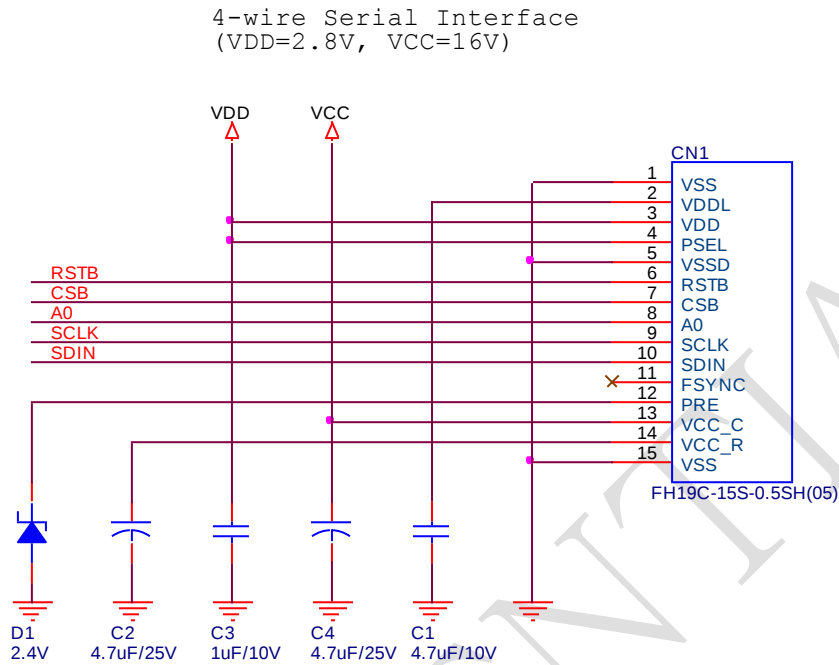
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6. Circuit Block Diagram



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7. Application Circuit



| Ref. No. | Part Description                 | Manufacturer |
|----------|----------------------------------|--------------|
| C1       | 4.7uF, 10V, MLCC                 | Any          |
| C2, C4   | 4.7uF, 25V, Tantal               | Any          |
| C3       | 1uF, 10V, MLCC                   | Any          |
| D1       | KDZ2.4EV-RTK/P(Zener Diode 2.4V) | Any          |
| CN1      | FH19C-15S-0.5SH(05)              | Hirose       |

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## 8. Pin Connections

Pin assignment for 4-wire Serial Interface

I: Input, I/O: Input/Output, P: Power pin

| Pin No. | Pin Name | Descriptions                                                                                                                                                                                                                                | Type |
|---------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1       | VSS      | Analog ground.                                                                                                                                                                                                                              | P    |
| 2       | VDDL     | Internal Logic Power. Capacitor is connected between VDDL and Ground.                                                                                                                                                                       | P    |
| 3       | VDD      | Interface Power & Analog Power                                                                                                                                                                                                              | P    |
| 4       | PSEL     | This pin enable/disable internal logic power regulator. When this pin is tied with VDD pin, it is the internal logic power regulator enabled.                                                                                               | I    |
| 5       | VSSD     | Logic GND                                                                                                                                                                                                                                   | P    |
| 6       | RSTB     | Reset (Active Low)                                                                                                                                                                                                                          | I    |
| 7       | CSB      | Chip Select (Active Low)                                                                                                                                                                                                                    | I    |
| 8       | A0       | Address ( L: Command, H: Parameter)                                                                                                                                                                                                         | I    |
| 9       | SCLK     | Serial clock input                                                                                                                                                                                                                          | I    |
| 10      | SDIN     | Serial data input                                                                                                                                                                                                                           | I    |
| 11      | FSYNC    | Frame Signal & Oscillator Clock output, Kept NC                                                                                                                                                                                             | O    |
| 12      | PRE      | Column Driver Pre-Charge Power for RGB.                                                                                                                                                                                                     | P    |
| 13      | VCC_C    | Column Driver Power                                                                                                                                                                                                                         | P    |
| 14      | VCC_R    | This pin is the power output pin of internal row power regulator. A 4.7uF capacitor is recommended to connect between VCC_R and GND. If Internal row power regulator is disabled, It must be connected to the external high voltage source. | P    |
| 15      | VSS      | Analog ground.                                                                                                                                                                                                                              | P    |

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## 9. Serial Interface Characteristics

### 9-1. Serial Interface

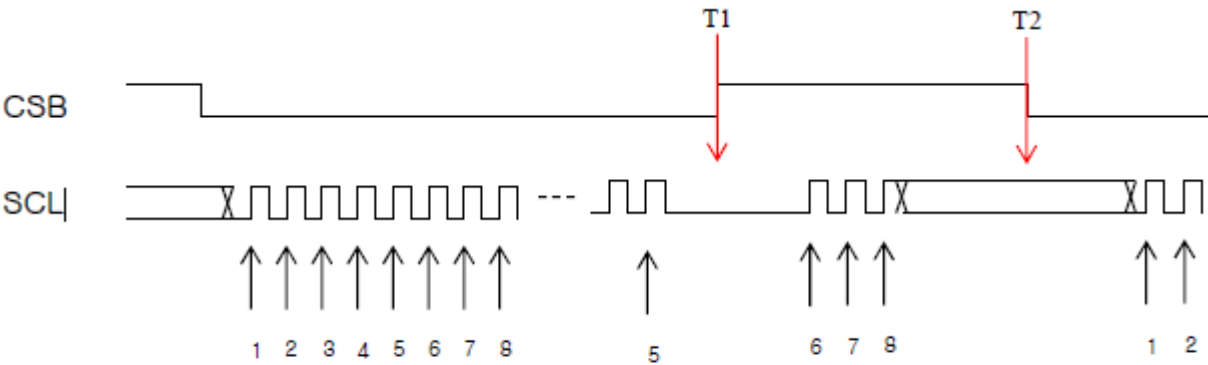
This IC's IF can be connected to SPI IF.

The high level of CSB signal clears the internal buffer of SDA and SCL Counter .

The 8th SCL fixes the address or data (parameter) according to A0 status.

### 9-2. Serial I/F User Guide

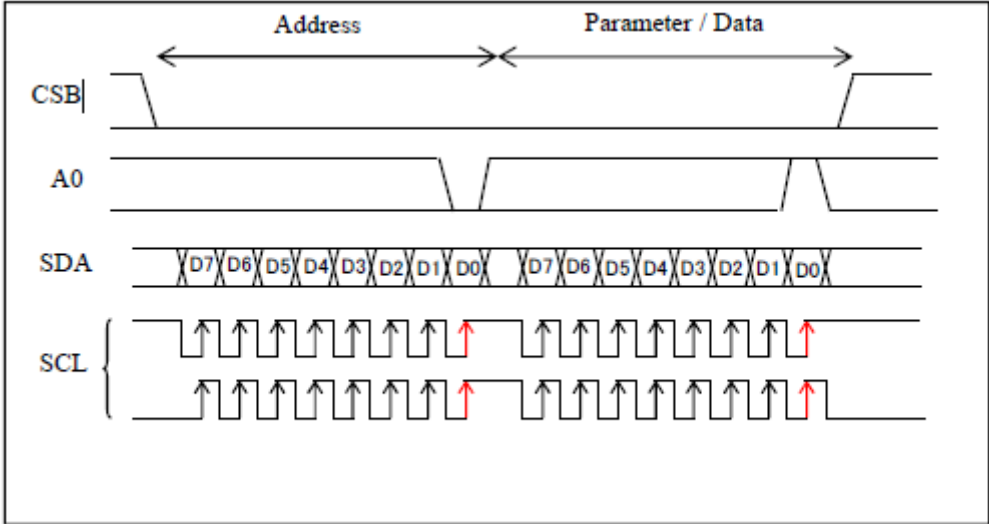
The condition of serial I/F initialization is that CSB should go from "Low" to "High".



Note1. At T1, Serial Shift Register and Serial Clock Counter are initialized.

Note2. From T1 to T2, inputted SCL is ignored.

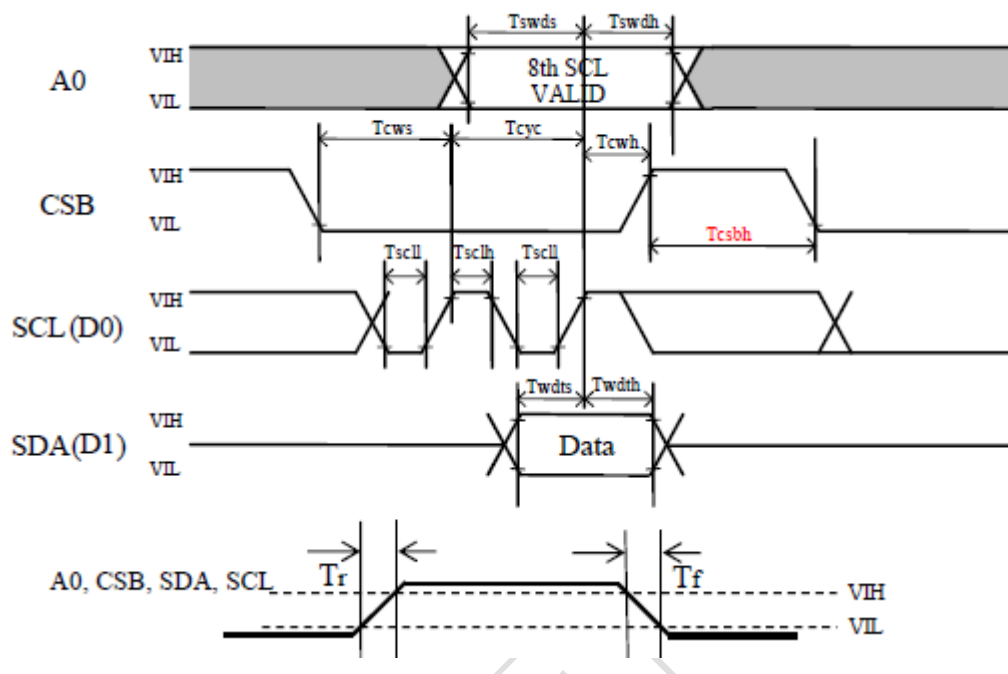
### 9-3. Write Sequence



- ◇ Notice
- All command inputs have a priority over previous commands.
  - To select Parallel/Serial Interface use PS Input. (H: Parallel L: Serial)
  - Serial clock (SCL) works in the unit of 8 clocks.

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#### 9-4. Write Timing



#### Writing Timing

(Ta = 25 °C, VSSA=VSSD=0V, VDD=2.8V, VCC\_C=VCC\_R=18V, R/G/BPRE=0V, CL=100pF)

| Parameter               | Symbol | Related Pins      | Specification |     | Unit |
|-------------------------|--------|-------------------|---------------|-----|------|
|                         |        |                   | MIN           | MAX |      |
| Write Cycle Time        | Tcyc   | SCL(D0)           | 100           | -   | ns   |
| Address Setup Time      | Tswds  | A0                | 65            |     | ns   |
| Address Hold Time       | Tswdh  | A0                | 35            |     | ns   |
| Select Setup Time       | Tcws   | CSB               | 65            |     | ns   |
| Select Hold Time        | Tcwh   | CSB               | 35            |     | ns   |
| SCL Low Pulse Width     | Tscll  | SCL(D0)           | 45            |     | ns   |
| Write High Pulse Width  | Tsclh  | SCL(D0)           | 45            |     | ns   |
| Select High Pulse Width | Tcsbh  | CSB               | 30            |     | ns   |
| Data Setup Time         | Twdts  | SDA(D1)           | 20            |     | ns   |
| Data Hold Time          | Twdth  | SDA(D1)           | 30            |     | ns   |
| Rising Time             | Tr     | A0, CSB, SDA, SCL | -             | 30  | ns   |
| Falling Time            | Tf     | A0, CSB, SDA, SCL | -             | 30  | ns   |

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## 10. Power and Sleep ON/OFF Sequence

### 10-1. Software Reset

Software Reset (SOFTRES(01h)) has auto-clear-function (within 200ns).

In the Software Reset condition, this IC's function is as follows:

- Display OFF
- Clock Oscillation Halt
- Register Writing is impossible (IF operation halt)
- Internal register (Except the Graphic Data) value is initialized.

### 10-2. Hardware Reset (RSTB)

This pad ignores the pulse shorter than 30ns.

In the Hardware Reset condition, this IC's function is as follows:

- Display OFF
- Clock Oscillation Halt
- Register Writing is impossible (IF operation halt)
- Internal register (Except the Graphic Data) value is initialized.

### 10-3. Software Sleep

Software Sleep function (DSTBYON/OFF (14h)) makes this IC shift to sleep condition. In the Software Sleep Condition, all display functions are halted and a clock oscillation is suspended, and power condition is going to the lowest. The default value of this register is "H" (active condition).

All of the internal state in the software sleep and the contents of the data memory are held.

In the Software Sleep condition, this IC's function is as follows:

- Display OFF
- Clock Oscillation Halt
- It is possible to write the Data Memory and the Register.

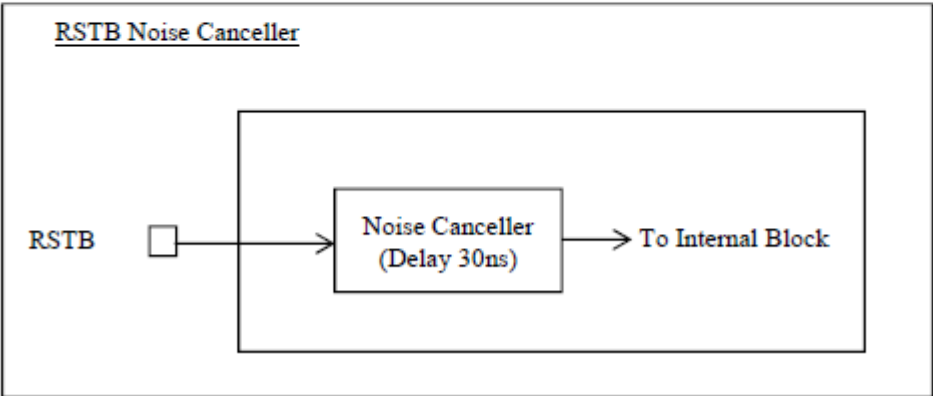
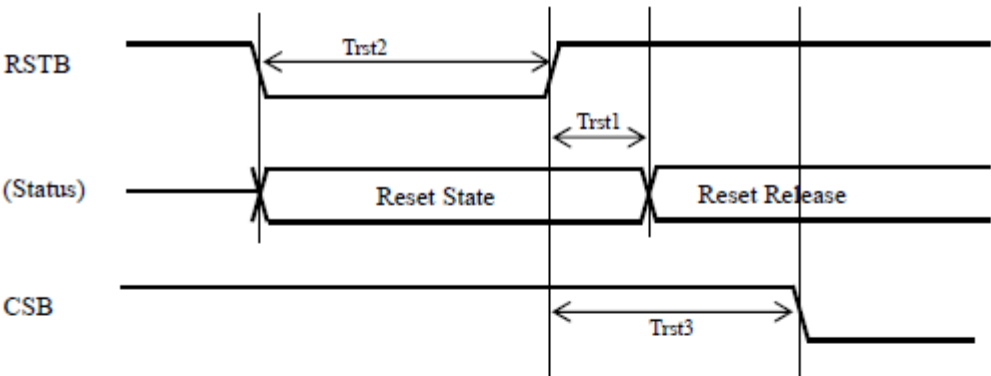
★ After Software Sleep, the register of DDISPON/OFF(02h) is cleared.

10-4. Reset Timing

(Ta = 25℃, VSSA=VSSD=0V, VDD=2.8V, VCC\_C=VCC\_R=18V, R/G/BPRE=0V, CL=100pF)

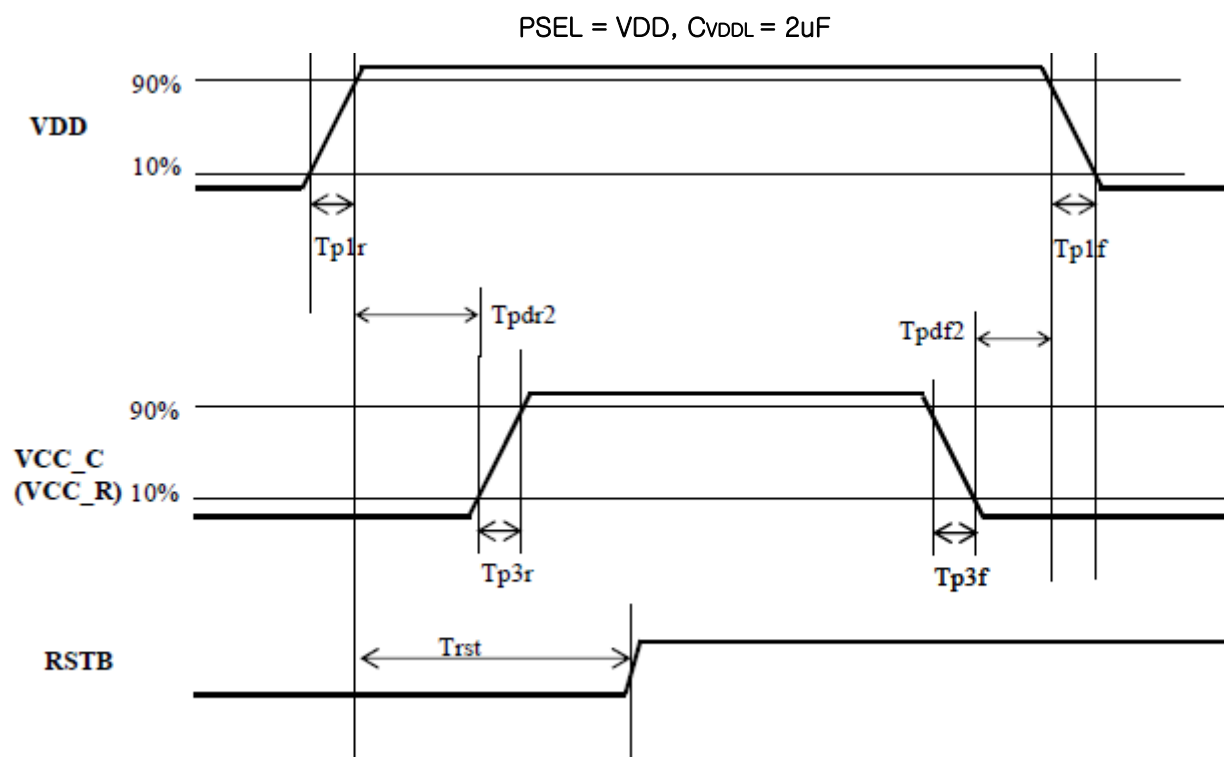
| Parameter                    | Symbol | Related Pins | Specification |     | Unit |
|------------------------------|--------|--------------|---------------|-----|------|
|                              |        |              | MIN           | MAX |      |
| The completion Time of Reset | Trst1  | RSTB         | 30 (Typ.)     |     | ns   |
| Reset Low Pulse Width        | Trst2  | RSTB         | 1000          |     | ns   |
| RSTB non-overlap to CSB      | Trst3  | RSTB, CSB    | 100           |     | ns   |

\* RSTB pad ignores typically the pulse width less than 30ns.



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#### 10-5. Power sequence



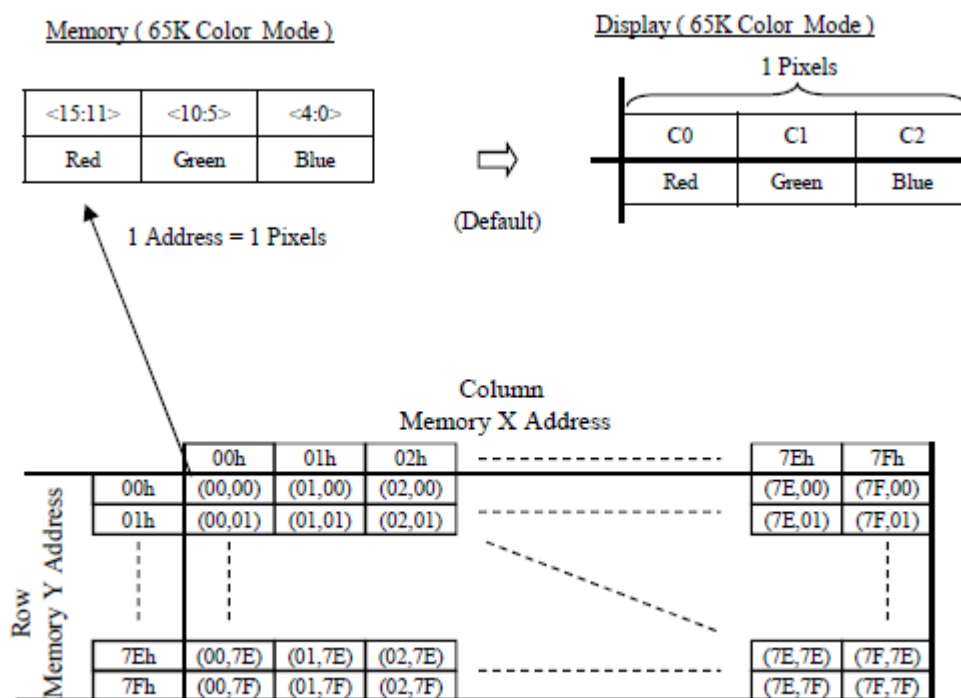
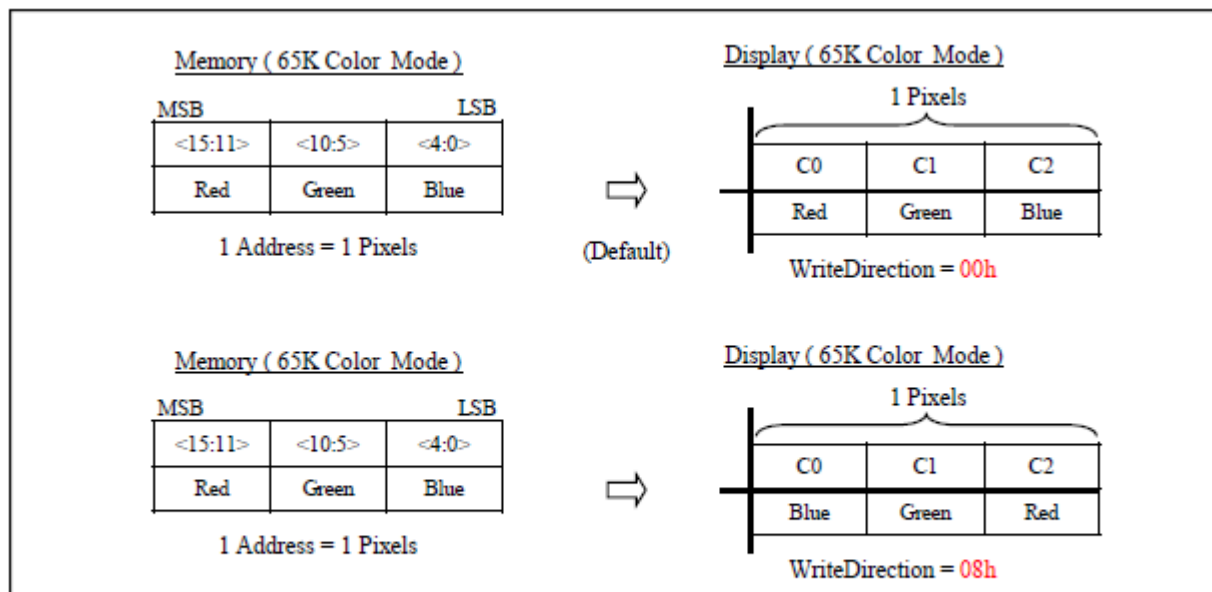
( $T_a = 25^\circ\text{C}$ ,  $V_{SSA} = V_{SSD} = 0\text{V}$ ,  $V_{DD} = 2.8\text{V}$ ,  $V_{CC\_C} = V_{CC\_R} = 18\text{V}$ ,  $R/G/BPRE = 0\text{V}$ ,  $C_L = 100\text{pF}$ )

| Parameter                                       | Symbol                 | Related Pins         | Specification |     |     | Unit |
|-------------------------------------------------|------------------------|----------------------|---------------|-----|-----|------|
|                                                 |                        |                      | MIN           | TYP | MAX |      |
| VDD On Slope<br>VDD Off Slope                   | $T_{p1r}$<br>$T_{p1f}$ | VDD                  | 0.2           | 1   | 5   | ms/V |
| VCC_C(VCC_R) On Slope<br>VCC_C(VCC_R) Off Slope | $T_{p3r}$<br>$T_{p3f}$ | VCC_C(VCC_R)         | 0.2           | 1   | 5   | ms/V |
| From VDD to<br>VCC_C(VCC_R) Delay               | $T_{pdr2}$             | VDD,<br>VCC_C(VCC_R) | 2             | -   | -   | ms   |
| From VCC_C(VCC_R)<br>to VDD Delay               | $T_{pdf2}$             | VDD,<br>VCC_C(VCC_R) | 2             | -   | -   | ms   |
| From VDD to H/W Reset<br>Release                | $T_{rst}$              | VDD,<br>RSTB         | 30            | -   | -   | ms   |

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## 11. DDRAM

### 11-1. Memory Map



|  |                  |          |             |
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## 12. Reliability

### 12-1. Test Items and Conditions

| Item                            | Test Condition                                                                                                                                               | Criteria for Pass/Fail |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| High Temp. Operation            | 70±2℃, 96hrs                                                                                                                                                 | (1)(2)                 |
| Low Temp. Operation             | -20±2℃, 96hrs                                                                                                                                                | (1)(2)                 |
| High Temp. Storage              | 80±2℃, 96hrs                                                                                                                                                 | (1)                    |
| Low Temp. Storage               | -30±2℃, 96hrs                                                                                                                                                | (1)                    |
| High Temp. & High Humi. Storage | 60±2℃, 90±2%RH, 96hrs                                                                                                                                        | (1)                    |
| Temperature Cycle               | 25℃(0.5h) → -20℃(3h) → 25℃(1h)<br>→ 60℃(3h) → 25℃(0.5h), 10 cycles                                                                                           | (1)                    |
| Thermal Shock                   | 25℃(5m) → -30℃(30m) → 25℃(5m)<br>→ 80℃(30m), 20 cycles                                                                                                       | (1)                    |
| Vibration Test                  | Acceleration : 1G vibrating frequency 10 to 55Hz one cycle 20 minute to direction for X,Y,Z(total 1.0hrs) and after removing vibration.(Non-operation state) | (1)                    |
| Shock Test (Drop Test)          | To be measured after dropping from 70cm high onto steel board of 15mm thick and from 3 direction X,Y,Z each one time.(Non-operation state)                   | (1)                    |

Note 1) After the above reliability test, the samples should be left under room temperature for 2 hours and then should be inspected for normal operation.

Note 2) The conditions for driving at operation tests shall be the same as indicated on the above description except for the temperature and humidity conditions.

### 12-2. Criteria for Reliability Test

- (1) There shall be no abnormality in the functions and the display.
- (2) No irregularities shall be found for the appearance and structure.
- (3) The luminance change should be within 50% of initial value (based on white)

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### 13. Quality Specifications

#### 13-1. Acceptance Quality Level (AQL)

| Inspection Item | Sampling Procedures                                                                                        | AQL  |
|-----------------|------------------------------------------------------------------------------------------------------------|------|
| Major           | KS Q ISO 2859-1 Sampling plans indexed by acceptable quality level(AQL) for lot-by-lot inspection level II | 0.65 |
| Minor           | KS Q ISO 2859-1 Sampling plans indexed by acceptable quality level(AQL) for lot-by-lot inspection level II | 1.5  |

(1) Major defect : Defects which influence display function or reliability issues.

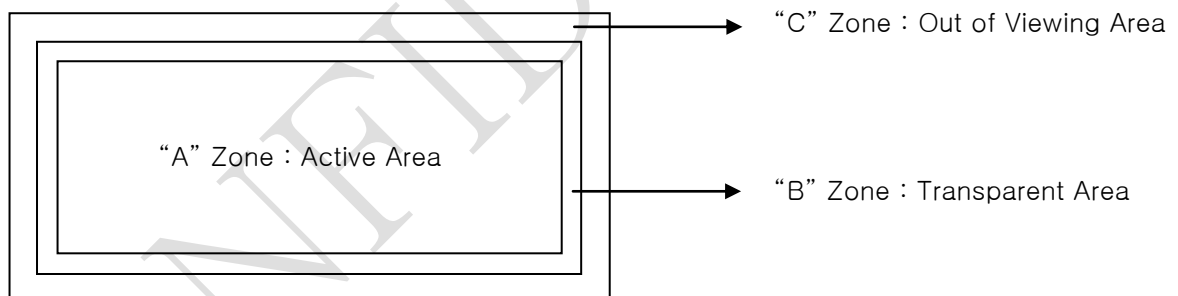
(2) Minor defect : Defects which satisfy all functions, but no impact to reliability issues.

#### 13-2. Inspection Conditions

The environmental conditions for inspection shall be as follows,

- Room Temperature :  $23 \pm 5^{\circ}\text{C}$
- Brightness : 300 ~ 500 [lux]
- Humidity :  $60 \pm 20\%\text{RH}$

#### 13-3. Definition of Area

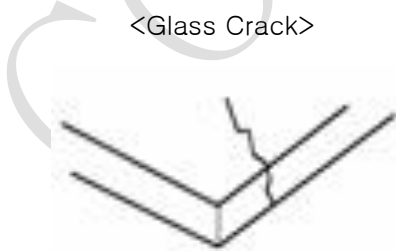


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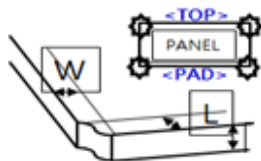
#### 13-4. Inspection Standards

| No | Items                         | Criteria of defects                            |            | Defect type |
|----|-------------------------------|------------------------------------------------|------------|-------------|
| 1  | No Display                    | To be zero                                     |            | Major       |
| 2  | Abnormal Operation            | To be zero                                     |            | Major       |
| 3  | Short                         | To be zero                                     |            | Major       |
| 4  | Open                          | To be zero                                     |            | Major       |
| 5  | Bright/Dark Spot (Display ON) | Size ( $\phi$ )                                | Acceptable | Minor       |
|    |                               | $\phi < 0.1$                                   | Ignore     |             |
|    |                               | $0.1 < \phi \leq 0.2$                          | 2          |             |
|    |                               | $0.2 < \phi$                                   | 0          |             |
| 6  | Glass Crack                   | To be zero                                     |            | Minor       |
| 7  | Glass Scratch                 | Size (mm)                                      | Acceptable | Minor       |
|    |                               | $W \leq 0.05, L : \text{ignore}$               | Ignore     |             |
|    |                               | $W \leq 0.10, L \leq 2.0$                      | 2          |             |
|    |                               | $0.1 < W$                                      | 0          |             |
| 8  | Broken Glass                  | Size (mm)                                      | Acceptable | Minor       |
|    |                               | Corner : $(W+L)/2 \leq 2.0$                    | Ignore     |             |
|    |                               | Top, Side : $L \leq 5.0, W \leq 1.0, Z \leq T$ | Ignore     |             |
|    |                               | PAD : $L \leq 3.0, W \leq 0.5, Z \leq T$       | Ignore     |             |

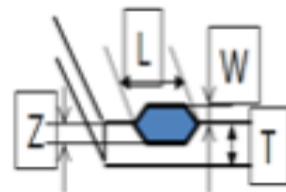
<Glass Crack>



<Broken (Corner)>



<Broken (Top, Side, Pad)>



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## 18. Example of LD7138 Initial Setting

### 18-1. LD7138 Initial Setting

| Command | Data   |        |        |        | Description     |
|---------|--------|--------|--------|--------|-----------------|
|         | 100nit | 150nit | 200nit | 250nit |                 |
| 0x01    |        |        |        |        | Software Reset  |
| 0x03    | 0x00   | 0x00   | 0x00   | 0x00   | Stand-by Off    |
| 0x04    | 0x04   | 0x04   | 0x04   | 0x04   | DFRAME          |
| 0x05    | 0x09   | 0x09   | 0x09   | 0x09   | Write Direction |
| 0x06    | 0x00   | 0x00   | 0x00   | 0x00   | Scan Direction  |
| 0x07    | 0x00   | 0x00   | 0x00   | 0x00   | Display Size    |
|         | 0x00   | 0x00   | 0x00   | 0x00   |                 |
|         | 0x07   | 0x07   | 0x07   | 0x07   |                 |
|         | 0x0F   | 0x0F   | 0x0F   | 0x0F   |                 |
|         | 0x00   | 0x00   | 0x00   | 0x00   |                 |
|         | 0x00   | 0x00   | 0x00   | 0x00   |                 |
|         | 0x03   | 0x03   | 0x03   | 0x03   |                 |
|         | 0x0F   | 0x0F   | 0x0F   | 0x0F   |                 |
| 0x08    | 0x01   | 0x01   | 0x01   | 0x01   | IF_BUS_SEL      |
| 0x09    | 0x07   | 0x07   | 0x07   | 0x07   | Data Masking    |
| 0x0A    | 0x00   | 0x00   | 0x00   | 0x00   | MBoxSize        |
|         | 0x00   | 0x00   | 0x00   | 0x00   |                 |
|         | 0x07   | 0x07   | 0x07   | 0x07   |                 |
|         | 0x0F   | 0x0F   | 0x0F   | 0x0F   |                 |
|         | 0x00   | 0x00   | 0x00   | 0x00   |                 |
|         | 0x00   | 0x00   | 0x00   | 0x00   |                 |
|         | 0x03   | 0x03   | 0x03   | 0x03   |                 |
|         | 0x0F   | 0x0F   | 0x0F   | 0x0F   |                 |
| 0x0B    | 0x00   | 0x00   | 0x00   | 0x00   | Display Start   |
|         | 0x00   | 0x00   | 0x00   | 0x00   |                 |
|         | 0x00   | 0x00   | 0x00   | 0x00   |                 |
|         | 0x00   | 0x00   | 0x00   | 0x00   |                 |
| 0x0E    | 0x01   | 0x02   | 0x03   | 0x04   | DotCurrent      |
|         | 0x09   | 0x03   | 0x02   | 0x03   |                 |
|         | 0x00   | 0x01   | 0x01   | 0x01   |                 |
|         | 0x0D   | 0x02   | 0x09   | 0x0F   |                 |
|         | 0x01   | 0x01   | 0x02   | 0x04   |                 |
|         | 0x03   | 0x0C   | 0x0A   | 0x05   |                 |
| 0x0F    | 0x00   | 0x00   | 0x00   | 0x00   | PeakCurrent     |
|         | 0x00   | 0x00   | 0x00   | 0x00   |                 |
|         | 0x00   | 0x00   | 0x00   | 0x00   |                 |
| 0x10    | 0x01   | 0x01   | 0x01   | 0x01   | SCLK            |
| 0x1C    | 0x01   | 0x01   | 0x01   | 0x01   | PreC_Width      |
| 0x1D    | 0x01   | 0x01   | 0x01   | 0x01   | PeakWidth       |
|         | 0x01   | 0x01   | 0x01   | 0x01   |                 |
|         | 0x01   | 0x01   | 0x01   | 0x01   |                 |
| 0x1E    | 0x00   | 0x00   | 0x00   | 0x00   | PeakDelay       |
| 0x1F    | 0x00   | 0x00   | 0x00   | 0x00   | Row_Scan        |
| 0x30    | 0x10   | 0x10   | 0x10   | 0x10   | VCC_R_SEL       |
| 0x34    | 0x00   | 0x00   | 0x00   | 0x00   | RGB_MODE        |
| 0x02    |        |        |        |        | Display On      |

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void OLED\_SetInitCode() // 150cd/m2

```
{  
    Command(0x01);  
  
    Command(0x04);  
    Parameter(0x04);  
  
    Command(0x05);  
    Parameter(0x09);  
  
    Command(0x06);  
    Parameter(0x00);  
  
    Command(0x07);  
    Parameter(0x00);  
    Parameter(0x00);  
    Parameter(0x07);  
    Parameter(0x0F);  
    Parameter(0x00);  
    Parameter(0x00);  
    Parameter(0x03);  
    Parameter(0x0F);  
  
    Command(0x08);  
    Parameter(0x01);  
  
    Command(0x09);  
    Parameter(0x07);  
  
    Command(0x0A);  
    Parameter(0x00);  
    Parameter(0x00);  
    Parameter(0x07);  
    Parameter(0x0F);  
    Parameter(0x00);  
    Parameter(0x00);  
    Parameter(0x03);
```

|  |                  |          |             |
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Parameter(0x0F);

Command(0x0B);

Parameter(0x00);

Parameter(0x00);

Parameter(0x00);

Parameter(0x00);

Command(0x0E);

Parameter(0x02);

Parameter(0x03);

Parameter(0x01);

Parameter(0x02);

Parameter(0x01);

Parameter(0x0C);

Command(0x0F);

Parameter(0x00);

Parameter(0x00);

Parameter(0x00);

Command(0x10);

Parameter(0x01);

Command(0x1C);

Parameter(0x01);

Command(0x1D);

Parameter(0x01);

Parameter(0x01);

Parameter(0x01);

Command(0x1E);

Parameter(0x00);

Command(0x1F);

Parameter(0x00);

|  |           |          |             |
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Command(0x30);  
Parameter(0x10);

Command(0x34);  
Parameter(0x00);

Command(0x03);  
Parameter(0x00);

Command(0x02);  
Parameter(0x01);

}

void OLED\_Disp\_Draw() // ex) Full RED Draw

{

Int iX,iY;

Command(0x0C);

for ( iY = 0; iY < 128; iY++)

{

for( iX = 0; iX < 64; iX++)

{

Parameter( 0xF8);

Parameter( 0x00);

}

}

}