

# APPROVAL SHEET

Model No : T0350MTQN-01

Approval option : ☐ Specification

☐ Sample

■ Customer's Confirmation

|                     |
|---------------------|
| <b>Customer:</b>    |
| <b>Approved by:</b> |
| <b>Date:</b>        |
| <b>Note:</b>        |

■ Center Confirmed :

| Approved | Checked by | Made by |
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**Record of Revision**

| Rev | Issued Date | Description          | Editor   |
|-----|-------------|----------------------|----------|
| 1.0 | 2010-10-21  | Preliminary release. | Lei Peng |
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## 1. General Specifications

| Feature                    |                                | Spec                   |
|----------------------------|--------------------------------|------------------------|
| Display Spec.              | Size                           | 3.5inch                |
|                            | Resolution                     | 320(RGB) X 240         |
|                            | Interface                      | RGB                    |
|                            | Color Depth                    | 24bit                  |
|                            | Technology type                | a-Si                   |
|                            | Pixel pitch (mm)               | 0.219 x 0.219          |
|                            | Display colors                 | 16.7M Dithering        |
|                            | Pixel Configuration            | R.G.B. Vertical Stripe |
|                            | Display Mode                   | TM with Normally White |
|                            | Surface Treatment              | HC                     |
|                            | Gray Scale Inversion Direction | 6 CLOCK                |
| Mechanical Characteristics | LCM (W x H x D) (mm)           | 76.9*63.9*3.2          |
|                            | Active Area(mm)                | 70.08 x 52.56          |
|                            | With /Without TSP              | Without TSP            |
|                            | Weight (gram)                  | 29.3                   |
|                            | LED Numbers                    | 6 LEDs                 |

Note 1: Viewing direction for best image quality is different from TFT definition, there is a 180 degree shift.

Note 2: Requirements on Environmental Protection: RoHS

Note 3: LCM weight tolerance: +/- 5%

## 2. Input/Output Terminals

### 2.1 TFT LCD Panel

Matching connector of Hirose H23-45S-0.3SHW

| No | Symbol      | I/O/P | Description                    | Remarks  |
|----|-------------|-------|--------------------------------|----------|
| 1  | LED_Cathode | P     | LED_Cathode                    | Note2-1  |
| 2  | LED_Cathode | P     | LED_Cathode                    |          |
| 3  | LED_Anode   | P     | LED_Anode                      |          |
| 4  | LED_Anode   | P     | LED_Anode                      |          |
| 5  | NC          | -     | No Connect                     |          |
| 6  | NC          | -     | No Connect                     |          |
| 7  | NC          | -     | No Connect                     |          |
| 8  | RESET       | I     | Reset                          |          |
| 9  | SPENA       | I     | Serial port data enable signal |          |
| 10 | SPCK        | I     | SPI Serial Clock               |          |
| 11 | SPDA        | I/O   | SPI Serial Data Input/output   |          |
| 12 | D00         | I     | Data 00                        | Note 2-2 |
| 13 | D01         | I     | Data 01                        | Note 2-2 |
| 14 | D02         | I     | Data 02                        | Note 2-2 |
| 15 | D03         | I     | Data 03                        | Note 2-2 |
| 16 | D04         | I     | Data 04                        | Note 2-2 |
| 17 | D05         | I     | Data 05                        | Note 2-2 |
| 18 | D06         | I     | Data 06                        | Note 2-2 |
| 19 | D07         | I     | Data 07                        | Note 2-2 |
| 20 | D08         | I     | Data 08                        | Note 2-2 |
| 21 | D09         | I     | Data 09                        | Note 2-2 |
| 22 | D10         | I     | Data 10                        | Note 2-2 |
| 23 | D11         | I     | Data 11                        | Note 2-2 |
| 24 | D12         | I     | Data 12                        | Note 2-2 |
| 25 | D13         | I     | Data 13                        | Note 2-2 |
| 26 | D14         | I     | Data 14                        | Note 2-2 |
| 27 | D15         | I     | Data 15                        | Note 2-2 |
| 28 | D16         | I     | Data 16                        | Note 2-2 |

|    |       |   |                               |          |
|----|-------|---|-------------------------------|----------|
| 29 | D17   | I | Data 17                       | Note 2-2 |
| 30 | D18   | I | Data 18                       | Note 2-2 |
| 31 | D19   | I | Data 19                       | Note 2-2 |
| 32 | D20   | I | Data 20                       | Note 2-2 |
| 33 | D21   | I | Data 21                       | Note 2-2 |
| 34 | D22   | I | Data 22                       | Note 2-2 |
| 35 | D23   | I | Data 23                       | Note 2-2 |
| 36 | HSYNC | I | Horizontal Synchronous Signal |          |
| 37 | VSYNC | I | Vertical Synchronous Signal   |          |
| 38 | CLK   | I | Data Clock                    |          |
| 39 | NC    | - | No Connect                    |          |
| 40 | NC    | - | No Connect                    |          |
| 41 | VDD   | P | power supply (3.3V)           |          |
| 42 | VDD   | P | power supply (3.3V)           |          |
| 43 | NC    | - | No Connect                    |          |
| 44 | NC    | - | No Connect                    |          |
| 45 | NC    | - | No Connect                    |          |
| 46 | NC    | - | No Connect                    |          |
| 47 | NC    | - | No Connect                    |          |
| 48 | NC    | - | No Connect                    |          |
| 49 | NC    | - | No Connect                    |          |
| 50 | NC    | - | No Connect                    |          |
| 51 | NC    | - | No Connect                    |          |
| 52 | DEN   | I | Data enabling signal          |          |
| 53 | GND   | P | Ground                        |          |
| 54 | GND   | P | Ground                        |          |

Note2-1: I/O definition:

I---Input    O---Output    P----Power/Ground

Note2-2:

| Mode         | D(23:16) | D(15:08) | D(07:00) | HSYNC | VSYNC |
|--------------|----------|----------|----------|-------|-------|
| ITU-R BT 656 | D(23:16) | GND      | GND      | NC    | NC    |
| ITU-R BT 601 | D(23:16) | GND      | GND      | HSYNC | VSYNC |
| 8 Bit RGB    | D(23:16) | GND      | GND      | HSYNC | VSYNC |
| 24 Bit RGB   | R(7:0)   | G(7:0)   | B(7:0)   | HSYNC | VSYNC |

### 3 Absolute Maximum Ratings

#### 3.1 Driving TFT LCD Panel

Ta = 25°C

| Item                  | Symbol           | MIN  | MAX | Unit | Remark |
|-----------------------|------------------|------|-----|------|--------|
| Supply Voltage        | VDD              | -0.3 | 5.0 | V    |        |
| Operating Temperature | T <sub>OPR</sub> | -20  | 60  | °C   |        |
| Storage Temperature   | T <sub>STG</sub> | -30  | 70  | °C   |        |

### 4 Electrical Characteristics

#### 4.1 Driving TFT LCD Panel

GND=0V, Ta=25°C

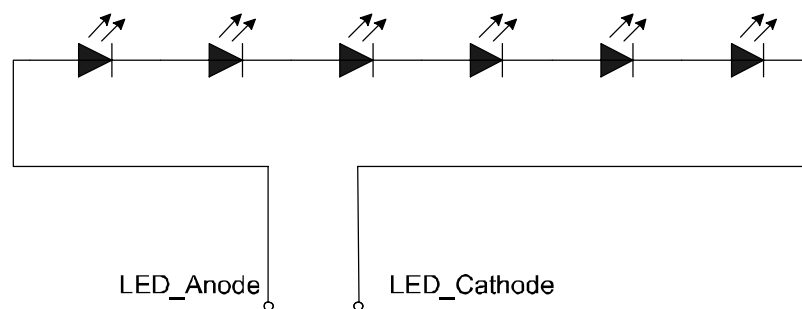
| Item                             | Symbol           | MIN             | TYP      | MAX | Unit     | Remark |
|----------------------------------|------------------|-----------------|----------|-----|----------|--------|
| Supply Voltage                   | VDD              | 3.0             | 3.3      | 3.6 | V        |        |
| Input Signal Voltage             | Low Level        | V <sub>IL</sub> | GND      | -   | 0.2* VDD | V      |
|                                  | High Level       | V <sub>IH</sub> | 0.8* VDD | -   | VDD      | V      |
| Output Signal Voltage            | Low Level        | V <sub>OL</sub> | GND      | -   | 0.2* VDD | V      |
|                                  | High Level       | V <sub>OH</sub> | 0.8* VDD | -   | VDD      | V      |
| (Panel+LSI)<br>Power Consumption | Black Mode(60HZ) | -               | TBD      | -   | mW       |        |
|                                  | Stand-by Mode    | -               | TBD      | -   | mW       |        |

#### 4.2 Driving Backlight

Ta=25°C

| Item                        | Symbol          | MIN | TYP | MAX | Unit | Remark |
|-----------------------------|-----------------|-----|-----|-----|------|--------|
| Forward Current             | I <sub>F</sub>  | --  | 20  | 25  | mA   |        |
| Forward Current Voltage     | V <sub>F</sub>  | 3.0 | 3.2 | 3.4 | V    |        |
| Backlight Power Consumption | W <sub>BL</sub> | --  | 384 | 510 | mW   |        |

Note 1: The figure below shows the connection of backlight LED.

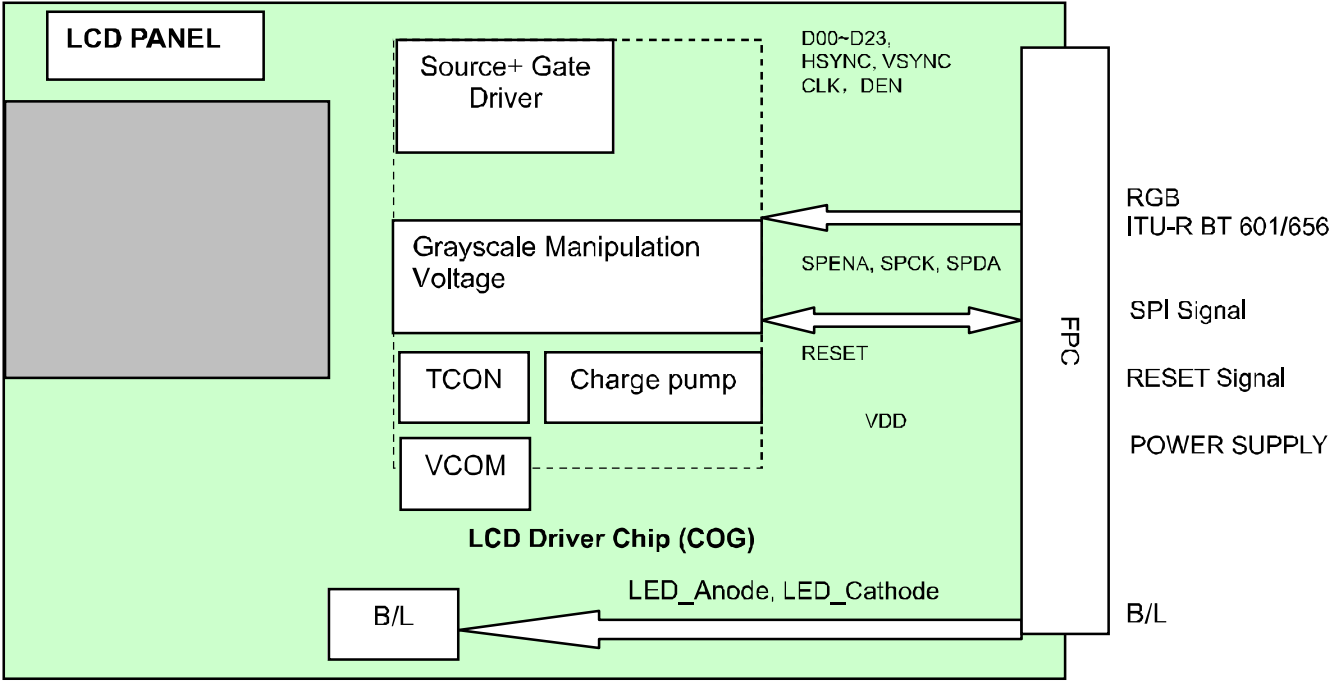


Note 2: One LED : I<sub>F</sub> =20 mA, V<sub>F</sub> =3.2V

Note 3: The minimal life of LED : 20,000 hours



4.3 Block Diagram

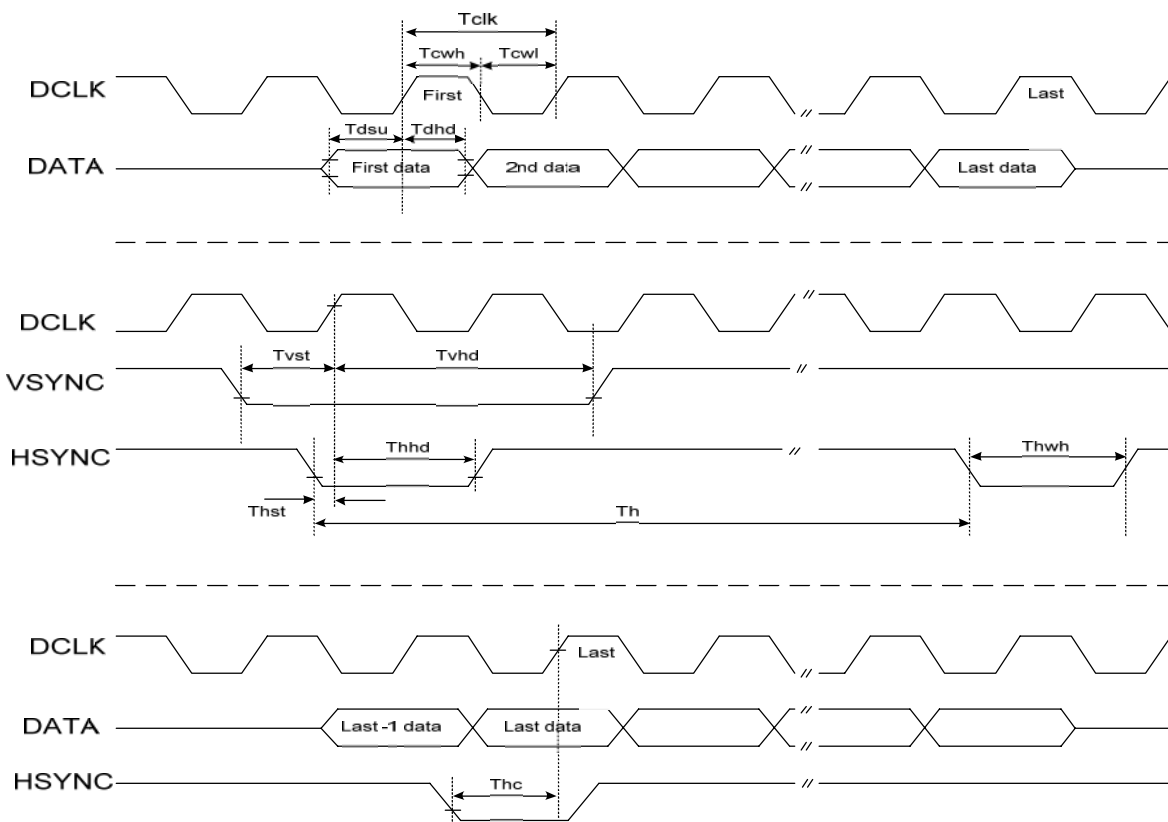


## 5 Timing Chart

### 5.1 Timing Parameter

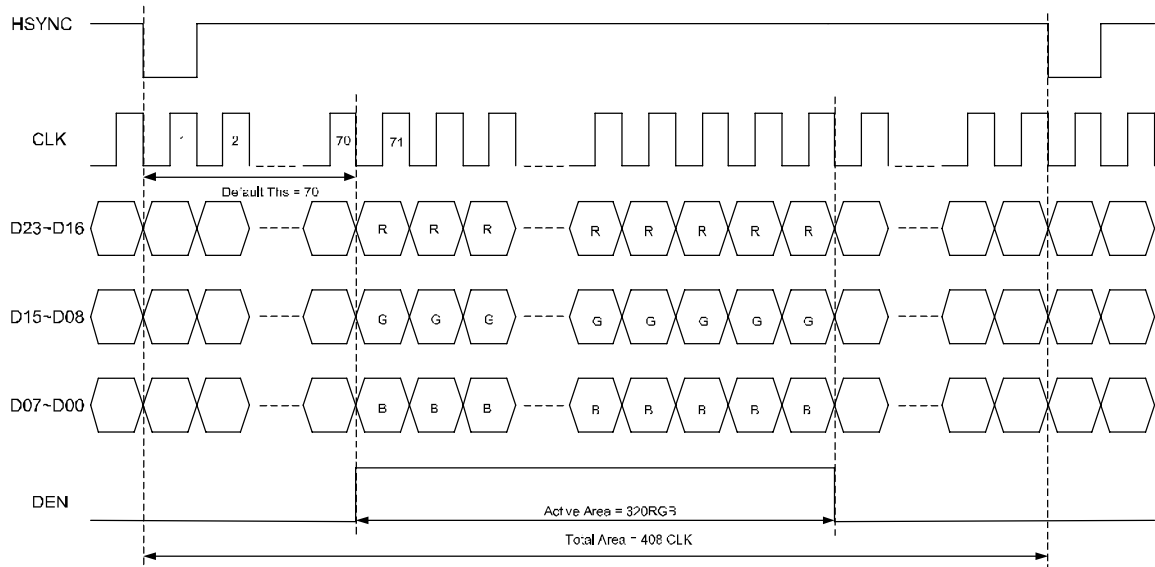
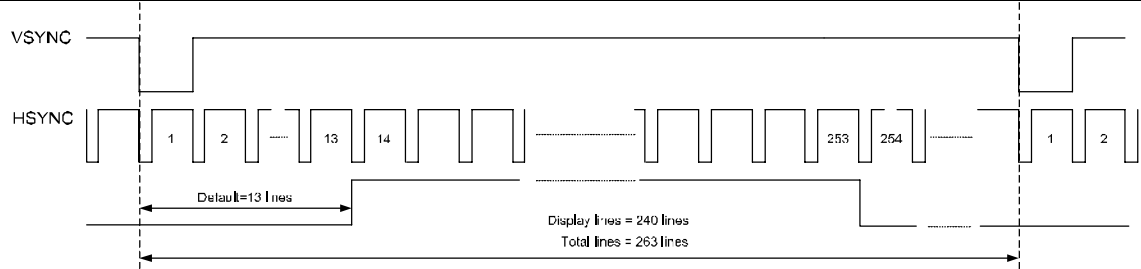
#### 5.1.1 AC Electrical Characteristics (VDD=3.3V, GND= 0V, Ta=25°C)

| Parameter         | Symbol | Min. | Typ.  | Max. | Unit | Conditions      |
|-------------------|--------|------|-------|------|------|-----------------|
| CLK clock time    | Tclk   | -    | -     | 35.7 | ns   | CLK=28MHz       |
| CLK pulse duty    | Tchw   | 40   | 50    | 60   | %    | Tclk            |
| HSYNC to CLK      | Thc    | -    | -     | 1    | CLK  |                 |
| HSYNC width       | Thwh   | 1    | -     | -    | CLK  |                 |
| VSYNC width       | Tvwh   | 1    | -     | -    | Th   |                 |
| HSYNC period time | Th     | 60   | 63.56 | 67   | us   |                 |
| VSYNC setup time  | Tvst   | 12   | -     | -    | ns   |                 |
| VSYNC hold time   | Tvhd   | 12   | -     | -    | ns   |                 |
| HSYNC setup time  | Thst   | 12   | -     | -    | ns   |                 |
| HSYNC hold time   | Thhd   | 12   | -     | -    | ns   |                 |
| Data set-up time  | Tdsu   | 12   | -     | -    | ns   | D[23:00] to CLK |
| Data hold time    | Tdhd   | 12   | -     | -    | ns   | D[23:00] to CLK |
| DEN setup time    | Tesd   | 12   | -     | -    | ns   | DEN to CLK      |



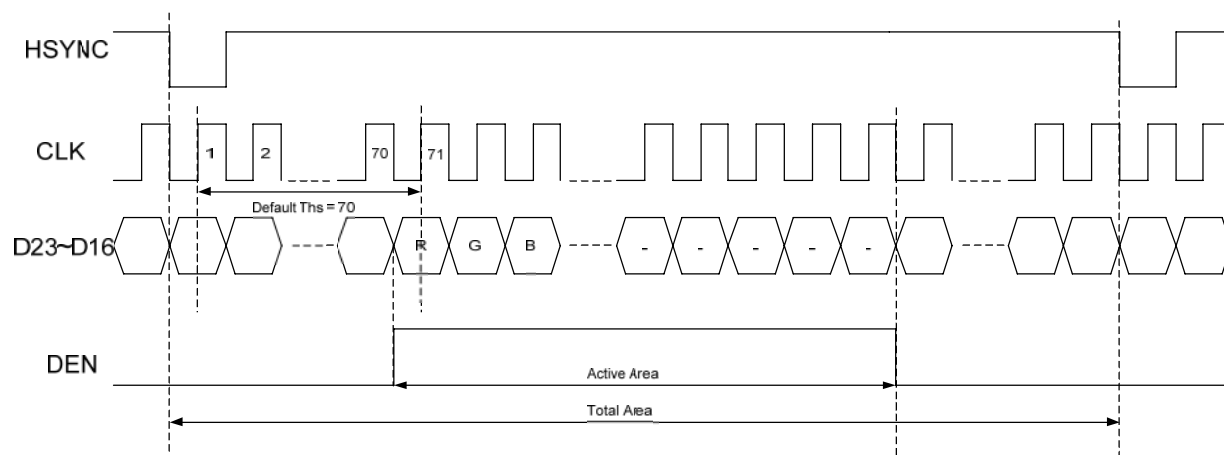
## 5.2 24 bit RGB mode for 320RGB x 240

| Parameter                                | Symbol | Min. | Typ. | Max. | Unit | Conditions   |
|------------------------------------------|--------|------|------|------|------|--------------|
| CLK frequency                            | Fclk   | -    | 6.4  | -    | MHz  | VDD=3.0~3.6V |
| CLK cycle time                           | Tclk   | -    | 156  | -    | ns   |              |
| Time that HSYNC to 1'st data input(NTSC) | Ths    | 40   | 70   | 255  | CLK  |              |



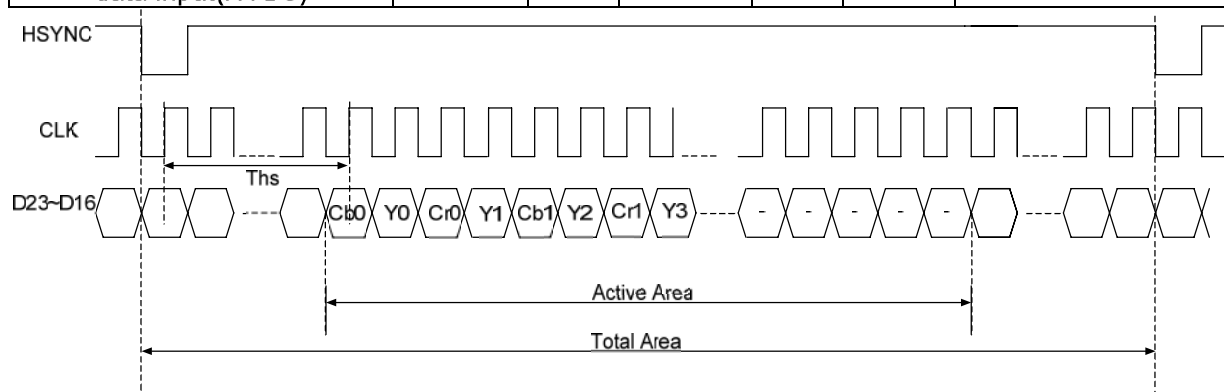
### 5.3 8 bit RGB mode for 320RGB x 240

| Parameter                                | Symbol          | Min. | Typ. | Max. | Unit | Conditions   |
|------------------------------------------|-----------------|------|------|------|------|--------------|
| CLK frequency                            | Fclk            | -    | 27   | -    | MHz  | VDD=3.0~3.6V |
| CLK cycle time                           | Tclk            | -    | 37   | -    | ns   |              |
| Time that HSYNC to 1'st data input(NTSC) | T <sub>hs</sub> | 35   | 70   | 255  | CLK  |              |



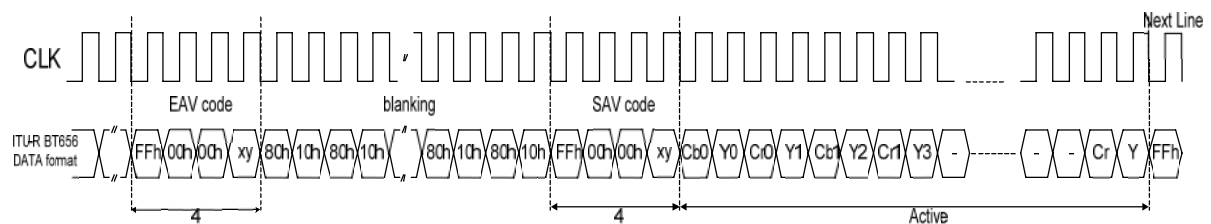
### 5.4 ITU-R BT 601

| Parameter                                | Symbol          | Min. | Typ.     | Max. | Unit | Conditions   |
|------------------------------------------|-----------------|------|----------|------|------|--------------|
| CLK frequency                            | Fclk            | -    | 24.54/27 | -    | MHz  | VDD=3.0~3.6V |
| CLK cycle time                           | Tclk            | -    | 40/37    | -    | ns   |              |
| Time that HSYNC to 1'st data input(PAL)  | T <sub>hs</sub> | 128  | 264      | -    | CLK  |              |
| Time that HSYNC to 1'st data input(NTSC) | T <sub>hs</sub> | 128  | 244      | -    | CLK  |              |



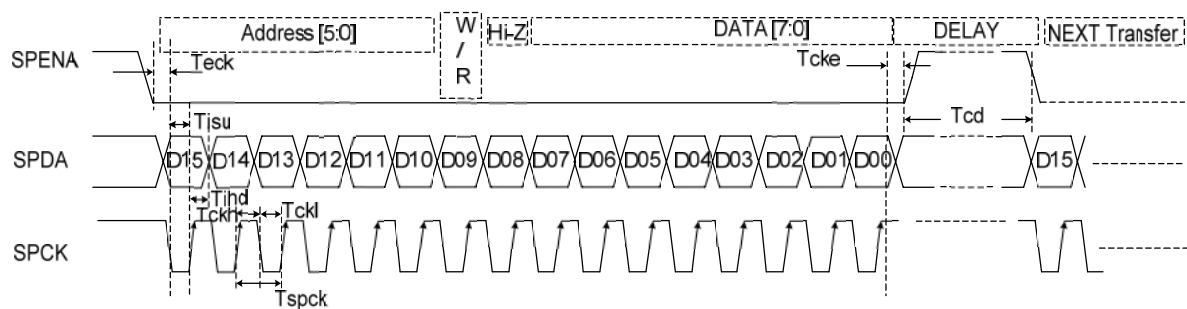
### 5.5 ITU-R BT 656

| Parameter                              | Symbol | Min. | Typ. | Max. | Unit | Conditions   |
|----------------------------------------|--------|------|------|------|------|--------------|
| CLK frequency                          | Fclk   | -    | 27   | -    | MHz  | VDD=3.0~3.6V |
| CLK cycle time                         | Tclk   | -    | 37   | -    | ns   |              |
| Time that EVA to 1'st data input(PAL)  | Ths    | 128  | 288  | -    | CLK  |              |
| Time that EVA to 1'st data input(NTSC) | Ths    | 128  | 276  | -    | CLK  |              |



### 5.6 3-wire serial communication AC timing

| Parameter               | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|-------------------------|--------|------|------|------|------|------------|
| Serial clock            | Tspck  | 320  | -    | -    | ns   |            |
| SPCK pulse duty         | Tscdut | 40   | 50   | 60   | %    |            |
| Serial data setup time  | Tisu   | 120  | -    | -    | ns   |            |
| Serial data hold time   | Tihd   | 120  | -    | -    | ns   |            |
| Serial clock high/low   | Tssw   | 120  | -    | -    | ns   |            |
| Chip select distinguish | Tcd    | 1    | -    | -    | us   |            |



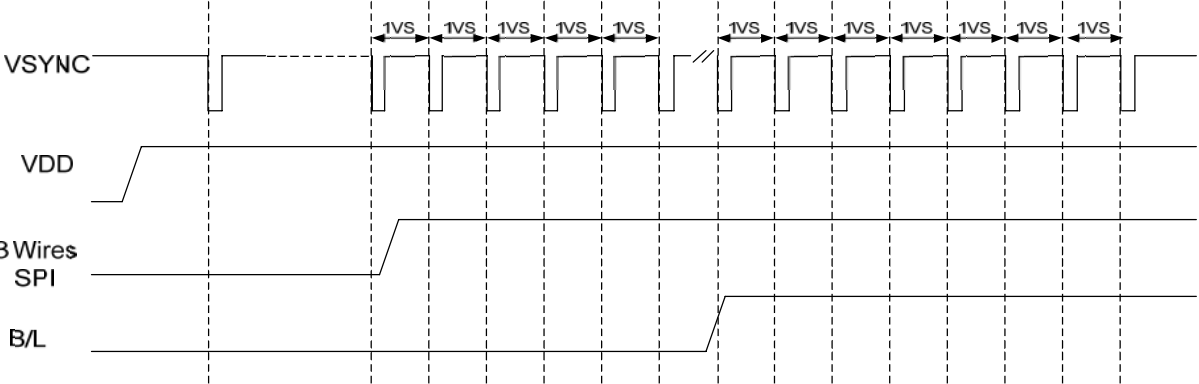
### 5.7 3-Wire Control Registers List

| 3-Wire Register |      | Register Description |     |                                               |
|-----------------|------|----------------------|-----|-----------------------------------------------|
| D[15:8]         | Name | Init                 | R/W | Function Description                          |
| 000000b         | R00  | 07h                  | R/W | System control register                       |
| 000001b         | R01  | 00h                  | R/W | Timing Controller function register           |
| 000010b         | R02  | 03h                  | R/W | Operation control register                    |
| 000011b         | R03  | CCh                  | R/W | Input data Format control register            |
| 000100b         | R04  | 46h                  | R/W | Source Timing delay control register          |
| 000101b         | R05  | 0Dh                  | R/W | Gate Timing delay control register            |
| 000110b         | R06  | 00h                  | R/W | Reserved                                      |
| 000111b         | R07  | 00h                  | R/W | Internal function control register            |
| 001000b         | R08  | 08h                  | R/W | RGB Contrast control register                 |
| 001001b         | R09  | 40h                  | R/W | RGB Brightness control register               |
| 001010b         | R0A  | 88h                  | R/W | Hue / Saturation control register             |
| 001011b         | R0B  | 88h                  | R/W | R / B Sub-Contrast control register           |
| 001100b         | R0C  | 20h                  | R/W | R Sub-Brightness control register             |
| 001101b         | R0D  | 20h                  | R/W | B Sub-Brightness control register             |
| 001110b         | R0E  | 68h                  | R/W | VCOMDC Level Control Register                 |
| 001111b         | R0F  | A4h                  | R/W | VCOMAC Level Control Register                 |
| 010000b         | R10  | 04h                  | R/W | VGAM2 level control register                  |
| 010001b         | R11  | 24h                  | R/W | VGAM3/4 level control register                |
| 010010b         | R12  | 24h                  | R/W | VGAM5/6 level control register                |
| 011110b         | R1E  | 00h                  | R/W | VCOMDC Trim function control register         |
| 100000b         | R20  | 00h                  | R/W | Wide and narrow display mode control register |

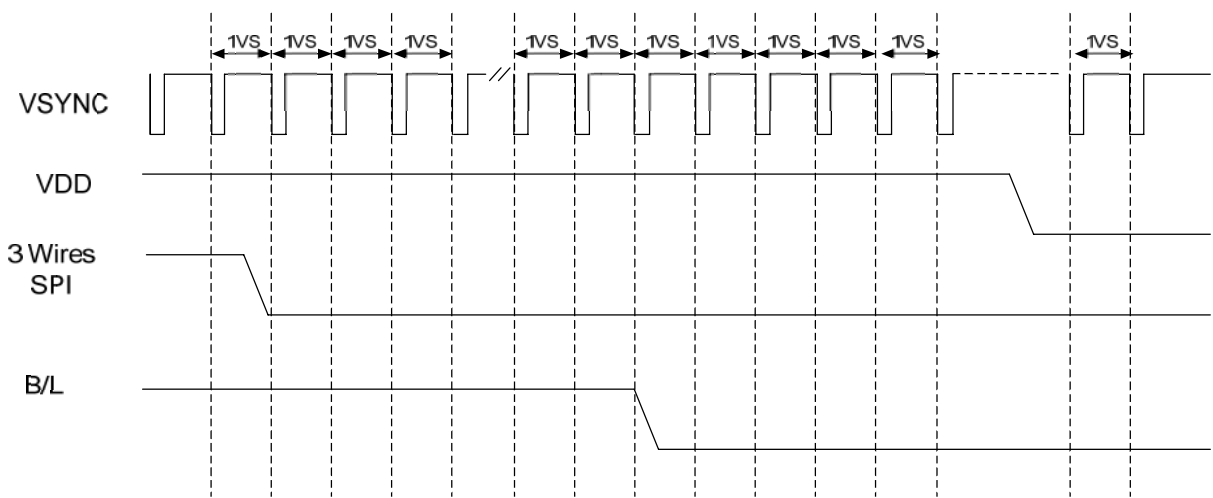
Note :

R03: c4h:ITU-R BT 656 Mode  
 c2h:ITU-R BT 601 Mode  
 c8h:8 bit RGB Mode(HV Mode)  
 c9h:8 bit RGB Mode(DE Mode)  
 cch(default):24 bit RGB Mode (HV mode)  
 cdh:24 bit RGB Mode (DE mode)

5.8 power on sequence



5.9 power off sequence



## 6 Optical Characteristics

### 6.1 Optical Specification

Ta=25°C

| Item           |       | Symbol           | Condition       | Min   | Typ.  | Max.  | Unit              | Remark          |
|----------------|-------|------------------|-----------------|-------|-------|-------|-------------------|-----------------|
| View Angles    |       | θT               | CR>10           | 30    | 40    | -     | Degree            | Note 2          |
|                |       | θB               |                 | 50    | 60    | -     |                   |                 |
|                |       | θL               |                 | 50    | 60    | -     |                   |                 |
|                |       | θR               |                 | 50    | 60    | -     |                   |                 |
| Contrast Ratio |       | CR               | θ=0°            | 200   | 350   | -     |                   | Note1<br>Note3  |
| Response Time  |       | T <sub>ON</sub>  | 25℃             | -     | 25    | 40    | ms                | Note1<br>Note4  |
|                |       | T <sub>OFF</sub> |                 |       |       |       |                   |                 |
| Chromaticity   | White | x                | Backlight is on | 0.260 | 0.310 | 0.360 |                   | Note5,<br>Note1 |
|                |       | y                |                 | 0.283 | 0.333 | 0.383 |                   |                 |
|                | RED   | x                |                 | 0.574 | 0.624 | 0.674 |                   |                 |
|                |       | y                |                 | 0.318 | 0.368 | 0.418 |                   |                 |
|                | GREEN | x                |                 | 0.300 | 0.350 | 0.400 |                   |                 |
|                |       | y                |                 | 0.500 | 0.550 | 0.600 |                   |                 |
|                | BLUE  | x                |                 | 0.093 | 0.143 | 0.193 |                   |                 |
|                |       | y                |                 | 0.069 | 0.119 | 0.169 |                   |                 |
| Uniformity     |       | U                |                 | 75    | 80    | -     | %                 | Note1<br>Note6  |
| NTSC           |       |                  |                 | -     | 50    | -     | %                 | Note 5          |
| Luminance      |       | L                |                 | 240   | 300   | -     | cd/m <sup>2</sup> | Note1<br>Note7  |

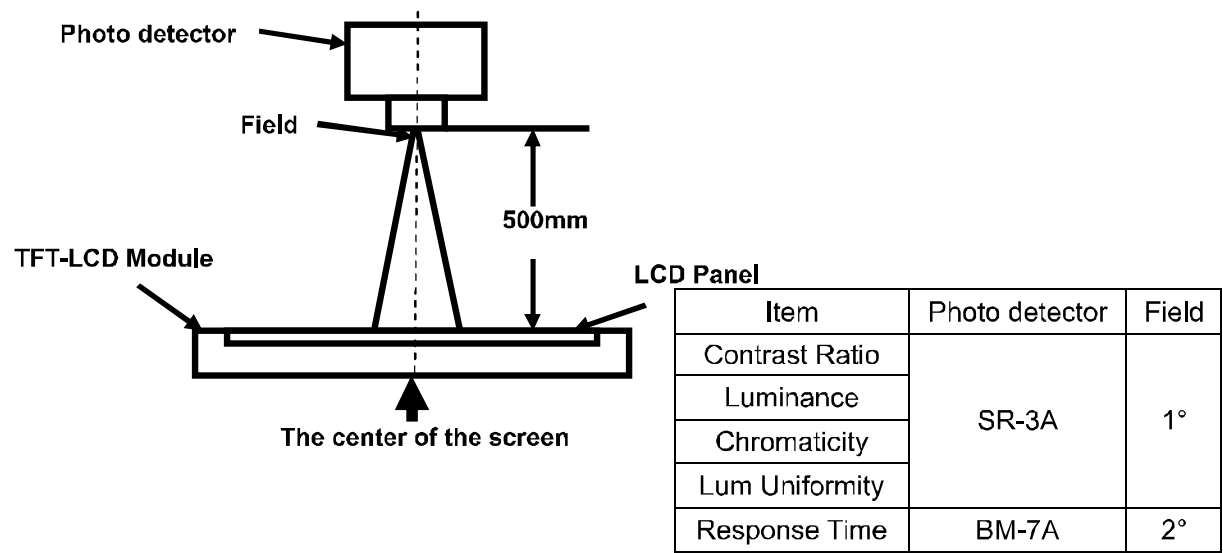
Test Conditions:

1.  $V_F = 3.2V$ ,  $I_F = 20mA$ (LED current), the ambient temperature is 25°C.
2. The test systems refer to Note 1 and Note2.



Note 1: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



Note 2: Definition of viewing angle range and measurement system.

viewing angle is measured at the center point of the LCD by CONOSCOPE(ergo-80).

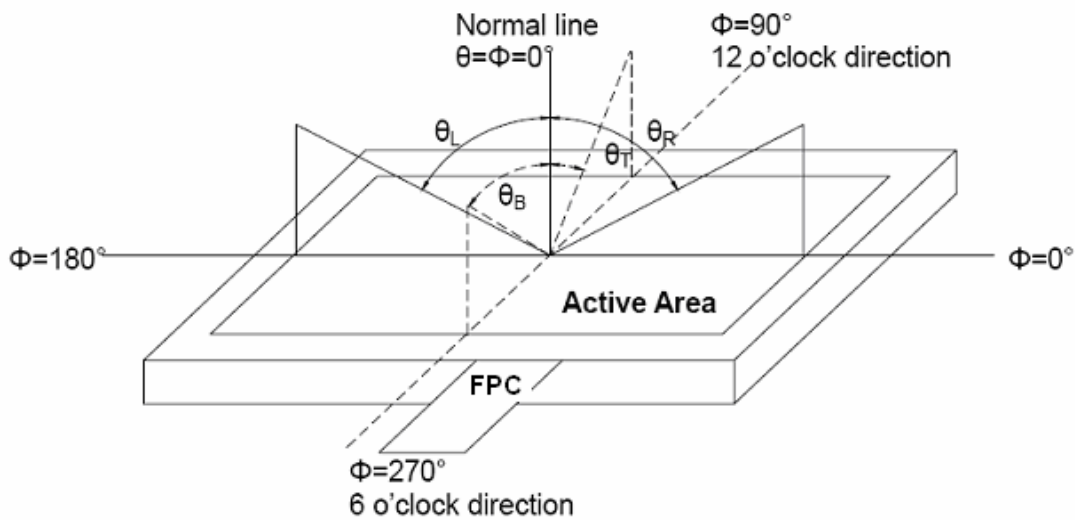


Fig. 1 Definition of viewing angle

Note 3: Definition of contrast ratio

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

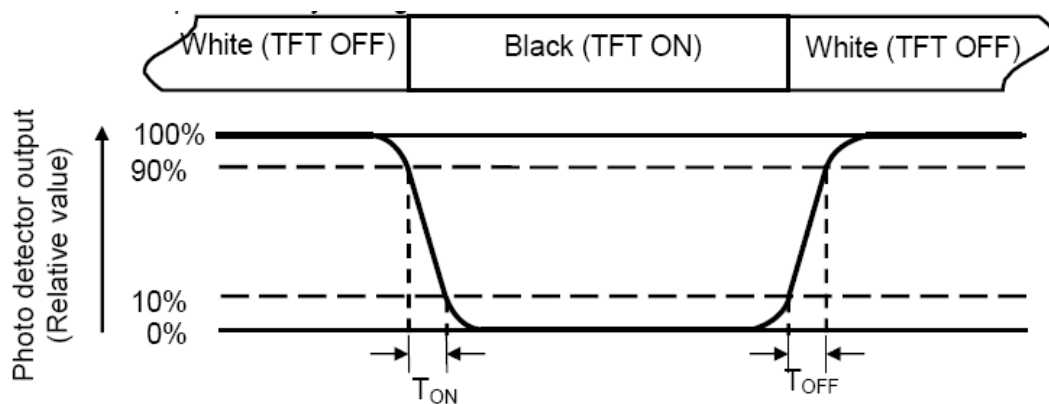
"White state ":The state is that the LCD should driven by  $V_{\text{white}}$ .

"Black state": The state is that the LCD should driven by  $V_{\text{black}}$ .

$V_{\text{white}}$ : To be determined      $V_{\text{black}}$ : To be determined.

Note 4: Definition of Response time

The response time is defined as the LCD optical switching time interval between "White" state and "Black" state. Rise time ( $T_{\text{ON}}$ ) is the time between photo detector output intensity changed from 90% to 10%. And fall time ( $T_{\text{OFF}}$ ) is the time between photo detector output intensity changed from 10% to 90%.



Note 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.

Note 6: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer Fig. 2). Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity}(U) = L_{\min} / L_{\max}$$

L-----Active area length W----- Active area width

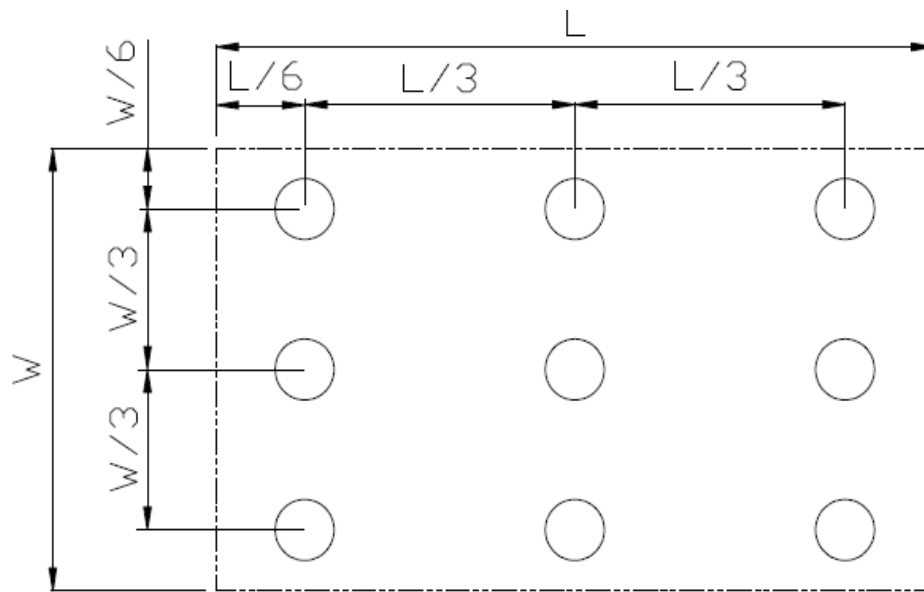


Fig. 2 Definition of uniformity

$L_{\max}$ : The measured maximum luminance of all measurement position.

$L_{\min}$ : The measured minimum luminance of all measurement position.

Note 7: Definition of Luminance :

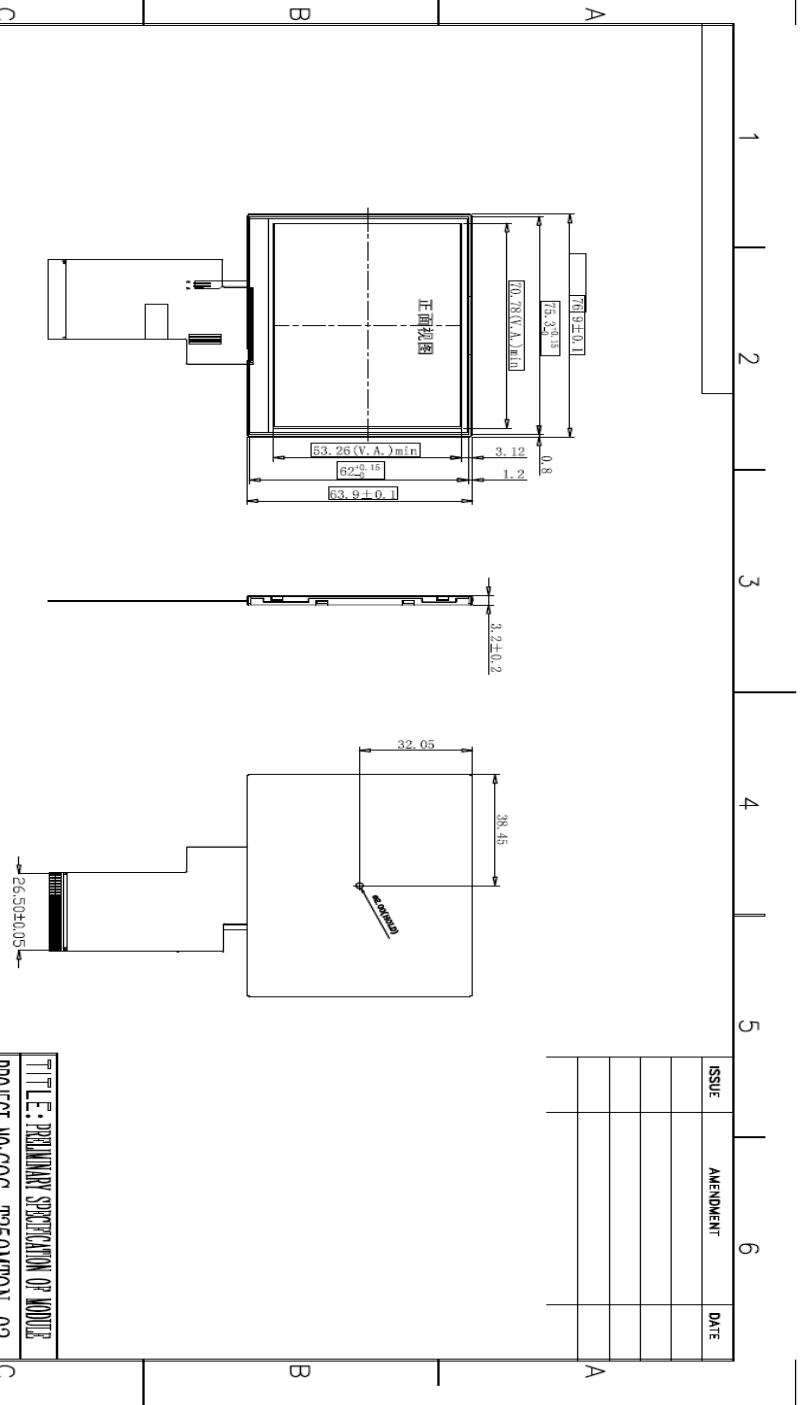
Measure the luminance of white state at center point.

## 7 Environmental / Reliability Tests

| No | Test Item                                | Condition                                                                                                                     | Remarks                                                                                 |
|----|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1  | High Temperature Operation               | Ts=+60℃,240hrs                                                                                                                | Note1<br>IEC60068-2-2,GB2423.2—89                                                       |
| 2  | Low Temperature Operation                | Ta=-20℃,240hrs                                                                                                                | Note 2, IEC60068-2-1<br>GB2423.1—89                                                     |
| 3  | High Temperature Storage                 | Ta=+70℃,240hrs                                                                                                                | IEC60068-2-2,<br>GB2423.2—89                                                            |
| 4  | Low Temperature Storage                  | Ta=-30℃,240hrs                                                                                                                | IEC60068-2-1<br>GB2423.1—89                                                             |
| 5  | High Temperature & High Humidity Storage | +60℃,90% RH max,160 hours                                                                                                     | IEC60068-2-3,<br>GB/T2423.3—2006                                                        |
| 6  | Thermal Shock (Non-operation)            | -30℃ 30 min~+70℃ 30 min,<br>Change time:5min,30 Cycle.                                                                        | Start with cold temperature, end<br>with high temperature<br>IEC60068-2-14,GB2423.22—87 |
| 7  | Electro Static Discharge (Operation)     | C=150pF, R=330Ω, 5points/panel<br>Air:±8KV,5times;Contact:±4KV,5times;<br>( Environment:15℃ ~ 35℃,30% ~<br>60%,86Kpa~106Kpa ) | IEC61000-4-2<br>GB/T17626.2—1998                                                        |
| 8  | Vibration (Non-operation)                | Frequency<br>range:10~55Hz,Stroke:1.5mm<br>Sweep:10Hz~55Hz~10Hz 2 hours for each<br>direction of X.Y.Z.(package condition)    | IEC60068-2-6<br>GB/T2423.10—1995                                                        |
| 9  | Shock (Non-operation)                    | 60G 6ms, ± X,± Y,± Z 3times for each<br>direction                                                                             | IEC60068-2-27<br>GB/T2423.5—1995                                                        |
| 10 | Package Drop Test                        | Height:80 cm,1 corner, 3 edges, 6 surfaces                                                                                    | IEC60068-2-32<br>GB/T2423.8—1995                                                        |

Note1: Ts is the temperature of panel's surface.

Note2: Ta is the ambient temperature of sample.



2. 电路图 CIRCUT DIAGRAM (LED 6X1=6 dies)

Electrical Circuit:  
LED: 1\*6=6 PCS

|                            |                  |                                                                                     |  |
|----------------------------|------------------|-------------------------------------------------------------------------------------|--|
| CONSUMER PRODUCT           |                  | XXX 2011                                                                            |  |
| DISPLAY TYPE               | FT/26K COLOR     |                                                                                     |  |
| TRANSMISSIVE               |                  |                                                                                     |  |
| DISPLAY RESOLUTION         | 120 X 600 X240   |                                                                                     |  |
| VIEWING ANGLE              | WIDE ANGLE       |                                                                                     |  |
| LED CONTROLLER/DRIVER      |                  |                                                                                     |  |
| LOGIC VOLTAGE              | -2.5V            |                                                                                     |  |
| OPERATING TEMPERATURE      | -20° C TO +70° C |                                                                                     |  |
| STORAGE TEMPERATURE        | -30° C TO +80° C |                                                                                     |  |
|                            |                  |                                                                                     |  |
| TYPE                       | LED30            |                                                                                     |  |
| COLOR                      | White            |                                                                                     |  |
| COORDINATE                 | -                |                                                                                     |  |
| DRIVING VOLTAGE            | -1.2 V @ 10mA    |                                                                                     |  |
| LUMINANCE (cd/m²)          | Max. -           |                                                                                     |  |
| ON THE BACKLIGHT           | Typ. 200         |                                                                                     |  |
| SERIAL NO.                 | Max. -           |                                                                                     |  |
| THIRD ANGLE PROJECTION     |                  |  |  |
| NAME                       | SIGN             | DATE                                                                                |  |
| DRAWN:                     | Q I N            |                                                                                     |  |
| CHECKED:                   | Q I N            |                                                                                     |  |
| APPROVED:                  | Q I N            |                                                                                     |  |
| ITEM NO. 007C CONTINUED ON |                  |                                                                                     |  |

|                                         |  |                                                                                     |  |
|-----------------------------------------|--|-------------------------------------------------------------------------------------|--|
| TITLE: PRIMARY SPECIFICATION OF MODULE  |  |                                                                                     |  |
| PROJECT NO: CCG- T350MTQN-02            |  |                                                                                     |  |
| CUSTOMER NO: CCG- T350MTQN-02           |  |                                                                                     |  |
| TOLERANCE UNITS:<br>OTHERWISE SPECIFIED |  | XXX ±0.3                                                                            |  |
| DIMENSIONS IN MM                        |  |                                                                                     |  |
| MATERIAL: N/A                           |  | FINISH: N/A                                                                         |  |
| SCALE: 1:1 NOT IN SCALE                 |  | OVERALL THK: N/A                                                                    |  |
| THIRD ANGLE PROJECTION                  |  |                                                                                     |  |
| NAME                                    |  | SIGN                                                                                |  |
| DATE                                    |  |  |  |
| DRAWN: G I N                            |  |                                                                                     |  |
| CHECKED: G I N                          |  |                                                                                     |  |
| APPROVED: G I N                         |  |                                                                                     |  |
| ITEM NO.: CCG- T350MTQN-02              |  |                                                                                     |  |
| DESCRIPTION: CCG- T350MTQN-02           |  |                                                                                     |  |
| FILE NO: CCG- T350MTQN-02 REV: 0        |  |                                                                                     |  |
| SHEET 1 OF 1                            |  |                                                                                     |  |