

TFT-Display Datenblatt

Modell FG0800A1DSSWJG01

Kurzdaten

| | |
|-------------|-----------------------------|
| Hersteller | Data Image |
| Diagonale | 8,0" / 20,3 cm |
| Format | wide |
| Auflösung | 800 x 480 |
| Backlight | LED / 650 cd/m ² |
| Interface | RGB |
| Touchscreen | nein |
| Temperatur | -30... +85°C (Betrieb) |

Vertrieb durch:



Confidential Document

DATA IMAGE CORPORATION

TFT Module Specification

Preliminary

ITEM NO.: FG0800A1DSSWJG01

Table of Contents

| | |
|-------------------------------------|----|
| 1. COVER & CONTENTS | 1 |
| 2. RECORD OF REVISION | 2 |
| 3. APPLICATION..... | 3 |
| 4. GENERAL SPECIFICATIONS | 3 |
| 5. ABSOLUTE MAXIMUM RATINGS | 3 |
| 6. ELECTRICAL CHARACTERISTICS | 4 |
| 7. TIMING SPECIFICATIONS | 5 |
| 8. OPTICAL CHARACTERISTIC | 8 |
| 9. PIN CONNECTIONS | 11 |
| 10. BLOCK DIAGRAM | 13 |
| 11. QUALITY ASSURANCE | 14 |
| 12. LCM PRODUCT LABEL DEFINE | 15 |
| 13. PRECAUTIONS IN USE LCM | 17 |
| 14. OUTLINE DRAWING | 18 |
| 15. PACKAGE INFORMATION | 19 |

| | | | | |
|--------------------|-------------------|-------------------|--------------------|--------------------|
| Customer Companies | R&D Dept. JACK | Q.C. Dept. JOE | Eng. Dept. GARY | Prod. Dept. KEN |
| Approved by | Version: | Issued Date: | Sheet Code: | Total Pages: |
| | 2 | 26/Dec/11' | | 19 |

3. APPLICATION

DVD player, Car TV, Notebook PC

4. GENERAL SPECIFICATIONS

| Parameter | Specifications | Unit |
|----------------------|---------------------------|------|
| Screen Size | 8 (diagonal) | inch |
| Display Format | 800(H) x (R,G,B) x 480(V) | dot |
| Active Area | 173.4(H) x 104.04(V) | mm |
| Pixel Pitch | 0.2168 (H) x 0.2168 (V) | mm |
| Pixel Configuration | Stripe | |
| Outline Dimension | 190(W) x 120(H) x 9.2 (D) | mm |
| Surface treatment | Anti-Glare | |
| Back-light | LED | |
| Display mode | Normally white | |
| Weight | TBD | g |
| View Angle direction | 6 o'clock | |

5. ABSOLUTE MAXIMUM RATINGS

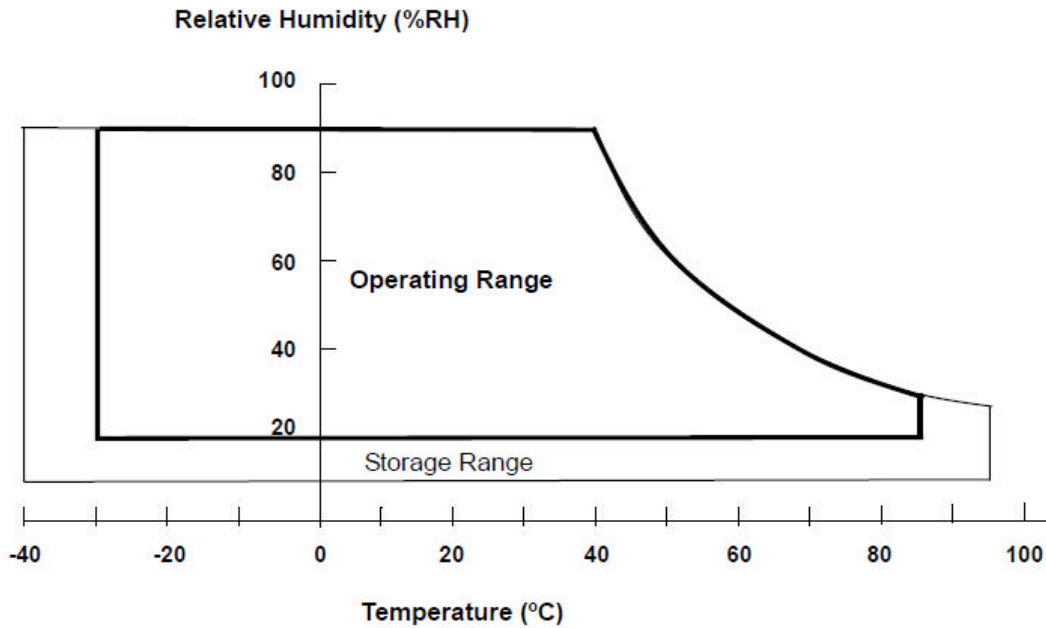
| Parameter | Symbol | MIN. | MAX. | Unit | Remark |
|------------------------------|-----------------|------|----------------------|------|--------|
| Power supply voltage for LCD | V _{CC} | -0.3 | 6 | V | |
| Logic input voltage | V _I | -0.3 | V _{CC} +0.3 | V | |
| Power Supply voltage for LED | V _{DD} | -0.3 | 27 | | |
| Operating temperature | T _{op} | -30 | 85 | °C | |
| Storage temperature | T _{st} | -40 | 95 | °C | |

Note 1: Temperature and relative humidity range is shown in the figure below.

Note 2: 90 %RH Max. (T_a = 40 °C).

Note 3: Wet-bulb temperature should be 39 °C Max. (T_a > 40 °C).

Note 4: No condensation.



6. ELECTRICAL CHARACTERISTICS

fH=35.1 KHz, Fv=60Hz, fCLK=33.26MHz, Ta=25°C

| Parameter | Symbol | MIN. | Typ. | MAX. | Unit | Remark |
|---------------------------------|-----------------|--------------------|------|--------------------|-------------------|-----------------------|
| Power Supply voltage for LCD | V _{CC} | 3.0 | 3.3 | 3.6 | V | |
| Power Supply Current for LCD | I _{CC} | | TBD | TBD | mA | V _{CC} =3.3V |
| Power Supply voltage for LED | V _{DD} | 11.5 | 12 | 12.5 | V | |
| Power Supply Current for LED | I _{DD} | | TBD | TBD | mA | V _{DD} =12V |
| Ripple voltage | V _{RF} | - | - | 100 | mV _{P-P} | |
| "H" level logical input voltage | V _{IH} | 0.7V _{CC} | - | V _{CC} | V | |
| "L" level logical input voltage | V _{IL} | 0 | - | 0.3V _{CC} | V | |
| ADJ frequency | | 16K | 18K | 20K | Hz | |
| ADJ PWM Duty | | 5 | | 100 | % | |
| ADJ input voltage | V _{IH} | 1.6 | - | 5.5 | V | |
| | V _{IL} | 0 | | 0.8 | V | |
| LED life time | | 20,000 | | | Hr | Note 1,2 |

Note 1: The lifetime of LED is defined as the time when it continues to operate under the conditions at Ta = 25±2 and I_L = 20 mA(Per EA) until the brightness becomes 50% of its original value.

Note 2: Please note that LED life will be shorter than the average life described in the specification if operate in higher ambient temperature.

7. TIMING SPECIFICATIONS

7.1 Input signal characteristics

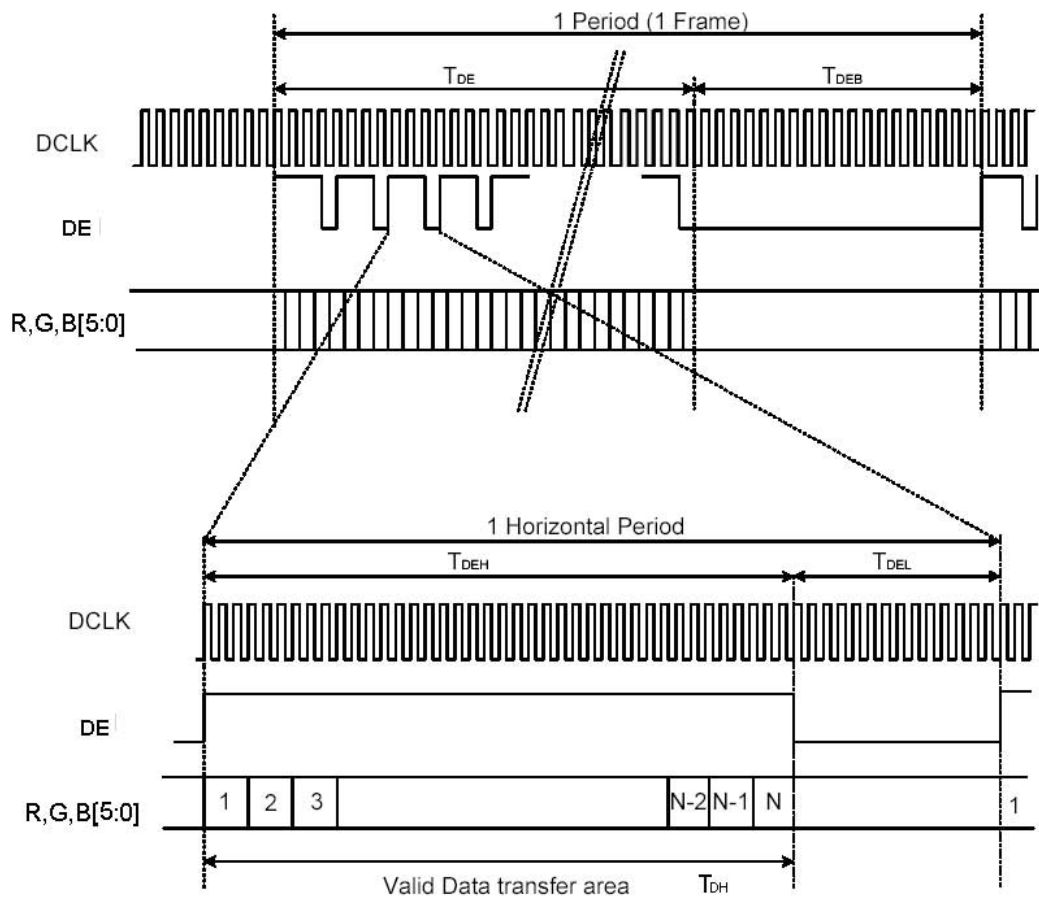
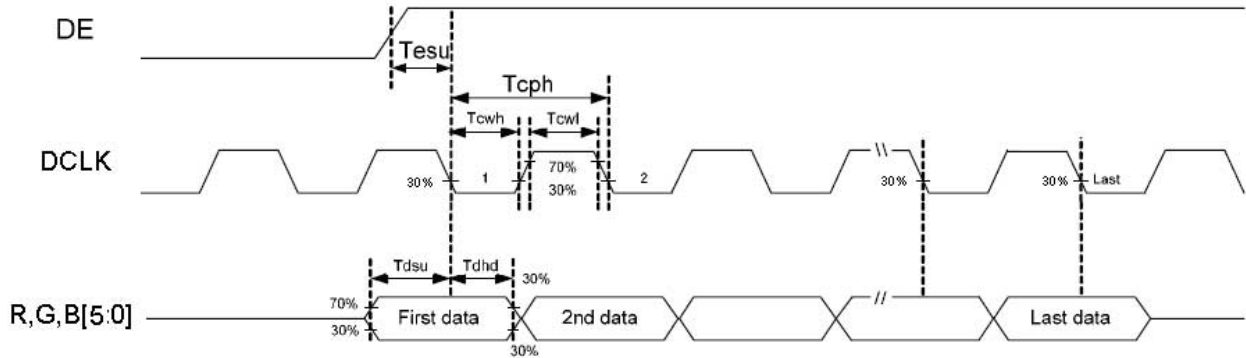
7.1.1 AC Electrical Characteristics

| Parameter | Symbol | MIN. | TYP. | MAX. | Unit |
|-----------------|-----------|------|------|------|------|
| Data setup time | T_{dsu} | 6 | - | - | ns |
| Data hold time | T_{dhd} | 6 | - | - | ns |
| DEN setup time | T_{esu} | 6 | - | - | ns |

7.1.2 Resolution : 800x480

| Parameter | Symbol | MIN. | TYP. | MAX. | Unit |
|-------------------|-------------------|------|-------|------|-------------------|
| CLK frequency | F_{CPH} | | 33.26 | | MHz |
| CLK period | T_{CPH} | | 30.06 | | ns |
| CLK pulse duty | T_{CWH} | 40 | 50 | 60 | % |
| DE period | $T_{DEH}+T_{DEL}$ | 1000 | 1056 | 1200 | T_{CPH} |
| DE pulse width | T_{DH} | - | 800 | - | T_{CPH} |
| DE frame blanking | T_{DEB} | 10 | 45 | 110 | $T_{DEH}+T_{DEL}$ |
| DE frame width | T_{DE} | - | 480 | - | $T_{DEH}+T_{DEL}$ |

7.2 Timing Controller Timing Chart

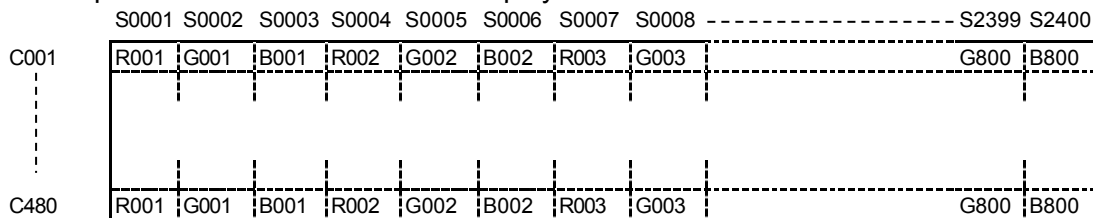


N=800

7.2 Color Data Input Assignment

| | | Data Signal | | | | | | | | | | | | | | | | | |
|---------------------|----------------|-------------|----|----|----|----|----|-------|----|----|----|----|----|------|----|----|----|----|----|
| | | Red | | | | | | Green | | | | | | Blue | | | | | |
| Color | | R5 | R4 | R3 | R2 | R1 | R0 | G5 | G4 | G3 | G2 | G1 | G0 | B5 | B4 | B3 | B2 | B1 | B0 |
| Basic Colors | Black | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Red | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Green | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Blue | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Cyan | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Magenta | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Yellow | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | White | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Gray Scale of Red | Red(0) / Dark | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Red(1) | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Red(2) | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| | Red(61) | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Red(62) | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Red(63) | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gray Scale of Green | Green(0)/ Dark | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Green(1) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Green(2) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| | Green(61) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Green(62) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Green(63) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gray Scale of Blue | Blue(0)/ Dark | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Blue (1) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | Blue (2) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| | Blue (61) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| | Blue (62) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| | Blue (63) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |

Correspondence between Data and Display Position

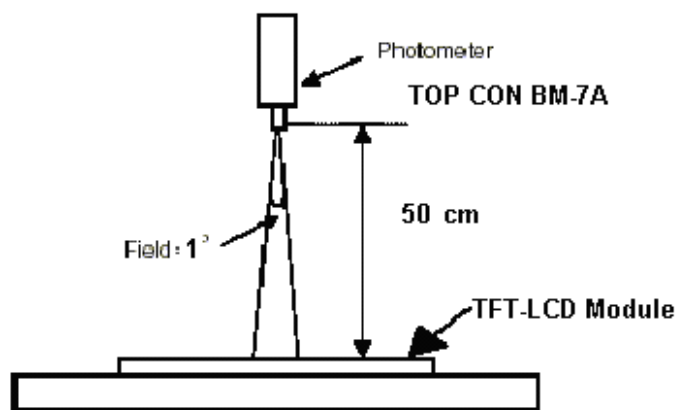


8. OPTICAL CHARACTERISTIC

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit | Remarks |
|-----------------|------------|---|--------------|-------|--------------|-------------------|----------|
| Viewing Angle | Horizontal | θ_{x+} | 60 | 70 | -- | deg | Note 1,4 |
| | | θ_{x-} | 60 | 70 | -- | | |
| | Vertical | θ_{y+} | 50 | 60 | -- | | |
| | | θ_{y-} | 50 | 60 | -- | | |
| Contrast Ratio | CR | at optimized viewing angle | 500 | 600 | | | Note 1,3 |
| Response time | Rise | T_R | - | 5 | 10 | ms | Note 6 |
| | Fall | T_F | - | 11 | 16 | ms | |
| White Variation | W | $\theta_x=\theta_y=0^\circ$ | - | 1.25 | 1.4 | % | Note1,5 |
| Brightness | L | $\theta_x=\theta_y=0^\circ$ ADJ=3.3V | 500 | 650 | -- | cd/m ² | Note 1,2 |
| Chromaticity | x_W | Center $\theta_x=\theta_y=0^\circ$ | Typ- 0.05 | 0.313 | Typ+ 0.05 | | Note 1,7 |
| | y_W | | | 0.329 | | | |
| | x_R | | | 0.640 | | | |
| | y_R | | | 0.347 | | | |
| | x_G | | | 0.326 | | | |
| | y_G | | | 0.617 | | | |
| | x_B | | | 0.152 | | | |
| | y_B | | | 0.053 | | | |

The following optical specifications shall be measured in a darkroom or equivalent state (ambient luminance ≤ 1 lux), and at $T_a=25^\circ\text{C}\pm 2^\circ\text{C}$ & $50\pm 10\%$ RH. The VCC=3.3V, VDD=12V and ADJ PWM Duty=100%. The measurement method is shown in Note1.

Note1: The method of optical measurement:



Note2: Definition of Luminance of White (LC):

Measure the luminance of gray level 63 at center point

$LC = L(5)$

L (x) is corresponding to the luminance of the point X at Figure in Note (5).

Note3: Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = $L63 / L0$

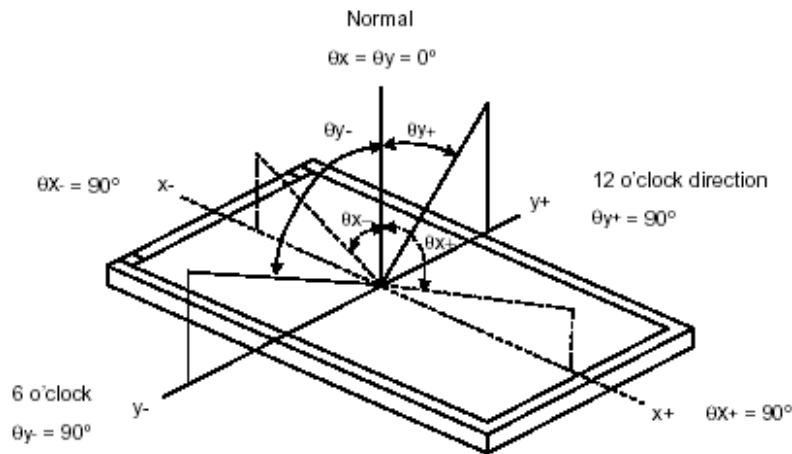
L63: Luminance of gray level 63

L 0: Luminance of gray level 0

$CR = CR(5)$

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note (5).

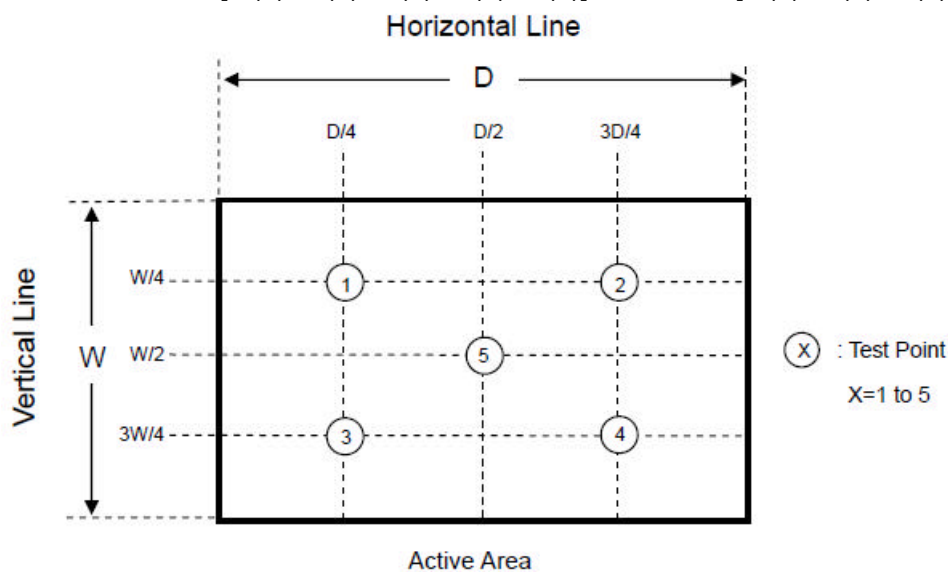
Note4: Definition of Viewing Angle



Note 5: Definition of White Variation (W):

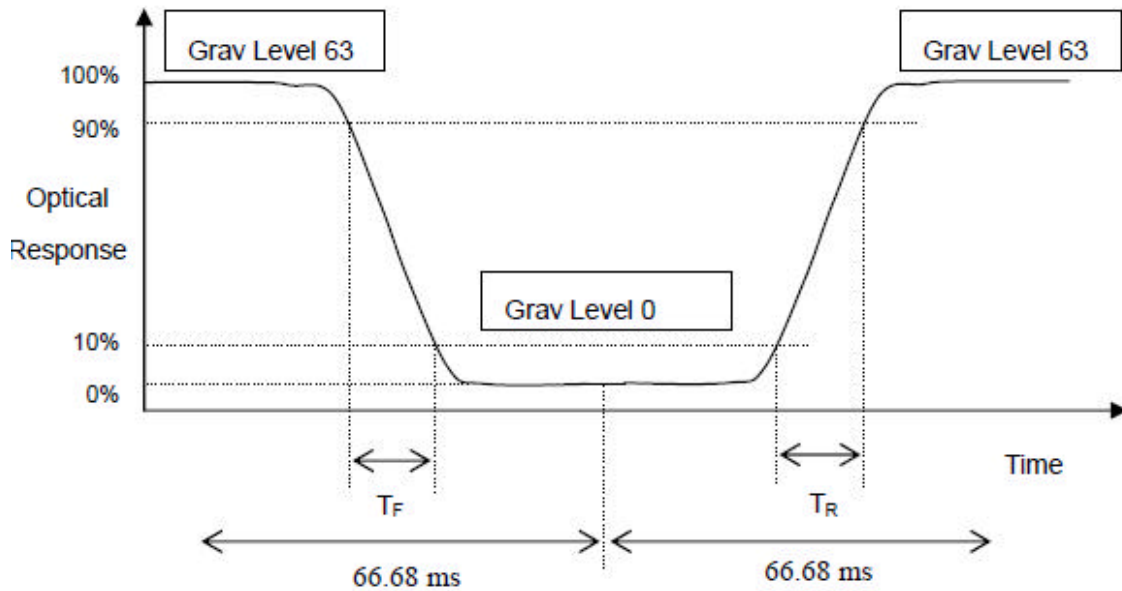
Measure the luminance of gray level 63 at 5 points

$W = \text{Maximum} [L(1), L(2), L(3), L(4), L(5)] / \text{Minimum} [L(1), L(2), L(3), L(4), L(5)]$



Note6: Definition of Response Time:

The Response Time is set initially by defining the “Rising Time (TF)” and the “Falling Time (TR)” respectively. TR and TF are defined as following figure.



Note 7: Definition of Chromaticity:

The color coordinates (x_W, y_W) , (x_R, y_R) , (x_G, y_G) , and (x_B, y_B) are obtained with all pixels in the viewing field at white, red, green, and blue states, respectively.

9. PIN CONNECTIONS

| Pin NO. | SYMBOL | DESCRIPTION |
|---------|--------|--|
| 1 | Vss | Power Ground |
| 2 | Vss | Power Ground |
| 3 | ADJ | PWM Brightness control Signal for LED B/L |
| 4 | VDD | Power Supply for LED Driver circuit |
| 5 | VDD | Power Supply for LED Driver circuit |
| 6 | VDD | Power Supply for LED Driver circuit |
| 7 | Vcc | Power Supply for Digital Circuit |
| 8 | Vcc | Power Supply for Digital Circuit |
| 9 | DE | Data Enable |
| 10 | Vss | Power Ground |
| 11 | Vss | Power Ground |
| 12 | Vss | Power Ground |
| 13 | B5 | Blue Data 5 (MSB) |
| 14 | B4 | Blue Data 4 |
| 15 | B3 | Blue Data 3 |
| 16 | Vss | Power Ground |
| 17 | B2 | Blue Data 2 |
| 18 | B1 | Blue Data 1 |
| 19 | B0 | Blue Data 0 (LSB) |
| 20 | Vss | Power Ground |
| 21 | G5 | Green Data 5 (MSB) |
| 22 | G4 | Green Data 4 |
| 23 | G3 | Green Data 3 |
| 24 | Vss | Power Ground |
| 25 | G2 | Green Data 2 |
| 26 | G1 | Green Data 1 |
| 27 | G0 | Green Data 0 (LSB) |
| 28 | Vss | Power Ground |
| 29 | R5 | Red Data 5 (MSB) |
| 30 | R4 | Red Data 4 |
| 31 | R3 | Red Data 3 |
| 32 | Vss | Power Ground |
| 33 | R2 | Red Data 2 |
| 34 | R1 | Red Data 1 |
| 35 | R0 | Red Data 0 (LSB) |
| 36 | Vss | Power Ground |
| 37 | Vss | Power Ground |
| 38 | DCLK | Clock Signals ; Latch Data at the Falling Edge |
| 39 | Vss | Power Ground |
| 40 | Vss | Power Ground |

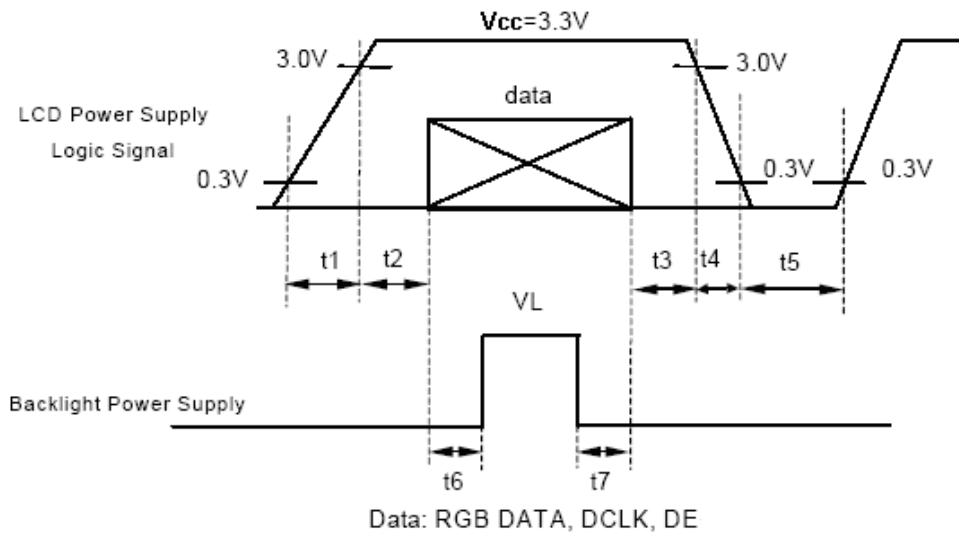
Remark:

1) ADJ is PWM brightness control Pin. The larger of the pulse duty is, the higher of the brightness.

9.1 Power Signal Sequence

*1) Power Signal sequence:

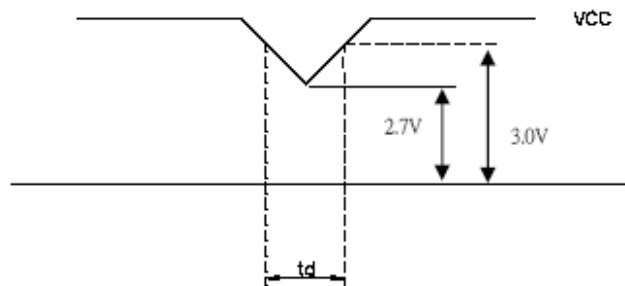
$t1 \leq 10\text{ms}$; $1 \text{ sec} \leq t5$
 $50\text{ms} \leq t2$; $200\text{ms} \leq t6$
 $0 < t3 \leq 50\text{ms}$; $200\text{ms} \leq t7$
 $0 < t4 \leq 10\text{ms}$



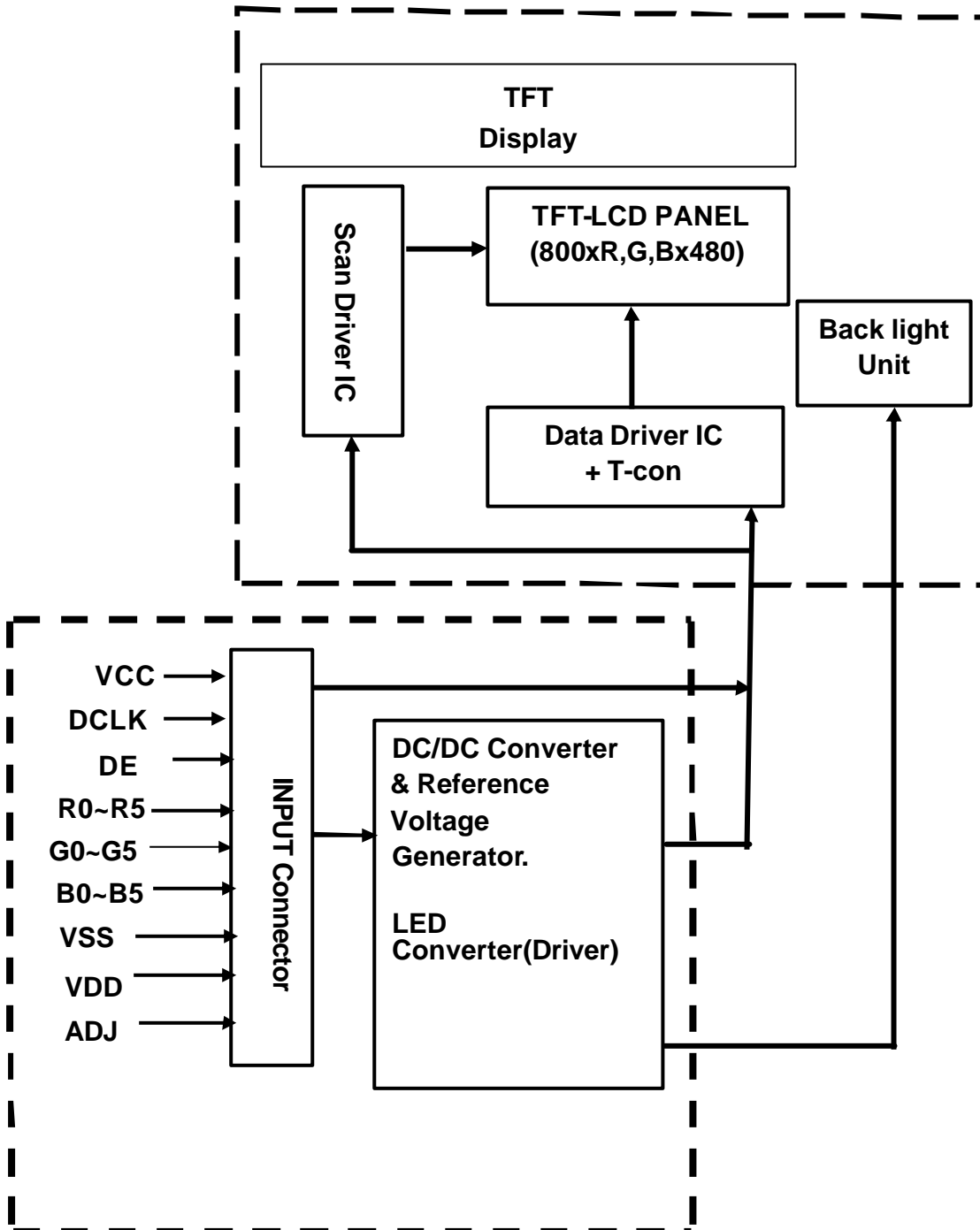
*2) VCC-dip condition:

(1) $2.7 \text{ V} \leq V_{CC} < 3.0\text{V}$, $t_d \leq 10 \text{ ms}$

(2) $V_{CC} > 3.0\text{V}$, VCC-dip condition should be the same with VCC-turn-on condition.



10. BLOCK DIAGRAM



11. QUALITY ASSURANCE

11.1 Test Condition

11.1.1 Temperature and Humidity(Ambient Temperature)

Temperature : $25 \pm 5^{\circ}\text{C}$

Humidity : $65 \pm 5\%$

11.1.2 Operation

Unless specified otherwise, test will be conducted under function state.

11.1.3 Container

Unless specified otherwise, vibration test will be conducted to the product itself without putting it in a container.

11.1.4 Test Frequency

In case of related to deterioration such as shock test. It will be conducted only once.

11.1.5 Test Method

| Reliability Test Item & Level | | Test Level |
|-------------------------------|---|---|
| No. | Test Item | |
| 1 | High Temperature Storage Test | T=95°C,240hrs |
| 2 | Low Temperature Storage Test | T=-40°C,240hrs |
| 3 | High Temperature Operation Test | T=85°C,240hrs |
| 4 | Low Temperature Operation Test | T=-30°C,240hrs |
| 5 | High Temperature and High Humidity Operation Test | T=60°C,90%RH,240hrs |
| 6 | Thermal Cycling Test (operation) | -40°C 25°C + 85°C , 100 Cycles 30 min 5 min 30 min |
| 7 | Shock test (operation) | 100 g , 11 ms, half sine, 3 shocks/dir, 18 shocks total |
| 8 | Vibration Test (No operation) | Frequency :10 ~ 55 Hz Amplitude :1.5 mm Sweep time : 11 mins Test Period: 6 Cycles for each direction of X, Y, Z |

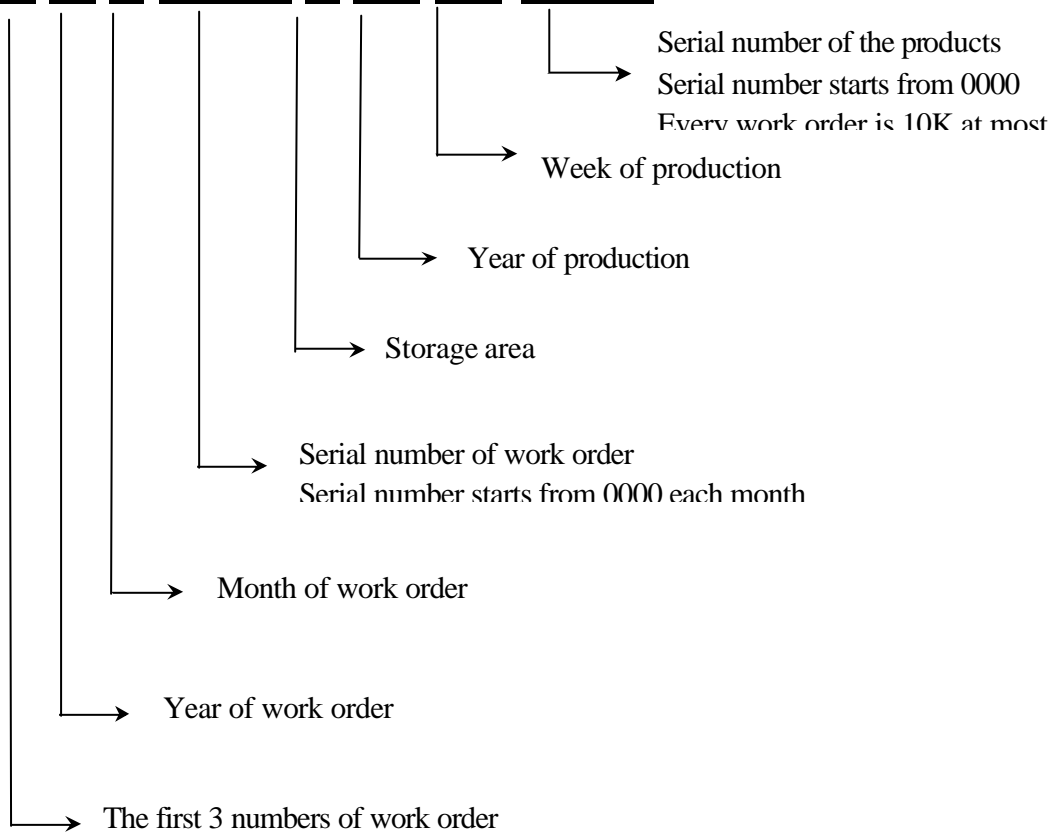
12. LCM PRODUCT LABEL DEFINE

Product Label style:

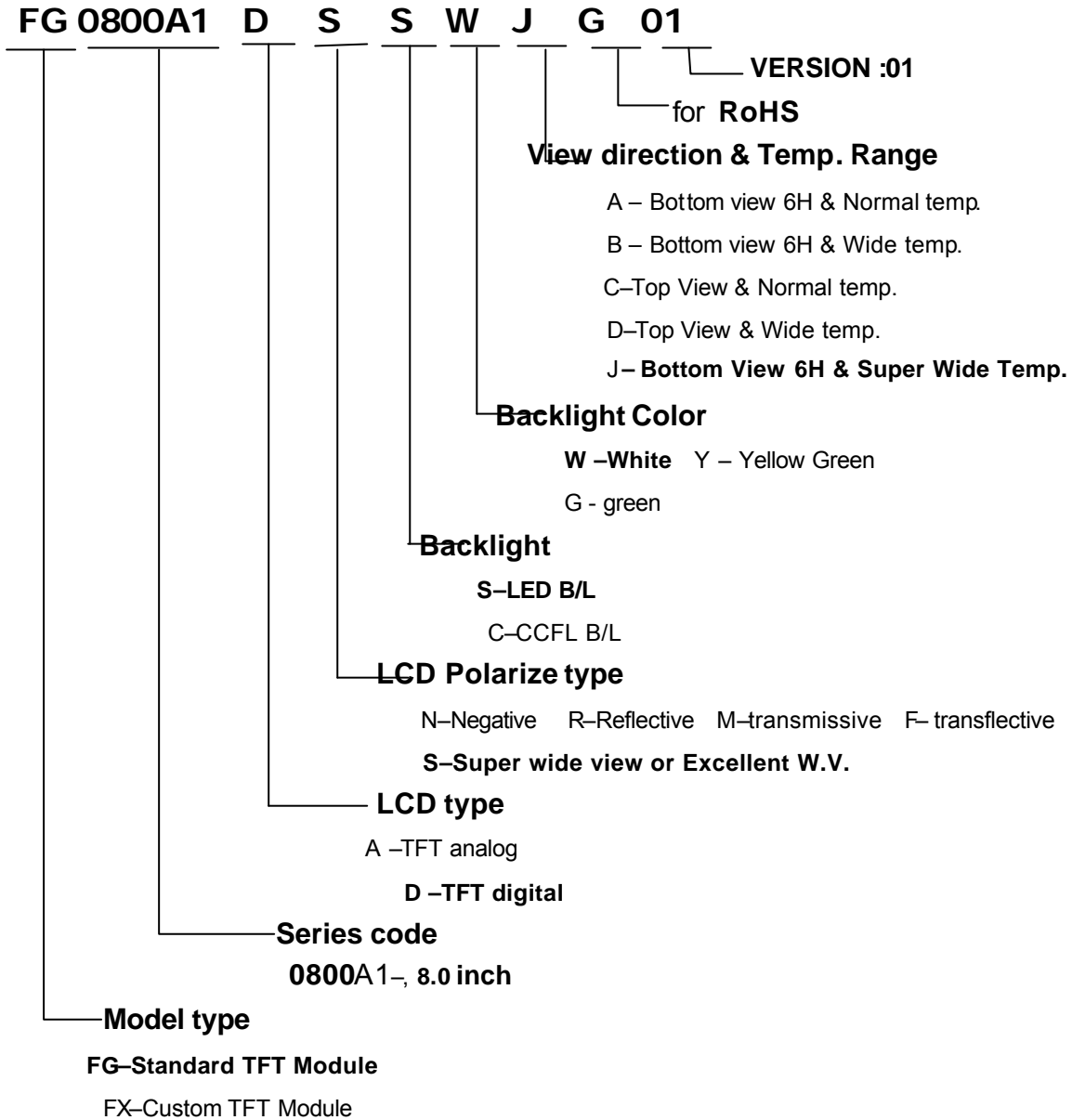


BarCode Define:

A A 6 0014 2 10 26-0013



Product Name Define:



13. PRECAUTION FOR USING LCM

1. ASSEMBLY PRECAUTIONS

- (1) You must mount a module using holes arranged in four corners or four sides.
- (2) You should consider the mounting structure so that uneven force (ex. Twisted stress) is not applied to the module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.
- (3) Do not touch, push or rub the exposed polarizers with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment.
- (4) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.
- (5) Do not open the case because inside circuits do not have sufficient strength.
- (6) Please do not take a LCD module to pieces and reconstruct it. Resolving and reconstructing modules may cause them not to work well.
- (7) Please do not touch metal frames with bare hands and soiled gloves. A color change of the metal frames can happen during a long preservation of soiled LCD modules.
- (8) Please pay attention to handling lead wire of backlight so that it is not tugged in connecting with inverter.

2. OPERATING PRECAUTIONS

- (1) Please be sure to turn off the power supply before connecting and disconnecting signal input cable.
- (2) Please do not change variable resistance settings in LCD module. They are adjusted to the most suitable value. If they are changed, it might happen LCD does not satisfy the characteristics specification
- (3) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.
- (4) When fixed patterns are displayed for a long time, remnant image is likely to occur.
- (5) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.
- (6) Please consider that LCD backlight takes longer time to become stable of radiation characteristics in low temperature than in room temperature.

3. ELECTROSTATIC DISCHARGE CONTROL

- (1) The operator should be grounded whenever he/she comes into contact with the module. Never touch any of the conductive parts such the copper leads on the PCB and the interface terminals with any

parts of the human body.

- (2) The modules should be kept in antistatic bags or other containers resistant to static for storage.
- (3) Only properly grounded soldering irons should be used.
- (4) If an electric screwdriver is used, it should be well grounded and shielded from commutator sparks.
- (5) The normal static prevention measures should be observed for work clothes and working benches; for the latter conductive (rubber) mat is recommended
- (6) Since dry air is inductive to statics, a relative humidity of 50-60% is recommended.

4. STORAGE PRECAUTIONS

- (1) When you store LCDs for a long time, it is recommended to keep the temperature between 0°C-40°C without the exposure of sunlight and to keep the humidity less than 90%RH.
- (2) Please do not leave the LCDs in the environment of high humidity and high temperature such as 60°C 90%RH
- (3) Please do not leave the LCDs in the environment of low temperature; below -20°C.

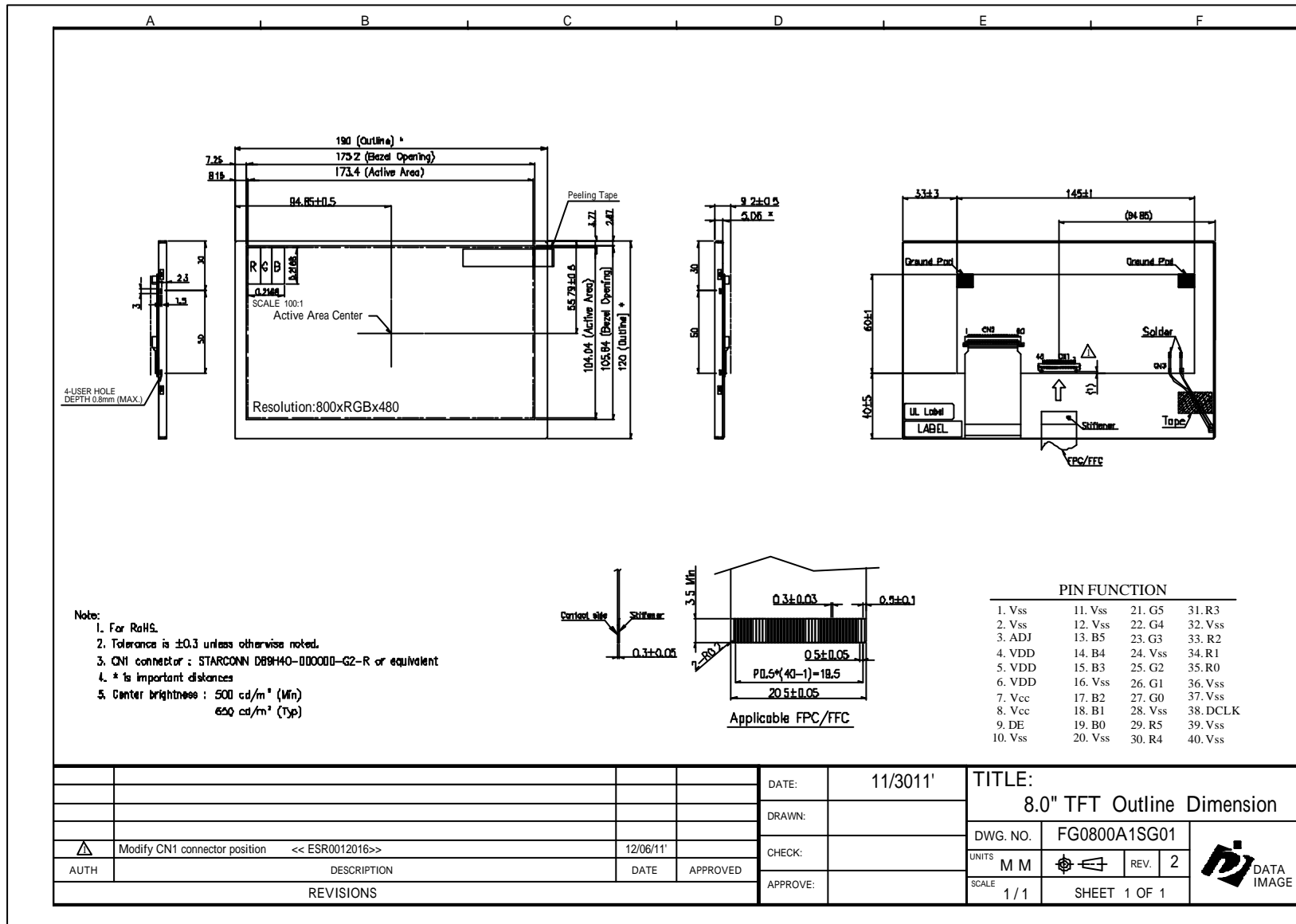
5. OTHERS

- (1) A strong incident light into LCD panel might cause display characteristics' changing inferior because of polarizer film, color filter, and other materials becoming inferior. Please do not expose LCD module direct sunlight and strong UV rays
- (2) Please pay attention to a panel side of LCD module not to contact with other materials in preserving it alone.
- (3) For the packaging box, please pay attention to the followings:
 - a. Please do not pile them up more than 5 boxes. (They are not designed so.) And please do not turn over.
 - b. Please handle packaging box with care not to give them sudden shock and vibrations. And also please do not throw them up.
 - c. Packing box and inner case for LCDs are made of cardboard. So please pay attention not to get them wet. (Such like keeping them in high humidity or wet place can occur getting them wet.)

6. LIMITED WARRANTY

Unless otherwise agreed between DATA IMAGE and customer, DATA IMAGE will replace or repair any of its LCD and LCM which is found to be defective electrically and visually when inspected in accordance with DATA IMAGE acceptance standards, for a period on one year from date of shipment. Confirmation of such date shall be based on freight documents. The warranty liability of DATA IMAGE is limited to repair and/or replacement on the terms set forth above. DATA IMAGE will not be responsible for any subsequent or consequential events.

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14. OUTLINE DRAWING



15. PACKAGE INFORMATION

T.B.D