DATA IMAGE CORPORATION

TFT Module Specification

PRELIMINARY

ITEM NO.: FG080051DSSWAGT2

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Customer Companies	R&D Dept.	Q.C. Dept.	Eng. Dept.	Prod. Dept.
	JACK	ERIC	PAUL	HELEN
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	1	2009/3/30		19

2. RECORD OF REVISION

Rev	Date	Item	Page	Comment
1	30/MAR/09			Initial preliminary

3. APPLICATION

DVD player, Car TV, UMPC, POS

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
Dot Pitch	0.07225 (H) x 0.21675 (V)	mm
Pixel Configuration	Stripe	
Outline Dimension	192.8(W) x 120(H) x 7.96 (D)	mm
Surface treatment	Anti-glare and hard coating	
Back-light	LED	
Display mode	Normally white	
Weight	300	g
View Angle direction	6 o'clock	
Our components and processes are compliant to RoHS standard		

5. ABSOLUTE MAXIMUM RATINGS

GND=0V

Parameter		Symbol	MIN.	MAX.	Unit	Remark
Power supply voltage		VCC	-0.3	7	V	Ta=25℃
Logic input voltage		VI	-0.3	V_{CC}+0.3	V	
Operating temperature		Top	-10	60	℃	Module surface*
Storage temperature		Tst	-20	70	℃	-
Humidity	Operation	20%~90% relative humidity				Ta<=38℃
	Non Operation	5%~90% relative humidity				Ta<=38℃

6. ELECTRICAL CHARACTERISTICS

6.1 Operating Conditions

GND=0V, fH=31.5KHz, fV=60Hz, fCLK=33.26MHz,Ta=25°C

Parameter	Symbol	MIN.	Typ.	MAX.	Unit	Remark
Power Supply voltage	V_{CC}	3.0	3.3	3.6	V	
Power Supply Current	I_{CC}		160	220	mA	V_{CC} =3.3V
Ripple voltage	V_{RF}	-	-	100	mV_{P-P}	
"H" level logical input voltage	V_{IH}	0.7Vcc	--	Vcc	V	
"L" level logical input voltage	V_{IL}	0	--	0.3Vcc	V	

6.2 Backlight Driving Consumption

Ta= 25 ℃

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
VLED voltage	V_L	9.3	9.9	10.5	V	Note1
LED current	I_L	-	200	-	mA	
LED life time		10000			hr	Note2,3

Note1: V_L=LEDA-LEDK

Note2: Ta= 25 ℃

Note3: Brightness is decreased to 50% of the initial value that I_L=200mA.

7. INPUT SIGNAL CHARACTERISTICS

7.1 AC Characteristics

7.1.1 AC Electrical Characteristics

ITEM	SYMBOL	MIN	TYP.	MAX	UNIT
HS setup time	T_{hst}	6	-	-	ns
HS hold time	T_{hhd}	6	-	-	ns
VS setup time	T_{vst}	6	-	-	ns
VS hold time	T_{vhd}	6	-	-	ns
Data setup time	T_{dsu}	6	-	-	ns
Data hold time	T_{dhd}	6	-	-	ns
DE setup time	T_{esu}	6	-	-	ns

7.1.2 Resolution

- **sync mode**

ITEM	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	%
HS period	T_H	-	1056	-	T_{CPH}
HS pulse width	T_{WH}	1	128	-	T_{CPH}
HS-first horizontal data time	T_{HS}		216		T_{CPH}
HS Active Time	T_{HA}	-	800	-	T_{CPH}
VS period	T_V	-	525	-	T_H
VS pulse width	T_{WV}	1	2	-	T_H
VS-DE time	T_{VS}		35		T_H
VS Active Time	T_{VA}	-	480	-	T_H

- **DE mode**

ITEM	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_{HS}	10	45	110	$T_{DEH}+T_{DEL}$
DE frame width	T_{EP}	-	480	-	$T_{DEH}+T_{DEL}$

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
OEV pulse width	T_{OEV}	-	150	-	T_{CPH}
CKV pulse width	T_{CKV}	-	133	-	T_{CPH}
DE(internal)-STV time	T_1	-	4	-	T_{CPH}
DE(internal)-CKV time	T_2	-	40	-	T_{CPH}
DE(internal)-OEV time	T_3	-	23	-	T_{CPH}
DE(internal)-POL time	T_4	-	157	-	T_{CPH}
STV pulse width	-	-	1	-	T_H

7.2 Timing Controller Timing Chart

7.2.1 Clock and Data input waveforms

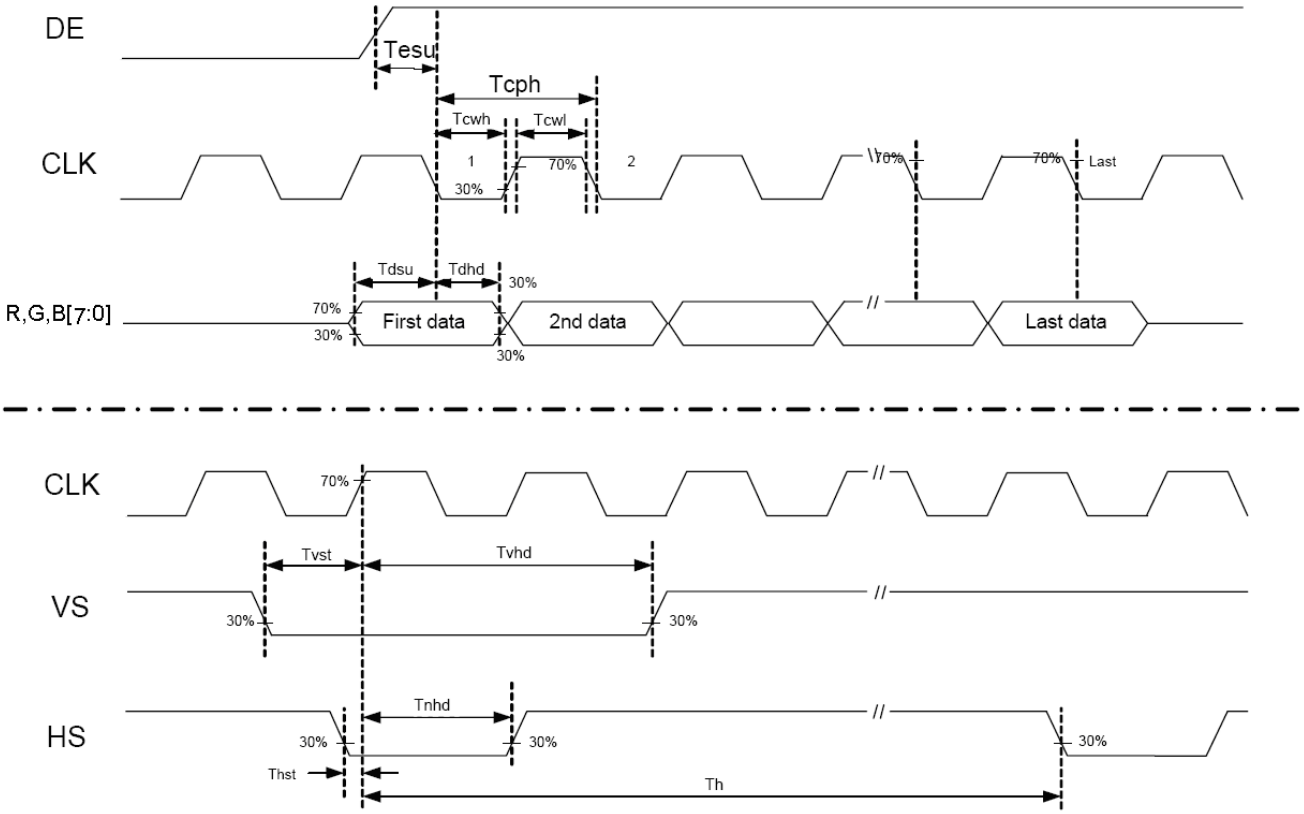


Figure 1 Clock and Data input waveforms.

7.2.2 Data Input format

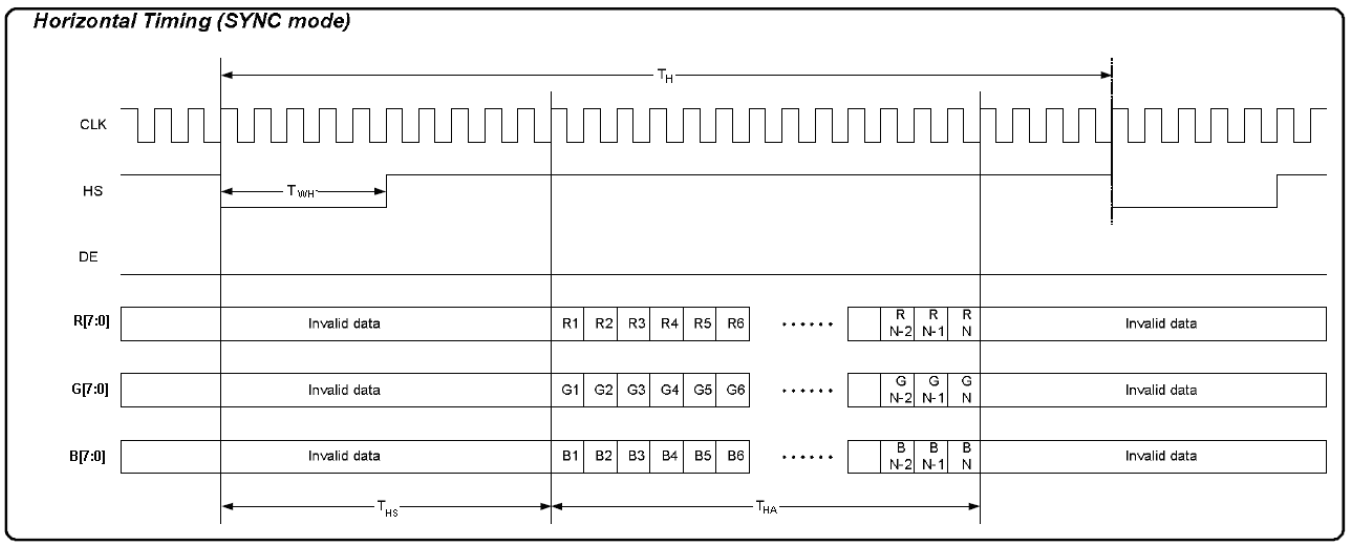


Figure 2 SYNC Mode Horizontal Data Format N=800

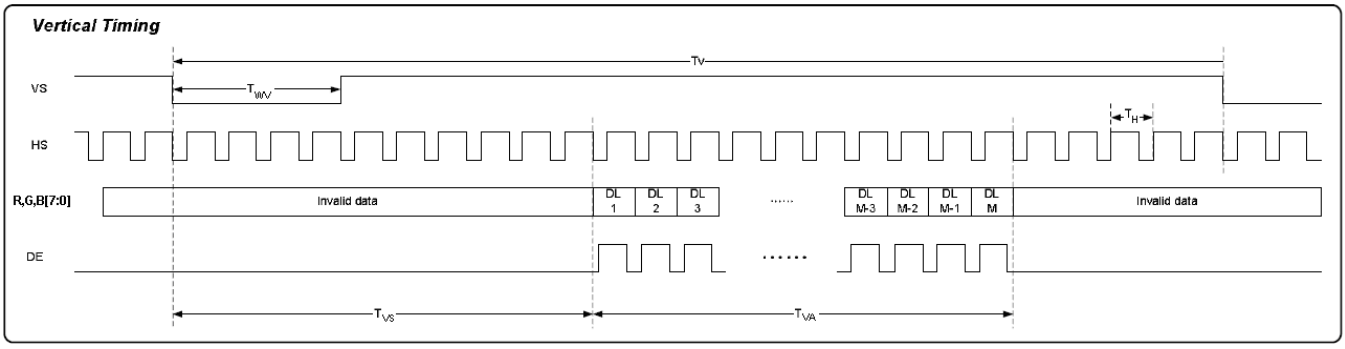


Figure 3 SYNC Mode Vertical Data Format M=480

7.2.3 DE Mode Data Format

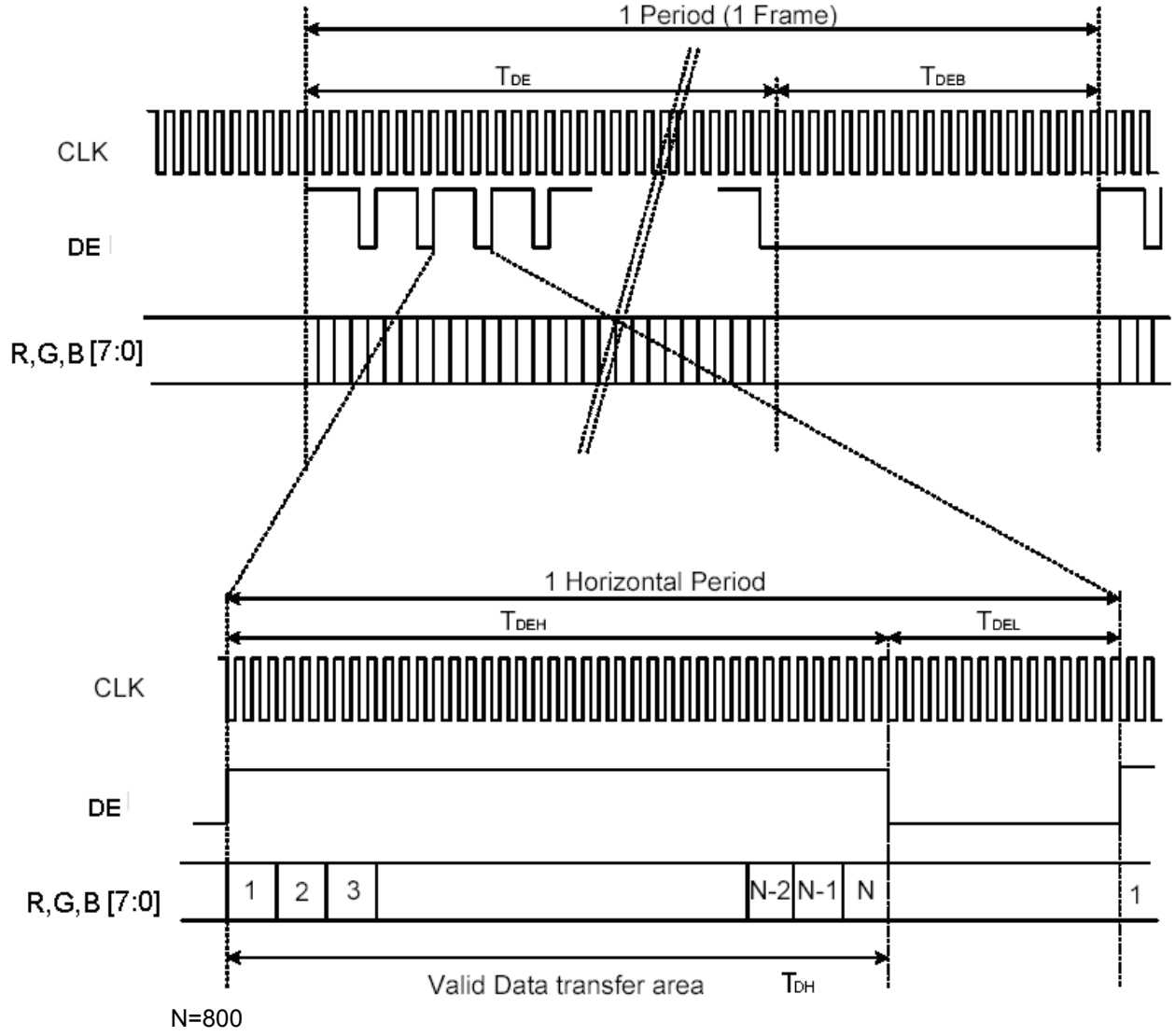


Figure 4 DE Mode Data Format

7.3 Color Data Input Assignment

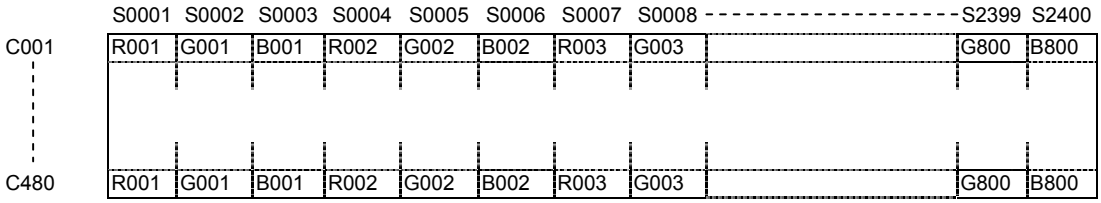
COLOR	DISPLAY	DATA SIGNAL																								GRAY SCALE LEVEL
		RED								GREEN								BLUE								
		R0	R1	R2	R3	R4	R5	R6	R7	G0	G1	G2	G3	G4	G5	G6	G7	B0	B1	B2	B3	B4	B5	B6	B7	
BASIC COLOR	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
	BLUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	-
	GREEN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	-
	CYAN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-
	RED	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
	MAGENTA	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	-
	YELLOW	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	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	1	1	1	1	1	1	-
GRAY SCALE OF RED	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R0
	DARK ↑	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R1
		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R2
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	R3~R252
	↓ LIGHT	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
		1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R253
		0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R254
	RED	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R255
GRAY SCALE OF GREEN	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G0
	DARK ↑	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G1
		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G2
		:			:	:	:	:	:	:			:	:	:	:	:	:			:	:	:	:	:	G3~G252
	↓ LIGHT	:			:	:	:	:	:	:			:	:	:	:	:	:			:	:	:	:	:	
		0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	G253
		0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	G254
	GREEN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	G255
GRAY SCALE OF BLUE	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	B0
	DARK ↑	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	B1
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	B2
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	B3~B252
	↓ LIGHT	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	B253
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	B254
	BLUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	B255

Note) Definition of Gray :

Rn : Red Gray, Gn : Green Gray, Bn : Blue Gray (n = Gray level)

Input Signal : 0 = Low level voltage, 1 = High level voltage

Correspondence between Data and Display Position

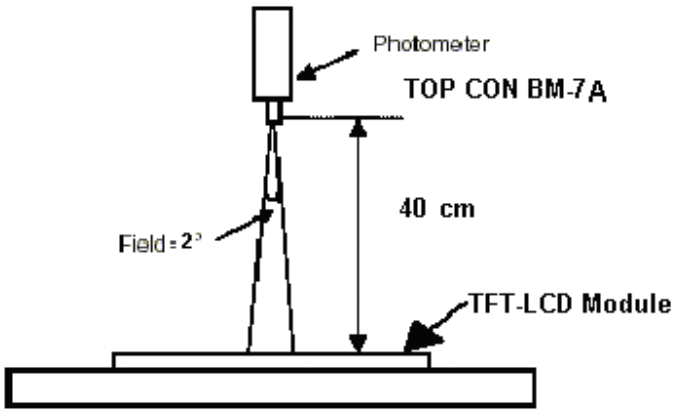


8. OPTICAL CHARACTERISTIC

Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit	Remarks
Viewing Angle	Horizontal	θ_x+	Center CR≥10	55	65	--	deg	Note 1,4
		θ_x-		55	65	--		
	Vertical	θ_Y+		35	45	--		
		θ_Y-		55	65	--		
Contrast Ratio		CR	at optimized viewing angle	250	300	--		Note 1,3
Response time	Rise	Tr	Center θx=θy =0°	--	5	--	ms	Note 1,7
	Fall	Tf		--	15	--	ms	
Uniformity		B-uni	θx=θy =0°	70	75	--	%	Note1,6
Brightness		L	θx=θy =0°	250	320	--	cd/m²	Note 1,2
Chromaticity		x_W	Center θx=θy =0°	0.2658	0.3158	0.3658		Note 1,7
		y_W		0.2893	0.3393	0.3893		
		x_R		0.5344	0.5844	0.6344		
		y_R		0.3156	0.3656	0.4156		
		x_G		0.2993	0.3493	0.3993		
		y_G		0.5200	0.5700	0.6200		
		x_B		0.1017	0.1517	0.2017		
		y_B		0.0653	0.1153	0.1653		
Image sticking		tis	2 hours			2	Sec	Note 8

The following optical specifications shall be measured in a darkroom or equivalent state (ambient luminance ≤1 lux, and at room temperature). The operation temperature is 25°C±2°C and LED IL =200mA.
The measurement method is shown in Note1.

Note1: The method of optical measurement:

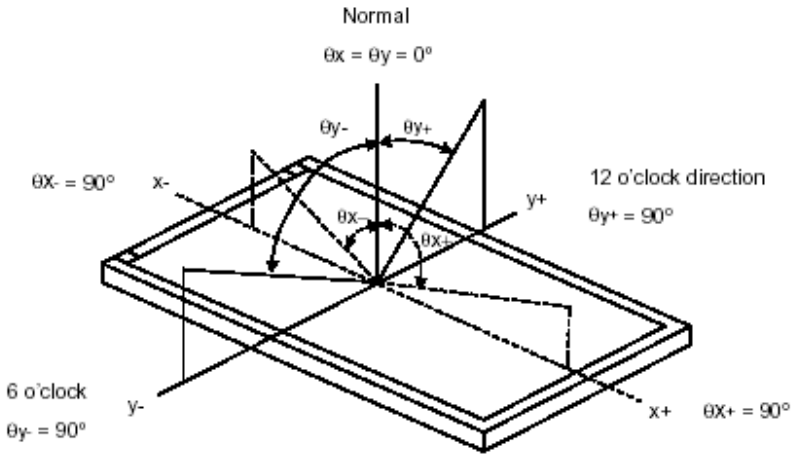


Note2: Measured at the center area of the panel and at the viewing angle of the $\theta x=\theta y=0°$ when all the input terminals of LCD panel are electrically opened.

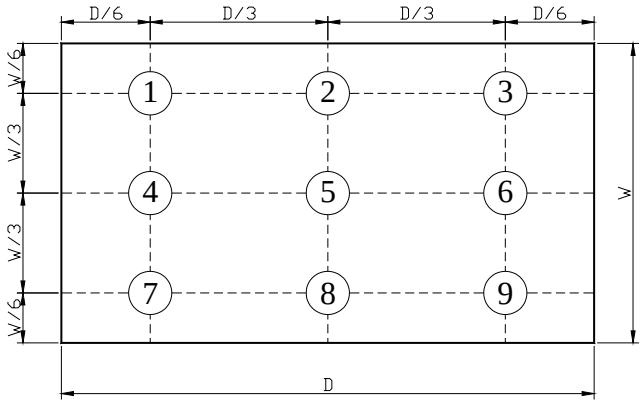
Note3: Definition of Contrast Ratio (CR):

$$CR = \frac{\text{Luminance with all pixels in white state}}{\text{Luminance with all pixels in Black state}}$$

Note4: Definition of Viewing Angle



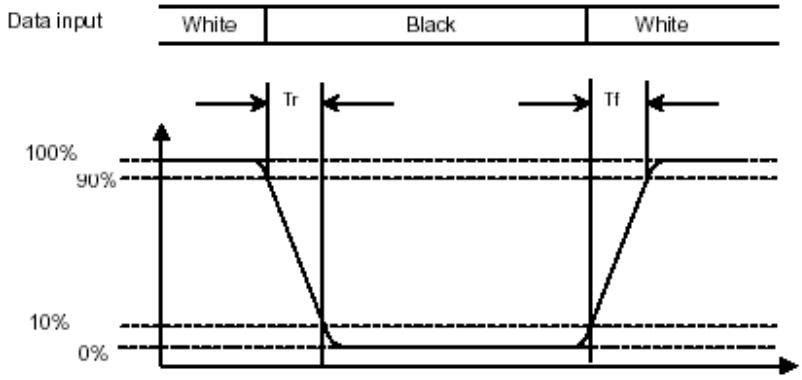
Note 5: Definition of Brightness Uniformity (B-uni):



$$\text{B-uni} = \frac{\text{Minimum luminance of 9 points}}{\text{Maximum luminance of 9points}} \quad \text{(Note 5).}$$

Note6: Definition of Response Time:

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



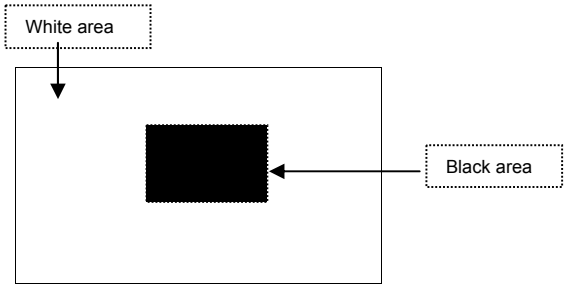
Note 7: Definition of Chromaticity:

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.

Note 8: Definition of Image sticking (tis):

Continuously display the test pattern shown in the figure below for 2 hours. Then display a completely white screen. The previous image shall not persist more than 2 sec at 25 °C

Image sticking pattern



9. PIN CONNECTIONS

9.1 TFT-LCD panel driving section

Pin NO.	SYMBOL	DESCRIPTION
1	GND	Power Ground
2	GND	Power Ground
3	VCC	Power Supply
4	VCC	Power Supply
5	R0	Red Data 0 (LSB)
6	R1	Red Data 1
7	R2	Red Data 2
8	R3	Red Data 3
9	R4	Red Data 4
10	R5	Red Data 5
11	R6	Red Data 6
12	R7	Red Data 7 (MSB)
13	G0	Green Data 0 (LSB)
14	G1	Green Data 1
15	G2	Green Data 2
16	G3	Green Data 3
17	G4	Green Data 4
18	G5	Green Data 5
19	G6	Green Data 6
20	G7	Green Data 7 (MSB)
21	B0	Blue Data 0 (LSB)
22	B1	Blue Data 1
23	B2	Blue Data 2
24	B3	Blue Data 3
25	B4	Blue Data 4
26	B5	Blue Data 5
27	B6	Blue Data 6
28	B7	Blue Data 7 (MSB)
29	GND	Power Ground
30	CLK	Clock Signals ; Latch Data at the Falling Edge
31	NC	No connection
32	HS	Horizontal synchronous signal
33	VS	Vertical synchronous signal
34	DE	Data Enable Signal
35	NC	No connection
36	NC	No connection
37	GND	Power Ground
38	GND	Power Ground
39	NC	No connection
40	NC	No connection

9.2 Backlight Unit Section

Pin No.	Symbol	I/O	Function	Remark
1	LED A	P	Power supply for backlight unit	Red
2	LED K	P	Ground for backlight unit	White

9.3 POWER OFF/ON SEQUENCE

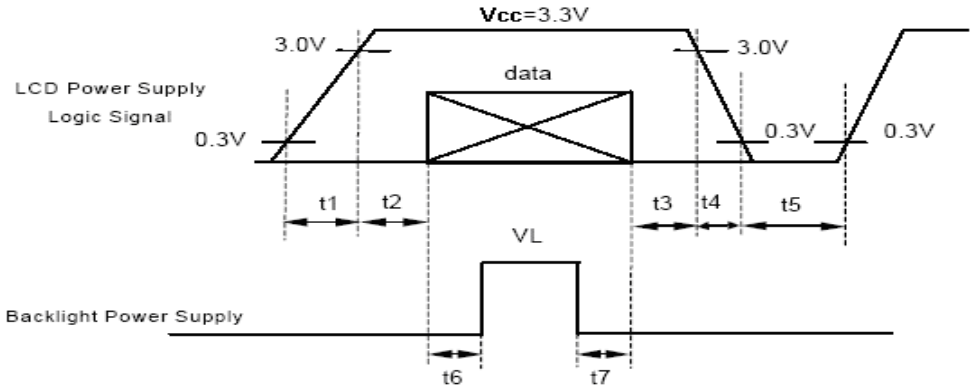
*1) Power Signal sequence:

t1 ≤10ms ; 1 sec≤ t5

50ms≤ t2 ; 200ms ≤t6

0<t3 ≤50ms ; 200ms≤ t7

0<t4 ≤10ms

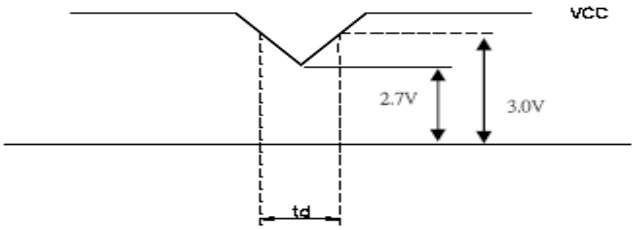


Data: RGB DATA, CLK,DE,HS,VS

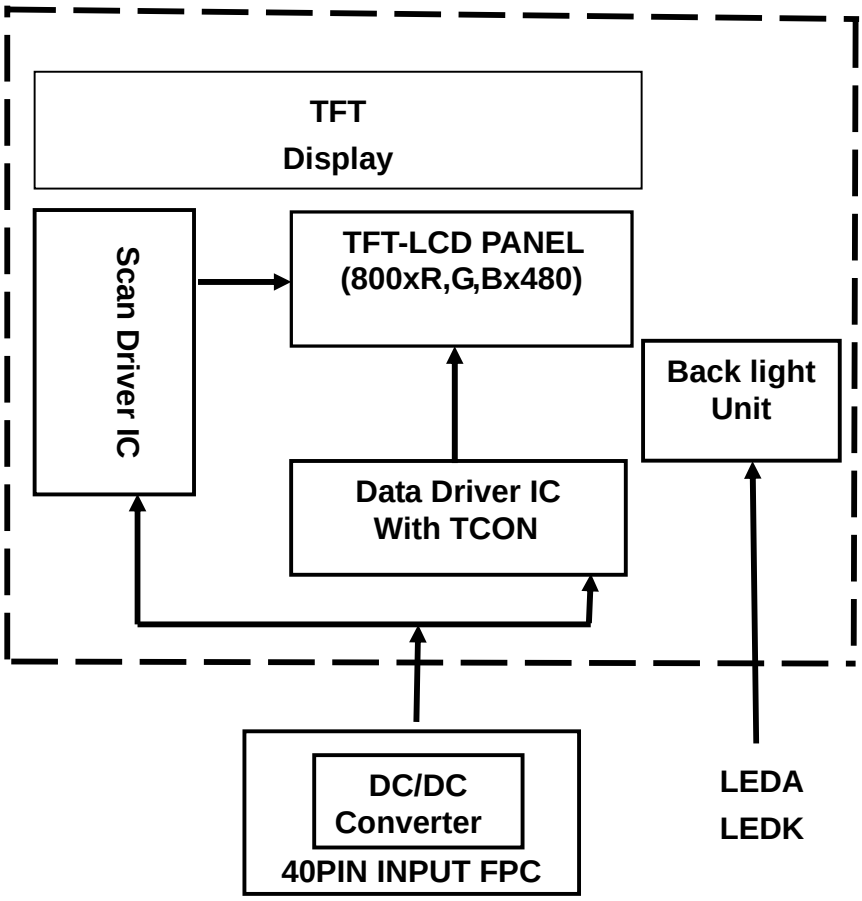
*2) VCC-dip condition:

(1) 2.7 V ≤VCC <3.0V,td ≤ 10 ms

(2) VCC>3.0V,VCC-dip condition should be the same with VCC-turn-on condition。



10. BLOCK DIAGRAM



11.TOUCH PANEL CHARACTERISTICS

1.Input Method and Activation Force

Input Method	Activation Force
0.8mm dia. Delrin Polyacetal stylus	50gf Max.
8mm dia. Silicon “finger”	50gf Max.

2.Typical Optical Characteristics

ITEM	Parameter
Visible Light Transmission	80% (TYP.)
Haze	5% (TYP.)

3. Electrical Specification

ITEM		Parameter
Operating Voltage		DC 7V Max
Circuit close resistance	X	300~1400Ω
	Y	150~800Ω
Circuit open resistance		≥20MΩ at 25V DC
Contact bounce		≤20ms
Linear Test		≤1.5%

4.Linearity

ITEM		Parameter
Linear Test Specification Direction	X	≤1.5%
	Y	≤1.5%

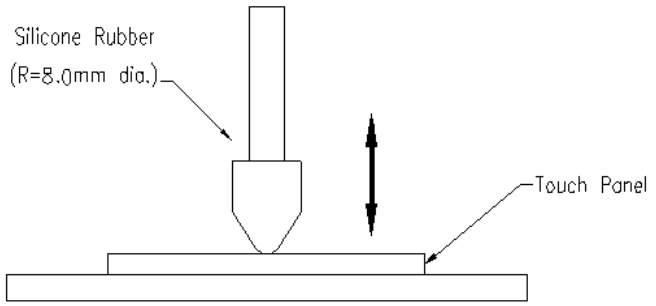
5.Specification

ITEM	Parameter
Operating Temperature	-10°C~+60°C
Storage Temperature	-20°C~+70°C

6.Durability test:

6.1 Touch panel is hit 1 millions times with a silicone rubber of R8 finger, hitting rate is by 250g at 2 times per second. The measurement must satisfy the following:

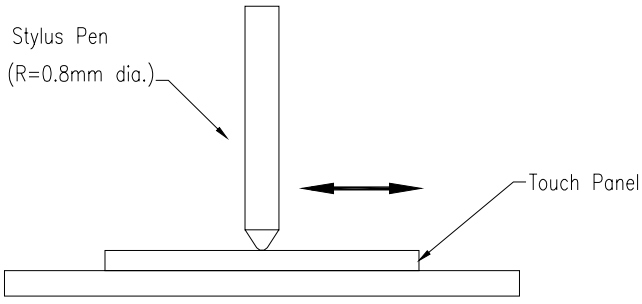
- Circuit close resistance: x300~1400Ω ; y 150~800Ω
- Circuit open resistance: ≥20MΩ at 25V DC
- Contact bounce: ≤20ms
- Linearity test: ≤3%



6.2 Stylus writing

Touch panel is drawn by R0.8 Darling stylus pen, at 250g forces, repeat one inch by 100k times. The measurement must satisfy the following:

- Circuit close resistance: x 300~1400Ω ; y 150~800Ω
- Circuit open resistance: ≥20MΩ at 25V DC
- Contact bounce: ≤20ms
- Linearity test: ≤3%



12. QUALITY ASSURANCE

12.1 Test Condition

12.1.1 Temperature and Humidity(Ambient Temperature)

Temperature : 25 ± 5°C
Humidity : 65 ± 5%

12.1.2 Operation

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

12.1.3 Container

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

12.1.4 Test Frequency

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

12.1.5 Test Method

Reliability Test Item & Level		Test Level
No.	Test Item	
1	High Temperature Storage Test	T=70℃,240hrs
2	Low Temperature Storage Test	T=-20℃,240hrs
3	High Temperature Operation Test	T=60℃,240hrs
4	Low Temperature Operation Test	T=-10℃,240hrs
5	High Temperature and High Humidity (No operation)	T=40℃,90%RH,240hrs
6	Thermal Cycling Test (No operation)	-20℃ → +25℃ → +60℃, 100 Cycles 30 min 5 min 30 min
7	Vibration Test (No operation)	Frequency :10 ~ 55 H_Z Amplitude :1.5 mm Sweep time : 11 mins Test Period: 6 Cycles for each direction of X, Y, Z
8	Shock Test (No operation)	100G, 6ms Direction: ±X, ±Y, ±Z Cycle: 3 times

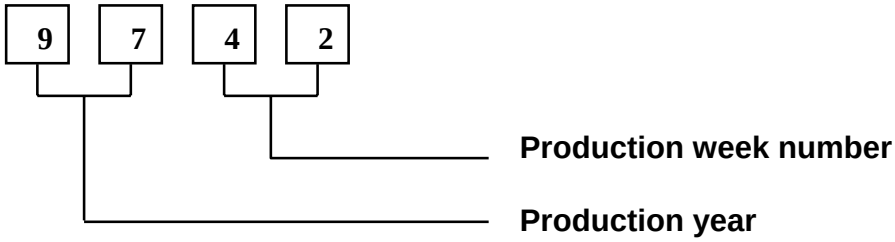
12.2 Judgment standard

The Judgment of the above test should be made as follow:

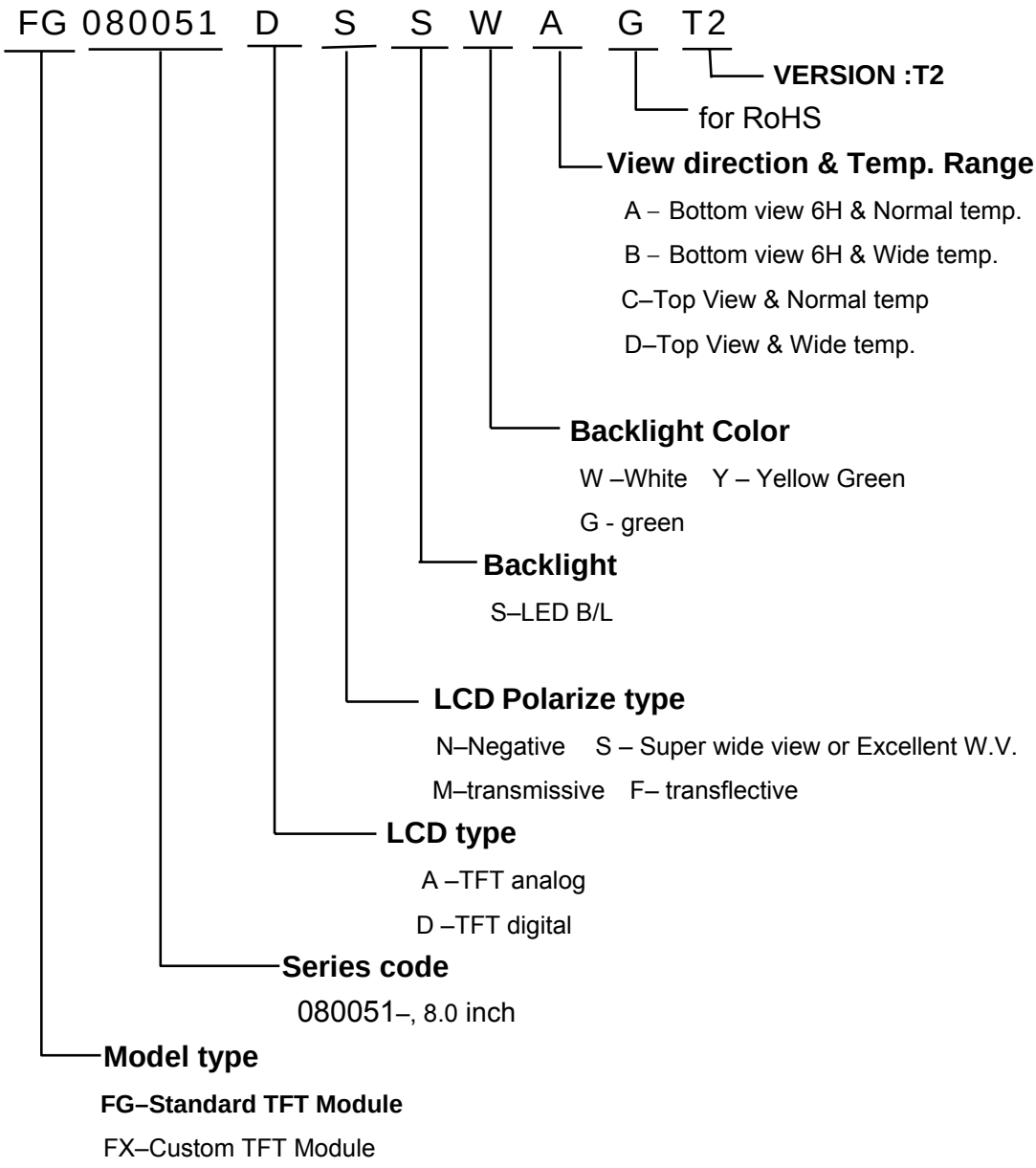
Pass: Normal display image with no obvious non-uniformity and no line defect. Partial transformation of the module parts should be ignored.

Fail: No display image, obvious non-uniformity, or line defect.

13. LOT NUMBERING SYSTEM



14. LCM NUMBERING SYSTEM



15. PRECAUTION IN USE LCM

1. LIQUID CRYSTAL DISPLAY (LCD)
LCD is made up of glass, organic sealant, organic fluid, and polymer based polarizers. The following precautions should be taken when handing,
(1). Keep the temperature within range of use and storage. Excessive temperature and humidity could cause polarization degradation, polarizer peel off or bubble.
(2). Do not contact the exposed polarizers with anything harder than an HB pencil lead. To clean dust off the display surface, wipe gently with cotton, chamois or other soft material soaked in petroleum benzin.
(3). Wipe off saliva or water drops immediately. Contact with water over a long period of time may cause polarizer deformation or color fading, while an active LCD with water condensation on its surface will cause corrosion of ITO electrodes.
(4). Glass can be easily chipped or cracked from rough handling, especially at corners and edges.
(5). Do not drive LCD with DC voltage.

2. Liquid Crystal Display Modules
2.1 Mechanical Considerations
LCM are assembled and adjusted with a high degree of precision. Avoid excessive shocks and do not make any alterations or modifications. The following should be noted.
(1). Do not tamper in any way with the tabs on the metal frame.
(2). Do not modify the PCB by drilling extra holes, changing its outline, moving its components or modifying its pattern.
(3). Do not touch the elastomer connector, especially insert an backlight panel (for example, EL).
(4). When mounting a LCM make sure that the PCB is not under any stress such as bending or twisting . Elastomer contacts are very delicate and missing pixels could result from slight dislocation of any of the elements.
(5). Avoid pressing on the metal bezel, otherwise the elastomer connector could be deformed and lose contact, resulting in missing pixels.

2.2. Static Electricity
LCM contains CMOS LSI's and the same precaution for such devices should apply, namely
(1). The operator should be grounded whenever he/she comes into contact with the module. Never touch any of the conductive parts such as the LSI pads, 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.

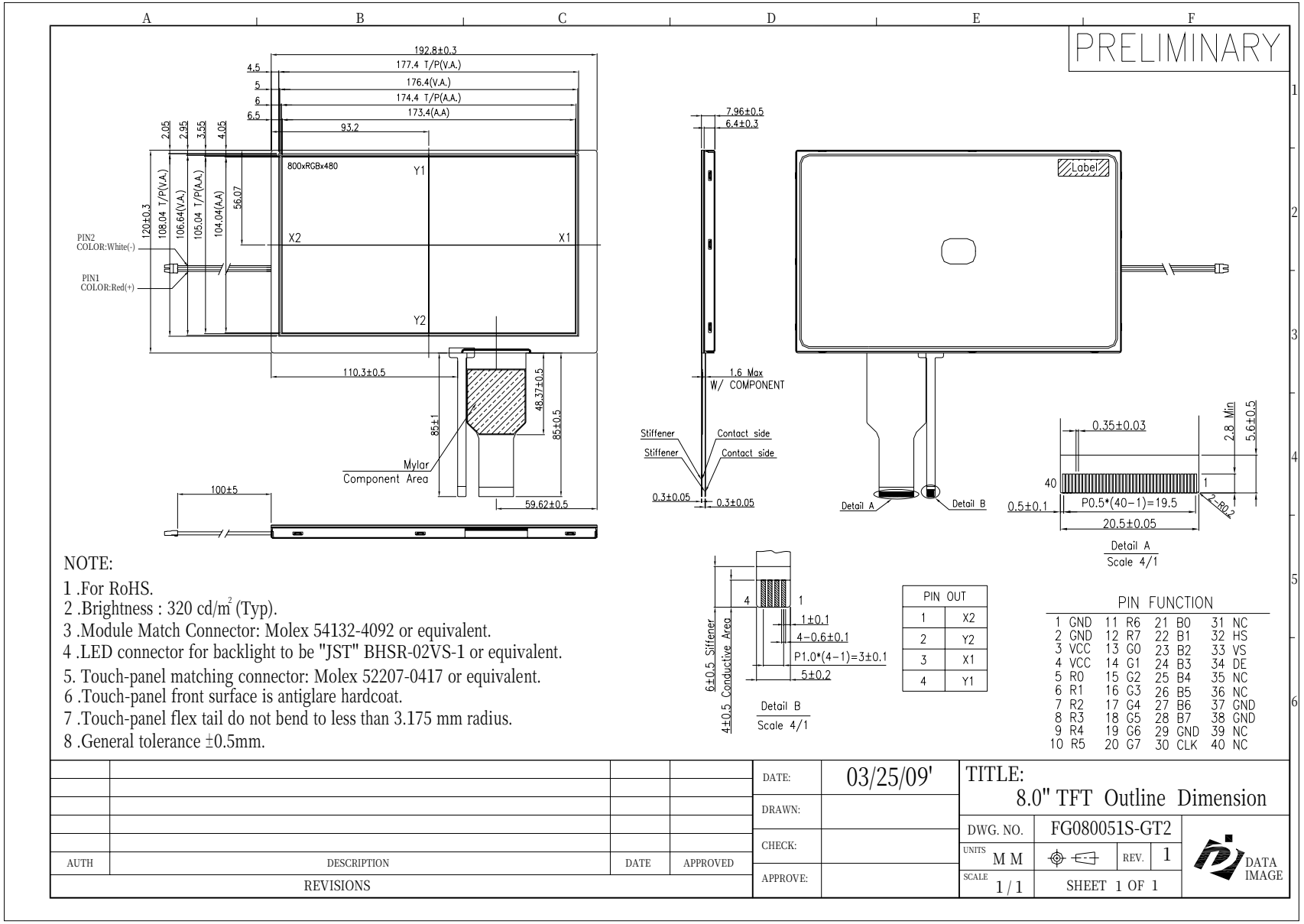
2.3 Soldering
(1). Solder only to the I/O terminals.
(2). Use only soldering irons with proper grounding and no leakage.
(3). Soldering temperature : 280°C ± 10°C
(4). Soldering time: 3 to 4 sec.
(5). Use eutectic solder with resin flux fill.
(6). If flux is used, the LCD surface should be covered to avoid flux spatters. Flux residue should be removed after wards.

2.4 Operation
(1). The viewing angle can be adjusted by varying the LCD driving voltage V0.
(2). Driving voltage should be kept within specified range; excess voltage shortens display life.
(3). Response time increases with decrease in temperature.
(4). Display may turn black or dark blue at temperatures above its operational range; this is (however not pressing on the viewing area) may cause the segments to appear "fractured".
(5). Mechanical disturbance during operation (such as pressing on the viewing area) may cause the segments to appear "fractured".

2.5 Storage
If any fluid leaks out of a damaged glass cell, wash off any human part that comes into contact with soap and water. Never swallow the fluid. The toxicity is extremely low but caution should be exercised at all the time.

2.6 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 responsible for any subsequent or consequential events.

16. OUTLINE DRAWING



NOTE:

1 .For RoHS.
2 .Brightness : 320 cd/m^2 (Typ).
3 .Module Match Connector: Molex 54132-4092 or equivalent.
4 .LED connector for backlight to be "JST" BHSR-02VS-1 or equivalent.
5. Touch-panel matching connector: Molex 52207-0417 or equivalent.
6 .Touch-panel front surface is antiglare hardcoat.
7 .Touch-panel flex tail do not bend to less than 3.175 mm radius.
8 .General tolerance ±0.5mm.

PIN OUT	
1	X2
2	Y2
3	X1
4	Y1

PIN FUNCTION

1	GND	11	R6	21	B0	31	NC
2	GND	12	R7	22	B1	32	HS
3	VCC	13	G0	23	B2	33	VS
4	VCC	14	G1	24	B3	34	DE
5	R0	15	G2	25	B4	35	NC
6	R1	16	G3	26	B5	36	NC
7	R2	17	G4	27	B6	37	GND
8	R3	18	G5	28	B7	38	GND
9	R4	19	G6	29	GND	39	NC
10	R5	20	G7	30	CLK	40	NC

AUTH	DESCRIPTION	DATE	APPROVED

REVISIONS

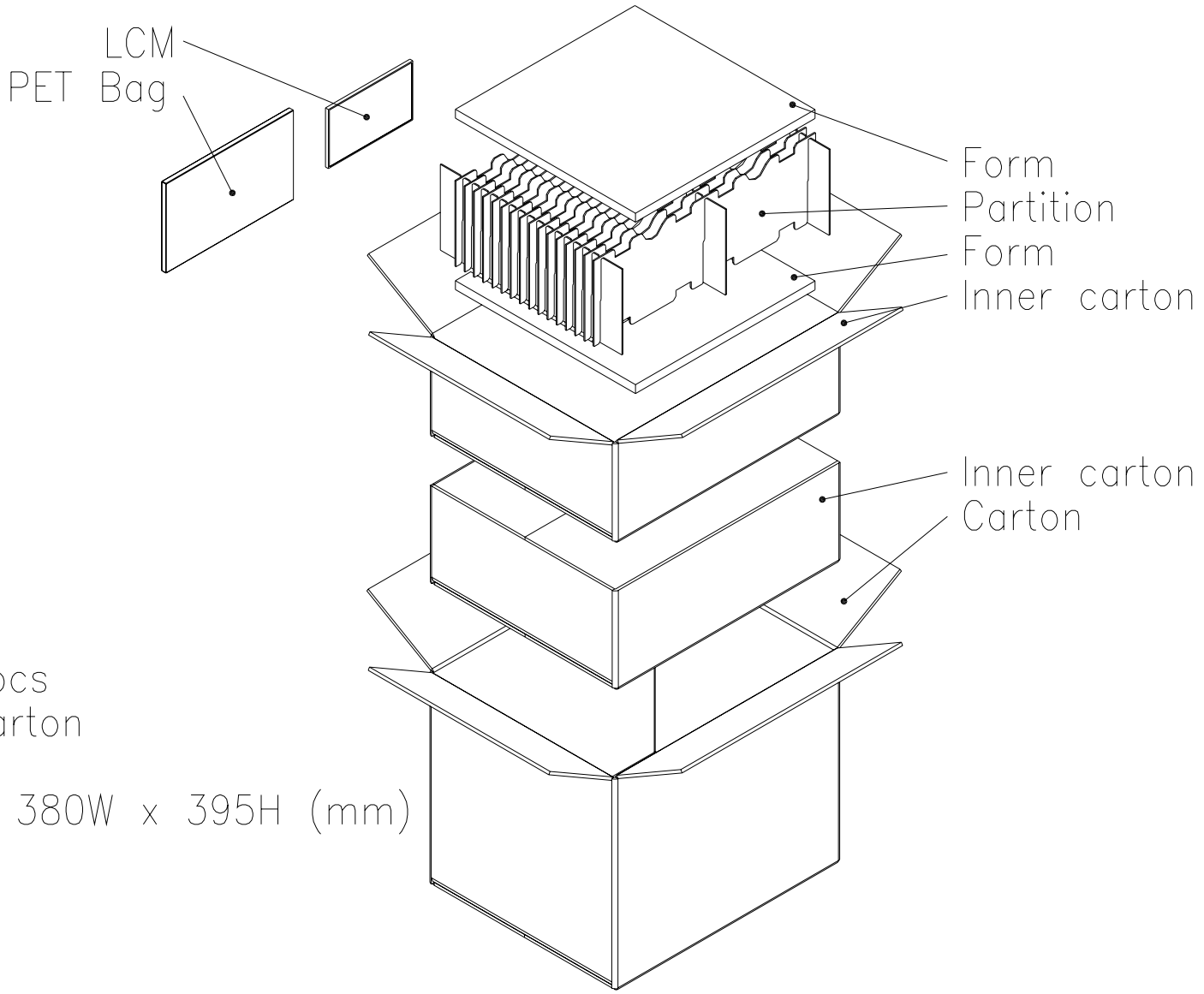
DATE:	03/25/09'
DRAWN:	
CHECK:	
APPROVE:	

TITLE: 8.0" TFT Outline Dimension

DWG. NO.	FG080051S-GT2		
UNITS	M M	REV.	1
SCALE	1/1	SHEET 1 OF 1	

DATA IMAGE

17. PACKAGE INFORMATION



1 Inner carton= 30 pcs
1 Carton= 2 Inner carton
= 30 pcs*2= 60 pcs
Carton size : 465L x 380W x 395H (mm)