

TFT-Display Datenblatt

Modell FG080033DSSWBGL1

Kurzdaten

Hersteller	Datimage
Diagonale	8,0" / 20,3cm
Format	4:3
Auflösung	800x600
Backlight	LED/300cd/m ²
Temperatur	-20...+70°C (Betrieb)



DATA IMAGE CORPORATION

TFT Module Specification

PRELIMINARY

ITEM NO.: FG080033DSSWBGL1

Table of Contents

1. COVER & CONTENTS	1
2. RECORD OF REVISION	2
3. GENERAL SPECIFICATIONS	3
4. ABSOLUTE MAXIMUM RATINGS	3
5. ELECTRICAL CHARACTERISTICS	3
6. INTERFACE SPECIFICATIONS	4
7. OPTICAL CHARACTERISTIC	7
8. PIN CONNECTIONS	10
9. BLOCK DIAGRAM	12
10. QUALITY ASSURANCE	13
11. LOT NUMBERING SYSTEM	14
12. LCM NUMBERING SYSTEM	14
13. PRECAUTIONS IN USE LCM	15
14. OUTLINE DRAWING	16
15. PACKAGE INFORMATION.....	17

Customer Companies	R&D Dept.	Q.C. Dept.	Eng. Dept.	Prod. Dept.
	JACK	ERIC	KEN	HUANG
Approved by	Version:	Issued Date:	Sheet Code:	Total Pages:
	1	2008/6/12		17

2. RECORD OF REVISION

Rev	Date	Item	Page	Comment
1	12/JUN/08			Initial PRELIMINARY

3. GENERAL SPECIFICATIONS

Parameter	Specifications	Unit
Screen Size	8 (diagonal)	inch
Display Format	800(H) x (R,G,B) x 600(V)	dot
Active Area	162(H) x 121.5 (V)	mm
Dot Pitch	0.0675 (H) x 0.2025 (V)	mm
Pixel Configuration	R.G.B.-Stripe	
Outline Dimension	183(W) x 141(H) x 6.6 (D) Max.	mm
Surface treatment	Anti-glare	
Back-light	LED	
Display mode	Normally white	
Weight	TBD	g
View Angle direction	6 o'clock	
Our components and processes are compliant to RoHS standard		

4. ABSOLUTE MAXIMUM RATINGS

GND= 0V

Parameter	Symbol	MIN.	MAX.	Unit	Remark
Power supply voltage	V_{DD}	-0.3	+7.0	V	
Logic input voltage	V_I	-0.3	$V_{DD}+0.3$	V	
Operating temperature	T_{op}	-20	70	°C	
Storage temperature	T_{st}	-30	80	°C	-

5. ELECTRICAL CHARACTERISTICS

A) Module

 GND= 0V, $T_a=25^{\circ}\text{C}$, DCLK=39.79 MHz

Parameter	Symbol	MIN.	Typ.	MAX.	Unit	Remark
Power Supply voltage	V_{DD}	3.0	3.3	3.6	V	
Power Supply Current	I_{DD}	--	200	--	mA	$V_{DD}=3.3\text{V}$
Ripple voltage	V_{RF}	-	-	100	mV_{P-P}	
"H" level logical input voltage	V_{IH}	0.7 VDD	-	VDD	V	
"L" level logical input voltage	V_{IL}	0	-	0.3 VDD	V	

B) Backlight Driving Conditions

 $T_a=25^{\circ}\text{C}$

Parameter	Symbol	MIN.	Typ.	MAX.	Unit	Remark
LED Voltage	V_L	9	--	10.5	V	Note 1
LED Current	I_L	--	200	--	mA	
LED Life time		30000	--		Hr	Note 2

 Note 1: $V_L=A-K$

 Note 2: The "LED life time" is defined as the module brightness decrease to 50% original brightness that the ambient temperature is 25 and $I_L=200\text{mA}$.

6. INTERFACE SPECIFICATIONS

6.1 Input signal characteristics

6.1.1 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

6.1.2 Resolution : 800x600

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
CLK frequency	F_{CPH}	30.5	39.79	42	MHz
CLK period	T_{CPH}	23.81	25.13	32.79	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	28	110	$T_{DEH}+T_{DEL}$
DE frame width	T_{DE}	-	600	-	$T_{DEH}+T_{DEL}$

6.2 Timing Controller Timing Chart

6.2.1 Clock and Data input waveforms

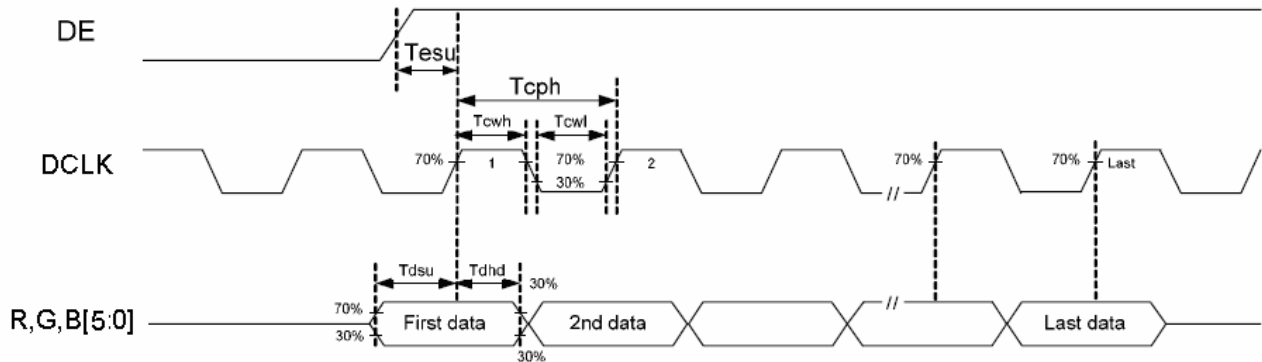
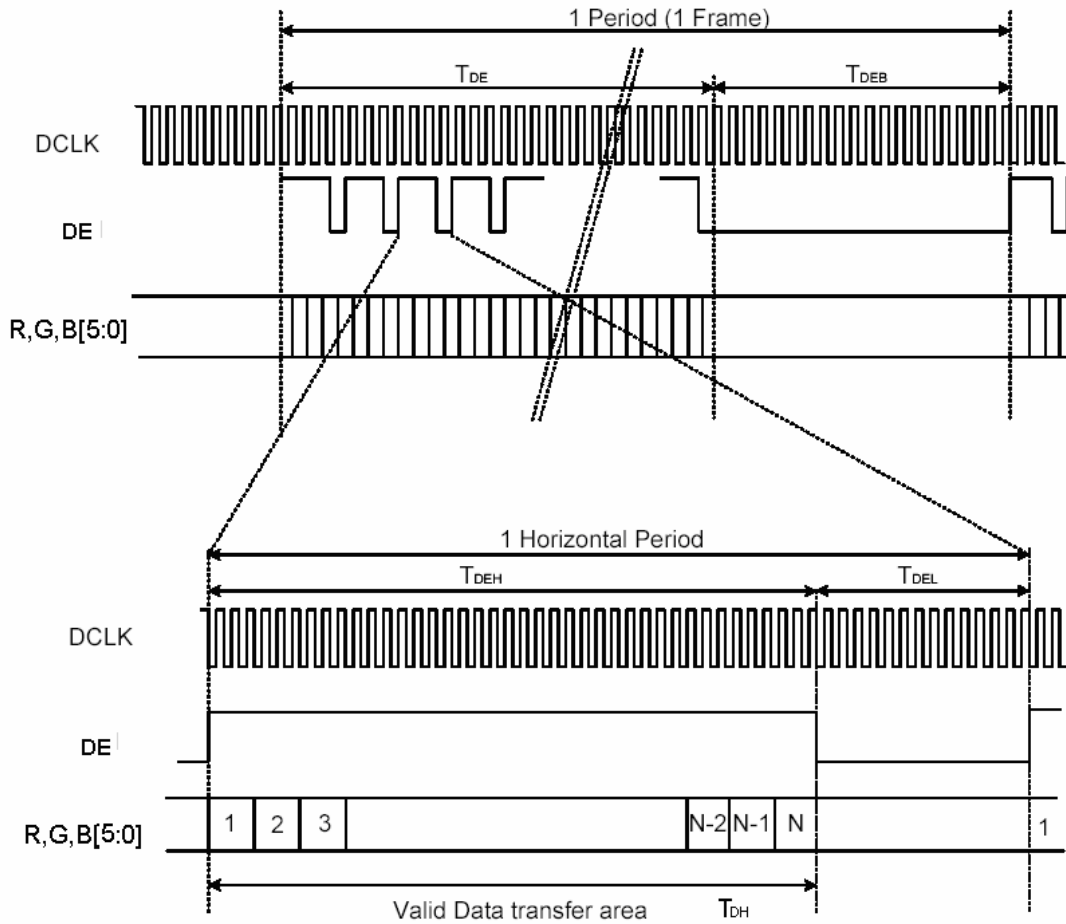


Figure 1 Clock and Data input waveforms.



N=800

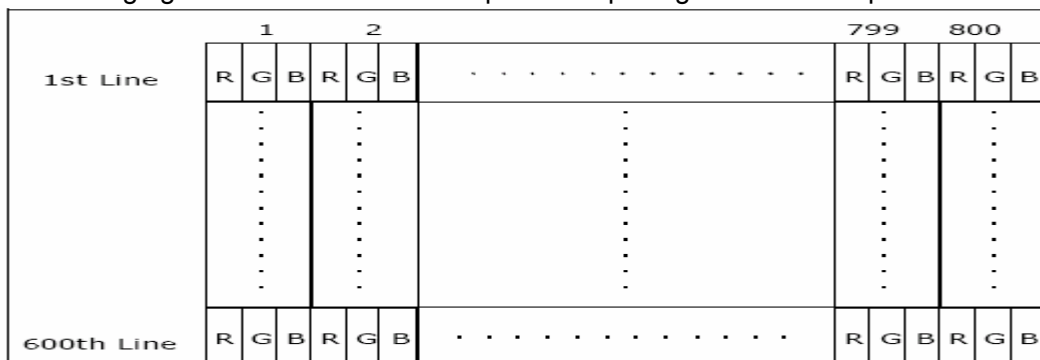
Figure 2 DE Mode Data Format

6.3 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

6.4 Pixel Format Image

Following figure shows the relationship of the input signals and LCD pixel format :



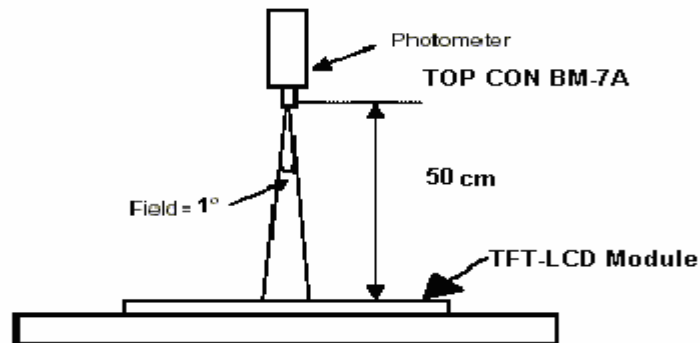
7. OPTICAL CHARACTERISTIC

7.1. Specification:

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit	Remarks	
Viewing Angle	Horizontal	θ_{x+}	55	65	--	deg	Note 1,4	
		θ_{x-}	55	65	--			
	Vertical	θ_{y+}	CR \geq 10	45	55			--
		θ_{y-}		55	65			--
Contrast Ratio	CR max.	Center	300	400	--		Note 1,3	
Response time	Rise	Tr	-	15	--	ms	Note 1,6	
	Fall	Tf	$\theta_x=\theta_y=0^\circ$	-	35	--		ms
Brightness Uniformity	B-uni	$\theta_x=\theta_y=0^\circ$	70	75	--	%	Note1,5	
Central Luminance	L	$I_L=200mA$	240	300	--	cd/m ²	Note 1,2	
White Chromaticity	x_w	Center	0.26	0.31	0.36		Note 1,2	
	y_w	$\theta_x=\theta_y=0^\circ$	0.28	0.33	0.38			
Image sticking	tis	2 hours			2	Sec	Note 7	

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 $25^\circ C \pm 2^\circ C$, and LED Current $I_L=200mA$. The measurement method is shown in Note1.

Note1: The method of optical measurement:

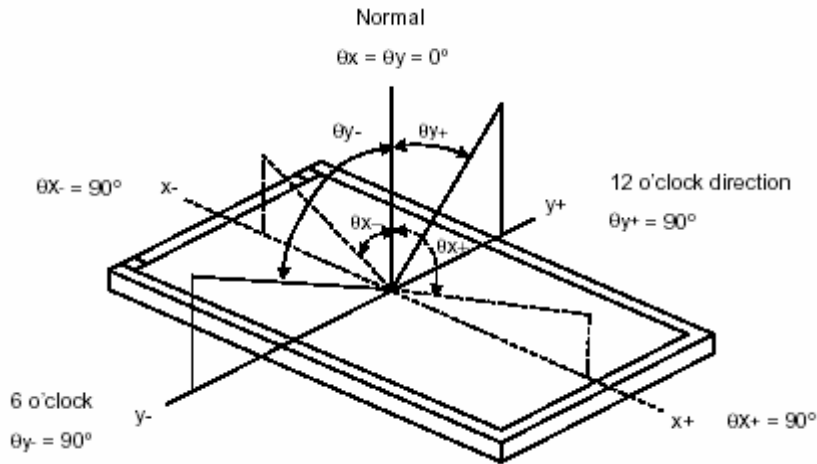


Note2: Measured at the central point of the LCD module and at the viewing angle of the $\theta_x=\theta_y=0^\circ$ (Note 4) when all the input terminals of LCD panel are electrically opened.

Note3: Definition of Contrast Ratio (CR):

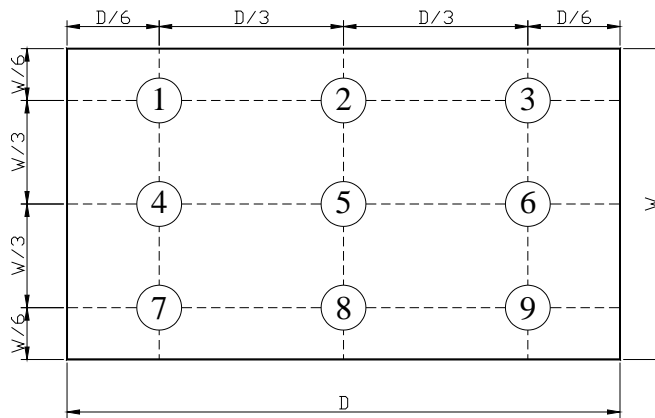
$$CR = \frac{\text{Luminance with all pixels in white state}}{\text{Luminance with all pixels in Black state}}$$

Note 4: Definition of Viewing Angle(CR≥10):



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

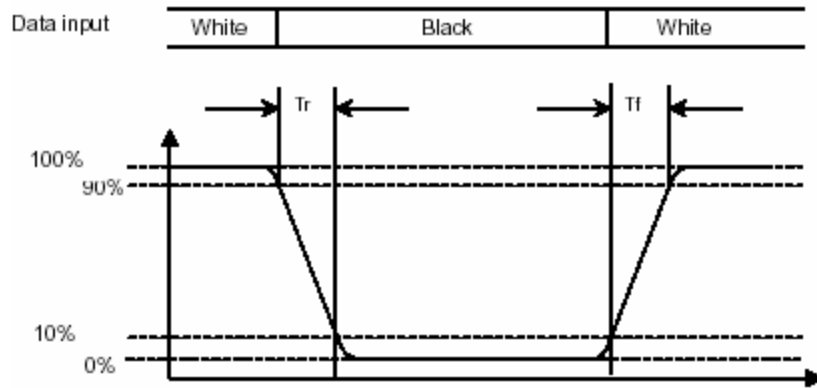
Luminance Measuring Points



$$B\text{-uni} = \frac{\text{Minimum luminance of 9 points}}{\text{Maximum luminance of 9 points}}$$

Note6: Definition of Response Time:

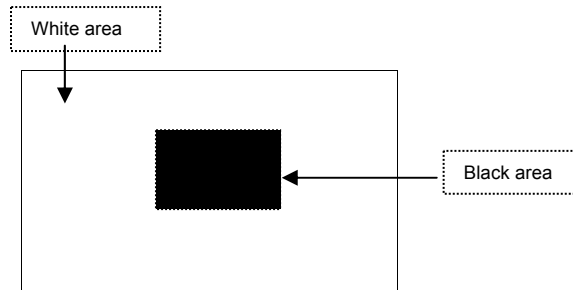
The Response Time is set initially by defining the "Rising Time (Tr)" and the "Falling Time (Tf)" respectively. Tr and Tf are defined as following figure.



Note 7: Definition of 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



8. PIN CONNECTIONS

8.1 TFT LCD Panel Driving Section

Pin NO.	Symbol	DESCRIPTION
1	GND	Ground
2	GND	Ground
3	NC	No Connection
4	V _{DD}	Power Supply
5	V _{DD}	Power Supply
6	V _{DD}	Power Supply
7	V _{DD}	Power Supply
8	NC	No Connection
9	DE	Data Enable Timing Signal
10	GND	Ground
11	GND	Ground
12	GND	Ground
13	B5	Blue Data 5 (MSB)
14	B4	Blue Data 4
15	B3	Blue Data 3
16	GND	Ground
17	B2	Blue Data 2
18	B1	Blue Data 1
19	B0	Blue Data 0 (LSB)
20	GND	Ground
21	G5	Green Data 5 (MSB)
22	G4	Green Data 4
23	G3	Green Data 3
24	GND	Ground
25	G2	Green Data 2
26	G1	Green Data 1
27	G0	Green Data 0 (LSB)
28	GND	Ground
29	R5	Red Data 5 (MSB)
30	R4	Red Data 4
31	R3	Red Data 3
32	GND	Ground
33	R2	Red Data 2
34	R1	Red Data 1
35	R0	Red Data 0 (LSB)
36	GND	Ground
37	GND	Ground
38	DCLK	Data Clock
39	GND	Ground
40	GND	Ground

8.2 Backlight Unit Section

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

8.3 Power Signal Sequence

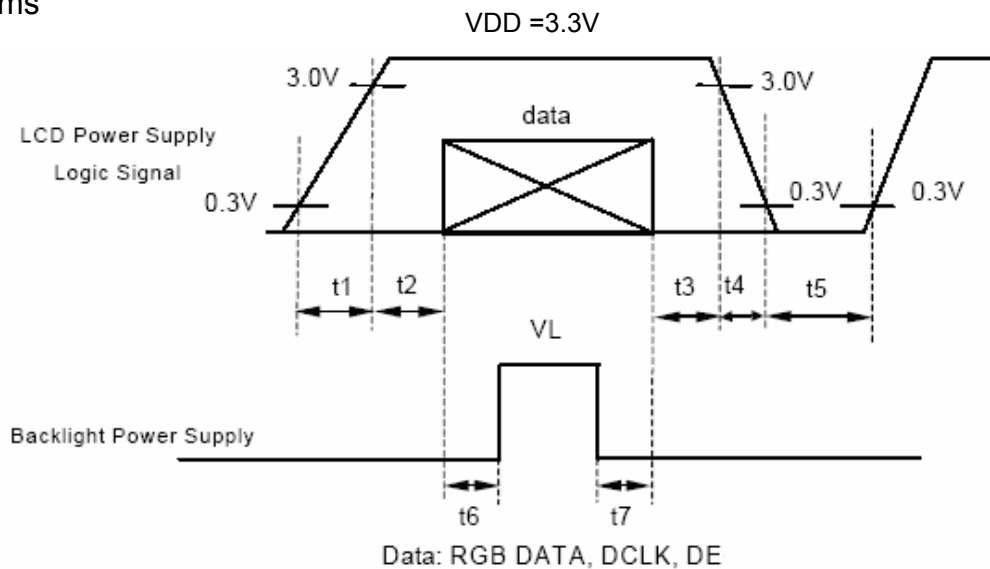
Remarks:

$t1 \leq 10\text{ms}$: $1 \text{ sec} \leq t5$

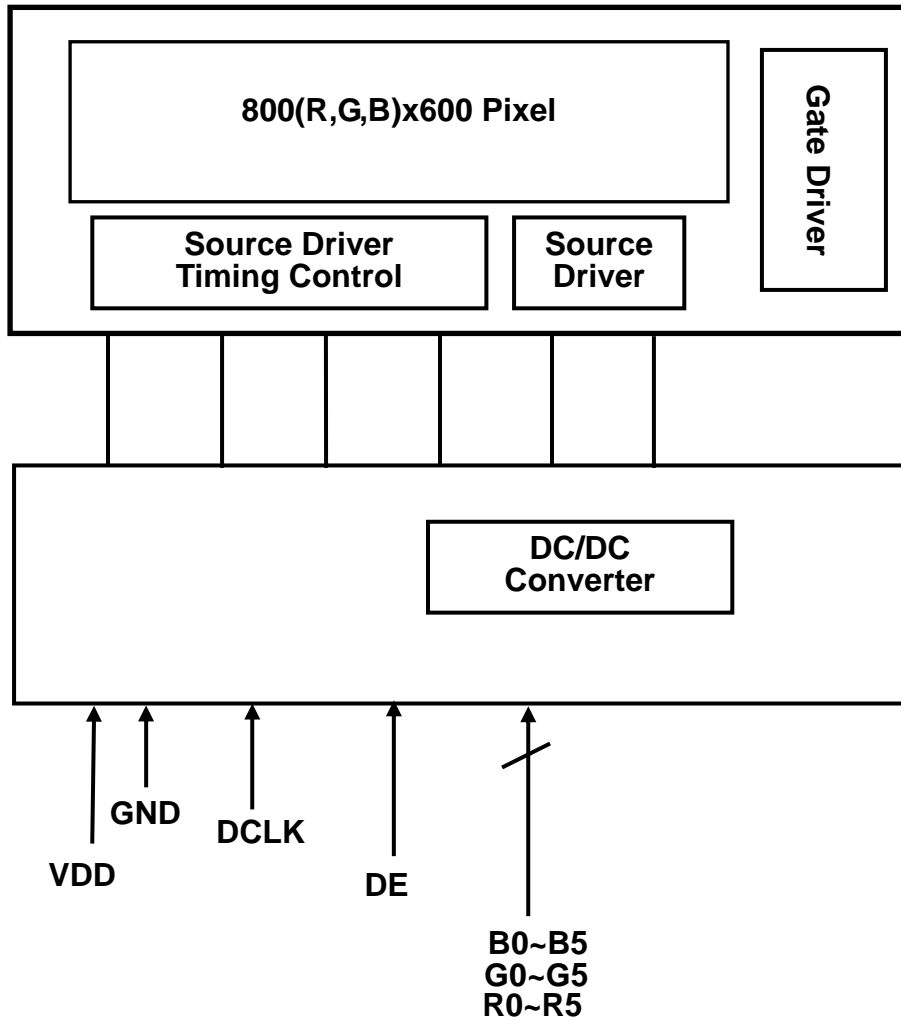
$50\text{ms} \leq t2$: $200\text{ms} \leq t6$

$0 < t3 \leq 50\text{ms}$: $200\text{ms} \leq t7$

$0 < t4 \leq 10\text{ms}$



9. BLOCK DIAGRAM



10. QUALITY ASSURANCE

10.1 Test Condition

10.1.1 Temperature and Humidity(Ambient Temperature)

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

Humidity : $65 \pm 5\%$

10.1.2 Operation

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

10.1.3 Container

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

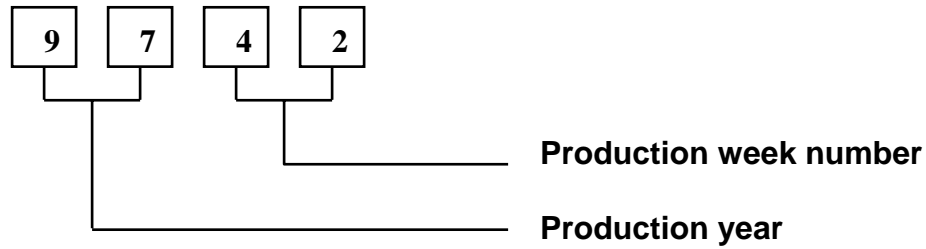
10.1.4 Test Frequency

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

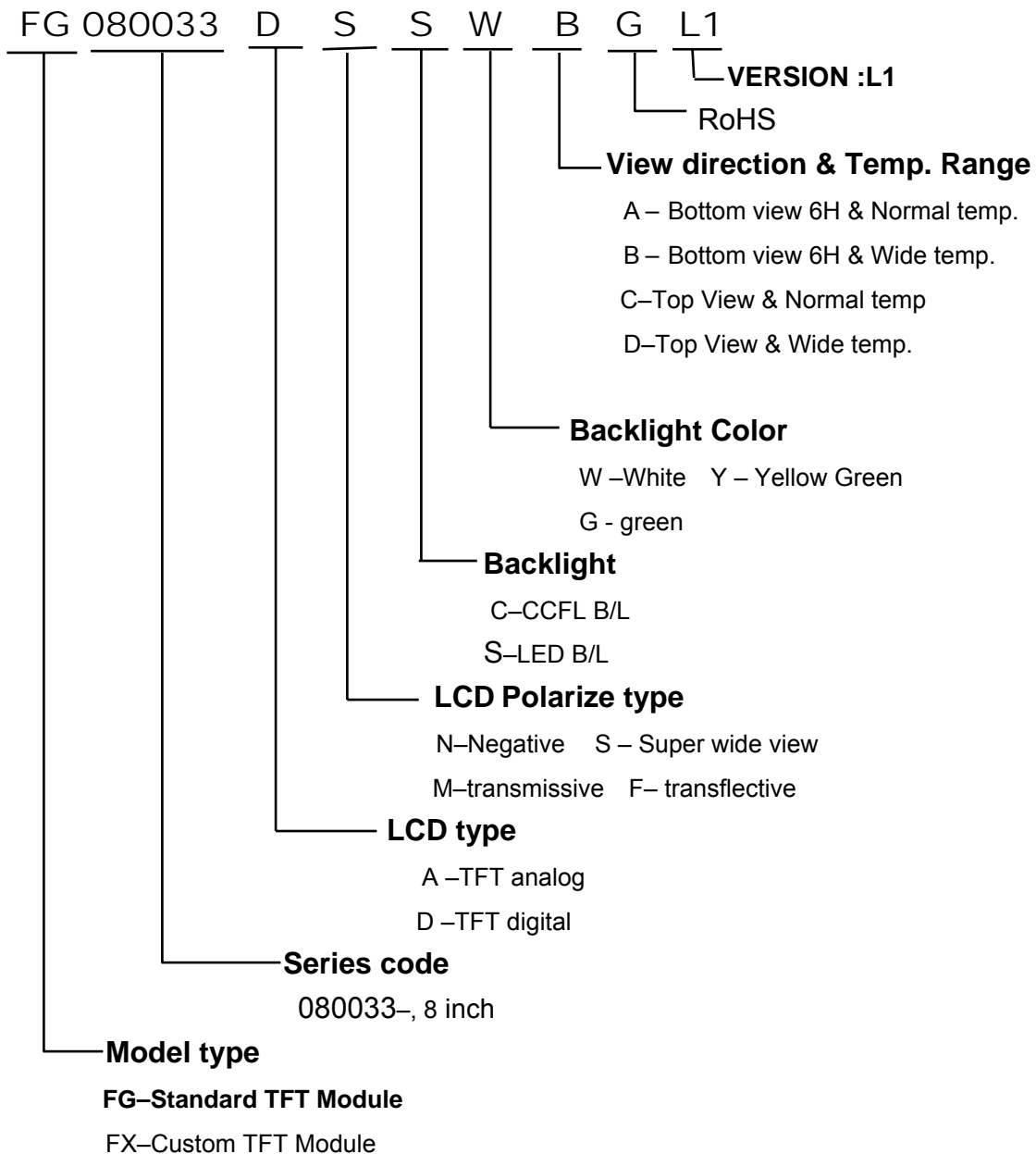
10.1.5 Test Method

Reliability Test Item & Level		Test Level
No.	Test Item	
1	High Temperature Storage Test	T=80 ,240hrs
2	Low Temperature Storage Test	T=-30 ,240hrs
3	High Temperature Operation Test	T=70 ,240hrs
4	Low Temperature Operation Test	T=-20 ,240hrs
5	High Temperature and High Humidity Operation Test	T=60 ,90%RH,240hrs
6	Thermal Cycling Test (No operation)	-20 → +25 → +70 ,100 Cycles 30 min 5 min 30 min
7	Vibration Test (No operation)	Frequency : 10 ~ 57 Hz Amplitude : 1.0 mm 58 ~ 500 Hz, 1G Sweep Time : 11min Test Period : 3hrs (1hrs for each Direction of X,Y,Z)
8	Shock Test (No operation)	80G, 6ms Direction : $\pm X, \pm Y, \pm Z$ Cycle : 1 times

11. LOT NUMBERING SYSTEM



12. LCM NUMBERING SYSTEM



13. PRECAUTIONS 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 handling,

- (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 benzine.
- (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 a 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 : $280^{\circ}\text{C} \pm 10^{\circ}\text{C}$
- (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 afterwards.

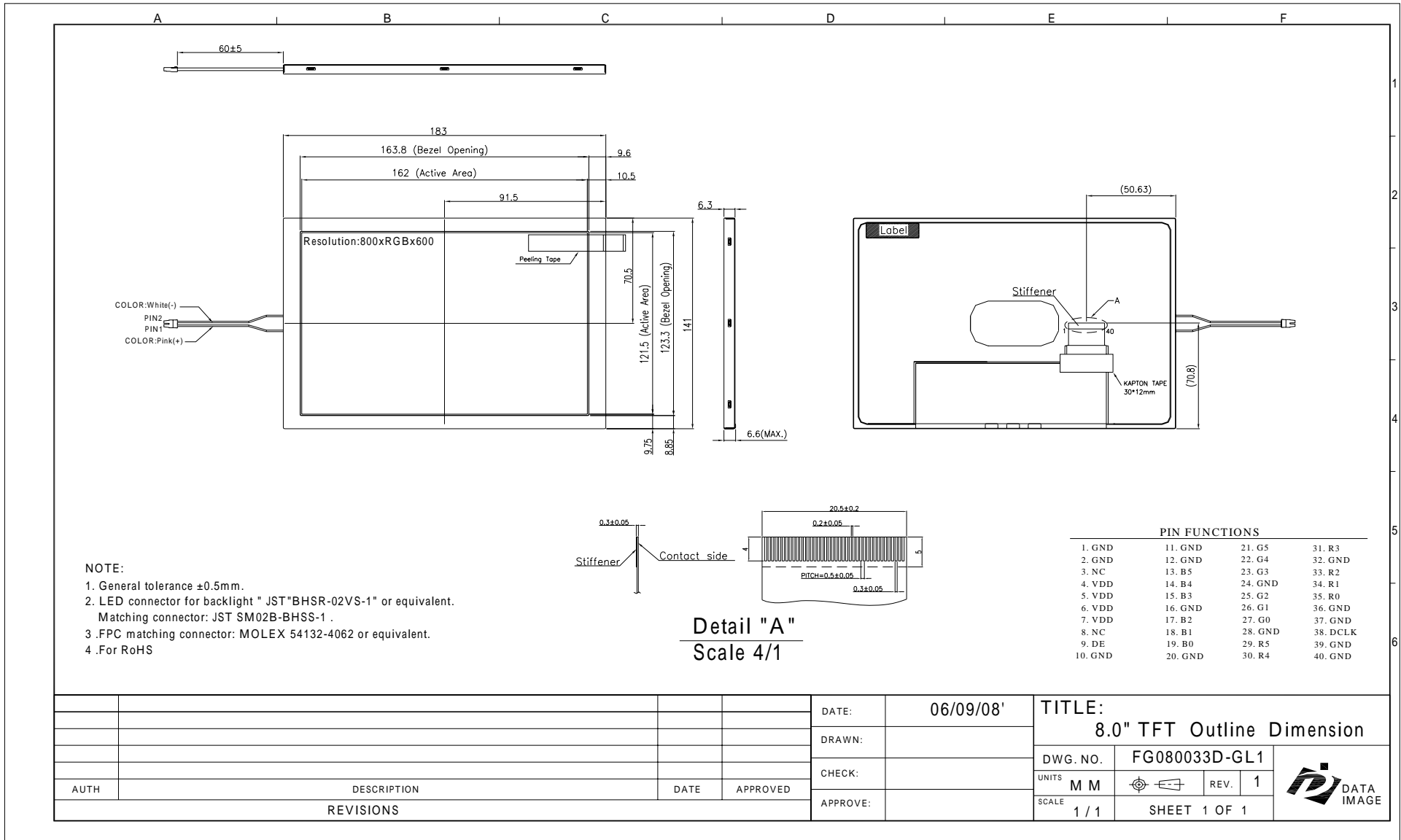
2.4 Operation

- (1). Driving voltage should be kept within specified range; excess voltage shortens display life.
- (2). Response time increases with decrease in temperature.
- (3). 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".
- (4). 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.

Confidential Document
14. OUTLINE DRAWING



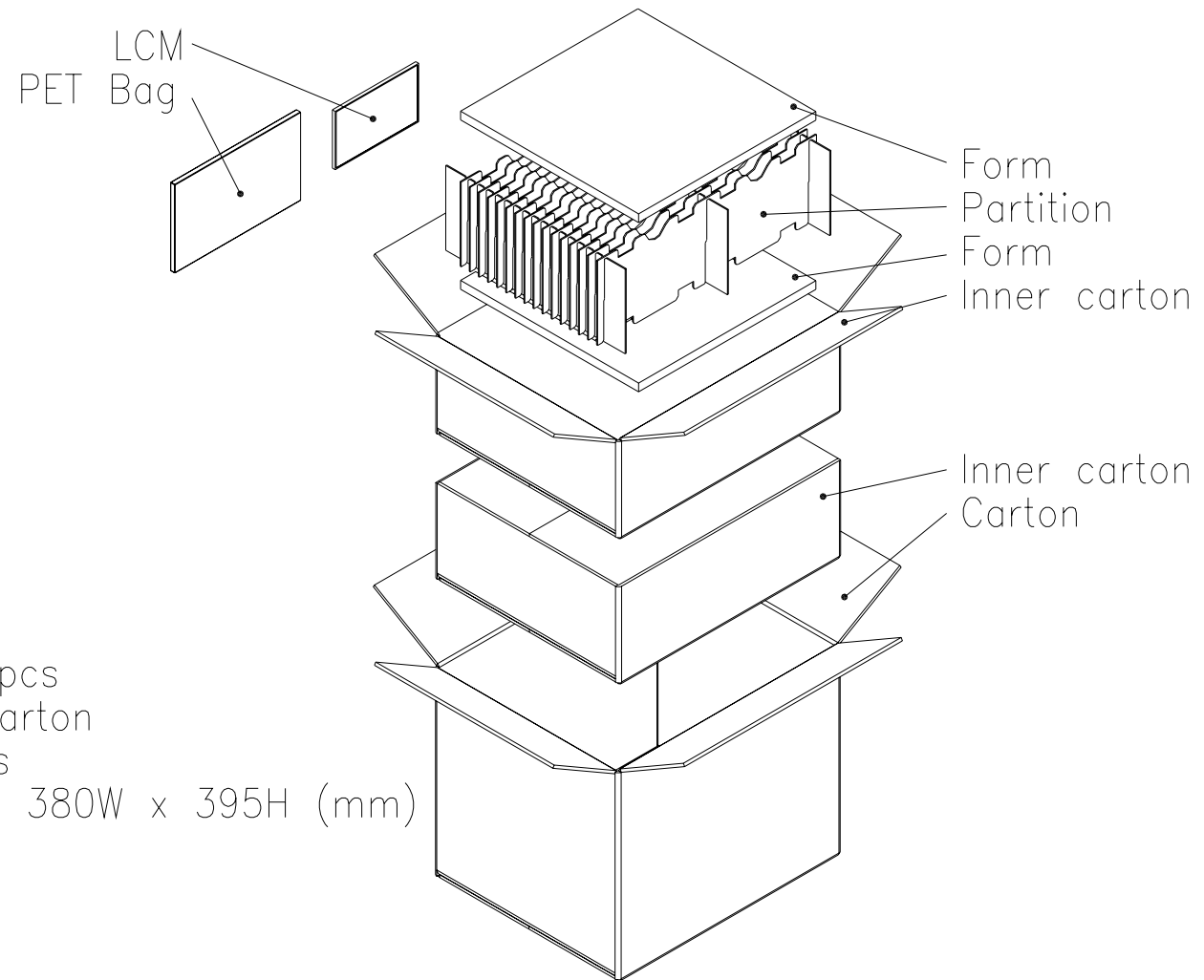
AUTH	DESCRIPTION	DATE	APPROVED
REVISIONS			

DATE:	06/09/08'
DRAWN:	
CHECK:	
APPROVE:	

TITLE: 8.0" TFT Outline Dimension			
DWG. NO.	FG080033D-GL1		
UNITS	M M	REV.	1
SCALE	1 / 1	SHEET 1 OF 1	



15.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)