







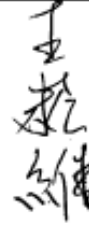
# APPROVAL SHEET

## 承認書

Customer 客戶名稱	
Part No. 產品型號	GPM765G0
Product type 產品內容	Mode: Transmissive and Normally white type 1.8" a-Si color TFT LCD Module
RoHS	<input type="checkbox"/> Non-compliance <input checked="" type="checkbox"/> Compliance
Remarks 備註欄	

☐ Preliminary Specification 暫行規格  
☒ Final Specification 正式規格

Signature by Customer:  
 客戶確認簽章:

Issued by QA	Checked by QA	Checked by PM	Approved By	
			QA	BU
 6/26/09	 6/26/09	 6/26/09	 6/26/09	 6/26/09



**Giantplus**  
Technology

RoHS  
COMPLIANT

## Specification of LCD Module

Product No.: GPM765G0

Issue date: 2009/6/26

Giantplus Technology Co., LTD

15 Industrial Rd., Lu-Chu Li, Toufen Chen

Miao-Li Hsien, 351 Taiwan.

TEL: 886-37-611-611

FAX: 886-37-611-612



## **TABLE OF CONTENTS**

<b>1. GENERAL DESCRIPTION .....</b>	<b>4</b>
<b>2. FEATURES .....</b>	<b>4</b>
<b>3. MECHANICAL SPECIFICATION.....</b>	<b>4</b>
<b>4. MECHANICAL DIMENSION .....</b>	<b>5</b>
<b>5. DRIVER &amp; CONTROLLER IC MAXIMUM RATINGS .....</b>	<b>6</b>
<b>6. ELECTRICAL CHARACTERISTICS .....</b>	<b>6</b>
6.1. Backlight Dc Characteristics.....	7
6.2. Pin Description .....	8
6.3. Timing Characteristics.....	9
6.4. Block Diagram Of Icm.....	10
6.5. Initialization Table.....	11
<b>7. ELECTRO-OPTICAL CHARACTERISTICS .....</b>	<b>14</b>
<b>8. RELIABILITY .....</b>	<b>17</b>
8.1. MTTF .....	17
8.2. Tests.....	17
8.3. Color performance.....	17
<b>9. INSPECTION CRITERIA .....</b>	<b>18</b>
9.1. Inspection Conditions .....	18
9.2. Light Method.....	18
9.3. Classification Of Defects .....	18
9.4. Sampling & Acceptable Quality Level .....	19
9.5. Definition Of Inspection Area.....	19
9.6. Items and Criteria .....	20
<b>10. ILLUSTRATION OF LCD DATE CODE(GP) .....</b>	<b>23</b>
<b>11. ILLUSTRATION OF LCD DATE CODE(KGP) .....</b>	<b>24</b>
<b>12. RoHS COMPLIANT WARRANTY .....</b>	<b>25</b>
<b>13. PRECAUTIONS FOR USE .....</b>	<b>25</b>



13.1.	Safety .....	25
13.2.	Storage Conditions .....	25
13.3.	Installing LCD Module .....	25
13.4.	Precautions For Operation .....	26
13.5.	Handling Precautions .....	26
13.6.	Warranty .....	29
<b>14.</b>	<b>FACTORY .....</b>	<b>29</b>
<b>15.</b>	<b>REVISION HISTORY .....</b>	<b>29</b>



## 1. GENERAL DESCRIPTION

The GPM765G0 model is a Color TFT LCD supplied by Giantplus. This main Module has an 1.8 inch diagonally measured active display area with 128 X RGB X 160 resolution. Each pixel is divided into Red, Green and Blue sub-pixels and dots which are arranged in vertical stripes. LCD color is determined with Dithering 262K Color signal for each pixel. The GPM765G0 has been designed to apply the interface method that enables low power, high speed, and high contrast. The GPM765G0 is intended to support applications where thin thickness, wide viewing angle ,low power are critical factors and graphic displays are important.

## 2. FEATURES

Display Mode	TFT module Transmissive and Normally white type
Display Format	RGB Stripe
Color	262K color / 65K color
Color configuration	Red=6 bit; Green=6 bit; Blue=6 bit / Red=5 bit; Green=6 bit; Blue=5 bit
Input Data	80 series Parallel 8 bit
Viewing Direction	12 O'clock
Backlight	White LED*2

## 3. MECHANICAL SPECIFICATION

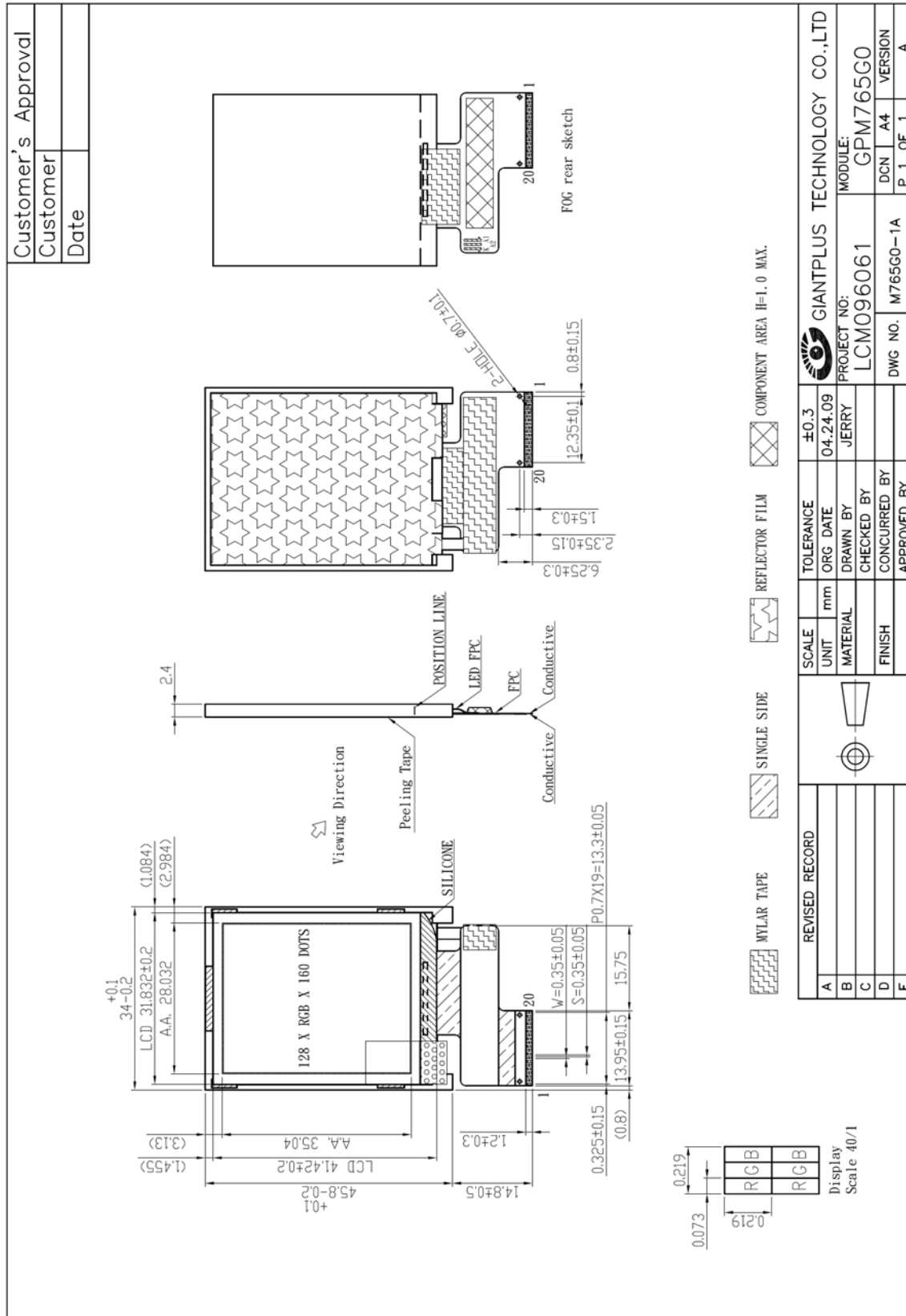
Item	Specifications	Unit
Dimensional outline	34.0(W)×45.8(H)×2.4(D)	mm
Resolution	128 X RGB × 160	Pixel
Active area	28.032(W)×35.04(H)	mm
Pixel pitch	0.219(W)×0.219(H)	mm
Dots pitch	0.073(W)×0.219(H)	mm

\*Not Include FPC

\*1 pixel = 3 dots = Red dot +Green dot +Blue dot



## 4. MECHANICAL DIMENSION





## 5. DRIVER & CONTROLLER IC MAXIMUM RATINGS

ITEM	SYMBOL	Min	Typ	Max	Units	Remark
Supply voltage	VDD	-0.3	-	+4.6	V	
Driver Supply voltage	VGH-VGL	-0.3	-	+33.0	V	
Logic Input voltage range	V <sub>IN</sub>	-0.3	-	VDD+0.3	V	
Logic Output voltage range	V <sub>O</sub>	-0.3	-	VDD+0.3	V	
Operating Temperature	T <sub>OP</sub>	-20	-	70	°C	
Storage Temperature	T <sub>ST</sub>	-30	-	80	°C	
Humidity	-	-	90	%RH	Note1	

Note 1: T<sub>A</sub> ≤ 40°C Without dewing

## 6. ELECTRICAL CHARACTERISTICS

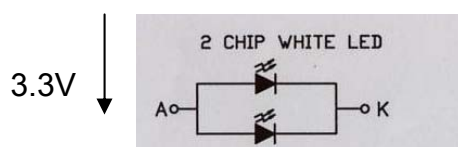
ITEM	SYMBOL	CONDITION	Min	Typ	Max	Units
Supply for Logic	VDD	Ta = 25°C	2.6	2.8	3.6	V
Supply Current for LCM	I <sub>DD</sub>	VDD=2.85V (Full Black Pattern)	-	1.3	2.6	mA
Low Level Input Voltage	V <sub>il</sub>	Ta = 25°C	GND	-	0.3 x V <sub>DD</sub>	V
High Level Input Voltage	V <sub>ih</sub>	Ta = 25°C	0.7 x V <sub>DD</sub>	-	V <sub>DD</sub>	V
Low Level Output Voltage	V <sub>ol</sub>	Ta = 25°C	GND	-	0.2 x V <sub>DD</sub>	V
High Level Output Voltage	V <sub>oh</sub>	Ta = 25°C	V <sub>DD</sub> -0.4	-	-	V



## 6.1. Backlight Dc Characteristics

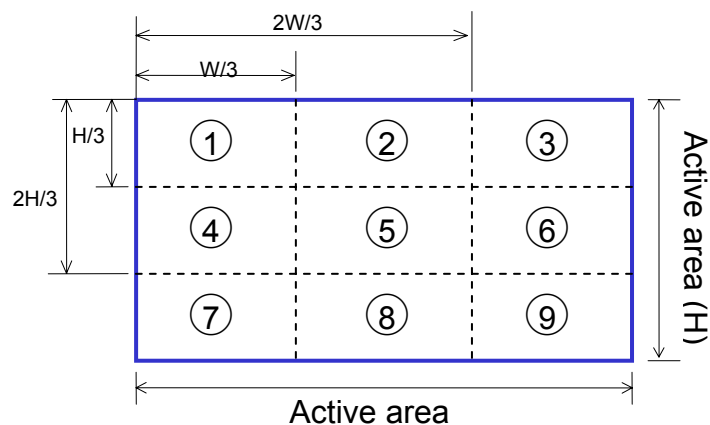
ITEM	SYMBOL	CONDITION	Min	Typ	Max	Units
Backlight power supply	$V_{LED}$	$T_a = 25^{\circ}\text{C}$ $I = 20\text{mA}$	---	3.3	3.4	V
Backlight current	$I_{LED}$	$T_a = 25^{\circ}\text{C}$	---	---	40	mA

★ 1 Backlight LED Circuit :



★2 Uniform measure condition :

- (a) Measure 9 point. Measure location is show below :
- (b) Uniform = (Min. brightness / Max. brightness)  $\times 100\%$  ,  $> 80\%$
- (c) Best Contrast, Main and sub panel All dots turn ON (White screen)





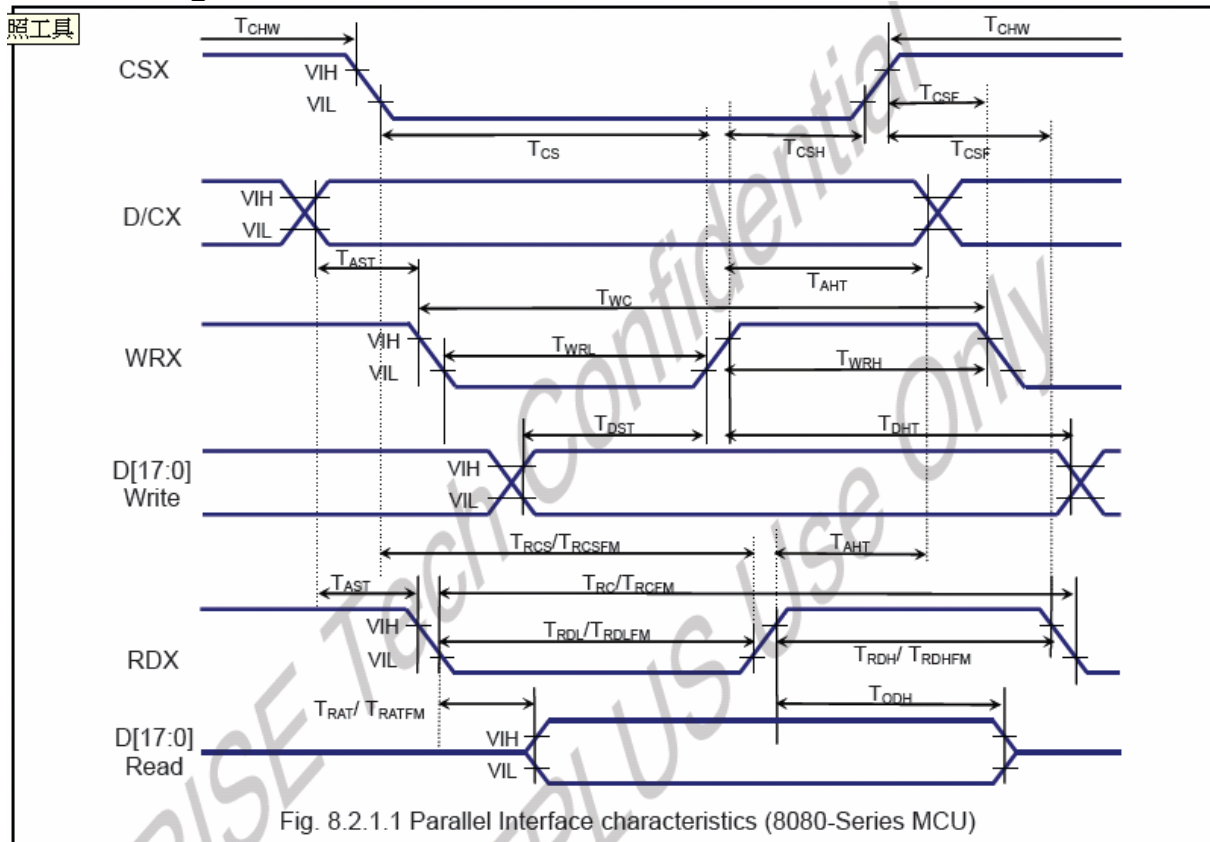


## 6.2.Pin Description

NO.	SYMBOL	I/O	Description
1	GND	P	Ground
2	GND	P	Ground
3	DB7	I/O	Bi-directional data bus
4	DB6	I/O	Bi-directional data bus
5	DB5	I/O	Bi-directional data bus
6	DB4	I/O	Bi-directional data bus
7	DB3	I/O	Bi-directional data bus
8	DB2	I/O	Bi-directional data bus
9	DB1	I/O	Bi-directional data bus
10	DB0	I/O	Bi-directional data bus
11	/RESET	I	When / Reset="L", all control registers are re-initialized by their default states
12	/WR	I	For and 80-system bus interface, serves as a write strobe signal and writes data at the low level
13	RS	I	Register select signal. Low: Index / Status ; High: Control register
14	/CS	I	Chip select, force low to active display
15	VDD	P	Power supply
16	GND	P	Ground
17	LEDA1	P	Anode for LED
18	LEDA2	P	Anode for LED
19	LEDK	P	Cathode for LED
20	GND	P	Ground



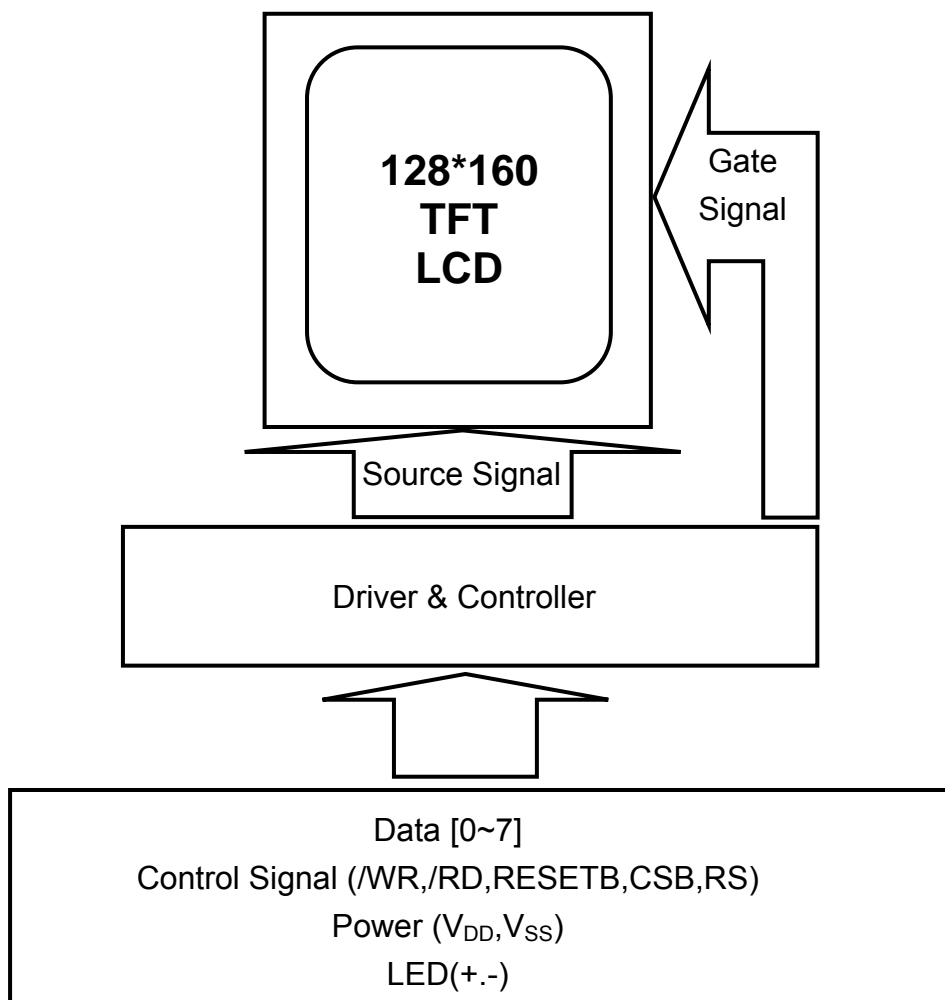
## 6.3. Timing Characteristics



Signal	Symbol	Parameter	MIN	MAX	Unit	Description
D/CX	$T_{AST}$	Address setup time	0		ns	
	$T_{AHT}$	Address hold time (Write/Read)	10		ns	
CSX	$T_{CHW}$	Chip select "H" pulse width	0		ns	-(3-transfer for one pixel)
	$T_{CS}$	Chip select setup time (Write)	15		ns	
	$T_{RCS}$	Chip select setup time (Read ID)	45		ns	
	$T_{RCSFM}$	Chip select setup time (Read FM)	355		ns	
	$T_{CSF}$	Chip select wait time (Write/Read)	10		ns	
	$T_{CSH}$	Chip select hold time	10		ns	
WRX	$T_{WC}$	Write cycle	66		ns	
	$T_{WRH}$	Control pulse "H" duration	15		ns	
	$T_{WRL}$	Control pulse "L" duration	15		ns	
RDX (ID)	$T_{RC}$	Read cycle (ID)	160		ns	When read ID data
	$T_{RDH}$	Control pulse "H" duration (ID)	90		ns	
	$T_{RDL}$	Control pulse "L" duration (ID)	45		ns	
RDX (FM)	$T_{RCFM}$	Read cycle (FM)	450		ns	When read from frame memory
	$T_{RDHFM}$	Control pulse "H" duration (FM)	90		ns	
	$T_{RDLFM}$	Control pulse "L" duration (FM)	355		ns	
D[17:0]	$T_{DST}$	Data setup time	10		ns	For maximum $C_L=30pF$ For minimum $C_L=8pF$
	$T_{DHT}$	Data hold time	10		ns	
	$T_{RAT}$	Read access time (ID)		40	ns	
	$T_{RATFM}$	Read access time (FM)		340	ns	
	$T_{ODH}$	Output disable time	20	80	ns	



## 6.4. Block Diagram Of Icm





## 6.5. Initialization Table

Instruction		D/CX	Code	Description
1	SLPOUT	0	0x11	Sleep out & booster on
2	INVOFF	0	0x20	Display inversion off (normal)
3	IDMOFF	0	0x38	Idle mode off
4	NORON	0	0x13	Partial off (Normal)
5	CASET	0	0x2A	Column address set
		1	0x00	X address start: $0 \leq XS \leq EFh, MV='0'$ X address end: $XS \leq XE \leq EFh, MV='0'$
		1	0x00	
		1	0x00	
		1	0x7F	
6	RASET	0	0x2B	Row address set
		1	0x00	Y address start: $0 \leq YS \leq 13Fh, MV='0'$ Y address end: $YS \leq YE \leq 13Fh, MV='0'$
		1	0x00	
		1	0x00	
		1	0x9F	
7	INVCTR	0	0xB4	Display inversion controll
		1	0x00	NLA, NLB, NLC: set inversion
8	Delay			500ms
9	VMCTR1	0	0xC5	VCOM control 1
		1	0XC0	nVM: VCOM input select
10	PWCTR1	0	0xC0	Power control setting
		1	0x03	VRH: Set the GVDD voltage
		1	0x00	VC:Set the VCI1 voltage
11	PWCTR2	0	0xC3	Power control setting
		1	0x05	Set the AVDD,VCL,VGH,VGL supply power level
12	VMCTR2	0	0xC6	VCOM control 2
		1	0x0B	VMA: VCOMAC voltage control
13	GAMSET	0	0x26	Gamma curve select
		1	0x04	Gamma curve ( G2.2 )
14	COLMOD	0	0x3A	Interface Pixel Format
		1	0x06	Interface format
15	GP definition	0	0xF0	
		1	0x5A	









Instruction		D/CX	Code	Description
16	GP definition	0	0xF2	
		1	0x00	
17	GP definition	0	0xB1	
		1	0x06	
		1	0x0A	
		1	0x04	
18	GP definition	0	0xF3	
		1	0x31	
19	GAMCTRP1	0	0xE0	Set Gamma correction
		1	0x00	Gamma adjustment (+ polarity)
		1	0x01	
		1	0x15	
		1	0x33	
		1	0x29	
		1	0x0B	
		1	0x1B	
		1	0x04	
		1	0x00	
		1	0x04	
		1	0x0E	
		1	0x0F	
		1	0x00	
		1	0x08	
		1	0x03	
		1	0x06	
20	GAMCTRN1	0	0xE1	Set Gamma correction
		1	0x06	Gamma adjustment (- polarity)
		1	0x20	
		1	0x1E	
		1	0x15	
		1	0x0A	
		1	0x04	
		1	0x03	
		1	0x17	
		1	0x06	



		1	0x04	
		1	0x02	
		1	0x00	
		1	0x0F	
Instruction		D/CX	Code	Description
		1	0x0E	
		1	0x04	
		1	0x05	
21	MADCTR	0	0X36	Memory data access control
		1	0X80	-
22	Delay			500ms
23	DISPON	0	0x29	Display on



## 7. ELECTRO-OPTICAL CHARACTERISTICS

Parameter		Symbol	Min.	Typ.	Max.	Units	Note
Luminance of white		Lwh	180		-	cd/m <sup>2</sup>	 3
Contrast Ratio		CR	250	300	-	-	 5
CIE color Coordinates	White	Wx	0.28	0.32	0.36	-	 BM5; 1° angle CIE 1931
		Wy	0.27	0.31	0.35		
	Red	Rx	0.60	0.64	0.68		
		Ry	0.30	0.34	0.38		
	Green	Gx	0.33	0.37	0.41		
		Gy	0.52	0.56	0.60		
	Blue	Bx	0.10	0.14	0.18		
		By	0.04	0.08	0.12		
Color Gamut ( NTSC )		S ( % )	-	60	-	%	 7
Response Time	Ring+Falling	Tr+Tf	-	30	-	ms	 4
Viewing Angle ( with Polarizer )	X axis right (ψ=0°)	$\theta_x$	-	65	-	degree	 6
	X axis left (ψ=180°)	$\theta_x$	-	65	-		
	Y axis up (ψ=90°)	$\theta_y$	-	50	-		
	Y axis down (ψ=270°)	$\theta_y$	-	65	-		

● For LCM

Note 1. Ambient temperature =  $25^\circ\text{C} \pm 2^\circ\text{C}$ .

Note 2. To be measured in the dark room.

Note 3. To be measured at the center area of panel with a viewing cone of  $1^\circ$  by Topcon luminance meter BM-5, after 10 minutes operation ( module ) .

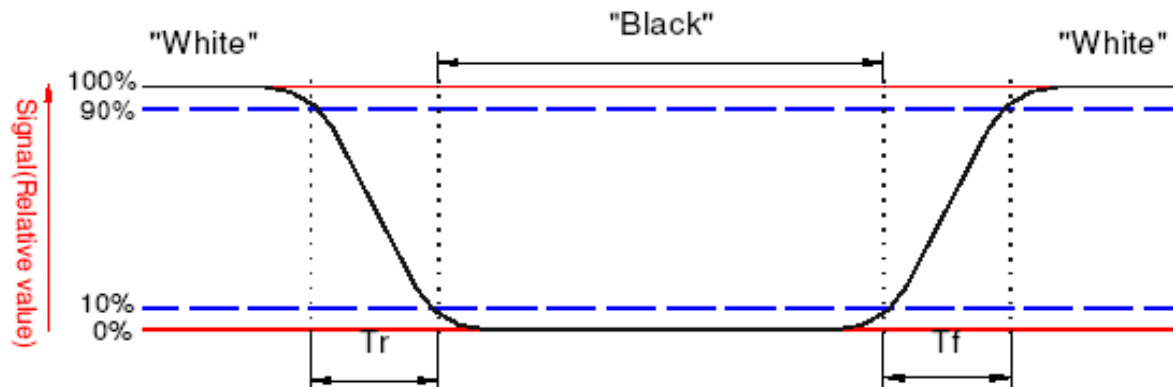


Note 4. Definition of response time :

The output signals of photo detector are measured when the input signals are changed from "black" to "white" ( falling time ) and from "white" to "black" ( rising time ) ,respectively.

The response time is defined as the time interval between the 10% and 90 % of amplitudes.

Refer to figure as below :



Note 5. Definition of contrast ratio :

Contrast ratio is calculated with the following formula.

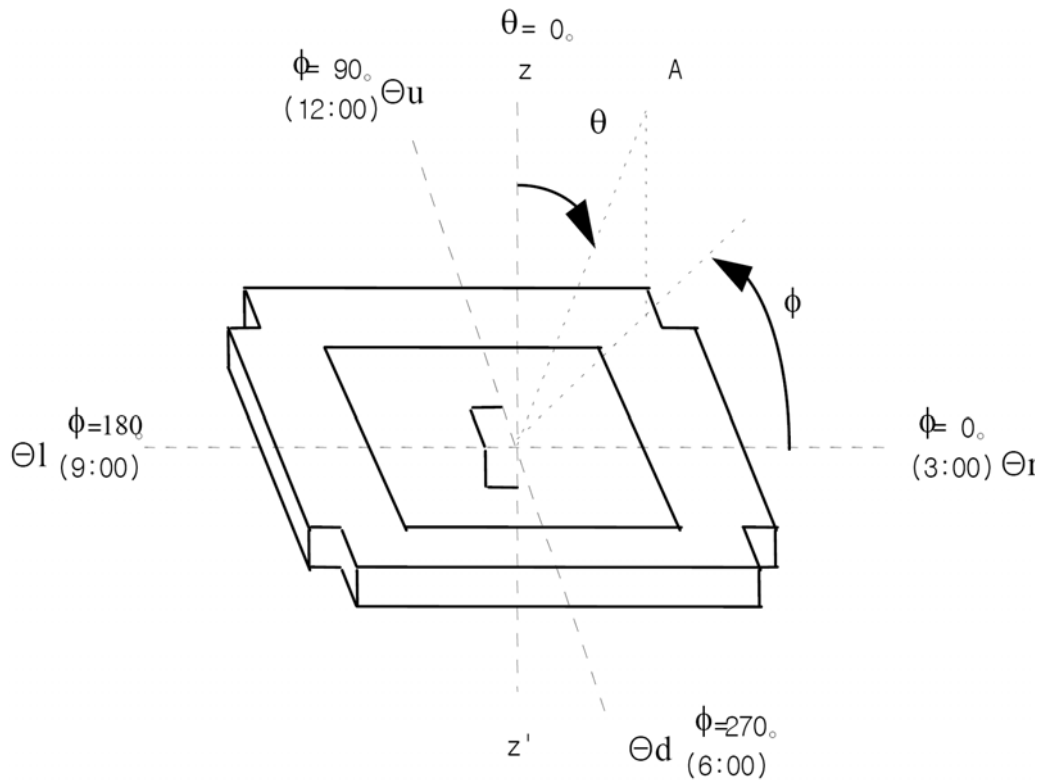
$$\text{Contrast ratio (CR)} = \frac{\text{Photo detector output when LCD is at "White" state}}{\text{Photo detector output when LCD is at "Black" state}}$$





Note 6. Definition of viewing angle (LCD-5200) :

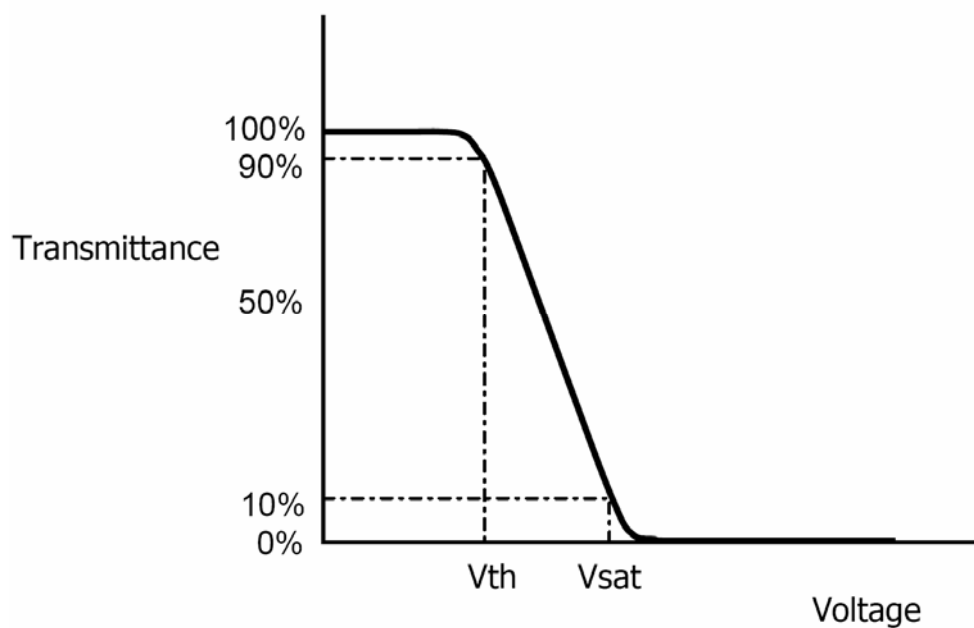
Refer to the figure as below



Note 7. The definition of Color Gamut

Color Gamut :  $S(\%) = ( \text{RGB Triangle Area} / \text{NTSC Triangle Area} ) \times 100$

Note 8. The definition of Vth and Vsat 100%





## 8. RELIABILITY

### 8.1.MTTF

The LCD module shall be designed to meet a minimum MTTF value of 50,000 hours with normal condition. (25°C in the room without sunlight; not include life time of backlight).

### 8.2.Tests

NO.	ITEM	CONDITION	CRITERION
1	High Temperature Operating	70°C 240 hrs	<ul style="list-style-type: none"> <li>No defect of Operational function in room temperature are allowable(23±5°C).</li> <li>Leakage current should be below double of initial value.</li> </ul>
2	Low Temperature Operating	-20°C 240 hrs	
3	High Temperature Non-Operating	80°C 240 hrs	
4	Low Temperature Non-Operating	-30°C 240 hrs	
5	High Temperature/ Humidity Non-Operating	50°C,90%RH 240 hrs	
6	Temperature Shock Non-Operating	-30°C (30min) ↔ 80°C (30min) (5min) 10 CYCLES	
7	Electro-static Discharge	HBM: ±2kv	

Note 1: Test after 24 hours in room temperature(23±5°C).

Note 2: The sampling above is individually for each reliability testing condition.

Note 3: The color fading of polarizing filter should not care.

Note 4: All of the reliability testing chamber above, is using D.I. water.(Min value: 1.0 MΩ-cm)

Note 5: In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judged as a good part.

### 8.3.Color performance

No.	ITEM	Criterion (initial)
1	Luminance	>50%
2	NTSC	>70%
3	Contrast Ratio	>50%



## 9. INSPECTION CRITERIA

### 9.1. Inspection Conditions

#### 9.1.1. Environmental conditions

The environmental conditions for inspection shall be as follows

Room temperature:  $23 \pm 5^{\circ}\text{C}$

Humidity:  $50 \pm 20\% \text{RH}$

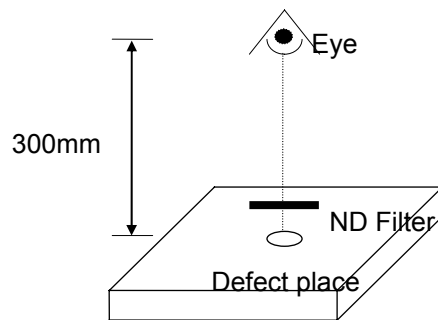
#### 9.1.1. The external visual inspection

With a single  $1000 \pm 200 \text{ lux}$  fluorescent lamp as the light source, the inspection was in the distance of 300mm or more from the LCD to the inspector's eyes.

### 9.2. Light Method

9.2.1. Environment lamp under  $1000 \pm 200 \text{ lux}$ , Viewing direction for inspection over 300mm.

9.2.2. The distance from eye to defect around 300mm, the distance from ND Filter to defect around 25~30mm



### 9.3. Classification Of Defects

#### 9.3.1. Major defect

A major defect refers to a defect that may substantially degrade usability for product applications.

#### 9.3.2. Minor defect

A minor defect refers to a defect which is not considered to be able substantially degrade the product application or a defect that deviates from existing standards almost unrelated to the effective use of the product or its operation.



Notes: If the LCD/LCM 's cosmetic and display performance do not specify in "inspection criterion", it should be based on these delivered samples.

## 9.4.Sampling & Acceptable Quality Level

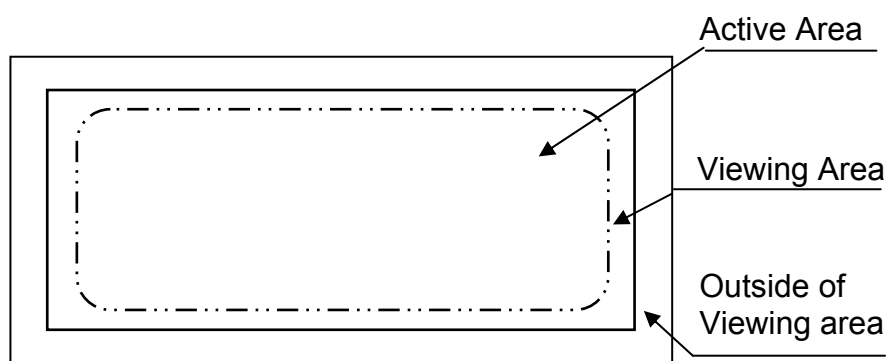
Level II, MIL-STD-105E

	Major	Minor
Cosmetic	1.0 %	1.5 %
Electrical-display	0.4%	0.65 %

## 9.5.Definition Of Inspection Area

V.A: Viewing Area

A.A: Active Area

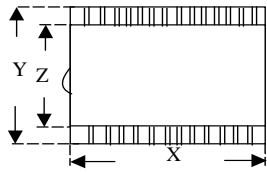
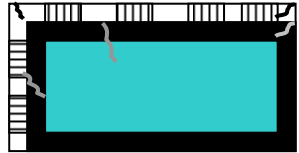




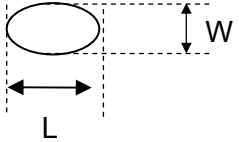
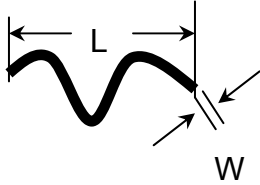
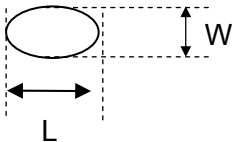
## 9.6. Items and Criteria

### 9.6.1. Visual inspection criterion in cosmetic

#### (1) Glass defect

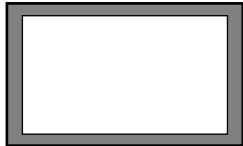
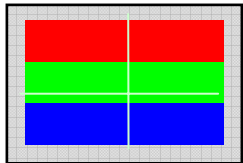
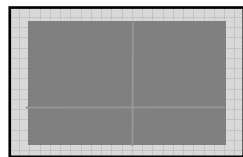
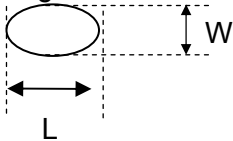
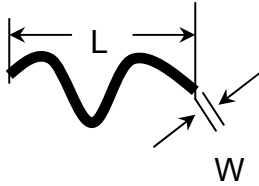
Glass defect			
No	Defect	Criteria	Remark
1	Dimension (Minor)	By engineering diagram	
2	Cracks (Major)	Extensive crack 【Reject】	

#### (2) LCM appearance defect

No	Defect	Criteria		Remark
1	Round type (Minor)	Spec.	Permissible Qty	1. $\phi = (L+W)/2$ , L: Length, W: Width 2. Disregard if out of A.A. 
		$\phi \leq 0.10\text{mm}$	Disregard	
		$0.10\text{mm} < \phi \leq 0.20\text{mm}$	3	
		$0.20\text{mm} < \phi$	0	
2	Line type (Minor)	Spec.	Permissible Qty	1. L: Length, W: Width 2. Disregard if out of A.A. 
		$W \leq 0.03\text{mm}$	Disregard	
		$L \leq 3.0\text{mm}$ and $0.03\text{mm} < W \leq 0.05\text{mm}$	2	
		$L \leq 3.0\text{mm}$ and $0.05\text{mm} < W \leq 0.10\text{mm}$	1	
		$W > 0.10\text{mm}$ or $L > 3.0\text{mm}$	0	
3	Polarizer dent (Minor)	Spec.	Permissible Qty	1. $\phi = (L+W)/2$ , L: Length, W: Width 2. Disregard if out of A.A. 
		$\phi \leq 0.20\text{mm}$	Disregard	
		$0.20\text{mm} < \phi \leq 0.30\text{mm}$	2	
		$0.30\text{mm} < \phi \leq 0.50\text{mm}$	1	
		$0.50\text{mm} < \phi$	0	



9.6.2. Visual inspection criterion in electrical display

No	Defect	Criteria		Remark
1	No display (Major)	Not allowed		
2	Missing line (Major)	Not allowed		
3	Darker or lighter line (Major)	Not allowed		
4	Weak line (Minor)	By limited sample		
5	Bright / Dark point (Minor)	Spec.	Permissible Qty	1:1sub-pixel: 1R or 1G or 1B 2:Point defect area $\geq$ 1/2 sub pixel.
		Bright point	1	
		Dark point	2	
6	Round type (Minor)	Spec.	Permissible Qty	1. $\phi = (L+W)/2$ , L: Length, W: Width 2. Disregard if out of A.A. 
		$\phi \leq 0.10\text{mm}$	Disregard	
		$0.10\text{mm} < \phi \leq 0.20\text{mm}$	3	
		$0.20\text{mm} < \phi$	0	
7	Line type (Minor)	Spec.	Permissible Qty	1. L: Length, W: Width 2. Disregard if out of A.A. 
		$W \leq 0.03\text{mm}$	Disregard	
		$L \leq 3.0\text{mm}$ and $0.03\text{mm} < W \leq 0.05\text{mm}$	2	
		$L \leq 3.0\text{mm}$ and $0.05\text{mm} < W \leq 0.10\text{mm}$	1	
		$W > 0.10\text{mm}$ or $L > 3.0\text{mm}$	0	
8	Mura (Minor)	By 5% ND filter invisible		

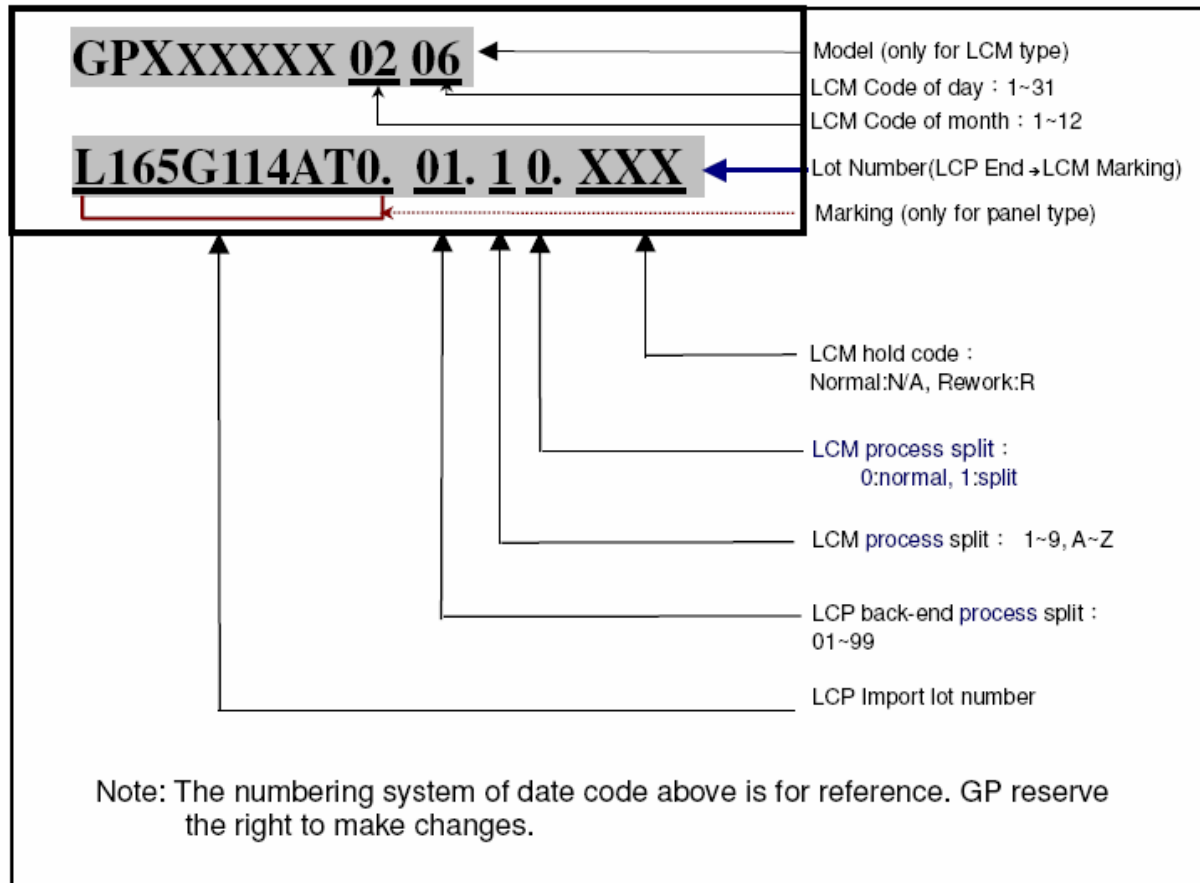


9.6.3.Others

1. Issues that are not defined in this document shall be discussed and agreed with both parties. (Customer and supplier)
2. Unless otherwise agreed upon in writing, the criteria shall be applied to both parties. (Customer and supplier)



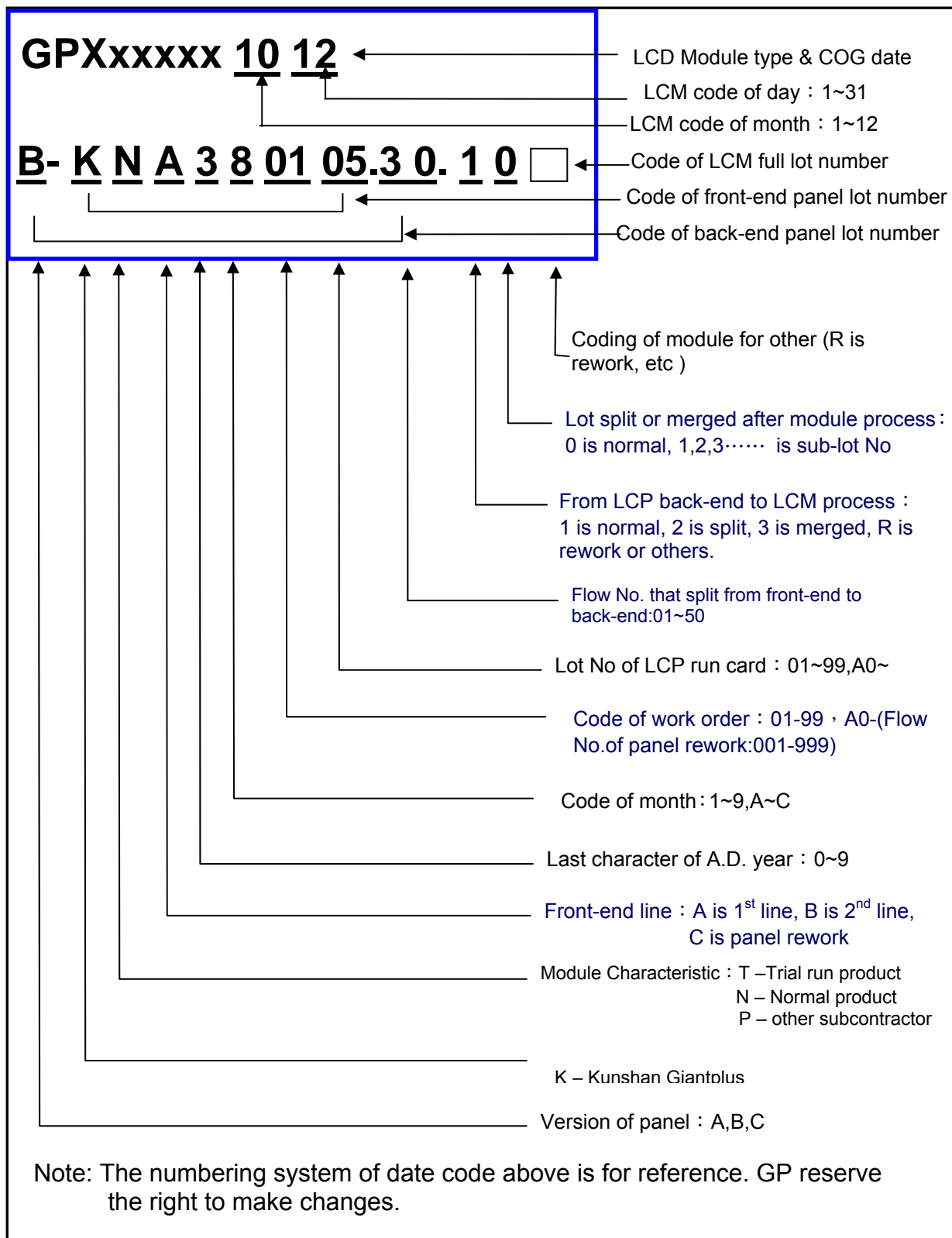
## 10. ILLUSTRATION OF LCD DATE CODE (GP)







## 11. ILLUSTRATION OF LCD DATE CODE (KGP)





## 12. RoHS COMPLIANT WARRANTY

RoHS Hazardous substances including:

- Cd < 100 ppm
- Pb < 1000 ppm
- Hg < 1000 ppm
- Cr +6 < 1000 ppm
- PBDE < 1000 ppm
- PBB < 1000 ppm

## 13. PRECAUTIONS FOR USE

### 13.1. Safety

- (1) Do not swallow any liquid crystal, even if there is no proof that liquid crystal is poisonous.
- (2) If the LCD panel breaks, be careful not to get liquid crystal to touch your skin.
- (3) If skin is exposed to liquid crystal, wash the area thoroughly with alcohol or soap.

### 13.2. Storage Conditions

- (1) Store the panel or module in a dark place where the temperature is  $23 \pm 5^{\circ}\text{C}$  and the humidity is below  $50 \pm 20\% \text{RH}$ .
- (2) Store in anti-static electricity container.
- (3) Store in clean environment, free from dust, active gas, and solvent.
- (4) Do not place the module near organics solvents or corrosive gases.
- (5) Do not crush, shake, or jolt the module.
- (6) Do not exposed to direct sun light of fluorescent lamps.

### 13.3. Installing LCD Module

Attend to the following items when installing the LCM.

- (1) Cover the surface with a transparent protective plate or touch panel to protect the polarizer and LC cell.
- (2) When assembling the LCM into other equipment, the spacer to the bit between the LCM and the fitting plate should have enough height to avoid causing stress to the module surface, refer to the individual specifications for measurements. The measurement tolerance should be  $\pm 0.1 \text{mm}$ .



### 13.4. Precautions For Operation

- (1) Viewing angle varies with the change of liquid crystal driving voltage ( $V_o$ ). Adjust  $V_o$  to show the best contrast.
- (2) Driving the LCD in the voltage above the limit will shorten its lifetime.
- (3) Response time is greatly delayed at temperature below the operating temperature range. However, this does not mean the LCD will be out of the order. It will recover when it returns to the specified temperature range.
- (4) When turning the power on, input each signal after the positive/negative voltage becomes stable.
- (5) Do not apply water or any liquid on product which composed of T/P.

### 13.5. Handling Precautions

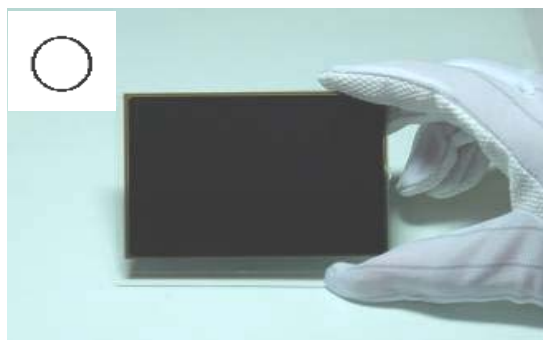
- (1) Avoid static electricity which can damage the CMOS LSI; please wear the wrist strap when handling.
- (2) The polarizing plate of the display is very fragile. so, please handle it very carefully.
- (3) Do not give external shock.
- (4) Do not apply excessive force on the surface; it may cause display abnormal .
- (5) Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate.
- (6) Do not use ketonics solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.
- (7) Do not operate it above the absolute maximum rating.
- (8) Do not remove the panel or frame from the module.
- (9) Do not apply water or any liquid on product which composed of T/P.



### 13.5.1. Handling precaution for LCD

LCD is easy to be damaged.  
Please note below and be careful for handling!

#### **Correct handling:**



As above photo, please handle with anti-static gloves around LCD edges.

#### **Incorrect handling:**



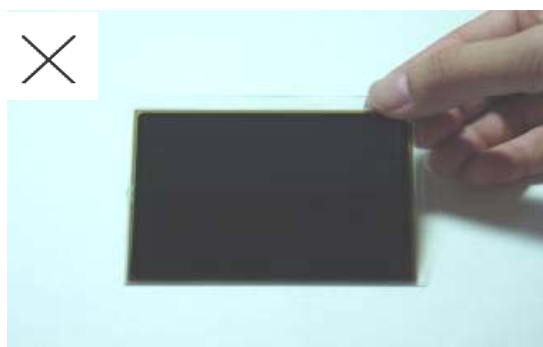
Please don't stack the LCDs.



Please don't hold the surface of LCD.



Please don't operate with sharp stick such as pens.



Please don't touch ITO glass without anti-static gloves.



### 13.5.2. Handling precaution for LCM

LCM is easy to be damaged.  
Please note below and be careful for handling!

#### **Correct handling:**

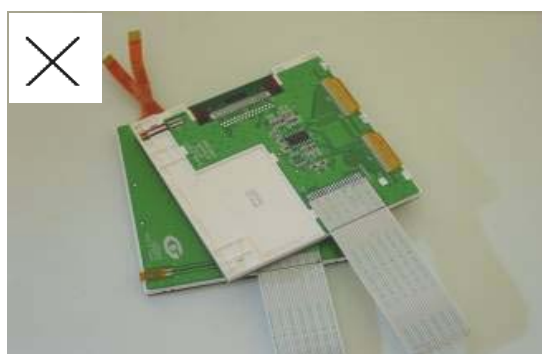


As above picture, please handle with anti-static gloves around LCM edges.

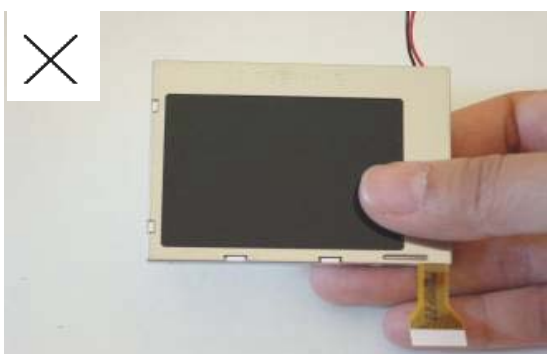
#### **Incorrect handling:**



Please don't touch IC directly.



Please don't stack LCM.



Please don't hold the surface of panel.



Please don't stretch interface of output, such as FPC cable.



## 13.6.Warranty

13.6.1. The period is within 12 months since the date of shipping out under normal using and storage conditions.

13.6.2.The warranty will be avoided in case of defect induced by customer.

## 14.FACTORY

For the consideration of mass production convenience, this model will be manufactured in the factories listed below.

FACTORY NAME: GIANTPLUS TECHNOLOGY CO., LTD

FACTORY ADDRESS: No.15 Industrial Rd., Lu-Chu Li, Toufen Town  
351 Miao-Li County, Taiwan, R.O.C..

FACTORY PHONE: TEL: 886-37-611-611 FAX: 886-37-613-166

FACTORY ADDRESS: No.1127,Heping Rd.,Bade City,Taoyuan,334, Taiwan, R.O.C..

FACTORY PHONE: TEL: 886-3-3679978 FAX: 886-3-3670661

FACTORY NAME: KUNSHAN GIANTPLUS OPTOELECTRONICS  
TECHNOLOGY CO., LTD.

FACTORY ADDRESS: No.88,HuanQing Rd., Hitech Industrial Park, Cheng-Bei Town,  
KunShan City, JiangShu Province, China.

FACTORY PHONE: TEL:86-512-57780-988 FAX : 86-512-57780-503

FACTORY NAME: SHENZHEN GIANTPLUS OPTOELEC. DISPLAY CO., LTD.

FACTORY ADDRESS: Building A, Distict A ,MinZhu99 Industrial City,  
ShaJing Industrial Park, BaoAn District, ShenZhen, China

FACTORY PHONE: TEL: 86-755-29720-088 FAX : 86-755-29720-828

## 15.REVISION HISTORY

Version	Revise record	Date
A	Original version.	2009/6/26