

SPECIFICATIONS

CUSTOMER : _____

MODEL NO. : **GFTM035EA320240-S**

Version : **B**

DATE : **2012.03.22**

CERTIFICATION : **ROHS**

Customer Sign	Sales Sign	Approved By	Prepared By

Revision Record

Data(y/m/d)	Ver.	Description	Note	page
2011.11.03	A	Specification released		
2012.03.22	B	Add Outline Drawing		25



Quality Certified
ISO 9001:2008
Licence No: TA1062-QC-EC

Environmentally Certified
ISO 14001:2004
Licence No: TA1062-QC-EC

1. GENERAL DESCRIPTION AND FEATURES

This is a transmissive type color active matrix TFT(Thin Film Transistor) liquid crystal display(LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT-LCD module, a driver circuit and a back-light unit. The resolution of a 3.5” contains 320 RGB * 240 dots and can display up to 262K colors. The following table described the features of GFTM035EA320240-S

1.1 Features

1.1.1 LCM Features

- 3.5 a-Si Color TFT LCD , White LED Backlight and PCB
- Resolution 320x240
- Power Supply Voltage : 3.3V single Power Input Built-in power supply(Without LED Driver)

1.1.2 Control Features

- Support MCU Interface 8/16Bit
- Embedded 256K SRAM display buffer



1.2 General Specifications

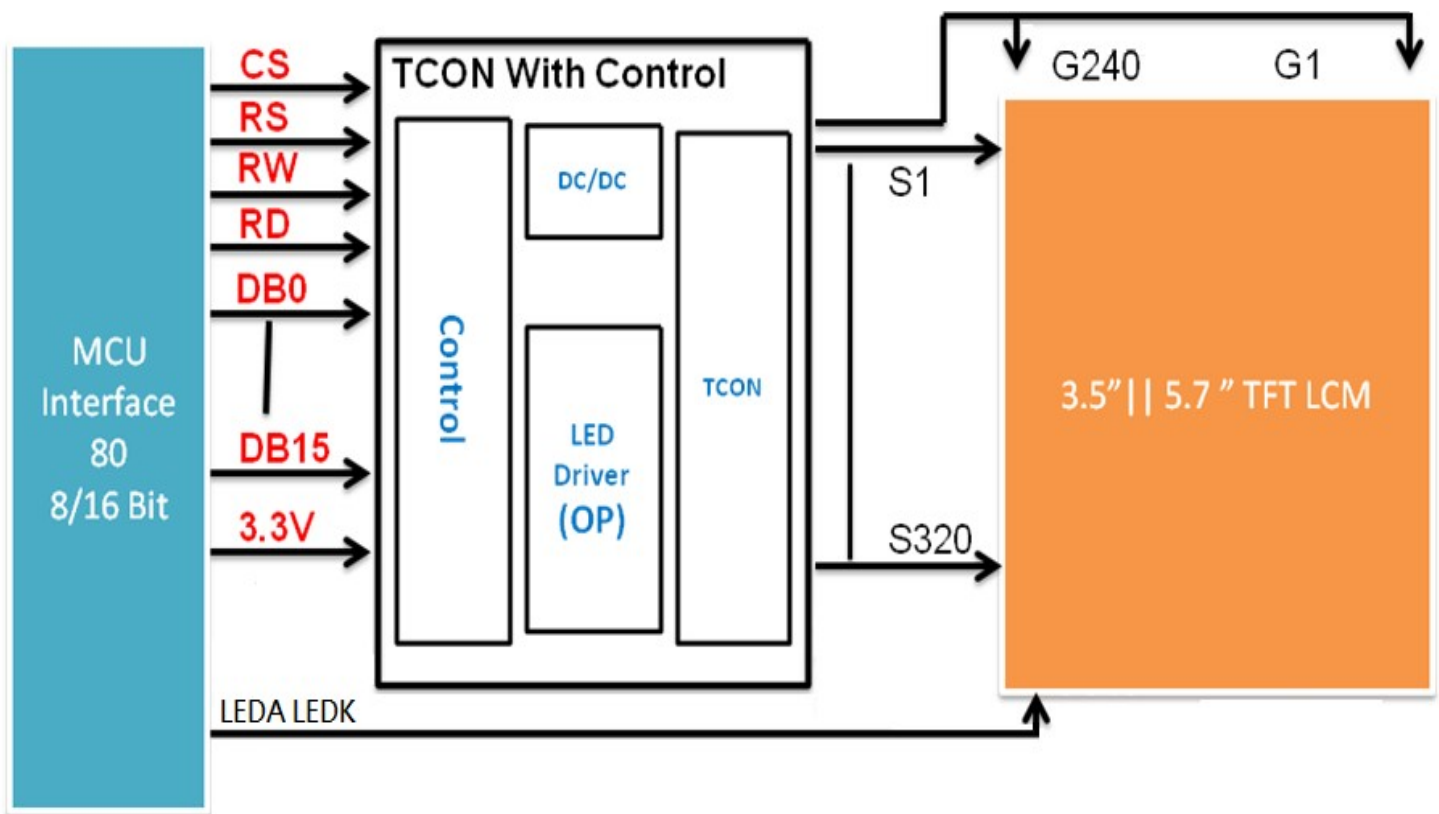
Parameter		Specifications	Unit
Screen Size		3.5(Diagonal)	inch
Display Format		320RGB x 240	Dot
Active Area		70.08(H) x 52.56(V)	mm
Pixel Pitch		0.219(H) x 0.219(V)	mm
Surface Treatment		Anti-Glare tupe	
Pixel Configuration		RGB-Stripe	
Outline Dimension		77.8(W) x 64.5(H) x TBD(D)	mm
Weight		60	g
View Angle Direction		6 o'clock	
Input Interface		8080 16/8 Bit	
Temperature Range	Operation	-20~70	°C
	Storage	-30~80	°C

2. INPUT TERMINAL PIN ASSIGNMENT

Pin No.	Symbol	I/O	Function	Remark
1	GND	I	Ground	
2	VDD	I	Power Supply (+3.3 V)	
3	WR	I	Write signal	
4	RD	I	Read signal	
5	CS	I	Chip select	
6	NC	--	Not Connection	
7	Reset	I	Reset : active low	
8	RS	I	Register Select L:Command , H:Data	
9	DB15	I	Data Bus	
10	DB14	I	16Bit :DB0~DB15	
11	DB13	I	8Bit :DB0~DB7	
12	DB12	I		
13	DB11	I		
14	DB10	I		
15	DB9	I		
16	DB8	I		
17	DB7	I		
18	DB6	I		
19	DB5	I		
20	DB4	I		
21	DB3	I		
22	DB2	I		
23	DB1	I		
24	DB0	I		
25	IF	I	High : 8Bit Low : 16Bit	

26	NC(Y1)	O	Bottom(TP)	(GFTM035EA320240Y-S)	
27	NC(X1)	O	Right(TP)	(GFTM035EA320240Y-S)	
28	NC(Y2)	O	Up(TP)	(GFTM035EA320240Y-S)	
29	NC(X2)	O	Left(TP)	(GFTM035EA320240Y-S)	
30	NC	--	Not Connection		
31	NC	--	Not Connection		
32	LEDK	I	Power Voltage for LED Ground		
33	LEDA	I	Power Voltage for LED Power 19.2V/20mA		

3. BLOCK DIAGRAM



4. OPTICAL CHARACTERISTICS

Item	Symbol	Condition	Min	Typ	Max	Unit	Remark
Response time	TR	$\theta=0^\circ$ 、 $\Phi=0^\circ$	-	15	30	ms	Note 3,5
	TF		-	35	50	ms	
Contrast ratio	CR	At optimized Viewing angle	200	300	-	-	Note 4,5
Color Chromaticity	White	$\theta=0^\circ$ 、 $\Phi=0^\circ$	(0.24)	(0.29)	(0.34)	-	Note 2,6,7
			(0.26)	(0.31)	(0.36)		

Viewing Angle	Hor	Θ_R	$CR \geq 10$	(50)	(60)	-	Deg.	Note
		Θ_L		(50)	(60)	-		
	Ver	ψ_H		(40)	(50)	-		
		ψ_L		(50)	(60)	-		
Brightness		-	-	180	250	-	cd/m ²	Center of display

Ta=25±2°C, IL=20mA

Note 1: Definition of viewing angle range

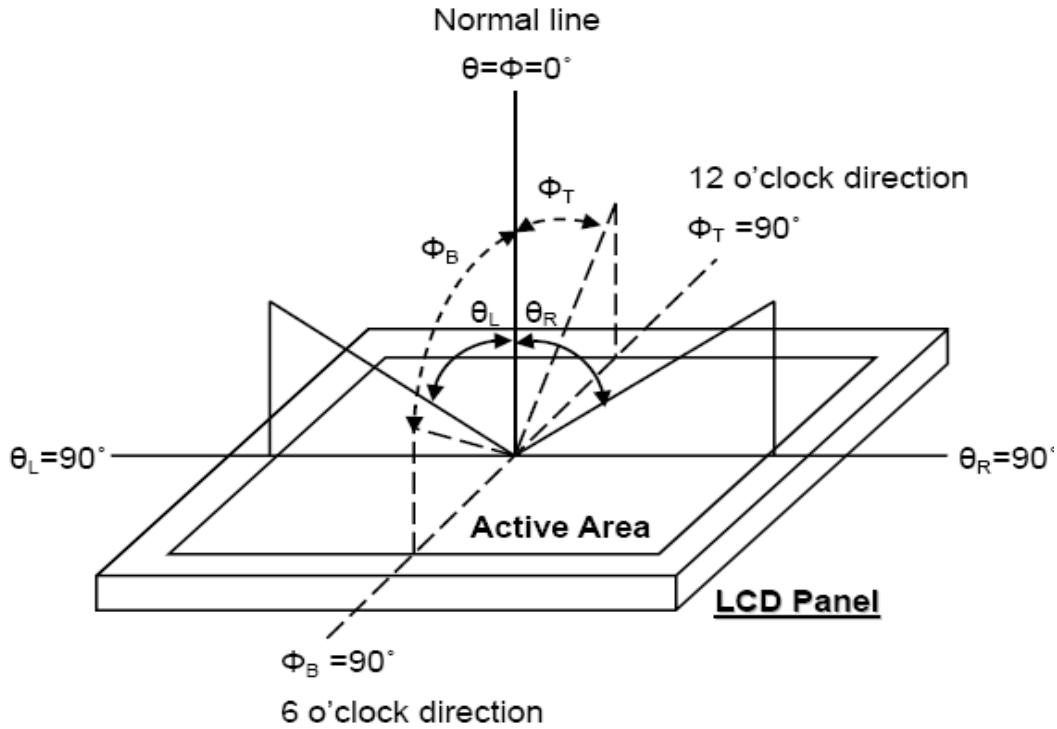
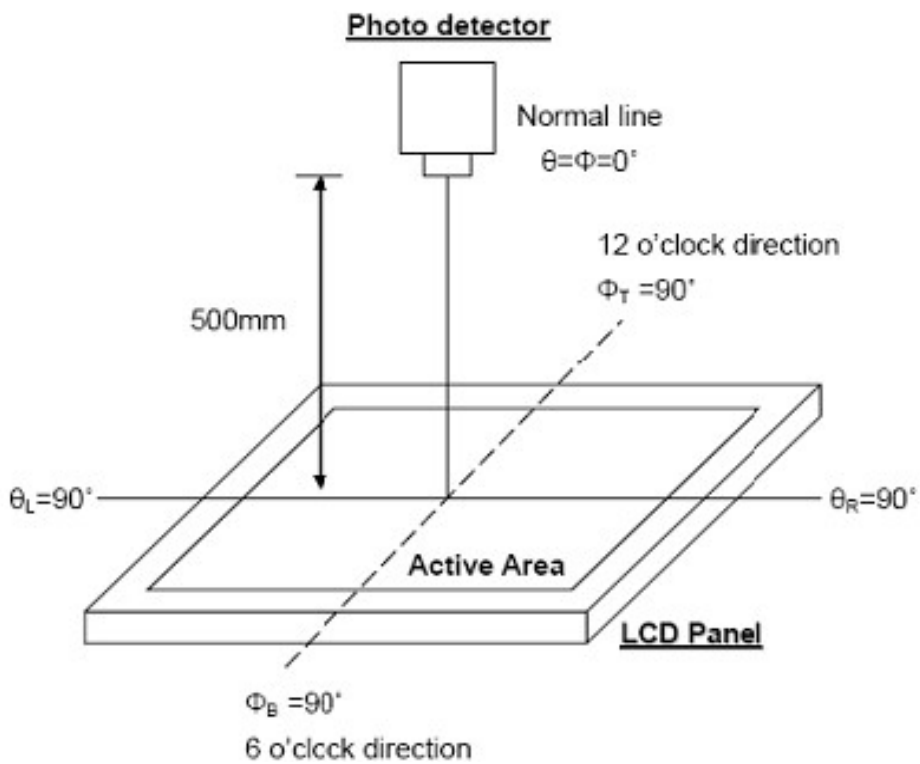


Fig. 4-1 Definition of viewing angle

Note 2: Test equipment setup:

After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7 luminance meter 1.0° field of view at a distance of 50cm and normal direction.



Note 3: 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_r , is the time between photo detector output intensity changed from 90% to 10% . And fall time, T_f , is the time between photo detector output intensity changed from 10% to 90% .

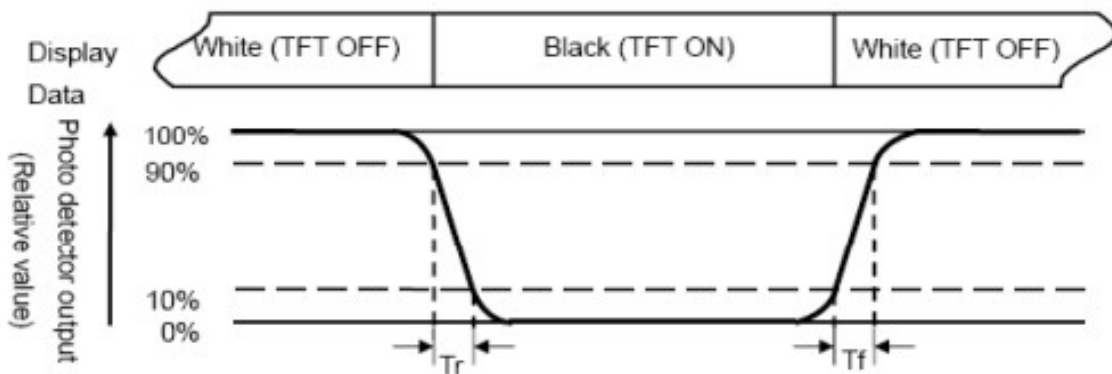


Fig.4-2 Definition of Response time

Note 4: Definition of contrast ratio:

The contrast ratio is defined as the following expression.

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

Note 5:

White $V_i = V_{i50} \pm 1.5V$

Black $V_i = V_{i50} \pm 2.0V$



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“±” means that the analog input signal swings in phase with VCOM signal.

“±” means that the analog input signal swings out of phase with VCOM signal.

The 100% transmission is defined as the transmission of LCD panel when all the input terminals of module are electrically opened.

Note 6: Definition of color chromaticity (CIE 1931)

Color coordinates measured at the center point of LCD

Note 7: Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

Brightness (min)

$$\text{Note 8 : Uniformity (U)} = \frac{\text{Brightness (min)}}{\text{Brightness (max)}} \times 100\%$$

5. ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Condition	Min.	Max.	Unit	Remark
Voltage	VDD	GND=0	-0.3	7.0	V	

Note: Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above

1. Temp. ≤ 60°C, 90% RH MAX.

Temp. > 60°C, Absolute humidity shall be less than 90% RH at 60°C

5.1. ELECTRICAL CHARACTERISTICS

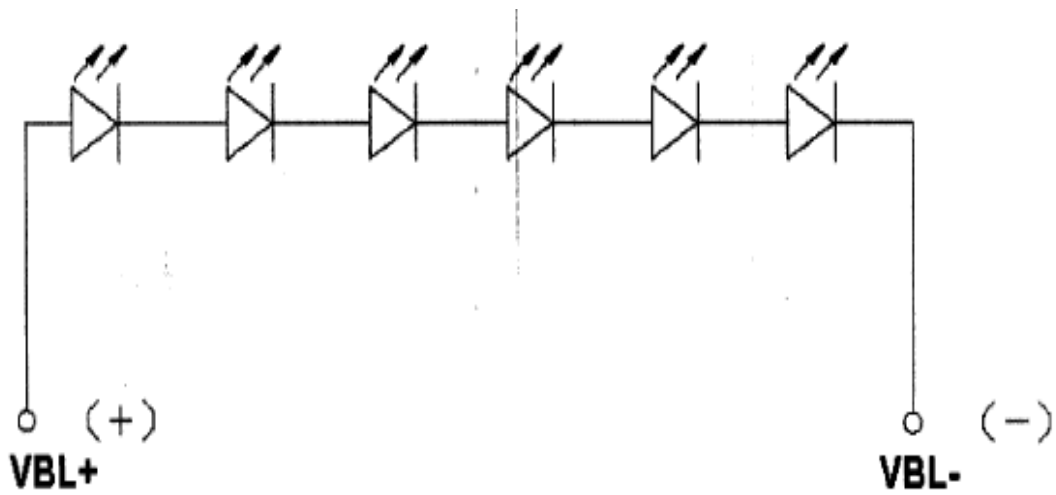
5.1.1 Operating conditions:

Item	Symbol	Rating			Unit	Remark
		Min.	Typ.	Max.		
Power Voltage	VCC	3.0	3.3	3.6	V	
Digital Operation Current	Icc	-	60	-	mA	

5.1.2 LED driving conditions

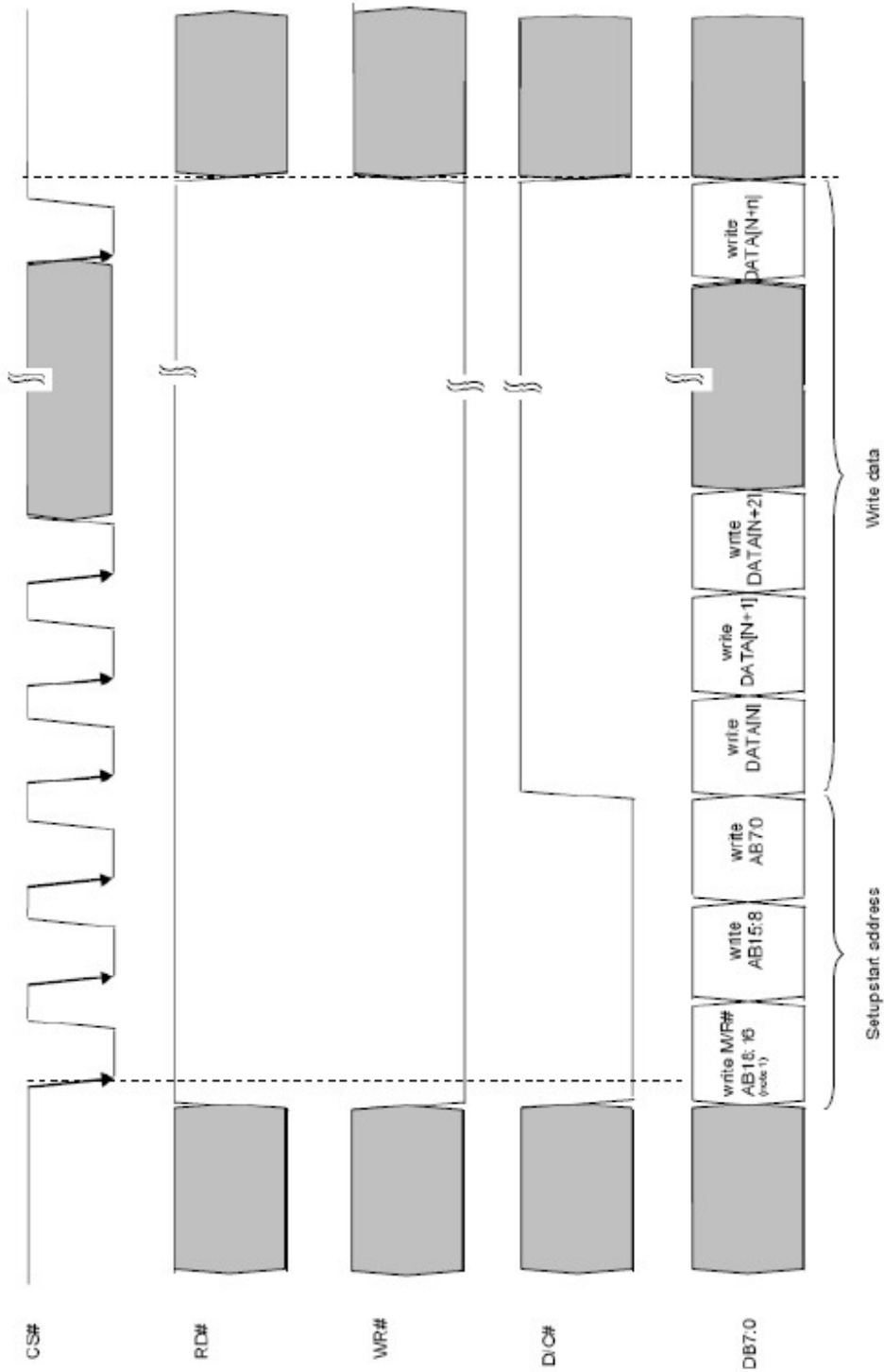
Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
LED current	-	-	20		mA	-
Power Consumption	-	-	398	420	mW	-
LED voltage	VBL+	18.0	19.8	21.0	V	Note 1

Note 1 : There are 1 Groups LED



6. 8080 INDIRECT ADDRESSING MODE

6.1 8080 8Bit Interface Timing(write cycle)

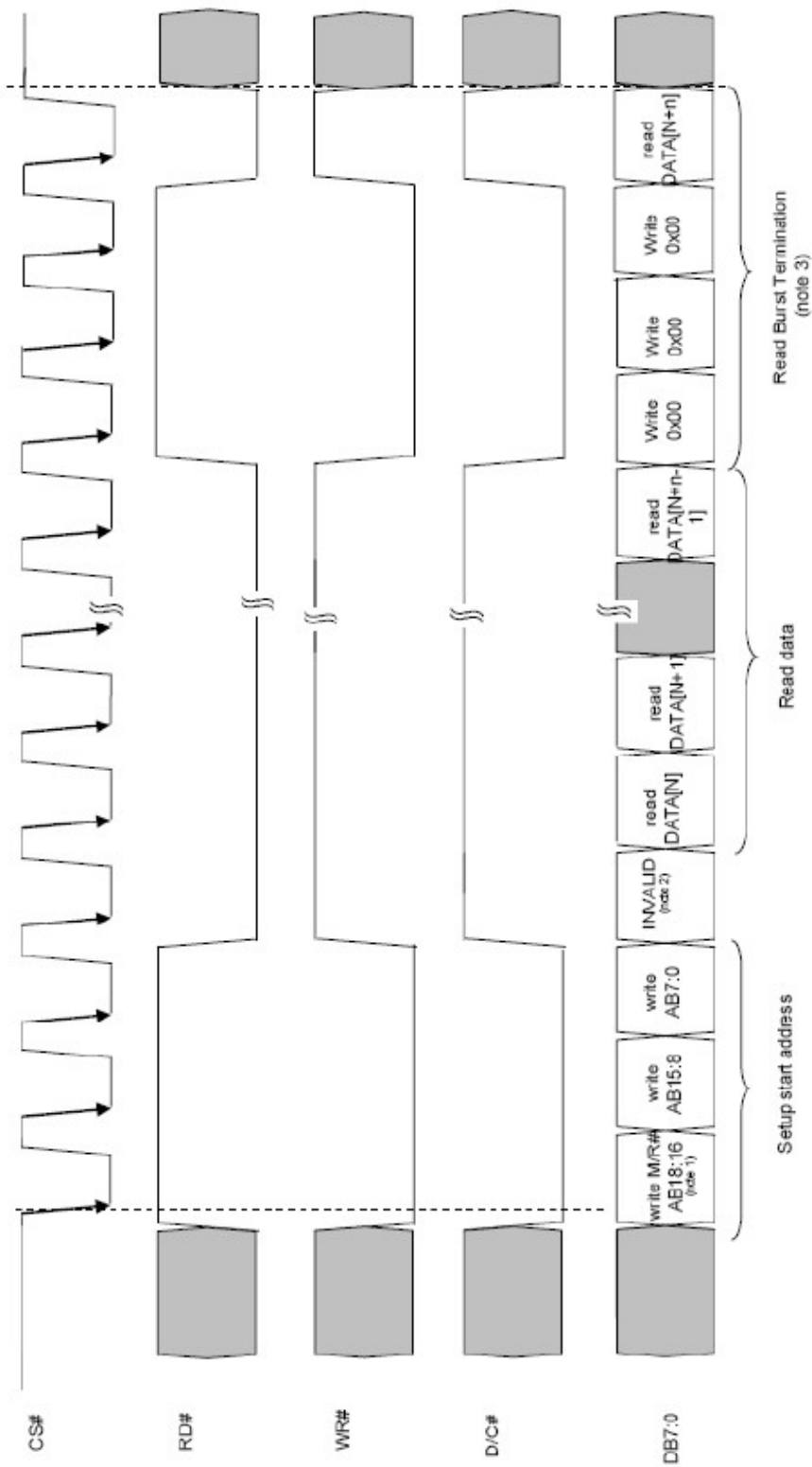


Note :

- 1 : Bit7 represent the M/R#, Bit7 = 1 means memory access, Bit7 = 0 means register access.
- Bit6:3 = 0.
- Bit2:0 represent the the address AB18:16.

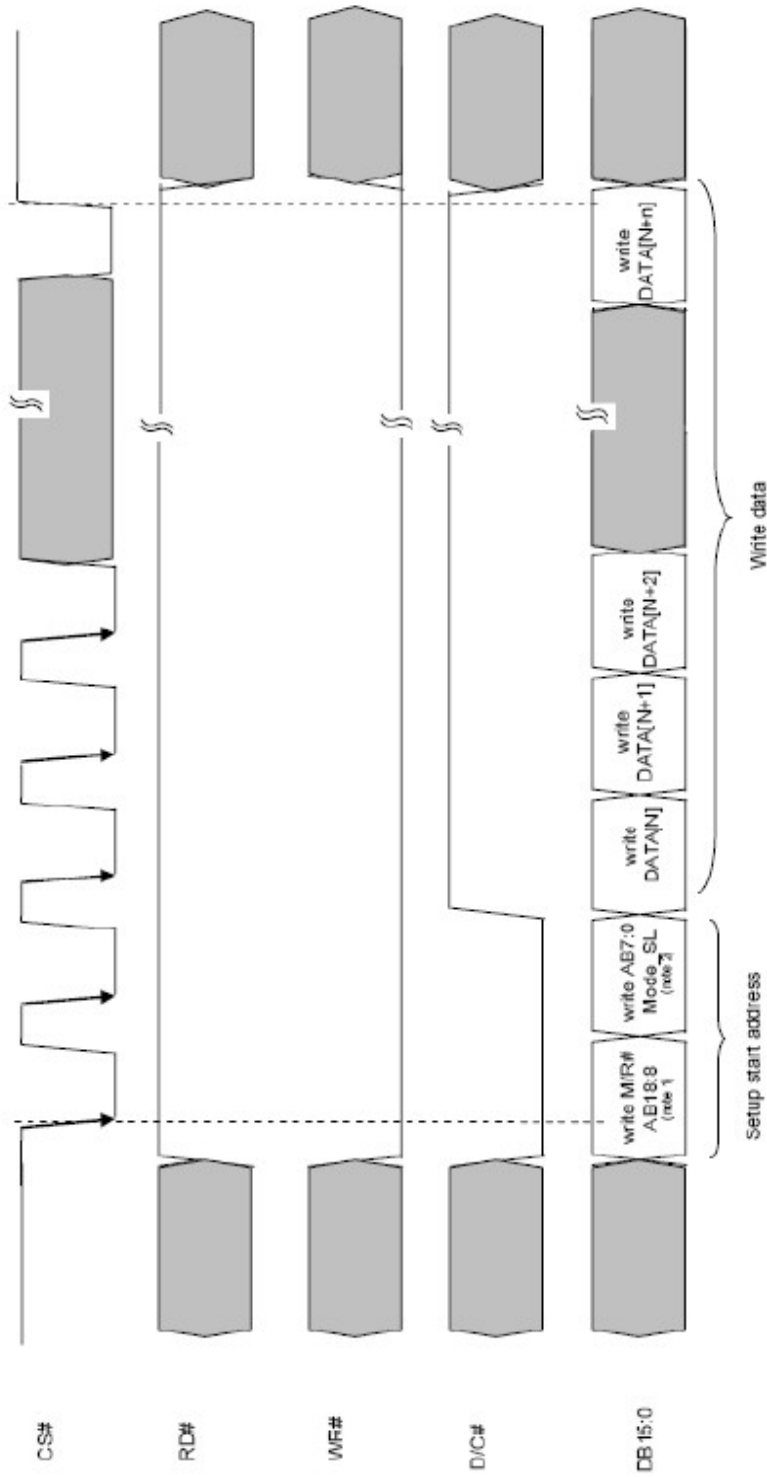
* 7 MCLK is needed for each cycle if WAIT# is not used for interface.

6.2 8080 8Bit Interface Timing(read cycle)



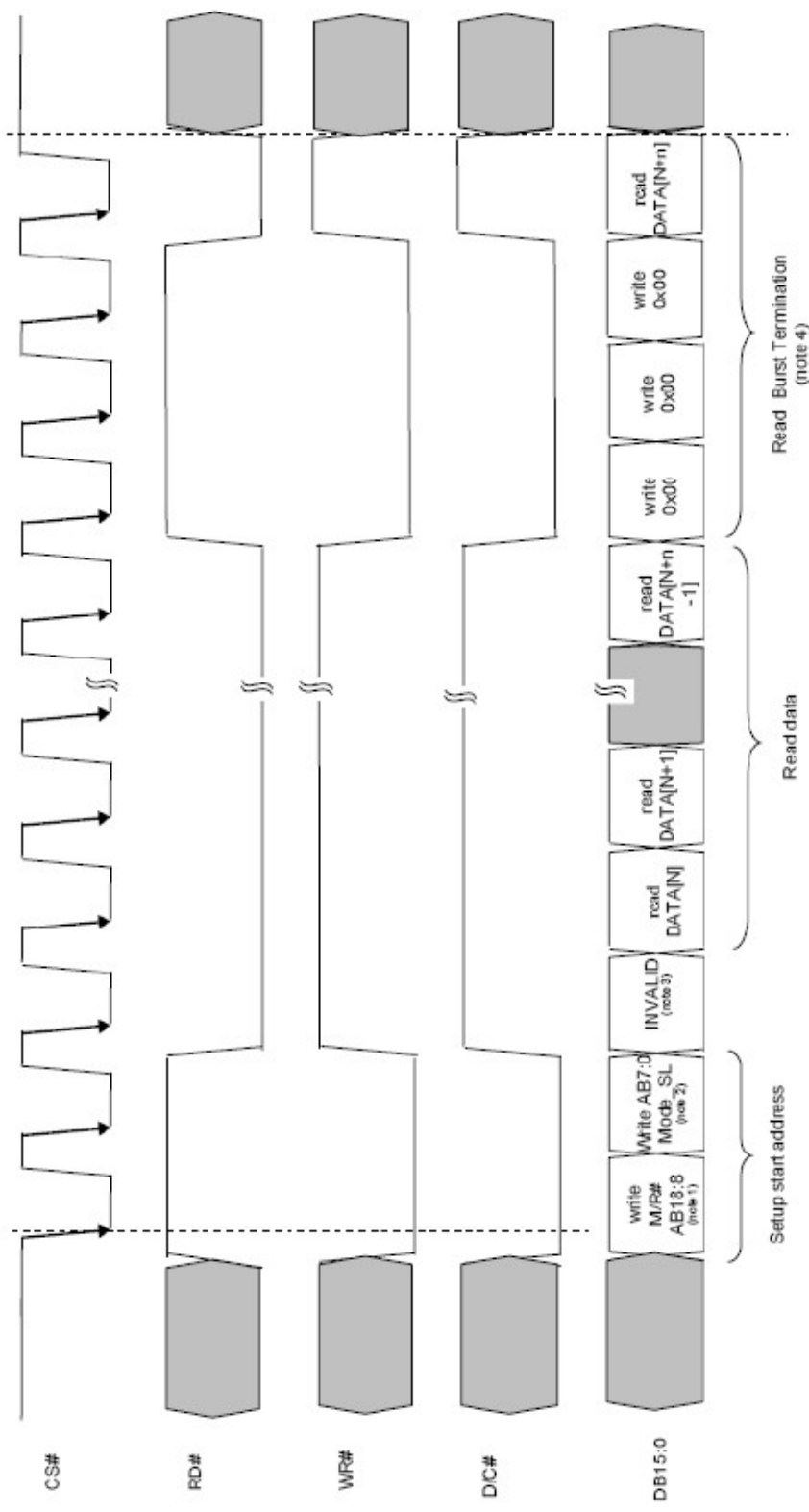
- Note :
- 1 : Bit7 represent the M/R#, Bit7 = 1 means memory access, Bit7 = 0 means register access. Bit6:3 = 0.
 - 2 : INVALID represent the the address AB18:16. Invalid dummy read cycle is needed after address is written.
 - 3 : Read Burst Termination must be asserted for all JPES related memory access.
- * 7 MCLK is needed for each cycle if WAIT# is not used for interface.

6.3 8080 16Bit Interface Timing(write cycle)



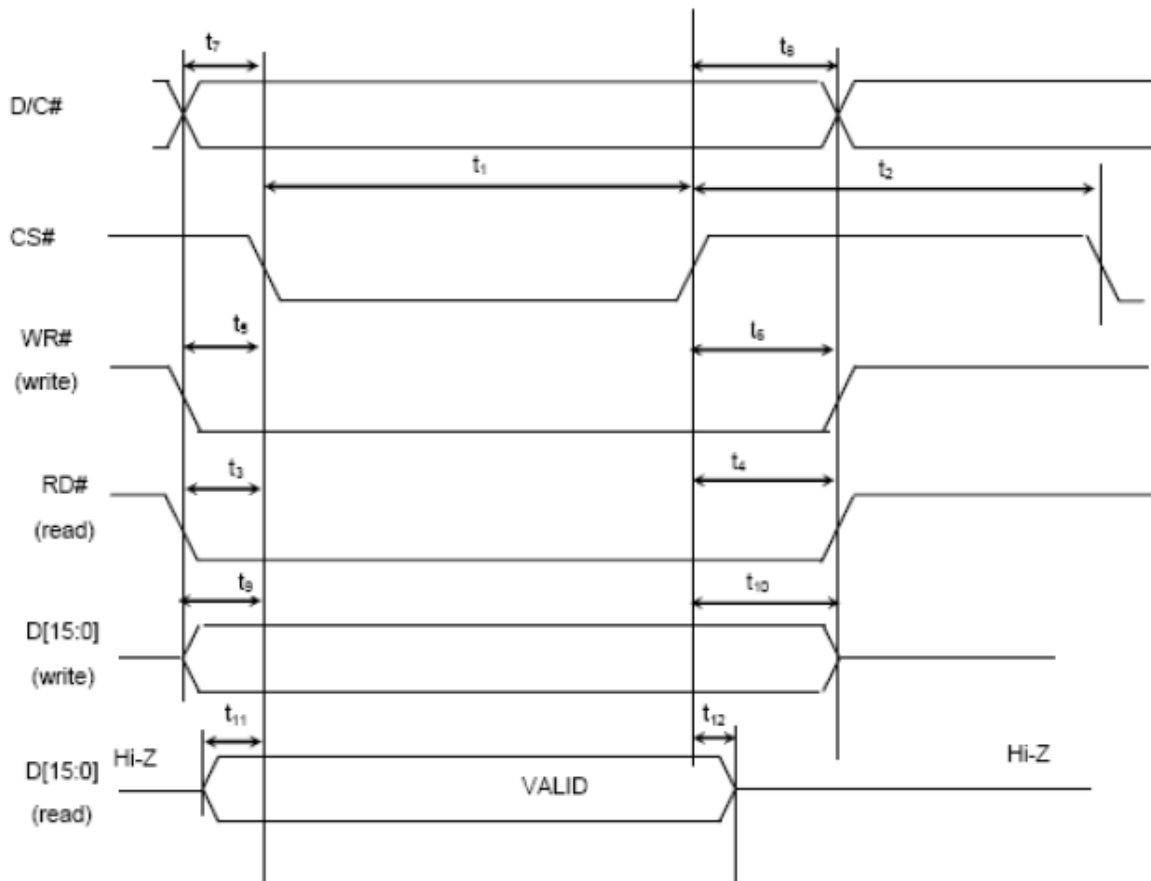
- Note :**
- 1 : Bit 15 represent the MIR#, Bit15 = 1 means memory access, Bit15 = 0 means register access. Bit 14:11 = 0.
 - 2 : Bit 10:0 represent the the address AB18:8. Bit 15:8 represent the address AB7:0 and Bit7:0 represent Mode_SL. Mode_SL to select byte or word access during 16 bit mode. 0x00 means Byte access, 0x01 means word access.
- * 7 MCLK is needed for each cycle if WAIT# is not used for interface.

6.4 8080 8Bit Interface Timing(write cycle)



- Note :
- 1 : Bit15 represent the M/P#, Bit15 = 1 means memory access, Bit15 = 0 means register access. Bit14:11 = 0.
 - 2 : Bit10:0 represent the the address AB18:8.
 - 3 : Bit15:8 represent the address AB7:0 and Bit7:0 represent Mode_SL. Mode_SL to select byte or word access during 16 bit mode. 0x00 means Byte access, 0x01 means word access. Invalid/dummy data cycle is needed after address is written.
 - 4 : Read Burst Termination must be asserted for all JPEG related memory access.
- * 7 MCLK is needed for each cycle if WAIT# is not used for interface.

6.5 8080 indirect Interface Timing



Symbol	Parameter	Min.	Max.	Units
t_1	CS # pulse width low	82	--	ns
t_2	CS # pulse width high	82	--	ns
t_3	RD # setup	18	--	ns
t_4	RD # hold	0	--	ns
t_5	WR # setup	18	--	ns
t_6	WR # hold	0	--	ns
t_7	DC # setup	18	--	ns
t_8	DC # hold	0	--	ns
t_9	D [15:0] setup for write	18	--	ns
t_{10}	D [15:0] hold for write	0	--	ns
t_{11}	D [15:0] delay for read	55	--	ns
t_{12}	D [15:0] hold for read	0	--	ns

Note: Above timing is based on MCLK = 85MHz

7. DISPLAYED COLOR AND INPUT DATA

	Color & Gray Scale	Data Signal																	
		R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0
Basic Color	Black	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Red(0)	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Green(0)	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	Blue(0)	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	Cyan	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Magenta	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Yellow	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	White	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Red	Black	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Red(62)	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
	Red(61)	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Red(31)	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Red(1)	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
	Red(0)	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0
Green	Black	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Green(62)	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
	Green(61)	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green(31)	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green(1)	1	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1
	Green(0)	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
Blue	Black	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Blue(62)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
	Blue(61)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Blue(31)	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Blue(1)	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1
	Blue(0)	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0

0: Low level voltage, 1: High level voltage

Each basic color can be displayed in 64 gray scales from 6 bit data signals. With the combination of total 18 bit data signals, the 262,144-color display can be achieved on the screen.

8. Inspection Specification

1. Inspection Specification

◆ Scope : The document shall be applied to TFT-LCD Module for less than 3.5”~10” (Ver.02).

◆ Inspection Standard : MIL-STD-105E Table Normal Inspection Single Sampling Level II

◆ Defect Level : Major Defect AQL:0.4 ; Minor Defect AQL:1.5

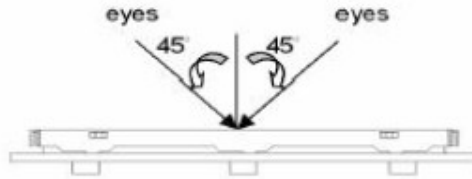
◆ OUT Going Defect Level : Sampling.

◆ Standard of the product appearance test:

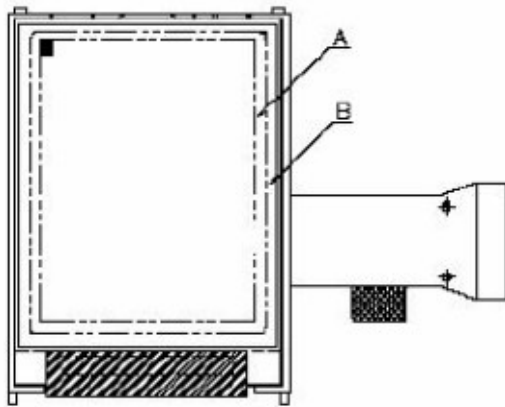
a. Manner of appearance test:

(1). The test best be under 20Wx2 fluorescent light , and distance of view must be at 30 cm.

(2). The test direction is base on about around 45° of vertical line.



(3). Definition of area.



A area : viewing area

B area : Outside of viewing area

(4). Standard of inspection : (Unit: mm)

◆ Specification For TFT-LCD Module Less Than 3.5” ~10” :

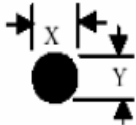
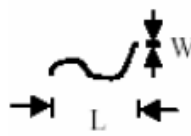
(Ver.02)

NO	Item	Criterion	Level												
01	Product condition	1.1 The part number is inconsistent with work order of production.	Major												
		1.2 Mixed product types.	Major												
		1.3 Assembled in inverse direction.	Major												
02	Quantity	2.1 The quantity is inconsistent with work order of production.	Major												
03	Outline dimension	3.1 Product dimension and structure must conform to structure diagram.	Major												
04	Electrical Testing	4.1 Missing line character and icon.	Major												
		4.2 No function of no display.	Major												
		4.3 Display malfunction.	Major												
		4.4 LCD viewing angle defect.	Major												
		4.5 Current consumption exceeds product specifications.	Major												
05	Dot defect(Bright dot、Dark dot)	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Item</th> <th>Acceptance(Q'ty)</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Dot Defect</td> <td>Bright Dot</td> <td>≤ 4</td> </tr> <tr> <td>Dark Dot</td> <td>≤ 5</td> </tr> <tr> <td>Joint Dot</td> <td>≤ 3</td> </tr> <tr> <td>Total</td> <td>≤ 7</td> </tr> </tbody> </table> <p>5.1 Inspection pattern: full white, full black, Red, Green and blue screens. 5.2 It is defined as dot defect if defect area $> 1/2$ dot. 5.3 The distance between two dot defect ≥ 5 mm.</p>	Item		Acceptance(Q'ty)	Dot Defect	Bright Dot	≤ 4	Dark Dot	≤ 5	Joint Dot	≤ 3	Total	≤ 7	Minor
	Item		Acceptance(Q'ty)												
Dot Defect	Bright Dot	≤ 4													
	Dark Dot	≤ 5													
	Joint Dot	≤ 3													
	Total	≤ 7													
On-display															

◆ Specification For TFT-LCD Module Less Than 3.5" ~10" :

(Ver.02)

NO	Item	Criterion	Level
----	------	-----------	-------

06	<p>Black or white dot 、 Scratch 、 contamination</p> <p>Round type</p>  <p>$\Phi = (x+y) / 2$</p> <p>Line type</p> 	<p>6.1 Round type (Non-display or display) :</p> <table border="1" data-bbox="555 185 1248 385"> <thead> <tr> <th>Dimension (diameter : Φ)</th> <th>Acceptance (Q' ty)</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.25$</td> <td>Ignore</td> </tr> <tr> <td>$0.25 < \Phi \leq 0.50$</td> <td>5</td> </tr> <tr> <td>$\Phi > 0.50$</td> <td>0</td> </tr> <tr> <td>Total</td> <td>5</td> </tr> </tbody> </table> <p>6.2 Line type(Non-display or display) :</p> <table border="1" data-bbox="555 517 1307 824"> <thead> <tr> <th>Length(L)</th> <th>Width(W)</th> <th>Acceptance(Q' ty)</th> </tr> </thead> <tbody> <tr> <td>---</td> <td>$W \leq$</td> <td>.03 Ignore</td> </tr> <tr> <td>$L \leq 10.0$</td> <td>$0.03 < W \leq 0.05$</td> <td>4</td> </tr> <tr> <td>$L \leq 5.0$</td> <td>$0.05 < W \leq 0.10$</td> <td>2</td> </tr> <tr> <td>---</td> <td>$W > 0.10$</td> <td>As round type</td> </tr> <tr> <td colspan="2">Total</td> <td>5</td> </tr> </tbody> </table>	Dimension (diameter : Φ)	Acceptance (Q' ty)	$\Phi \leq 0.25$	Ignore	$0.25 < \Phi \leq 0.50$	5	$\Phi > 0.50$	0	Total	5	Length(L)	Width(W)	Acceptance(Q' ty)	---	$W \leq$.03 Ignore	$L \leq 10.0$	$0.03 < W \leq 0.05$	4	$L \leq 5.0$	$0.05 < W \leq 0.10$	2	---	$W > 0.10$	As round type	Total		5	Major
Dimension (diameter : Φ)	Acceptance (Q' ty)																														
$\Phi \leq 0.25$	Ignore																														
$0.25 < \Phi \leq 0.50$	5																														
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Total	5																														
Length(L)	Width(W)	Acceptance(Q' ty)																													
---	$W \leq$.03 Ignore																													
$L \leq 10.0$	$0.03 < W \leq 0.05$	4																													
$L \leq 5.0$	$0.05 < W \leq 0.10$	2																													
---	$W > 0.10$	As round type																													
Total		5																													
07	Polarizer Bubble	<table border="1" data-bbox="547 1249 1313 1489"> <thead> <tr> <th>Dimension (diameter : Φ)</th> <th>Acceptance (Q' ty)</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.25$</td> <td>Ignore</td> </tr> <tr> <td>$0.25 < \Phi \leq 0.50$</td> <td>4</td> </tr> <tr> <td>$0.50 < \Phi \leq 0.80$</td> <td>1</td> </tr> <tr> <td>$\Phi > 0.80$</td> <td>0</td> </tr> <tr> <td>Total</td> <td>5</td> </tr> </tbody> </table>	Dimension (diameter : Φ)	Acceptance (Q' ty)	$\Phi \leq 0.25$	Ignore	$0.25 < \Phi \leq 0.50$	4	$0.50 < \Phi \leq 0.80$	1	$\Phi > 0.80$	0	Total	5	Minor																
Dimension (diameter : Φ)	Acceptance (Q' ty)																														
$\Phi \leq 0.25$	Ignore																														
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$\Phi > 0.80$	0																														
Total	5																														

◆Specification For TFT-LCD Module Less Than 3.5”~10”:

(Ver.02)

NO	Item	Criterion	Level
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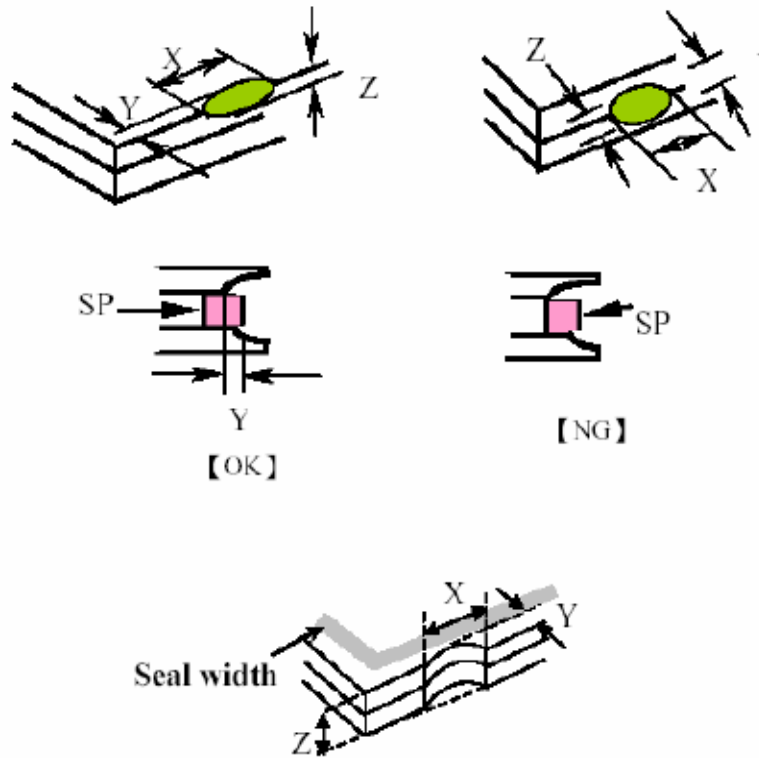
08 The crack of glass

Symbols :

X: The length of crack Y : The width of crack
 Z: The thickness of crack W: terminal length
 t : The thickness of glass a : LCD side length

8.1 General glass chip :

8.1.1 Chip on panel surface and crack between panels:



X	Y	Z
$\leq a$	Crack can't enter viewing area	$\leq 1/2 t$
$\leq a$	Crack can't exceed the half of SP width	$1/2 t < Z \leq 2 t$

◆Specification For TFT-LCD Module 3.5" ~10" :

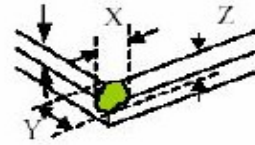
(Ver.02)

NO	Item	Criterion	Level
----	------	-----------	-------

08 The crack of glass

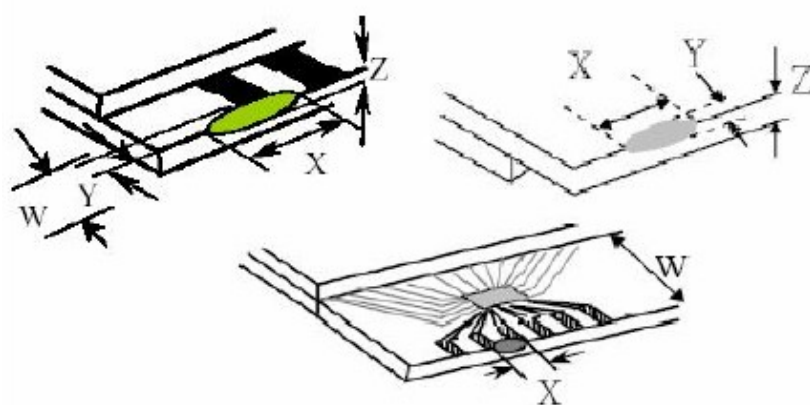
Symbols :
 X: The length of crack Y : The width of crack
 Z: The thickness of crack W: terminal length
 t : The thickness of glass a : LCD side length

8.1.2 Corner crack :



X	Y	Z
$\leq 1/5 a$	Crack can't enter viewing ar	a $Z \leq$
$\leq 1/5 a$	Crack can't exceed the half of SP width.	$1/2 t < Z \leq 2 t$

8.2 Protrusion over terminal :
 8.2.1 Chip on electrode pad :



	X	Y	Z
Front	$\leq a$	$\leq 1/2 W$	$\leq t$
Back	$\leq a$	$\leq W$	$\leq 1/2 t$

◆Specification For TFT-LCD Module 3.5" ~10" : (Ver.02)

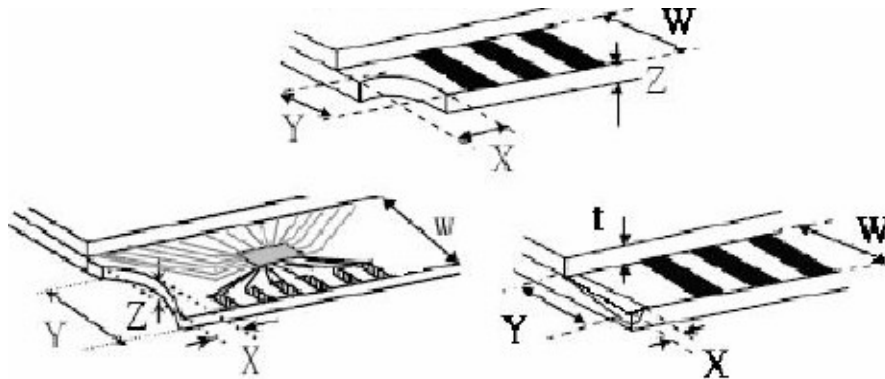
NO	Item	Criterion	Level
----	------	-----------	-------

08 The crack of glass

Symbols :

X: The length of crack Y : The width of crack
Z: The thickness of crack W: terminal length
t : The thickness of glass a : LCD side length

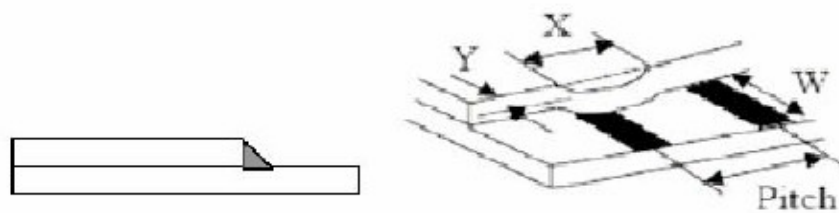
8.2.2 Non-conductive portion :



X	Y	Z
$\leq 1/3 a$	$\leq W$	$\leq t$

⊙ If the chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications.

8.2.3 Glass remain :



X	Y	Z
$\leq a$	$\leq 1/3 W$	$\leq t$



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◆Specification For TFT-LCD Module 3.5" ~10" :

(Ver.02)

NO	Item	Criterion	Level
09	Backlight elements	9.1 Backlight can't work normally.	Major
		9.2 Backlight doesn't light or color is wrong.	Major
		9.3 Illumination source flickers when lit.	Major
10	General appearance	10.1 Pin type 、 quantity 、 dimension must match type in structure diagram.	Major
		10.2 No short circuits in components on PCB or FPC.	Major
		10.3 Parts on PCB or FPC must be the same as on the production characteristic chart. There should be no wrong parts, missing parts or excess parts.	Major
		10.4 Product packaging must the same as specified on packaging specification sheet.	Minor
		10.5 The folding and peeled off in polarizer are not acceptable.	Minor
		10.6 The PCB or FPC between B/L assembled distance(PCB or FPC)is ≤ 1.5 mm.	Minor



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9. RELIABILITY CONDITION

No.	Test Item	Test Condition	REMARK
1	High Temperature Storage Test	Ta=80°C Dry 240h	
2	Low Temperature Storage Test	Ta=-30°C Dry 240h	
3	High Temperature Operation Test	Ta=70°C Dry 240h	
4	Low Temperature Operation Test	Ta=-20°C Dry 240h	
5	High Temperature and High Humidity Operation Test	Ta=60°C 90%RH 240h	
6	Electro Static Discharge Test	Panel surface / top case. Contact / Air_±4KV / ±10KV , 150pF , 330Ω	Non-operating
7	Sh Shock Test (non-operating)	Shock Level : 100G Waveform : Half Sinusoidal Wave Shock Time : 6ms Number of Shocks : 3 times for each ±X, ±Y, ±Z direction	
8	Vibration Test (non-operating)	Sweep : 8Hz ~ 33.3Hz Stoke : 1.3mm Sweep : 2.9G, 33.3~400Hz Vibration : Sinusoidal Wave, 4Hrs for Y direction. 2Hrs for each direction of X,Z	
9	Thermal Shock Test	-30°C(0.5h) ~ 85°C(0.5h) / 200 cycles	

***** Ta= Ambient Temperature

Note:

1. The test samples have recovery time for 2 hours at room temperature before the function check. In the standard conditions, there is no display function NG issue occurred.
2. All the cosmetic specifications are judged before the reliability stress.

10. APPLICATION NOTE REGISTER



Set_LCD_REG(0xa2,1);
Set_LCD_REG(0xa2,0);
Set_LCD_REG(0x126,0x0A);
Set_LCD_REG(0x127,0xC8);
Set_LCD_REG(0x12B,0xAE);
Set_LCD_REG(0x126,0x8A);

Set_LCD_REG(0x004,0x01);
Set_LCD_REG(0x158,0x5C);
Set_LCD_REG(0x159,0x8F);
Set_LCD_REG(0x15A,0x02);
Set_LCD_REG(0x010,0xE1);
Set_LCD_REG(0x011,0x00);
Set_LCD_REG(0x012,0x32);
Set_LCD_REG(0x013,0x07);
Set_LCD_REG(0x014,0x27);
Set_LCD_REG(0x016,0x44);
Set_LCD_REG(0x017,0x00);
Set_LCD_REG(0x018,0x06);
Set_LCD_REG(0x019,0x01);
Set_LCD_REG(0x01C,0xEF);
Set_LCD_REG(0x01D,0x00);
Set_LCD_REG(0x01E,0x12);
Set_LCD_REG(0x01F,0x00);
Set_LCD_REG(0x020,0x1E);
Set_LCD_REG(0x020,0x25);
Set_LCD_REG(0x021,0x00);
Set_LCD_REG(0x022,0x00);
Set_LCD_REG(0x023,0x00);
Set_LCD_REG(0x024,0x03);
Set_LCD_REG(0x024,0x07);
Set_LCD_REG(0x026,0x00);
Set_LCD_REG(0x027,0x00);



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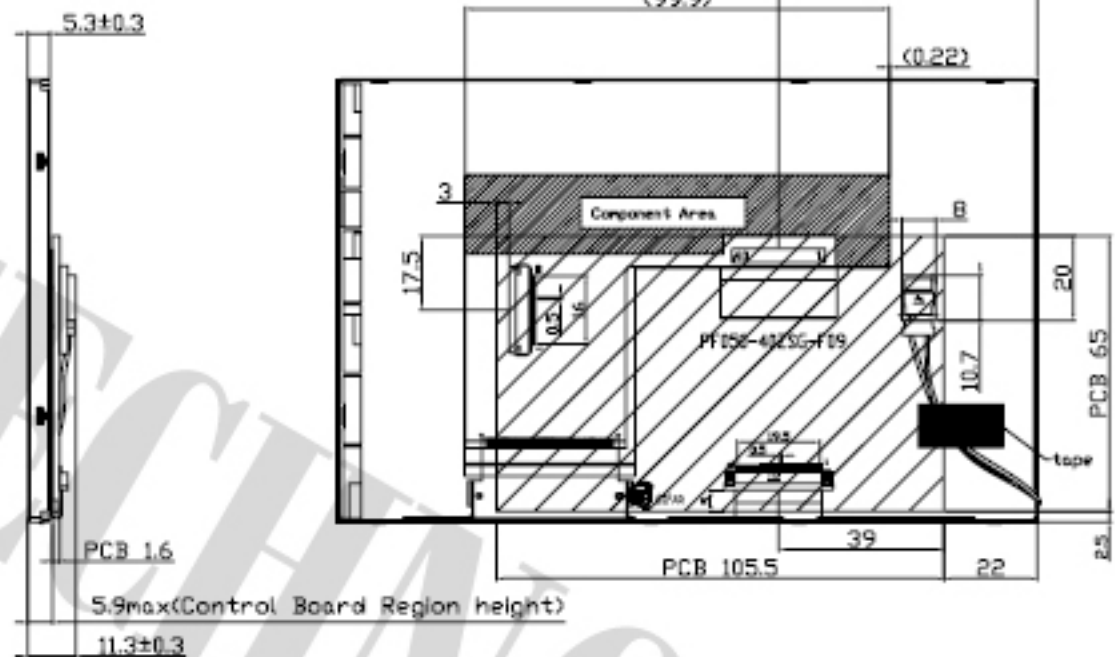
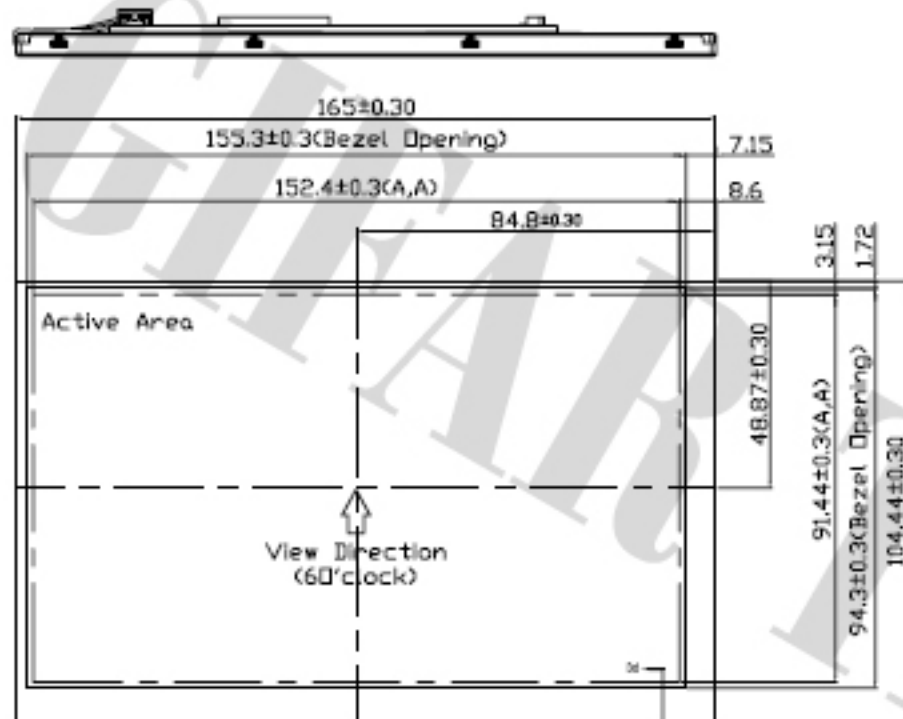
```
Set_LCD_REG(0x02C,0x40);  
Set_LCD_REG(0x02D,0x80);  
  
Set_LCD_REG(0x02E,0x40);  
Set_LCD_REG(0x02F,0x00);  
Set_LCD_REG(0x030,0x00);  
Set_LCD_REG(0x031,0x00);  
Set_LCD_REG(0x034,0x00);  
Set_LCD_REG(0x035,0x00);
```

```
Set_LCD_REG(0x038,0x01);  
Set_LCD_REG(0x038,0x00);  
Set_LCD_REG(0x350,0x00);  
Set_LCD_REG(0x351,0x00);  
Set_LCD_REG(0x354,0x00);  
Set_LCD_REG(0x355,0x00);  
Set_LCD_REG(0x0A0,0x00);  
Set_LCD_REG(0x070,0x14);  
Set_LCD_REG(0x074,0x00);  
Set_LCD_REG(0x075,0x00);  
Set_LCD_REG(0x076,0x00);  
Set_LCD_REG(0x078,0xA0);  
Set_LCD_REG(0x079,0x00);  
Set_LCD_REG(0x0A8,0x1F);  
Set_LCD_REG(0x071,0x40);  
Set_LCD_REG(0x1A4,0xFF);
```

11. DIMENSIONAL OUTLINES

See next page.....

RoHS



PIN DESCRIPTION

NO.	NAME
1	GND
2	VDD
3	WR
4	RD
5	CS
6	NC
7	/RESET
8	RS
9	DB15
10	DB14
11	DB13
12	DB12
13	DB11
14	DB10
15	DB9
16	DB8
17	DB7
18	DB6
19	DB5
20	DB4
21	DB3
22	DB2
23	DB1
24	DB0
25	IF
26	NC
27	NC
28	NC