

SPECIFICATION

Product Model: GD-240320T28N036A

DESIGNED	CHECKED	Approved
 <p>研发部 2019.09.27 Aleck</p>	 <p>研发部 2019.09.27 Hones</p>	 <p>研发部 2019.09.27 Mike</p>

Approval by Customer:

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1. Scope

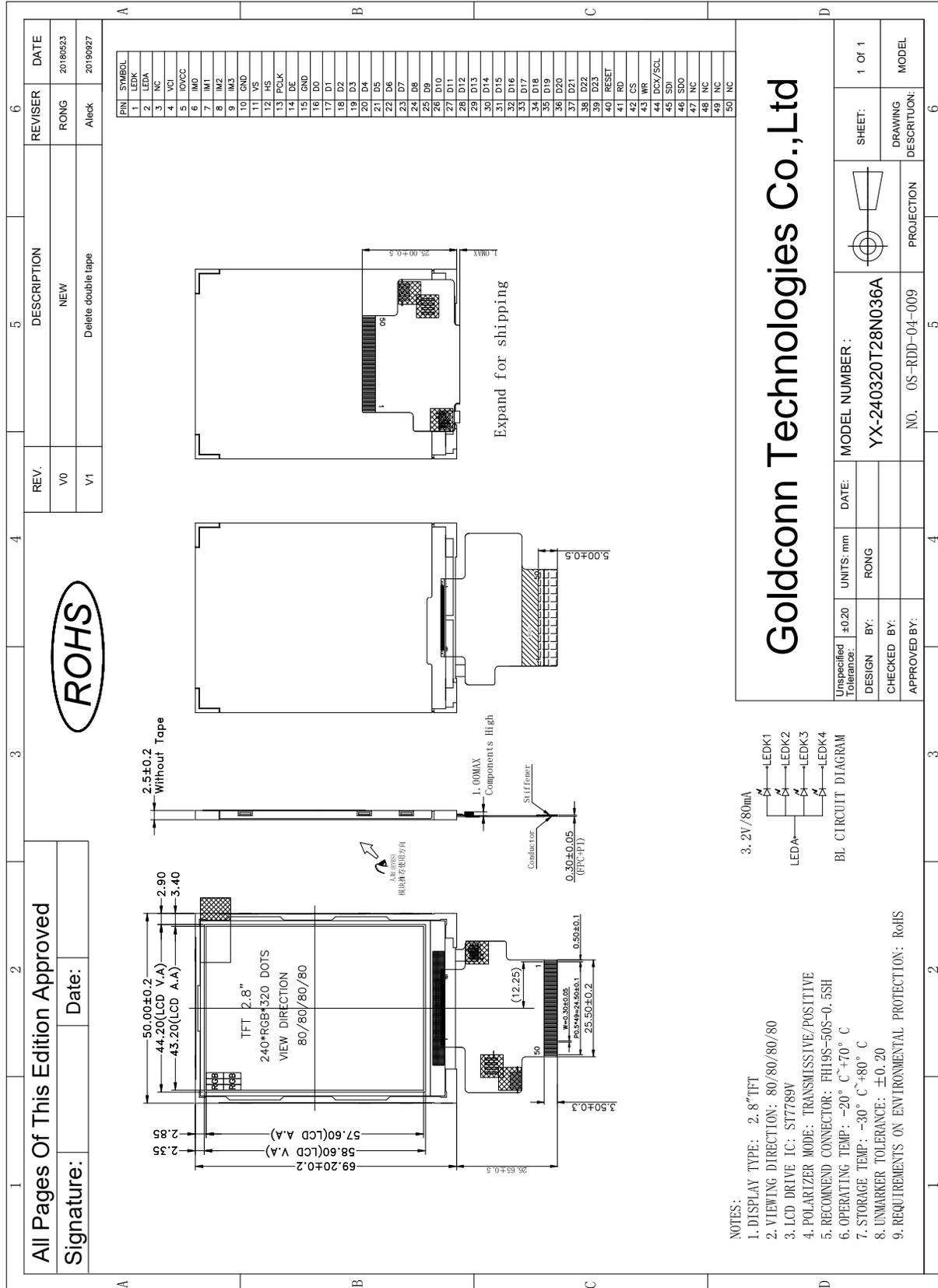
This specification defines general provisions as well as inspection standards for TFT module supplied by Goldconn.

If the event of unforeseen problem or unspecified items may occur, naturally shall negotiate and agree to solution

2. General Information

ITEM	STANDARD VALUES	UNITS
LCD type	2.8" TFT	--
Dot arrangement	240(RGB)×320	dots
Color filter array	RGB vertical stripe	--
Display mode	Transmission / Normally Black	-
Gray Scale Inversion Direction	80/80/80/80	--
Eyes Viewing Direction	ALL	--
Driver IC	ST7789V	--
Module size	50.0(W)×69.2(H)×2.5(T)	mm
Active area	43.2(W)×57.6(H)	mm
Dot pitch	0.18(W)×0.18(H)	mm
Interface	i80-system 8/16/18-bit MCU interface 3SPI/4SPI/ 16/18-bit RGB interface	--
Operating temperature	-20 ~ +70	°C
Storage temperature	-30 ~ +80	°C
Back Light	4 White LED	--
Weight	TBD	g

3. External Dimensions



4. Interface Description

PIN NO.	PIN NAME	DESCRIPTION
1	LEDK	The Anode of LED power
2	LEDA	The cathode of LED power
3	NC	NC
4	VCI	Analog operating voltage.
5	IOVCC	Logic operating voltage.
6~9	IM0~IM3	MPU interface mode select pin,(FYI NOTE1)
10	GND	Power ground
11	VSYNC	Frame synchronizing signal for RGB interface operation.
12	HSYNC	Line synchronizing signal for RGB interface operation.
13	DOTCLK	Dot clock signal for RGB interface operation.
14	DE	Data enable signal for RGB interface operation.
15	GND	Power ground
16-33	DB0-DB17	Data bus
34`39	DB18~DB23	NC
40	RESET	Reset pin setting either pin low initializes the LSI Must be reset after power supplied
41	RD	Read signal input terminal, Active at 'L'.
42	CS	Chip select signal input terminal, Active at 'L'
43	/WR	Write enable in MCU parallel interface Display data/command selection pin in 4-line serial interface. - Second Data lane in 2 data lane serial interface. -If not used, please fix this pin at VDDI or DGND.
44	DCX /SCL	Display data/command selection pin in parallel interface. This pin is used to be serial interface clock DCX='1': display data or parameter DCX='0': command data.
45	SDI	When IM [3]: Low, Serial in/out signal. When IM [3]: High, Serial input signal. The data is applied on the rising edge of the SCL signal.
46	SDO	Serial output signal. The data is applied on the rising edge of the SCL signal.
47	NC	NC.
48	NC	NC.

49	NC	NC.
50	NC	NC.

Note1:

-The MCU interface mode select.

IM3	IM2	IM1	IM0	MPU Interface Mode	Data pin
0	0	0	0	80-8bit parallel I/F	DB[7:0]
0	0	0	1	80-16bit parallel I/F	DB[15:0]
0	0	1	0	80-9bit parallel I/F	DB[8:0]
0	0	1	1	80-18bit parallel I/F	DB[17:0],
0	1	0	1	3-line 9bit serial I/F	SDA: in/out
				2 data lane serial I/F	SDA: in/out WRX: in
0	1	1	0	4-line 8bit serial I/F	SDA: in/out
1	0	0	0	80-16bit parallel I/F II	DB[17:10], DB[8:1]
1	0	0	1	80-8bit parallel I/F II	DB[17:10]
1	0	1	0	80-18bit parallel I/F II	DB[17:0],
1	0	1	1	80-9bit parallel I/F II	DB[17:9]
1	1	0	1	3-line 9bit serial I/F II	SDA: in/ SDO: out
1	1	1	0	4-line 8bit serial I/F II	SDA:in/ SDO: out

If not used, please fix this pin at VDDI or DGND.

5. Absolute Maximum Ratings

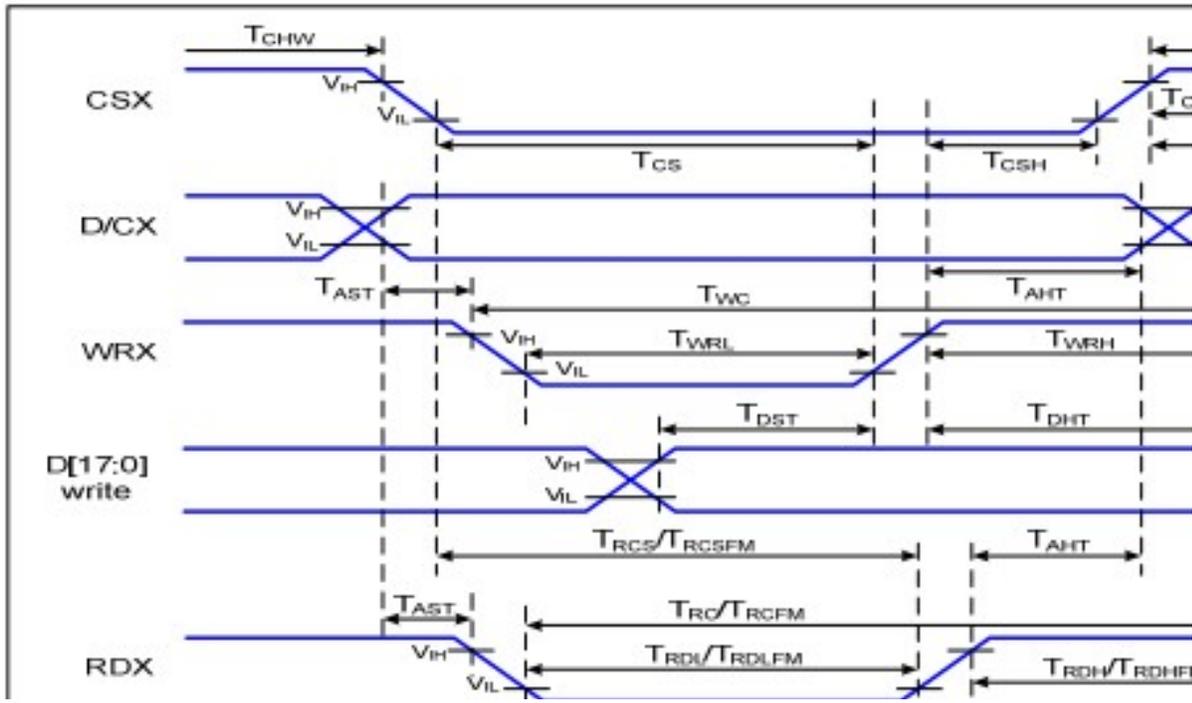
Item	Symbol	Min.	Max.	Unit
Logic Supply Voltage	IOVCC	-0.3	4.6	V
Analog Supply Voltage	VCI	-0.3	4.6	V
Input Voltage	V _{in}	-0.3	IOVCC +0.3	V
Operating Temperature	T _{OP}	-20	70	°C
Storage Temperature	T _{ST}	-30	80	°C
Storage Humidity	HD	20	90	%RH

6. DC Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Logic Supply Voltage	IOVCC	1.65	2.8	3.3	V	-
Analog Supply Voltage	VCI	2.5	2.8	3.3	V	-
Input High Voltage	V _{IH}	0.7VCI	-	IOVCC	V	-
Input Low Voltage	V _{IL}	GND	-	0.3 IOVCC	V	-
Output High Voltage	V _{OH}	0.8 VCI	-	IOVCC	V	-
Output Low Voltage	V _{OL}	GND	-	0.2 IOVCC	V	-
I/O Leak Current	I _{LI}	-1	-	1	uA	-
Supply Current	IDD	-	7.0	10	mA	-

7. Timing Characteristics

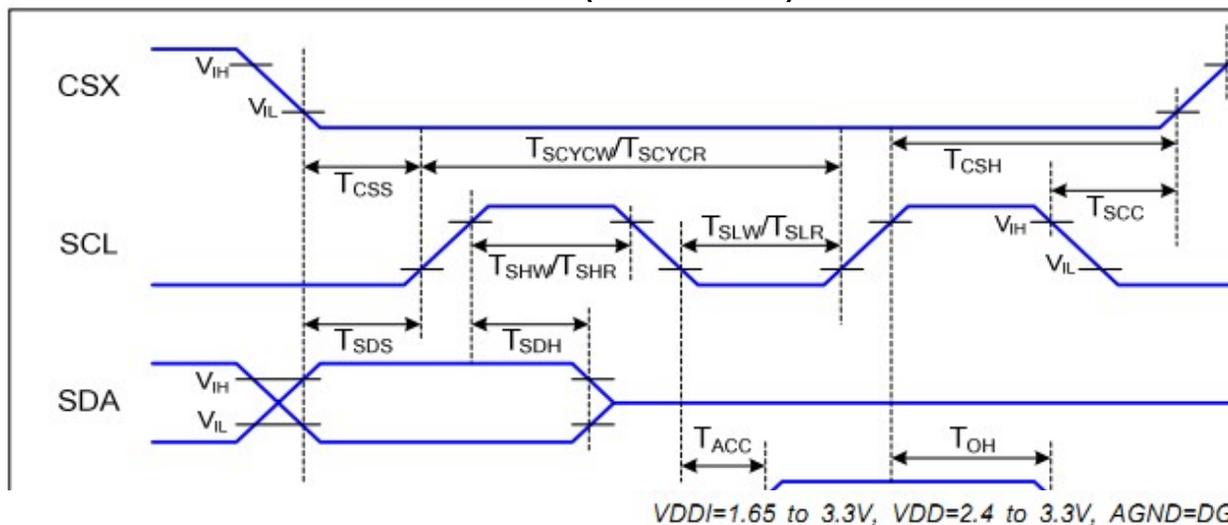
7.1 i80-System Interface Timing Characteristics



Signal	Symbol	Parameter	Min	Max	Unit
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
	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
	T_{RDH}	Control pulse "H" duration (ID)	90		ns
	T_{RDL}	Control pulse "L" duration (ID)	45		ns

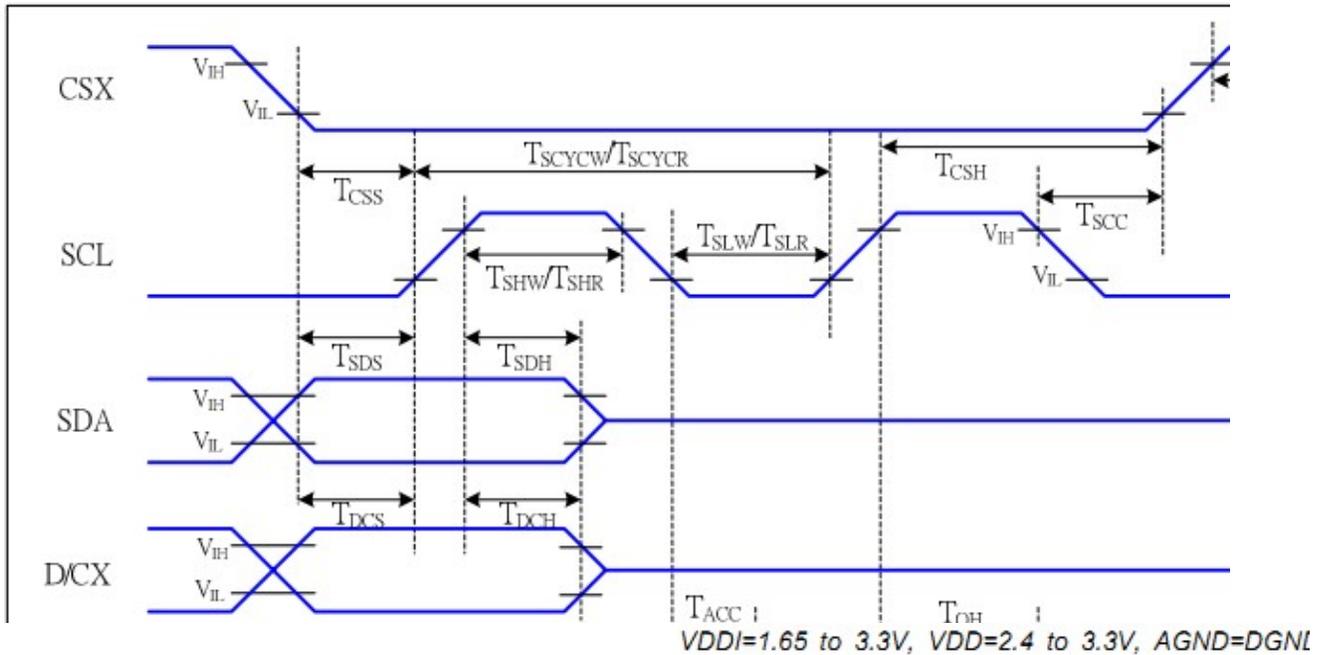
T_{DHT}	Data hold time	10		ns
T_{RAT}	Read access time (ID)		40	ns
T_{RATFM}	Read access time (FM)		340	ns

7.2 Serial Interface Characteristics (3-line serial):



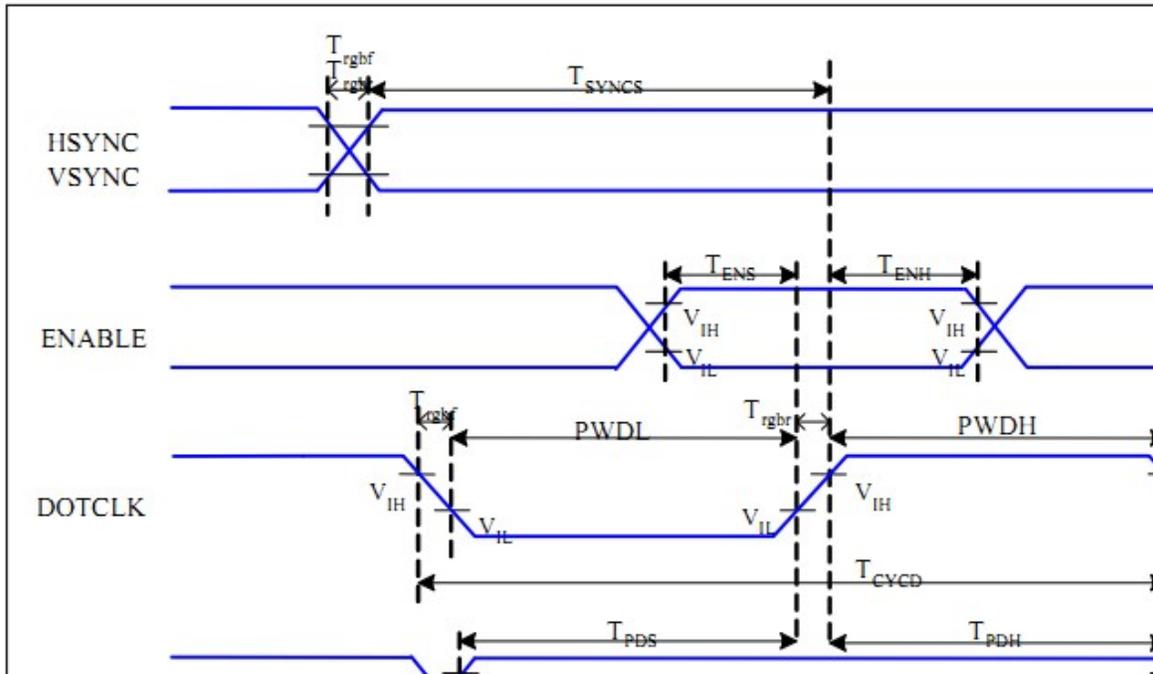
Signal	Symbol	Parameter	Min	Max	Unit
CSX	T_{CSS}	Chip select setup time (write)	15		ns
	T_{CSH}	Chip select hold time (write)	15		ns
	T_{CSS}	Chip select setup time (read)	60		ns
	T_{SCC}	Chip select hold time (read)	65		ns
	T_{CHW}	Chip select "H" pulse width	40		ns
SCL	T_{SCYCW}	Serial clock cycle (Write)	66		ns
	T_{SHW}	SCL "H" pulse width (Write)	15		ns
	T_{SLW}	SCL "L" pulse width (Write)	15		ns
	T_{SCYCR}	Serial clock cycle (Read)	150		ns
	T_{SHR}	SCL "H" pulse width (Read)	60		ns
	T_{SLR}	SCL "L" pulse width (Read)	60		ns
SDA	T_{SDS}	Data setup time	10		ns

7.3 Serial Interface Characteristics (4-line serial):



Signal	Symbol	Parameter	MIN	MAX	Unit	
CSX	T _{CSS}	Chip select setup time (write)	15		ns	
	T _{CSH}	Chip select hold time (write)	15		ns	
	T _{CSS}	Chip select setup time (read)	60		ns	
	T _{SCC}	Chip select hold time (read)	65		ns	
	T _{CHW}	Chip select "H" pulse width	40		ns	
SCL	T _{SCYCW}	Serial clock cycle (Write)	66		ns	-w/
	T _{SHW}	SCL "H" pulse width (Write)	15		ns	
	T _{SLW}	SCL "L" pulse width (Write)	15		ns	
	T _{SCYCR}	Serial clock cycle (Read)	150		ns	-re
	T _{SHR}	SCL "H" pulse width (Read)	60		ns	
	T _{SLR}	SCL "L" pulse width (Read)	60		ns	
D/CX	T _{DCS}	D/CX setup time	10		ns	
	T _{DCH}	D/CX hold time	10		ns	

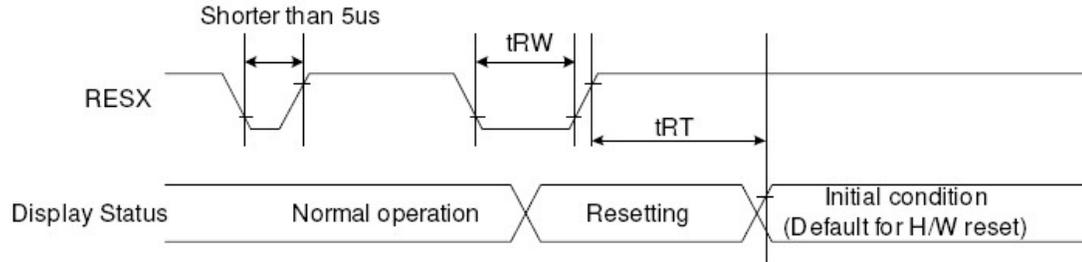
7.4 RGB Interface Characteristics:



VDDI=1.65 to 3.3V, VDD=2.4 to 3.3V, AGND=DG

Signal	Symbol	Parameter	MIN	MAX	Unit
HSYNC, VSYNC	T_{SYNCS}	VSYSNC, HSYNC Setup Time	30	-	ns
ENABLE	T_{ENS}	Enable Setup Time	25	-	ns
	T_{ENH}	Enable Hold Time	25	-	ns
DOTCLK	PWDH	DOTCLK High-level Pulse Width	60	-	ns
	PWDL	DOTCLK Low-level Pulse Width	60	-	ns
	T_{CYCD}	DOTCLK Cycle Time	120	-	ns
	Trghr, Trghf	DOTCLK Rise/Fall time	-	20	ns

7.5 Reset Timing Characteristics



Signal	Symbol	Parameter	Min	Max	Unit
RESX	tRW	Reset pulse duration	10		uS
	tRT	Reset cancel		5 (note 1,5)	mS
				120 (note 1,6,7)	mS

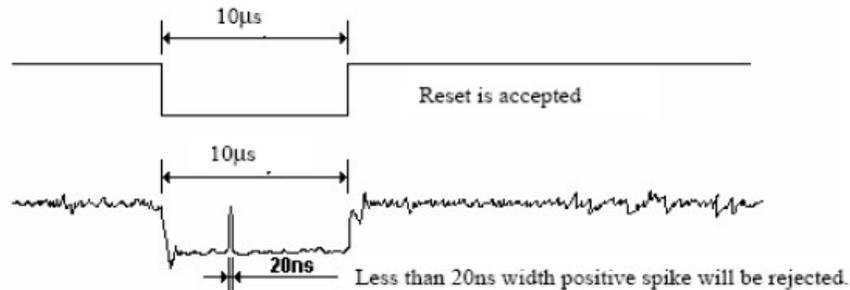
Note 1: The reset cancel includes also required time for loading ID bytes, VCOM setting and other settings from NV memory to registers. This loading is done every time when there is HW reset cancel time (tRT) within 5 ms after a rising edge of RESX.

Note 2: Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below: -

RESX Pulse	Action
Shorter than 5us	Reset Rejected
Longer than 10us	Reset
Between 5us and 10us	Reset starts

Note 3: During the Resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120 ms, when Reset Starts in Sleep Out -mode. The display remains the blank state in Sleep In -mode.) And then return to Default condition for Hardware Reset.

Note 4: Spike Rejection also applies during a valid reset pulse as shown below:

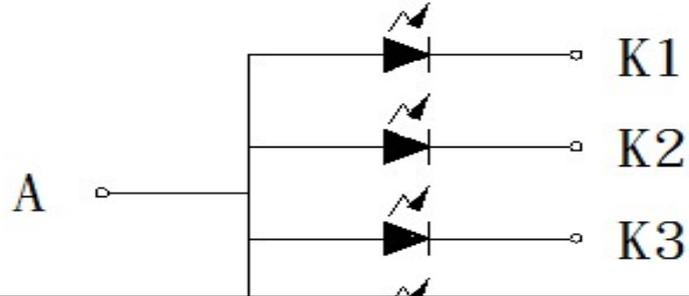


Note 5: When Reset applied during Sleep In Mode.

Note 6: When Reset applied during Sleep Out Mode.

Note 7: It is necessary to wait 5msec after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120msec.

8. Backlight Characteristic

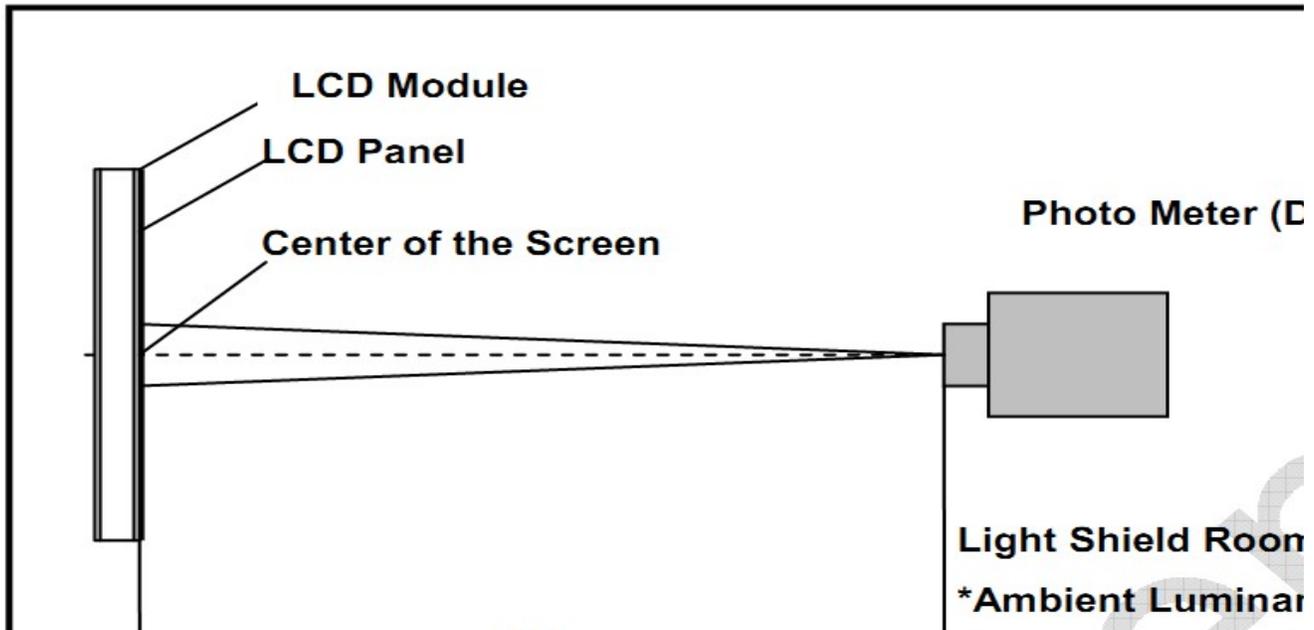


Item	Symbol	MIN	TYP	MAX	UNIT	Test Condition
Supply Voltage	Vf	2.9	3.2	3.5	V	If=80mA
Supply Current	If	-	80		mA	-
Luminous Intensity for LCM	-	200	250	-	cd/m ²	If=80mA
Uniformity for LCM	-	75	80	-	%	If=80mA
Life Time	-	50000	-	-	Hr	If=80mA
Backlight Color	White					

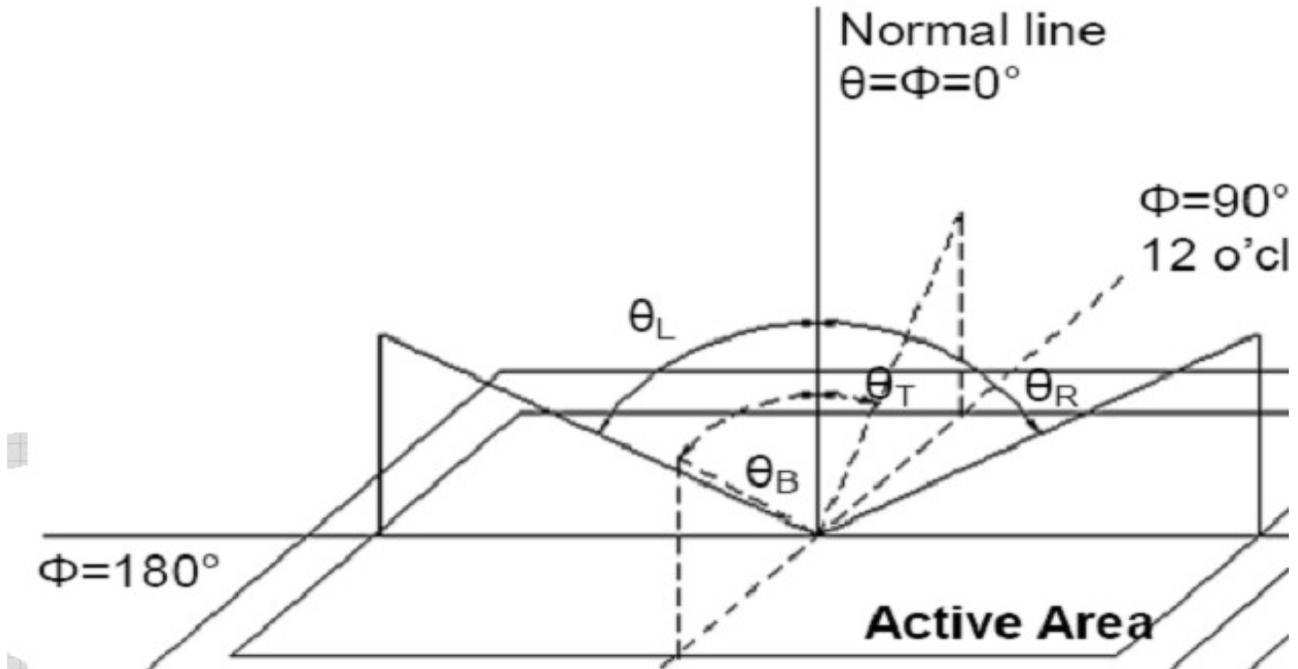
9. Optical Characteristics

Item	Conditions	Min.	Typ.	Max.	Unit	Note	
Viewing Angle (CR>10)	Horizontal	θ_L	-	80	-	degree	(1),(2),(6)
		θ_R	-	80	-		
	Vertical	θ_T	-	80	-		
		θ_B	-	80	-		
Contrast Ratio	Center	600	800	-	-	(1),(3),(6)	
Response Time	Rising + Falling	-	16	-	ms	(1),(4),(6)	
CF Color Chromaticity (CIE1931)	Red x	Typ. -0.05		Typ. +0.05	-	(1), (6)	
	Red y				-		
	Green x				-		
	Green y				-		
	Blue x				-		
	Blue y				-		
	White x				-		
	White y				-		
NTSC	CIE1931	-	60	-	%	(1),(6)	

Note (1) Measurement Setup: The LCD module should be stabilized at given temp. 25°C for 15 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 15 minutes in a windless room.



Note (2) Definition of Viewing Angle



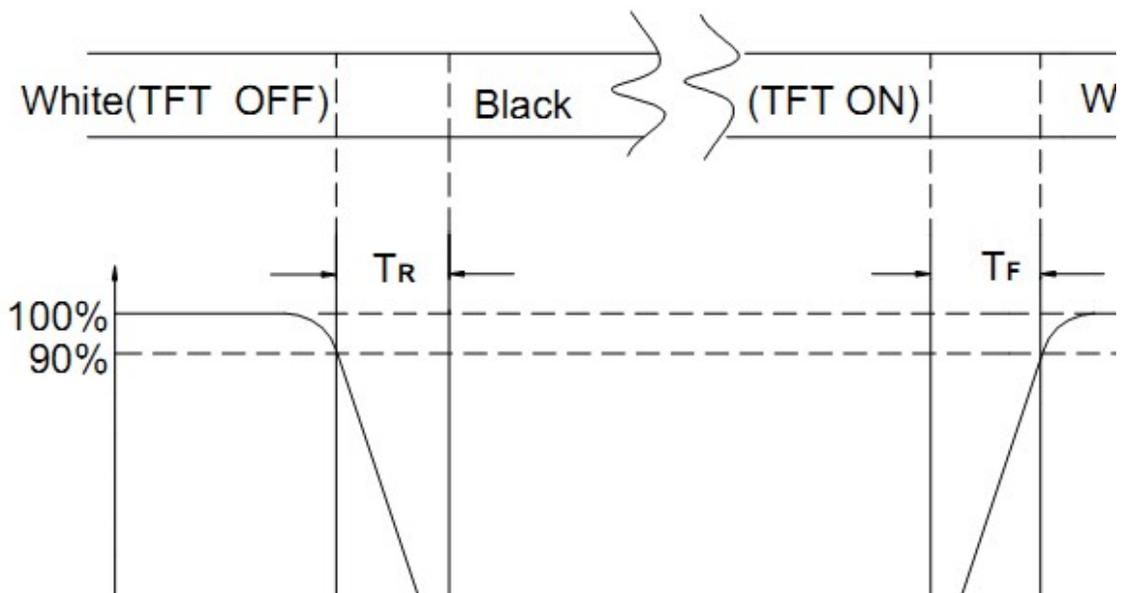
Note (3) Definition of Contrast Ratio (CR)

The contrast ratio can be calculated by the following expression

$$\text{Contrast Ratio (CR)} = L_{63} / L_0$$

L63: Luminance of gray level 63, L0: Luminance of gray level 0

Note (4) Definition of response time



Note (5) Definition of Transmittance (Module is without signal input)

$$\text{Transmittance} = \text{Center Luminance of LCD} / \text{Center Luminance of Back Light} \times 100\%$$

Note (6) Definition of color chromaticity (CIE1931)

Color coordinates measured at the center point of LCD

10. Reliability Test Conditions and Methods

NO.	TEST ITEMS	TEST CONDITION	INSPECTION AFTER TEST
①	High Temperature Storage	80°C±2°C×96Hours	Inspection after 2~4hours storage at room temperature, the samples should be free from defects: 1, Air bubble in the LCD. 2, Seal leak. 3, Non-display. 4, Missing segments. 5, Glass crack. 6, Current IDD is twice higher than initial value. 7, The surface shall be free from damage. 8, The electric characteristic requirements shall be satisfied.
②	Low Temperature Storage	-30°C±2°C×96Hours	
③	High Temperature Operating	70°C±2°C×96Hours	
④	Low Temperature Operating	-20°C±2°C×96Hours	
⑤	Temperature Cycle(Storage)	-20°C ↔ 25°C ↔ 70°C (30min) ↔ (5min) ↔ (30min) 1cycle Total 10cycle	
⑥	Damp Proof Test (Storage)	50°C±5°C×90%RH×120Hours	
⑦	Vibration Test	Frequency:10Hz~55Hz~10Hz Amplitude:1.5MM X,Y,Z direction for total 3hours (packing condition test will be tested by a carton)	
⑧	Drooping Test	Drop to the ground from 1M height one time every side of carton. (packing condition test will be tested by a carton)	
⑨	ESD Test	Voltage:±8KV,R:330Ω,C:150PF,Air Mode,10times	

REMARK:

- 1, The Test samples should be applied to only one test item.
- 2, Sample side for each test item is 5~10pcs.
- 3, For Damp Proof Test, Pure water(Resistance > 10MΩ) should be used.
- 4, In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judge as a good part.
- 5, EL evaluation should be accepted from reliability test with humidity and temperature: Some defects such as black spot/blemish can happen by natural chemical reaction with humidity and Fluorescence EL has.
- 6, Failure Judgment Criterion: Basic Specification Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.

11. Inspection Standard

11.1. QUALITY :

THE QUALITY OF GOODS SUPPLIED TO PURCHASER SHALL COME UP TO THE FOLLOWING

11.1.1. THE METHOD OF PRESERVING GOODS

AFTER DELIVERY OF GOODS FROM AMSON TO PURCHASER. PURCHASER SHALL STORE THE GOODS AT -10℃ TO 40℃ ,AND IT MIGHT BE DESIRABLE TO KEEP AT THE NORMAL ROOM TEMPERATURE AND HUMIDITY UNTIL INCOMING INSPECTION OR THROWING INTO PROCESS LINE.

11.1.2. INCOMING INSPECTION

(A) THE METHOD OF INSPECTION

IF PURCHASER MAKE AN INCOMING INSPECTION , A SAMPLING PLAN SHALL BE APPLIED ON THE CONDITION THAT QUALITY OF ONE DELIVERY SHALL BE REGARDED AS ONE LOT.

(B) THE STANDARD OF QUALITY

ISO-2859-1 (SAME AS MIL-STD-105E) , LEVEL II SINGLE PLAN.

CLASS	AQL(%)
CRITICAL	0.4 %
MAJOR	0.65 %
MINOR	1.5 %
TOTAL	1.5 %

EVERY ITEM SHALL BE INSPECTED ACCORDING TO THE CLASS.

(C) MEASURE

IF AS THE RESULT OF ABOVE RECEIVING INSPECTION , A LOT OUT IS DISCOVERED, PURCHASER SHALL BE INFORM SELLER OF IT WITHIN SEVEN DAYS. BUT FIRST TIME WITHIN FOURTEEN DAYS.

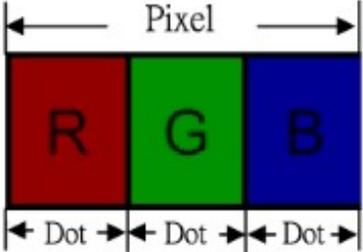
11.1.3. WARRANTY POLICY

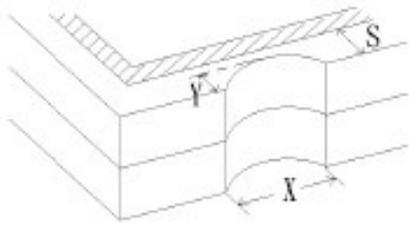
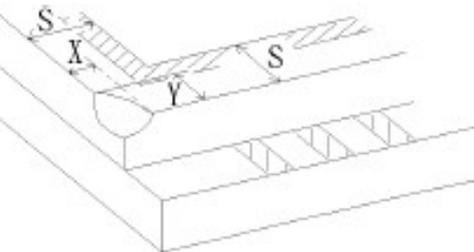
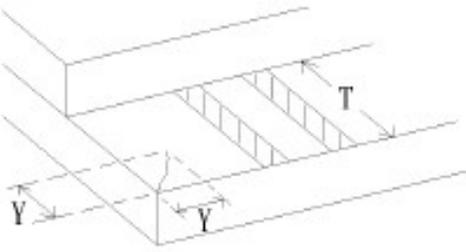
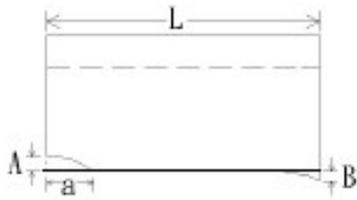
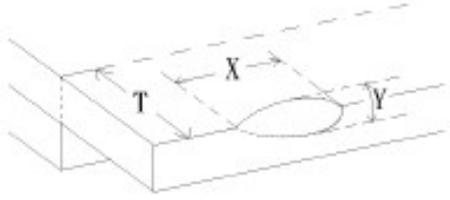
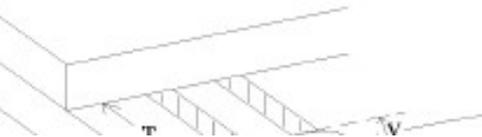
AMSON WILL PROVIDE ONE-YEAR WARRANTY FOR THE PRODUCTS ONLY IF UNDER NORMAL OPERATING CONDITIONS. AMSON WILL REPLACE NEW PRODUCTS FOR THESE DEFECTS.

11.3. INSPECTION PLAN :

CLASS	ITEM	JUDGEMENT
PACKING & INDICATE	1. OUTSIDE AND INSIDE PACKAGE	"MODEL NO." , "LOT NO." AND "Q SHOULD INDICATE ON THE PACI
	2. MODEL MIXED AND QUANTITY	OTHER MODEL MIXED.....RE QUANTITY SHORT OR OVER.....RE.
	3. PRODUCT INDICATION	"MODEL NO." SHOULD INDICATE THE PRODUCT
ASSEMBLY	4. DIMENSION, LCD GLASS SCRATCH AND SCRIBE DEFECT.	ACCORDING TO SPECIFICATION DRAWING.
APPEARANCE	5. VIEWING AREA	POLARIZER EDGE OR LCD'S SEAL IS VISABLE IN THE VIEWING AREREJECTED
	6. BLEMISH - BLACK SPOT - WHITE SPOT IN THE LCD AND LCD GLASS CRACKS	ACCORDING TO STANDARD OF V INSPECTION(INSIDE VIEWING ARI
	7. BLEMISH - BLACK SPOT WHITE SPOT AND SCRATCH ON THE POLARIZER	ACCORDING TO STANDARD OF V INSPECTION(INSIDE VIEWING ARI
	8. BUBBLE IN POLARIZER	ACCORDING TO STANDARD OF V INSPECTION(INSIDE VIEWING ARI
	9. LCD'S RAINBOW COLOR	STRONG DEVIATION COLOR (OF RING) OF LCD.....REJECTED. OR ACCORDING TO LIMITED SAM (IF NEEDED, AND INSIDE VIEWIN
	10. ELECTRICAL AND OPTICAL CHARACTERISTICS (CONTRAST- VOP -	ACCORDING TO SPECIFICATION DRAWING . (INSIDE VIEWING AR

11.4. STANDARD OF VISUAL INSPECTION

NO.	CLASS	ITEM	JUDGEMENT																				
11.4.1	MINOR	BLACK AND WHITE SPOT FOREIGN MATERIEL DUST IN THE CELL BLEMISH SCRATCH	<p>(A) ROUND TYPE:</p> <table border="1"> <thead> <tr> <th>DIAMETER (mm.)</th> <th>ACCEPTAB</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.1$</td> <td>DISR</td> </tr> <tr> <td>$0.1 < \Phi \leq 0.25$</td> <td>3 (Dista</td> </tr> <tr> <td>$0.25 < \Phi$</td> <td></td> </tr> </tbody> </table> <p>NOTE: $\Phi = (\text{LENGTH} + \text{WIDTH}) / 2$</p> <p>(B) LINEAR TYPE:</p> <table border="1"> <thead> <tr> <th>LENGTH</th> <th>WIDTH</th> <th>ACC</th> </tr> </thead> <tbody> <tr> <td>-----</td> <td>$W \leq 0.03$</td> <td></td> </tr> <tr> <td>$L \leq 5.0$</td> <td>$0.03 < W \leq 0.07$</td> <td></td> </tr> <tr> <td>-----</td> <td>$0.07 < W$</td> <td>FOLI</td> </tr> </tbody> </table>	DIAMETER (mm.)	ACCEPTAB	$\Phi \leq 0.1$	DISR	$0.1 < \Phi \leq 0.25$	3 (Dista	$0.25 < \Phi$		LENGTH	WIDTH	ACC	-----	$W \leq 0.03$		$L \leq 5.0$	$0.03 < W \leq 0.07$		-----	$0.07 < W$	FOLI
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11.4.2	MINOR	BUBBLE IN POLARIZER DENT ON POLARIZER	<table border="1"> <thead> <tr> <th>DIAMETER</th> <th>ACCEPT.</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.2$</td> <td>DISR</td> </tr> <tr> <td>$0.2 < \Phi \leq 0.5$</td> <td>2 (Dista</td> </tr> <tr> <td>$0.5 < \Phi$</td> <td></td> </tr> </tbody> </table>	DIAMETER	ACCEPT.	$\Phi \leq 0.2$	DISR	$0.2 < \Phi \leq 0.5$	2 (Dista	$0.5 < \Phi$													
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11.4.3	MINOR	Dot Defect	<table border="1"> <thead> <tr> <th>Items</th> <th>ACC</th> </tr> </thead> <tbody> <tr> <td>Bright dot</td> <td>N</td> </tr> <tr> <td>Dark dot</td> <td>N</td> </tr> </tbody> </table> <p>Pixel Define :</p> 	Items	ACC	Bright dot	N	Dark dot	N														
Items	ACC																						
Bright dot	N																						
Dark dot	N																						

NO.	CLASS	ITEM	JUDGEMENT
11.4.4	MINOR	LCD GLASS CHIPPING	 <p>Y ></p>
11.4.5	MINOR	LCD GLASS CHIPPING	 <p>X or</p>
11.4.6	MAJOR	LCD GLASS GLASS CRACK	 <p>Y ></p>
11.4.7	MAJOR	LCD GLASS SCRIBE DEFECT	 <p>1. 2. l</p>
11.4.8	MINOR	LCD GLASS CHIPPING (ON THE TERMINAL AREA)	 <p>Φ =</p>
11.4.9	MINOR	LCD GLASS CHIPPING (ON THE TERMINAL AREA)	 <p>Y ></p>

12. Handling Precautions

12.1 Mounting method

The LCD panel of Goldconn TFT module consists of two thin glass plates with polarizers which easily be damaged. And since the module is so constructed as to be fixed by utilizing fitting holes in the printed circuit board.

Extreme care should be needed when handling the LCD modules.

12.2 Caution of LCD handling and cleaning

When cleaning the display surface, Use soft cloth with solvent

[Recommended below] and wipe lightly

- Isopropyl alcohol
- Ethyl alcohol

Do not wipe the display surface with dry or hard materials that will damage the polarizer surface.

Do not use the following solvent:

- Water
- Aromatics

Do not wipe ITO pad area with the dry or hard materials that will damage the ITO patterns

Do not use the following solvent on the pad or prevent it from being contaminated:

- Soldering flux
- Chlorine (Cl) , Sulfur (S)

If goods were sent without being silicon coated on the pad, ITO patterns could be damaged due to the corrosion as time goes on.

If ITO corrosion happens by miss-handling or using some materials such as Chlorine (Cl), Sulfur (S) from customer, Responsibility is on customer.

12.3 Caution against static charge

The LCD module uses C-MOS LSI drivers, so we recommend that you:

Connect any unused input terminal to POWER or GROUND, do not input any signals before power is turned on, and ground your body, work/assembly areas, and assembly equipment to protect against static electricity.

12.4 packing

- Module employs LCD elements and must be treated as such.
- Avoid intense shock and falls from a height.
- To prevent modules from degradation, do not operate or store them exposed direct to sunshine or high temperature/humidity

12.5 Caution for operation

- It is an indispensable condition to drive LCD's within the specified voltage limit since the higher voltage than the limit causes the shorter LCD life.
- An electrochemical reaction due to direct current causes LCD's undesirable deterioration, so that the use of direct current drive should be avoided.
- Response time will be extremely delayed at lower temperature than the operating temperature range and on the other hand at higher temperature LCD's show dark color in them. However those phenomena do not mean malfunction or out of order with LCD's, which will come back in the specified operation temperature.
- If the display area is pushed hard during operation, some font will be abnormally displayed but it resumes normal condition after turning off once.
- Slight dew depositing on terminals is a cause for electro-chemical reaction resulting in terminal open circuit.

Usage under the maximum operating temperature, 50%Rh or less is required.

12.6 storing

In the case of storing for a long period of time for instance, for years for the purpose or replacement use, the following ways are recommended.

- Storage in a polyethylene bag with the opening sealed so as not to enter fresh air outside in it. And with no desiccant.
- Placing in a dark place where neither exposure to direct sunlight nor light's keeping the storage temperature range.
- Storing with no touch on polarizer surface by the anything else.
[It is recommended to store them as they have been contained in the inner container at the time of delivery from us

12.7 Safety

- It is recommendable to crash damaged or unnecessary LCD's into pieces and wash off liquid crystal by either of solvents such as acetone and ethanol, which should be burned up later.
- When any liquid leaked out of a damaged glass cell comes in contact with your hands, please wash it off well with soap and water

13. Precaution for Use

13.1

A limit sample should be provided by the both parties on an occasion when the both parties agreed its necessity. Judgment by a limit sample shall take effect after the limit sample has been established and confirmed by the both parties.

13.2

On the following occasions, the handing of problem should be decided through discussion and agreement between responsible of the both parties.

- When a question is arisen in this specification
- When a new problem is arisen which is not specified in this specifications
- When an inspection specifications change or operating condition change in customer is reported to Goldconn TFT , and some problem is arisen in this specification due to the change
- When a new problem is arisen at the customer's operating set for sample evaluation in the customer site.

14. Packing Method

TBD