CHI HSIN ELECTRONICS CORP.

Product Specifications

Customer	
Description	**8” TFT LCD Module**
Model Name	**LS080HT111**
Date	**2008/04/23**
Doc. No.	
Revision	**C**

Preliminary

Customer Approval	
Date	
The above signature represents that the product specifications, testing regulation, and warranty in the specifications are accepted	

Engineering			
Check	**Date**	**Prepared**	**Date**
			**2008.04.23**

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RECORD OF REVISIONS

Revision	Date	Page	Description
A	2008/03/18	All	New Creation
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1. SUMMARY

This technical specification applies to 8.0“color TFT-LCD panel. The 8.0“ color TFT-LCD panel is designed for Industrial Display, Instrument, Game Machine application and other electronic products which require high quality flat panel displays.
This module follows RoHS.

2. FEATURES

High Resolution: 1,440,000 Dots (800 RGB x 600). Image Reversion: Up/Down and Left/Right.

3. GENERAL SPECIFICATIONS

Parameter		Specifications	Unit
Screen Size		8(Diagonal)	inch
Display Format		800RGB x 600	Dot
Active Area		162(H) x 121.5(V)	mm
Pixel Pitch		0.2025(H) x 0.2025(V)	mm
Pixel Configuration		RGB-Stripe	
Outline Dimension		183.00(W) x 141.00(H) x 5.80(D)	mm
Weight		250	g
View Angle Direction		6 o’clock	
Temperature Range	Operation	-30~85	℃
	Storage	-40~85	℃

4. ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Values		Unit	Condition
		Min.	Max.		
Power Voltage	VDD	-0.3	+7.0	V	VSS=0
Logic Input Signal	Vin	-0.3	VDD+0.3	V	
Logic Output Signal	Vout	-0.3	VDD+0.3	V	

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

5. ELECTRICAL CHARACTERISTICS

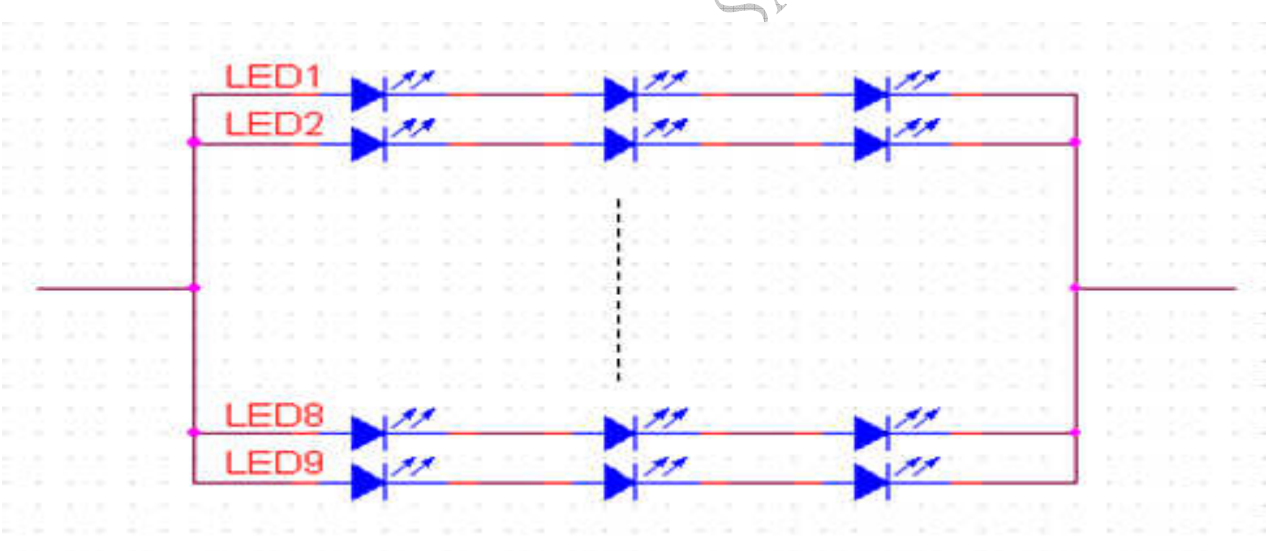
5.1. Operating conditions:

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Digital Power Supply	VDD	3.0	3.3	3.6	V	
Digital Operating Current	IVDD	-	200	-	mA	
Power Consumption	PLCD	-	660	-	mW	

5.2 LED driving conditions

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power Consumption	PLED	-	1782	-	mW	
LED Current	If	-	180	-	mA	
Backlight Voltage	Vb	-	9.9	10.5	V	

Note 1 : Ta = 25℃
Note 2 : Brightess to be decreased to 50% of the initial value



6. DC CHARATERISTICS

Parameter	Symbol	Rating			Unit	Condition
		Min.	Typ.	Max.		
Low level input voltage	V_{IL}	0	-	0.3*D_VDD	V	
Hight level input voltage	V_{IH}	0.7*D_VDD	-	D_VDD	V	

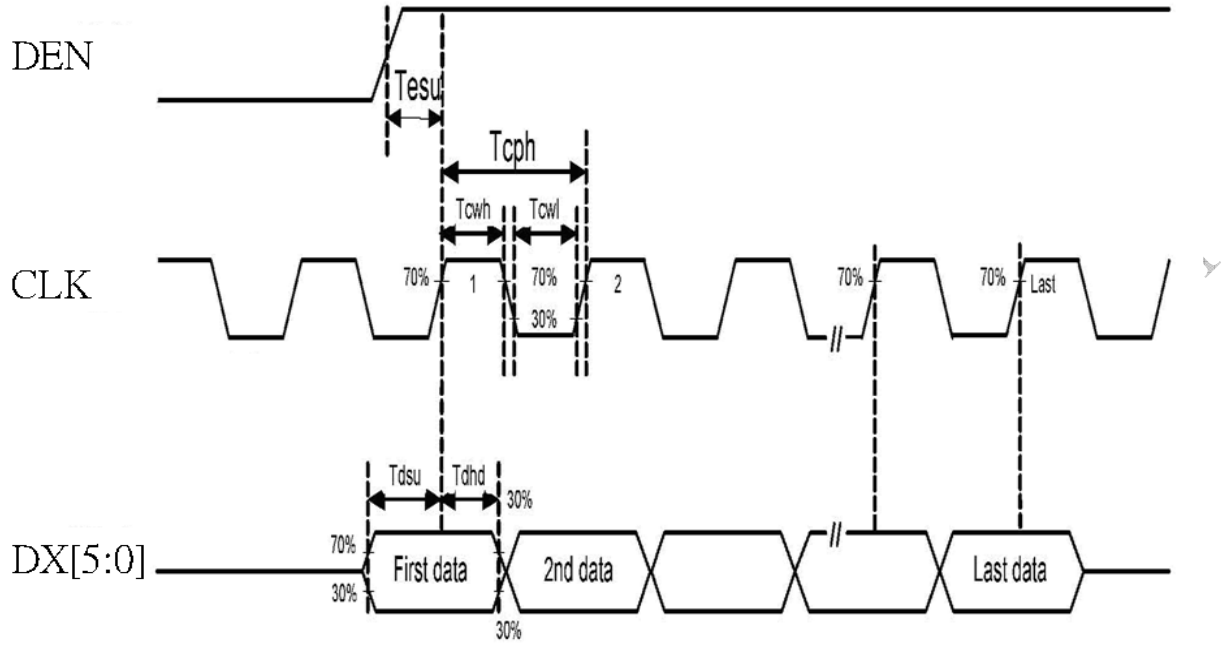
7. AC CHARATERISTICS

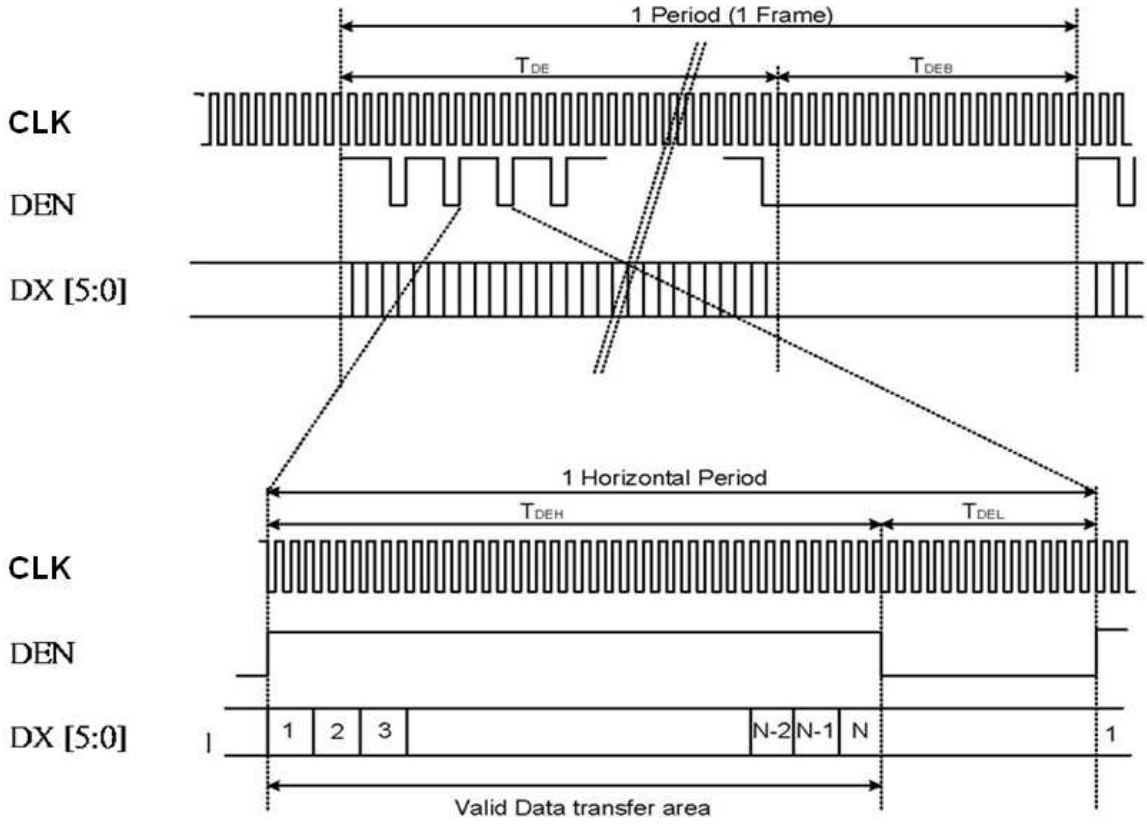
7.1 AC Timing Characteristics

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
CLK Frequency	FCPH	-	39.79	-	MHz
CLK Period	FCPH	-	25.13	-	ns
CLK Pulse Duty	FCWH	40	50	60	%
DE Period	FDEH+TDEL	1000	1056	-	TCPH
DE Pulse Width	T_{DEH}	-	800	-	TCPH
DE Frame Blanking	T_{DEB}	10	28	110	FDEH+TDEL
DE Frame Width	T_{DE}	-	600	-	FDEH+TDEL
OEV Pulse Width	TOEV	-	150	-	TCPH
CKV Pulse Width	TCKV	-	133	-	TCPH
DE (Internal)-STV Time	T1	-	4	-	TCPH
DE (Internal)-CKV Time	T2	-	40	-	TCPH
DE (Internal)-OEV Time	T3	-	23	-	TCPH
DE (Internal)-POL Time	T4	-	157	-	TCPH
STV Pulse Width	-	-	1	-	TH

THS+THA<TH

7.2 AC Timing Diagrams





Preliminary

8. OPTICAL CHARATERISTIC

Item		Symbol	Condition	Min	Typ	Max	Unit	Note
Brightness				200	250	-	cd/m2	
Response time		TR	Θ=0	-	15	-	ms	(2)
		TF		-	35	-	ms	
Contrast ratio		CR	At optimized viewing angle	450	500	-	-	(3)
Color Chromaticity	White	Wx	Θ=0	0.26	0.31	0.36	%	(4)
		Wy		0.28	0.33	0.38		
Viewing Angle	Hor.	ΘR	CR≧10	60	70	-	Degree	(5)
		ΘL		60	70	-		
	Ver.	φH		50	60	-		
		φL		60	70	-		

Ta=25±2℃, ILED=20mA

Note 1: Definition of viewing angle range

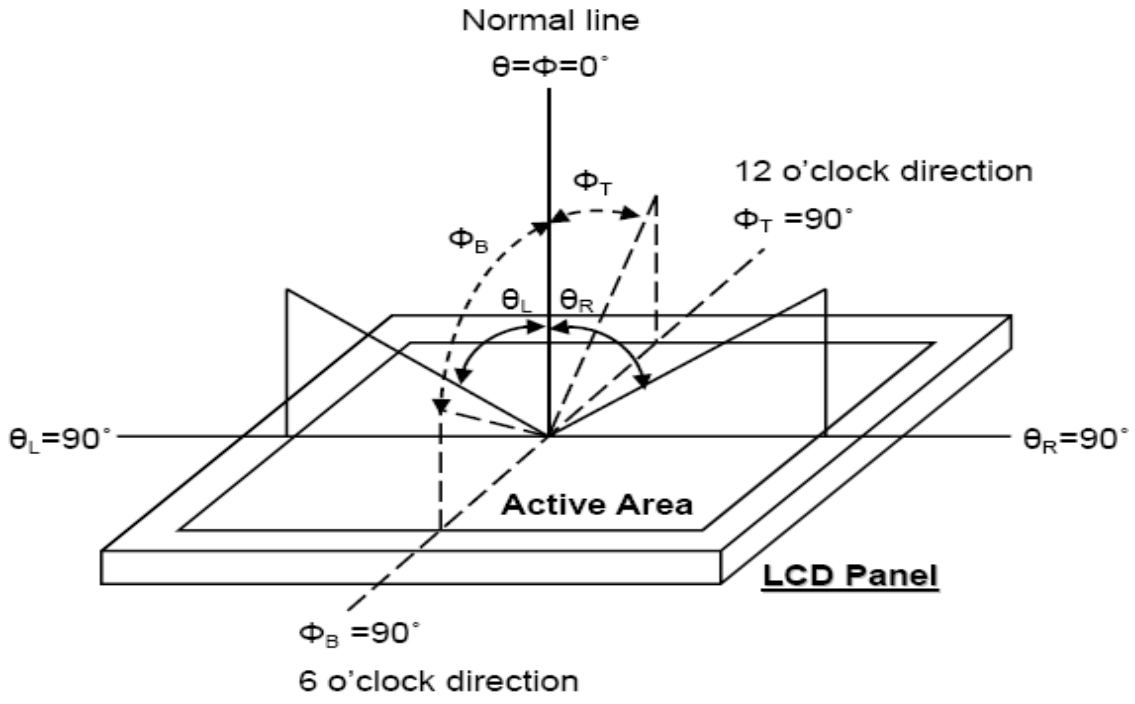


Fig. 8-1 Definition of viewing angle

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.

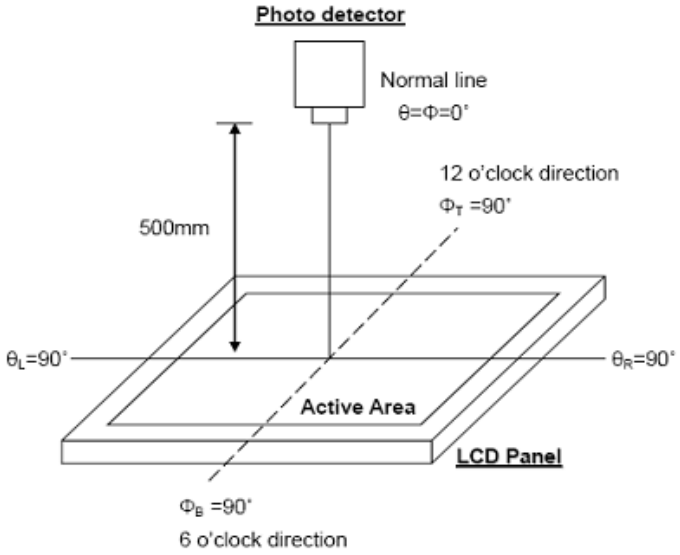


Fig. 8-2 Optical measurement system setup

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, Tr, is the time between photo detector output intensity changed from
90% to 10% . And fall time, Tf, is the time between photo detector output intensity changed from10% to 90% .

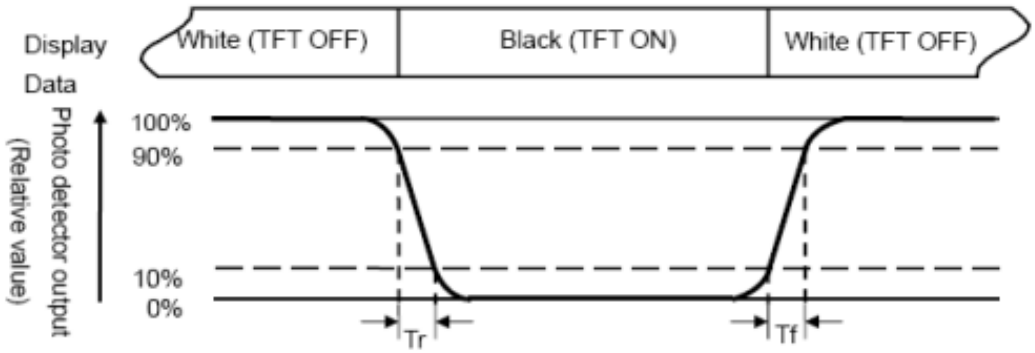


Fig. 3-3 Definition of response time

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 Vi = V_{i50} ± 1.5V
Black Vi = V_{i50} ± 2.0V
"±" 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.

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

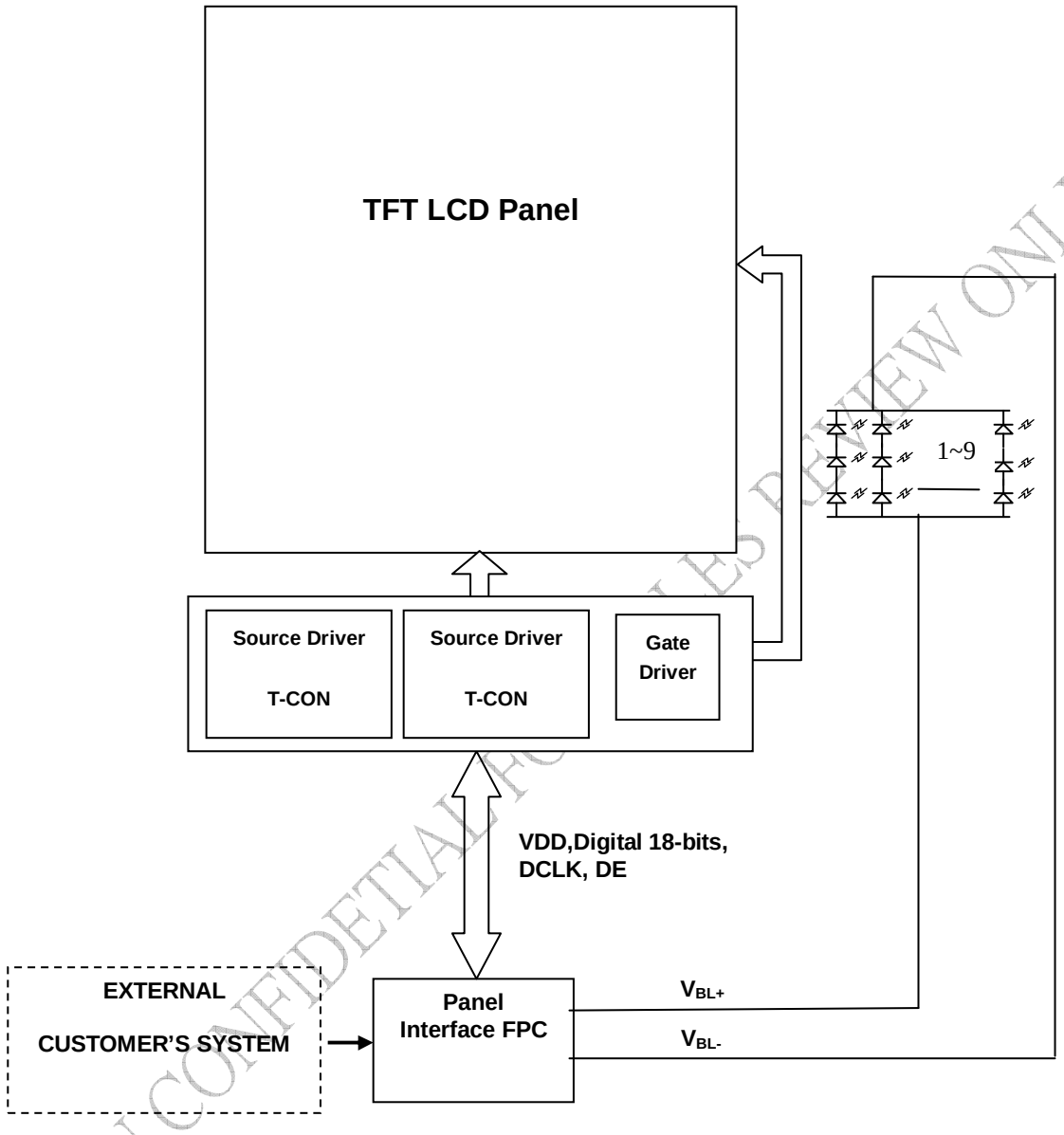
9. INTERFACE

9.1. LCM PIN Definition

Pin	Symbol	I/O	Function	Remark
1	GND	I	Power Ground	
2	GND	I	Power Ground	
3	NC	-	NC	
4	VCC	I	Power Supply (3.3V)	
5	VCC	I	Power Supply (3.3V)	
6	VCC	I	Power Supply (3.3V)	
7	VCC	I	Power Supply (3.3V)	
8	NC	-	NC	
9	DE	I	Data Enable	
10	GND	I	Power Ground	
11	GND	I	Power Ground	
12	GND	I	Power Ground	
13	B5	I	Blue Data bit (MSB)	
14	B4	I	Blue Data bit	
15	B3	I	Blue Data bit	
16	GND	I	Power Ground	
17	B2	I	Blue Data bit	
18	B1	I	Blue Data bit	
19	B0	I	Blue Data bit (LSB)	
20	GND	I	Power Ground	
21	G5	I	Green Data bit (MSB)	
22	G4	I	Green Data bit	
23	G3	I	Green Data bit	
24	GND	I	Power Ground	
25	G2	I	Green Data bit	
26	G1	I	Green Data bit	
27	G0	I	Green Data bit (LSB)	
28	GND	I	Power Ground	
29	R5	I	Red Data bit (MSB)	
30	R4	I	Red Data bit	

31	R3	I	Red Data bit	
32	GND	I	Power Ground	
33	R2	I	Red Data bit	
34	R1	I	Red Data bit	
35	R0	I	Red Data bit (LSB)	
36	GND	I	Power Ground	
37	GND	I	Power Ground	
38	CLK	I	Clock Signal Input. Latching data at the rising edge.	
39	GND	I	Power Ground	
40	GND	I	Power Ground	

10. BLOCK DIAGRAM



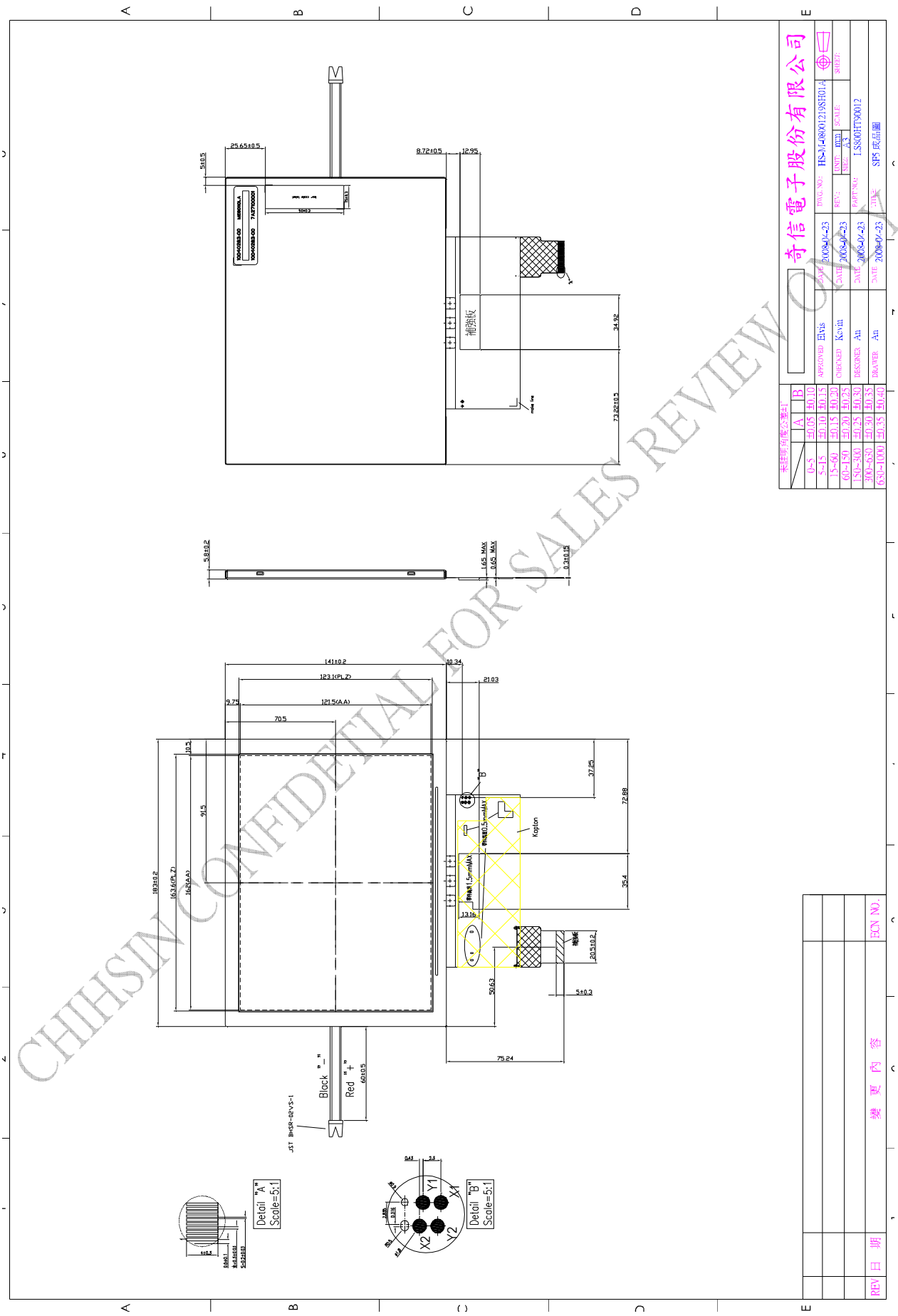
11. QUALITY ASSURANCE

Test Item	Test Condition
High Temperature Operation	85℃ (T_p) for 240 hours.
High Temperature and High Humidity Operation	60℃, 90%RH for 240 hours
Low Temperature Operation	-30℃ (T_a) for 240 hours
High Temperature Storage	85℃ (T_a) for 240 hours
Low Temperature Storage	-40℃ (T_a) for 240 hours
Thermal Shock	-30℃ (0.5Hr) ~ +85℃ (0.5Hr) for 200 cycles
Mechanical Shock	Shock Level : 125G Waveform : Half sinusoidal Wave Shock Time : 2ms Number of Shocks : 3 times for each ±X, ±Y, ±Z direction
Vibration	Frequency Range:10Hz~500Hz Stoke: 1.3mm Sweep : 2.9G,33.3Hz~400Hz Cycle:15min Vibration: Sinusoidal Wave,4Hrs for Y direction.2Hrs for each direction of X, Y, Z

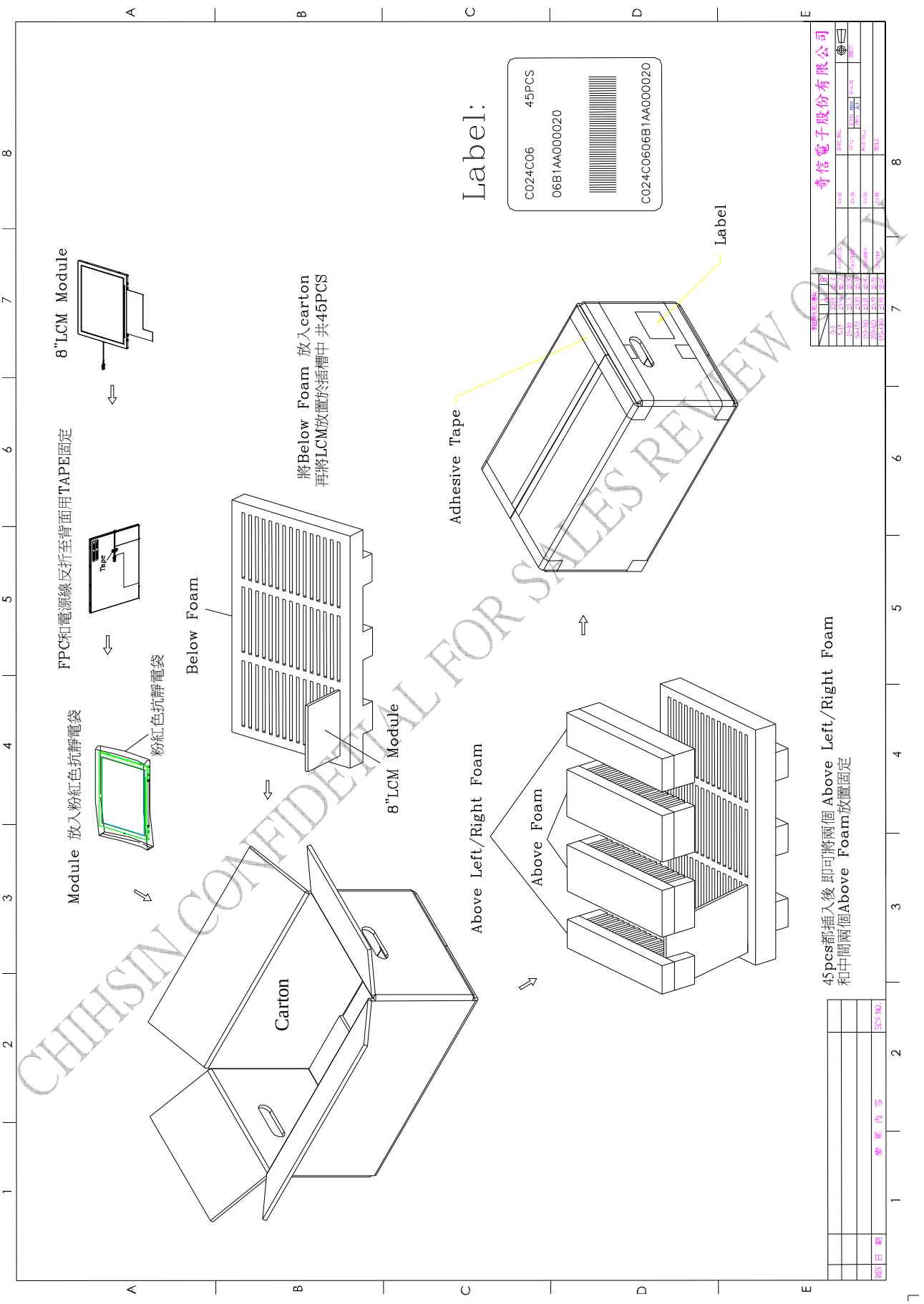
Note1: The test samples have recovery time for 2 hours at room temperature before the function check. In the standard conditions, there is no display function NG issue occurred.

Note2: All the cosmetic specifications are judged before the reliability stress.

12. OUTLINE DRAWING



13. PACKAGE INFORMATION



14. PRECAUTIONS

Please pay attention to the following when you use this TFT LCD module.

14.1 MOUNTING PRECAUTIONS

(1) You must mount a module using arranged in four corners or four sides.
(2) You should consider the mounting structure so that uneven force (ex. Twisted stress) is not applied to the module.
And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.
(3) Please attach a transparent protective plate to the surface in order to protect the polarizer. Transparent protective plate should have sufficient strength in order to the resist external force.
(4) You should adopt radiation structure to satisfy the temperature specification.
(5) Acetic acid type and chlorine type materials for the cover case are not describe because the former generates corrosive gas of attacking the polarizer at high temperature and the latter causes circuit break by electro-chemical reaction.
(6) Do not touch, push or rub the exposed polarizers with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment.
Do not touch the surface of polarizer for bare hand or greasy cloth. (Some cosmetics are determined to the polarizer)
(7) When the surface becomes dusty, please wipe gently with adsorbent cotton or other soft materials like chamois soaks with petroleum benzene. Normal-hexane is recommended for cleaning the adhesives used to attach front / rear polarizers. Do not use acetone, toluene and alcohol because they cause chemical damage to the polarizer.
(8) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.
(9) Do not open the case because inside circuits do not have sufficient strength.

14.2 OPERATING PRECAUTIONS

(1) The spike noise causes the mis-operation of circuits. It should be lower than following voltage：V=±200mV(Over and under shoot voltage)
(2) Response time depends on the temperature. (In lower temperature, it becomes longer.)
(3) Brightness depends on the temperature. (In lower temperature, it becomes lower)
And in lower temperature, response time (required time that brightness is stable after turned on) becomes longer.
(4) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.
(5) When fixed patterns are displayed for a long time, remnant image is likely to occur.
(6) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.

14.3 ELECTROSTATIC DISCHARGE CONTROL

Since a module is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wristband etc. And don’t touch interface pin directly.

14.4 PRECAUTIONS FOR STRONG LIGHT EXPOSURE

Strong light exposure causes degradation of polarizer and color filter.

14.5 STORAGE

When storing modules as spares for a long time, the following precautions are necessary.

(1) Store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the temperature between 5℃ and 35℃ at normal humidity.

(2) The polarizer surface should not come in contact with any other object. It is recommended that they be stored in the container in which they were shipped.

14.6 HANDLING PRECAUTIONS FOR PROTECTION FILM

(1) When the protection film is peeled off, static electricity is generated between the film and polarizer. This should be peeled off slowly and carefully by people who are electrically grounded and with well ion-blown equipment or in such a condition, etc.

(2) The protection film is attached to the polarizer with a small amount of glue. Is apt to remain on the polarizer. Please carefully peel off the protection film without rubbing it against the polarizer.

(3) When the module with protection film attached is stored for a long time, sometimes there remains a very small amount of glue still on the polarizer after the protection film is peeled off.

(4) You can remove the glue easily. When the glue remains on the polarizer surface or its vestige is recognized, please wipe them off with absorbent cotton waste or other soft material like chamois soaked with normal-hexane.