SHARP

No.	**LD – 17753A**
DATE	August. 9. 2005

TECHNICAL LITERATURE

FOR

TFT - LCD module

These parts have corresponded with the RoHS directive.

MODEL No. LQ121S1LG61

The technical literature is subject to change without notice.
So, please contact SHARP or its representative before designing your product based on this literature.

Engineering department Ⅴ
Mobile LCD design center Ⅱ
MOBILE LIQUID CRYSTAL DISPLY GROUP
SHARP CORPORATION

RECORDS OF REVISION

LQ121S1LG61

SPEC No.	DATE	REVISED No.	SUMMARY PAGE	SUMMARY	NOTE
LD-17753A	August.9.2005	–	–	–	1 st Issue

1. Application

This technical literature applies to color TFT-LCD module, LQ121S1LG61

The device listed in these technical literature sheets was designed and manufactured for use in general electronic equipment.

In case of using the device for applications such as control and safety equipment for transportation (aircraft, trains, automobiles, etc.), rescue and security equipment and various safety related equipment which require higher reliability and safety, take into consideration that appropriate measures such as fail-safe functions and redundant system design should be taken.

Do not use the device for equipment that requires an extreme level of reliability, such as aerospace applications, telecommunication equipment (trunk lines), nuclear power control equipment and medical or other equipment for life support.

SHARP assumes no responsibility for any damage resulting from the use of the device which does not comply with the instructions and the precautions specified in these technical literature sheets.

Contact and consult with a SHARP sales representative for any questions about this device.

2. Overview

This module is a color active matrix LCD module incorporating amorphous silicon TFT (Thin Film Transistor). It is composed of a color TFT-LCD panel, driver ICs, control circuit and power supply circuit and a backlight unit. Graphics and texts can be displayed on a 800 X 3 X 600 dots panel with 262,144 colors by using LVDS (Low Voltage Differential Signaling) system for interface and supplying +3.3V +5.0V DC supply voltage for TFT-LCD panel driving and supply voltage for backlight.
The TFT-LCD panel used for this module is a low-reflection and higher-color-saturation type.
Therefore, this module is also suitable for the multimedia use. Viewing angle is 6 o'clock direction.
This module is the type of wide viewing angle and superhigh brightness (450cd/m^2).
Backlight-driving DC/AC inverter is not built in this module.

3. Outline Specifications

Parameter	Specifications	Unit
Display size	31 (12.1") Diagonal	cm
Active area	246.0 (H) X 184.5 (V)	mm
Pixel format	800 (H) X 600 (V)	pixel
	(1 pixel=R+G+B dots)	
Number of colors (Number of gray scale level)	262, 144 colors （64 gray scales per color）	
Pixel pitch	0.3075 (H) X 0.3075 (V)	mm
Pixel configuration	R,G,B vertical stripe	
Display mode	Normally white	
Unit outline dimensions *1	276.0(W)×209.0(H)×Max.11.0 (D) *Outline dimensions is shown in Fig.1	mm
Mass	(TBD)	g
Surface treatment	Anti-glare and hard-coating 3H	

[Note] excluding backlight cables.

4. Input Terminals

4-1. TFT-LCD panel driving

CN1 (LVDS signals , +3.3V / +5.0V DC power supply and Contorol signal)

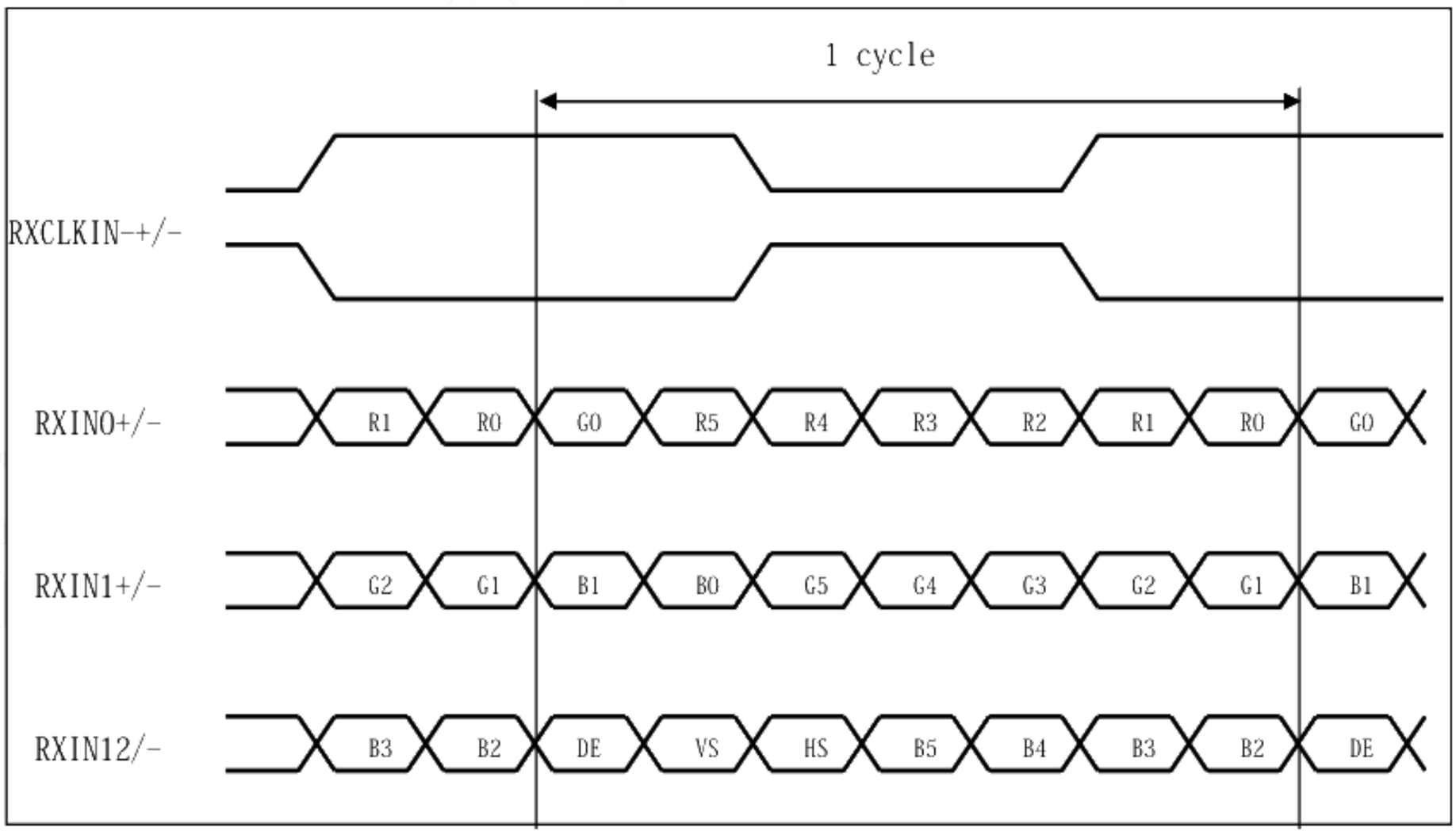
Corresponding connector:FI-SE20M (JAE) or FI-S20S (JAE)

Pin No.	Symbol	Function	Remark
1	V_{CC}	+3.3V / +5.0V power supply	
2	V_{CC}	+3.3V / +5.0V power supply	
3	GND		
4	GND		
5	RXIN0-	Differential data input, CH0 (negative)	LVDS signal
6	RXIN0+	Differential data input, CH0 (positive)	LVDS signal
7	GND		
8	RXIN1-	Differential data input, CH1 (negative)	LVDS signal
9	RXIN1+	Differential data input, CH1 (positive)	LVDS signal
10	GND		
11	RXIN2-	Differential data input, CH2 (negative)	LVDS signal
12	RXIN2+	Differential data input, CH2 (positive)	LVDS signal
13	GND		
14	RXCLK IN-	Differential clock input (negative)	LVDS signal
15	RXCLK IN+	Differential clock input (positive)	LVDS signal
16	GND		
17	R/L	Horizontal display mode select signal	[Note1]
18	U/D	Vertical display mode select signal	[Note2]
19	GND		
20	GND		

[Note] To obtain the proper relation between LVDS signals and actual digital data signals, the digital signals should be inputted into the transmitter as described in the nextsection, 4-2.

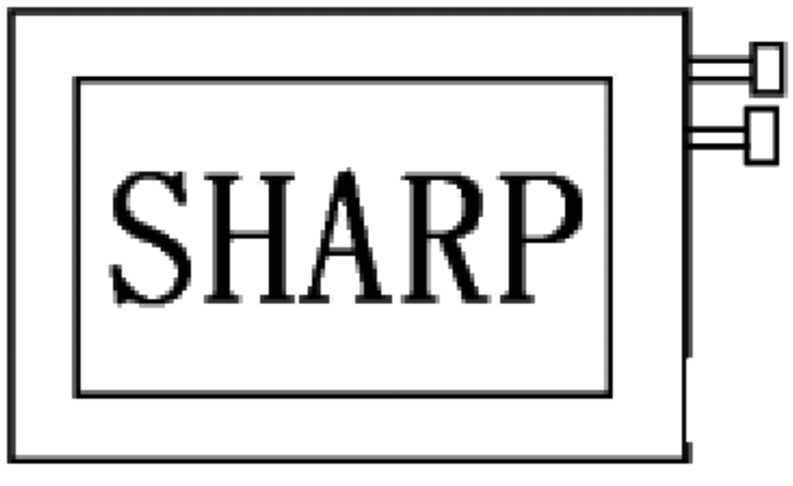
[Note] The shielding case is connected with signal GND.

[Note] Data Mapping



[Note 1],[Note 2]

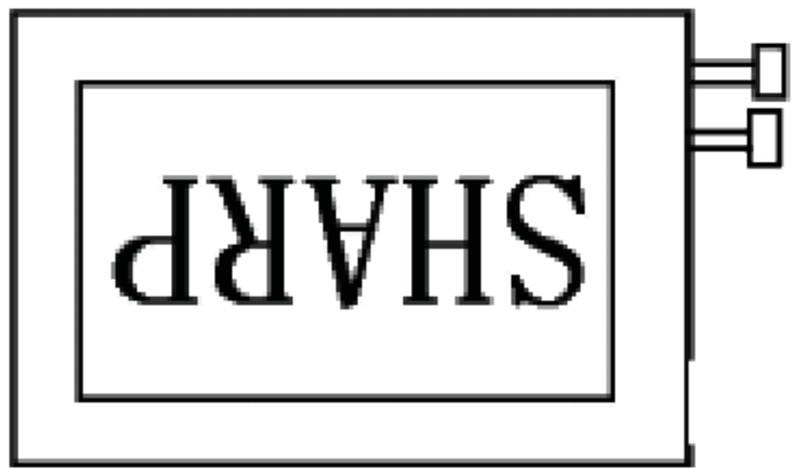
R/L = High, U/D = Low



R/L = Low, U/D = Low

R/L = High, U/D = High

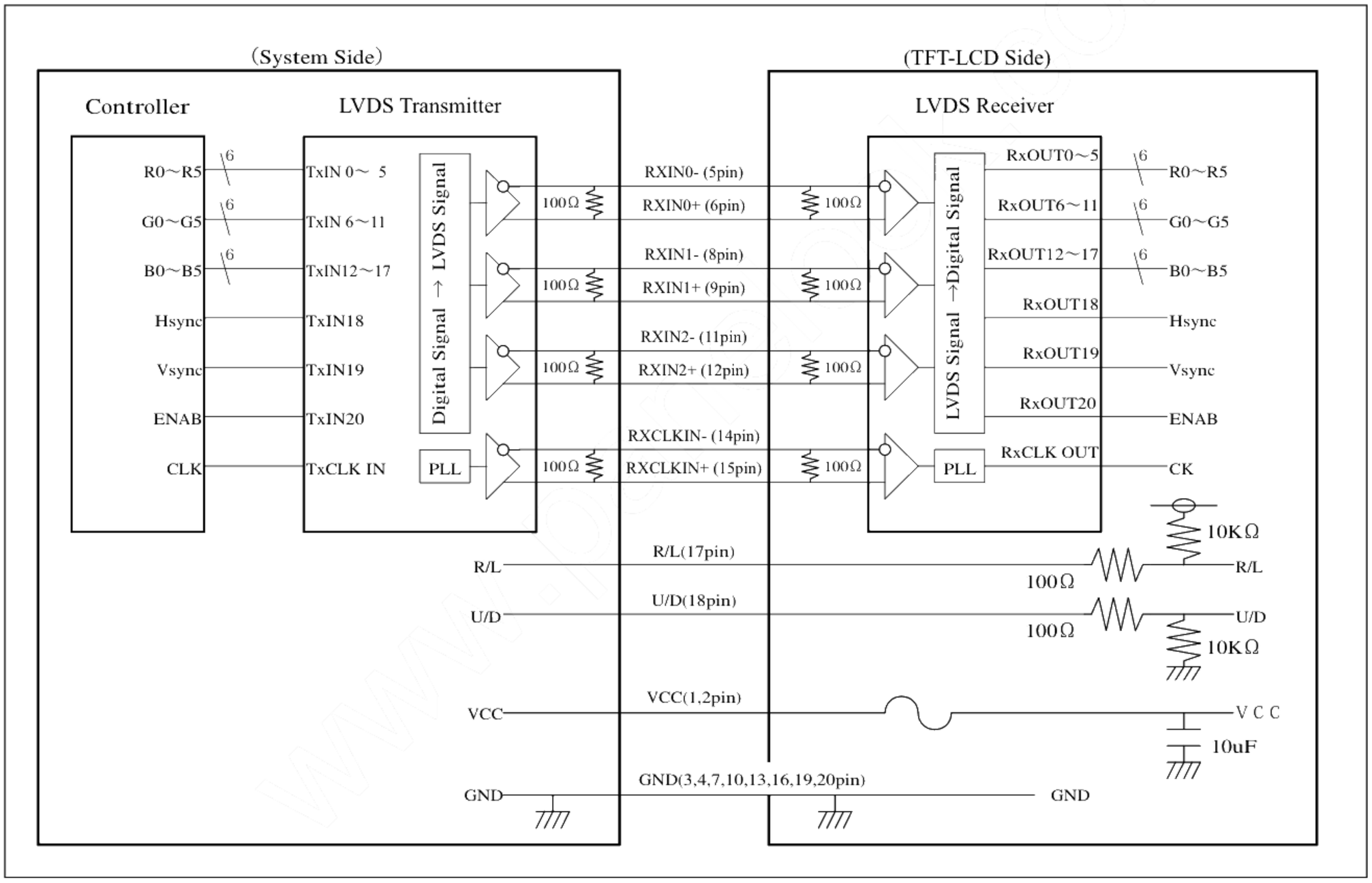
R/L = Low, U/D = High



4-2 LVDS Interface block diagram

Using receiver：Single LVDS interface, which equals THC63LVDF64A(THine),contained in a control IC

Corresponding Transmitter：DS90C363, DS90C363A, DS90C383, DS90C383A(National semiconductor),
THC63LVDF63A,THC63LVDM63A(THine), SN75LVDS84(Ti)



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4-3. Backlight driving

CN2 ,CN3

Used connector : BHR-02(8.0)VS-1N (JST)

Corresponding connector : SM02(8.0)B-BHS-1-TB or -1N-TB (JST)

Pin no.	symbol	function	Color of FL cable
1	VHIGH	Power supply for lamp (High voltage side)	(Pink／Blue)
2	VLOW	Power supply for lamp (Low voltage side)	(White／Gray)

5. Absolute Maximum Ratings

Parameter	Symbol	Condition	Pin name	Ratings	Unit	Remark
+3.3V / +5.0V supply voltage	Vcc	Ta=25 °C	Vcc	0 to + 6.0	V	
Input voltage	VI1	Ta=25°C	RXINi-/+(i= 0,1,2)	-0.3 to Vcc+0.3	V	Vcc<3.0V
			RXCLK IN-/+	-0.3 to 3.3V	V	3.0V≦Vcc
	VI2	Ta=25°C	R/L , U/D	-0.3 to Vcc+0.3	V	
Lamp input voltage	VHIGH	-	-	(TBD)	Vrms	
Storage temperature	Tstg	-	-	-30 to +80	°C	[Note1]
Operating temperature	Topa	Panel surface	-	-30 to +80	°C	

[Note1] Humidity: 95%RH Max. at Ta=<40°C.

Maximum wet-bulb temperature at 39°C or less at Ta>40 °C.

No condensation.

6.Recommended operation condition

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Supply voltage	Vcc	＋3.0	+3.3/+5.0	＋5.5	V	[Note1]
LVDS Signals	V_L	0		2.4	V	[Note2]
Input voltage	VI	0		Vcc	V	[Note3]
Ambient temperature	Topa	-30		+80	℃	[Note4], [Note5]

[Note1]On-off conditions for supply voltage

0<t1≦15ms

0<t2≦10ms

0<t3≦100ms

0<t4≦1s

200ms<t5

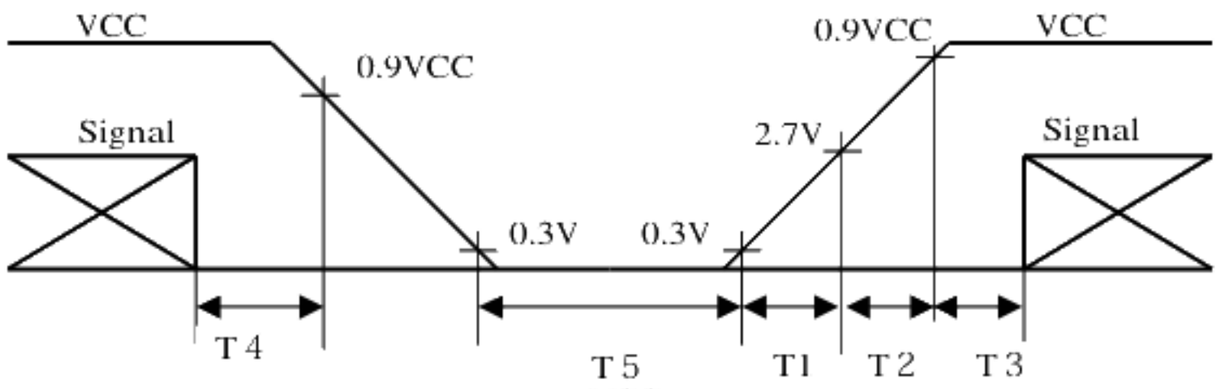
Vcc-dip conditions

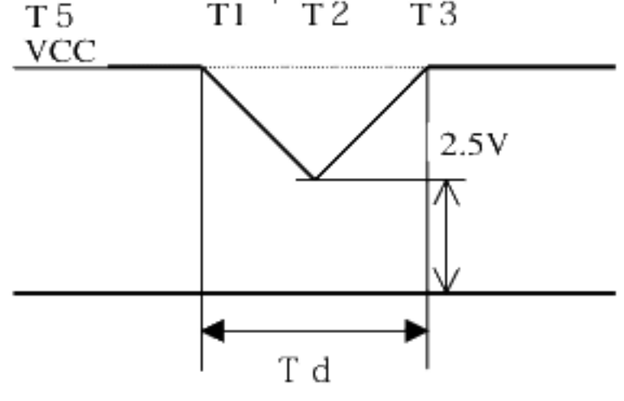
1) 2.5V≦Vcc

td≦10ms

2) Vcc<2.5V

Vcc-dip conditions should also follow the On-off conditions for supply voltage





[Note2] RXIN0-, RXIN0+,RXIN1-,RXIN1+,RXIN2-,RXIN2+, RXCLK IN-,RXCLK IN+

[Note3] R/L, U/D

[Note4] Humidity: 95%RH Max. at Ta=<40°C.

Maximum wet-bulb temperature at 39°C or less at Ta>40 °C.

No condensation.

[Note5] Maximum value : Panel surface temperature

7. Electrical Characteristics

7-1.TFT-LCD panel driving

Ta=25 °C

Parameter		Symbol	Min.	Typ.	Max.	Unit	Remark
Current dissipation	Vcc=+3.3V	Icc	-	(380)	(480)	mA	[Note1]
	Vcc=+5.0V	Icc	-	(230)	(280)	mA	
Permissive input ripple voltage		VRP	-	-	100	mVp-p	
Input voltage range	LVDS signal	VL	0	-	2.4	V	[Note2]
Differential input threshold voltage	High	VTH	-	-	VCM+ 100	mV	V_{CM}=1.2V [Note3]
	Low	VTL	VCM– 100	-	-	mV	
Input impedance (Differential input)		RT	-	100	-	Ω	[Note2]
Input voltage	Low	VIL	-	-	0.8	V	[Note4]
	High	VIH	2.1	-	-		[Note5]
Input current1	Low(VI=0V)	IOL1	-800	-	-		[Note4]
	High(VI=Vcc)	IOH1	-10.0	-	10.0		
Input current2	Low(VI=0V)	IOL2	-10.0	-	10.0	uA	[Note5]
	High(VI=Vcc)	IOH2	-	-	800	uA	

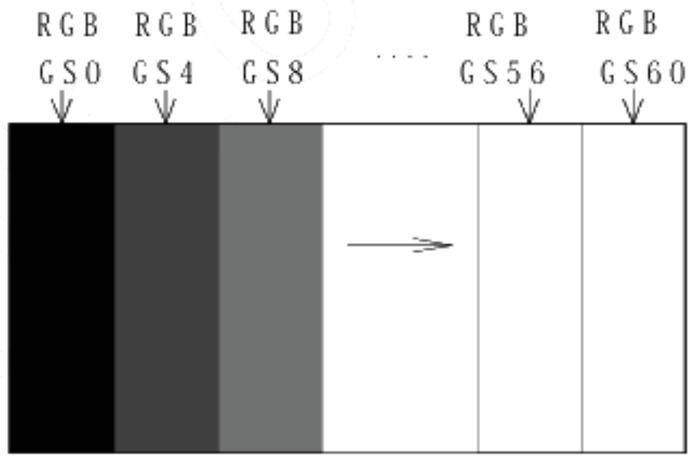
[Note1] Typical current situation : 16-gray-bar pattern.
Vcc=+3.3V / +5.0V

[Note2] LVDS signals

[Note3] V_{CM} : Common mode voltage of LVDS driver.

[Note4] R/L

[Note5] U/D

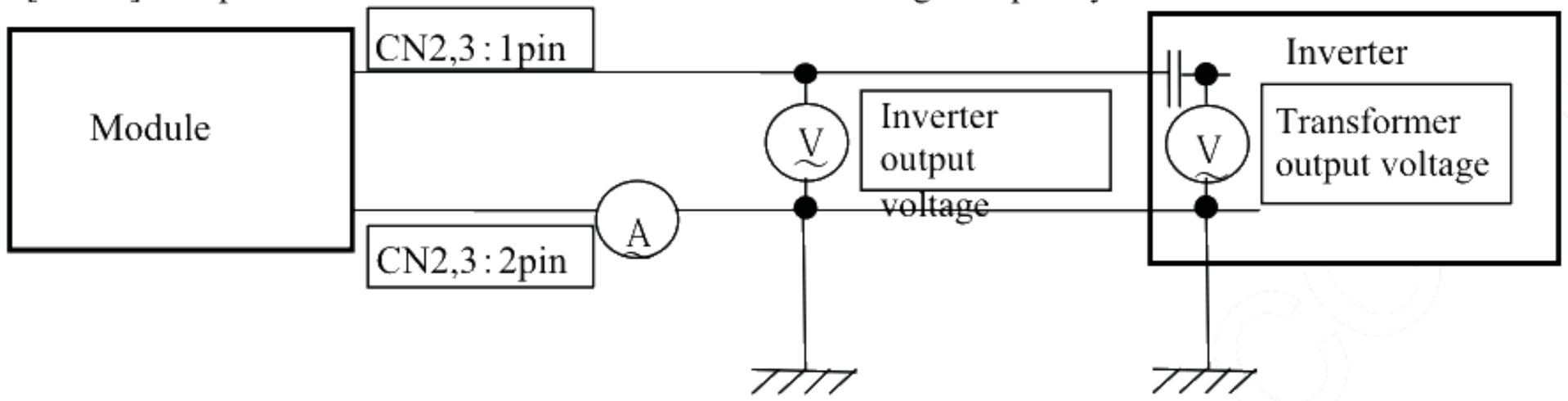


7-2. Backlight driving

The backlight system is an edge-lighting type with single CCFT (Cold Cathode Fluorescent Tube).
The characteristics of single lamp are shown in the following table.

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark	
Lamp current range	IL	(3.0)	(6.0)	(6.5)	mArms	[Note1]	
Lamp power consumption	PL	-	(3.5)	-	W	[Note2]	
Lamp frequency	FL	(40)	(60)	(70)	kHz	[Note3]	
Kick-off voltage	Vs	-	-	(TBD)	Vrms	Inverter output	[Note4]
		-	-	(TBD)		(Transformer output)	Ta=-30 °C
Lamp life time	LL	(50000)	-	-	hour	[Note5]	

[Note1] Lamp current is measured with current meter for high frequency as shown below.



[Note2] Referential data per one CCFT by calculation. (I L × VL)
The data don't include loss at inverter. (IL=6.0mArms)

[Note3] Lamp frequency may produce interference with horizontal synchronous frequency, and this may cause beat on the display. Therefore lamp frequency shall be detached as much as possible from the horizontal synchronous frequency and from the harmonics of horizontal synchronous to avoid interference.

[Note4] The voltage above this value should be applied to the lamp for more than 1 second to start-up. Otherwise the lamp may not be turned on.

[Note5] Since lamp is consumables, the life time written above is referencial value and it is not guaranteed in this specification sheet by SHARP.
Above value is applicable when lamp (the long side of LCD module) is placed horizontally. (Landscape position)
Lamp life time is defined that it applied either ① or ② under this condition
(Continuous turning on at Ta=25 °C, IL=6.0mArms)
① Brightness becomes 50% of the original value under standard condition.
② Kick-off voltage at Ta=-30 °C exceeds maximum value, (TBD)Vrms.
(Lamp lifetime may vary if lamp is in portrait position due to the change of mercury density inside the lamp.)
In case of operating under lower temp environment, the lamp exhaustion is accelerated and the brightness becomes lower. (Continuous operating for around 1 month under lower temp condition may reduce the brightness to half of the original brightness.)
In case of such usage under lower temp environment, periodical lamp exchange is recommended.

[Note6] The performance of the backlight, for example life time or brightness, is much influenced by the characteristics of the DC-AC inverter for the lamp. When you design or order the inverter, please make sure that a poor lighting caused by the mismatch of the backlight and the inverter (miss-lighting, flicker, etc.) never occur. When you confirm it, the module should be operated in the same condition as it is installed in your instrument.
Be sure to use a back light power supply with the safety protection circuit such as the detection circuit for the excess voltage, excess current and or electric discharge waveform.
Be sure to use the detect circuit by which one side of the CCFT lamps can be controlled independently. Otherwise, when one side of the CCFT is open, the excess current may possibly be applied to the other side of the lamp.
Recommended inverter is "(TBD)".

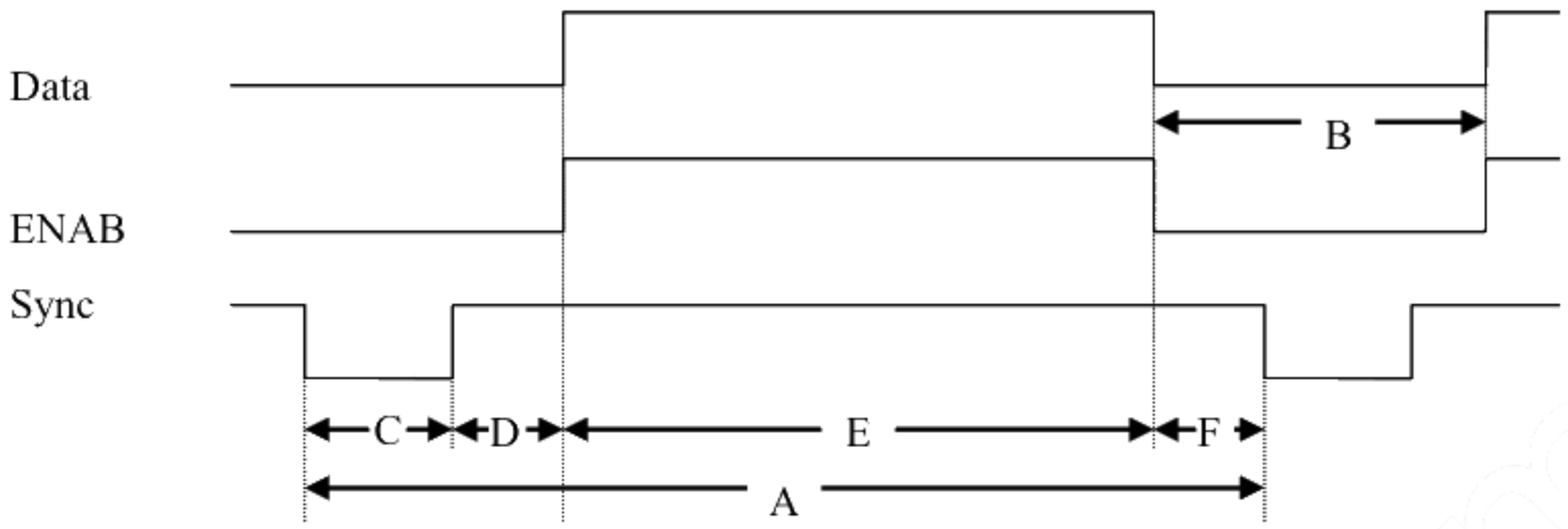
[Note7] It is required to have the inverter designed so that to allow the impedance deviation of the two CCFT lamps and the capacity deviation of barast capacitor.

[Note8] Under the environment of 10lx or less, miss-lighting delay may occur.

8. Timing characteristics of input signals

8-1. Timing characteristics

(These are specified at the digital inputs/outputs of LVDS transmitter/receiver.)



(Vertical timing)

Item(symbol)	Min.	Typ.	Max.	Unit	備考
Vsync cycle (T_{VA})	-	17.6	-	ms	Negative
	628	666	798	line	
Blanking period(T_{VB})	28	66	-	line	
Vsync pulse width (T_{VC})	2	4	6	line	
Back porch (T_{VD})	23	23	23	line	
Vsync pulse width+Back porch ($T_{VC}+T_{VD}$)	25	27	29	line	
Active display area (T_{VE})	600	600	600	line	
Front porch (T_{VF})	3	39	-	line	

(Horizontal timing)

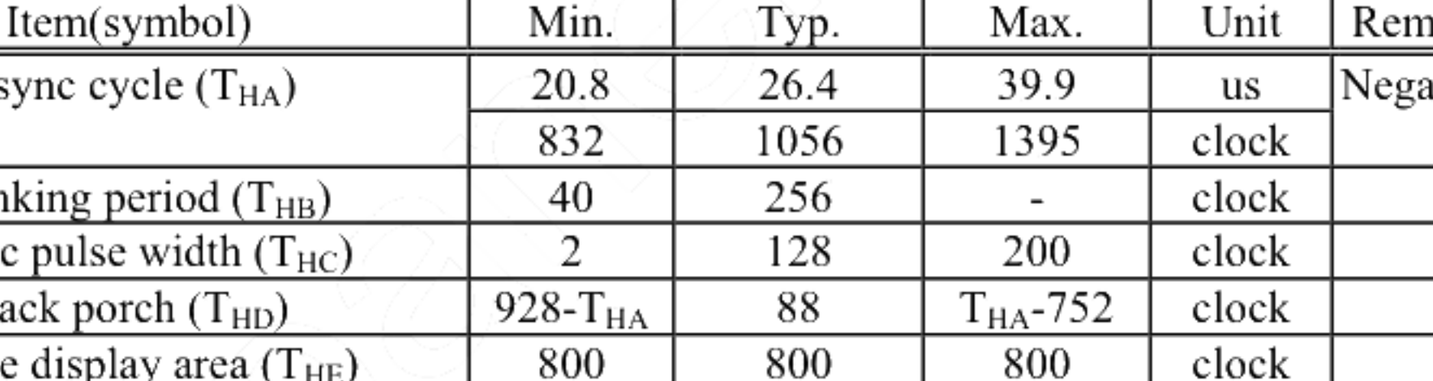
Item(symbol)	Min.	Typ.	Max.	Unit	Remark
Hsync cycle (T_{HA})	20.8	26.4	39.9	us	Negative
	832	1056	1395	clock	
Blanking period (T_{HB})	40	256	-	clock	
Hsync pulse width (T_{HC})	2	128	200	clock	
Back porch (T_{HD})	928-T_{HA}	88	T_{HA}-752	clock	
Active display area (T_{HE})	800	800	800	clock	
Front porch (T_{HF})	0	40	-	clock	

(Clock signal)

Item	Min.	Typ.	Max.	Unit	Remark
Frequency	35	40	42	MHz	[Note1]

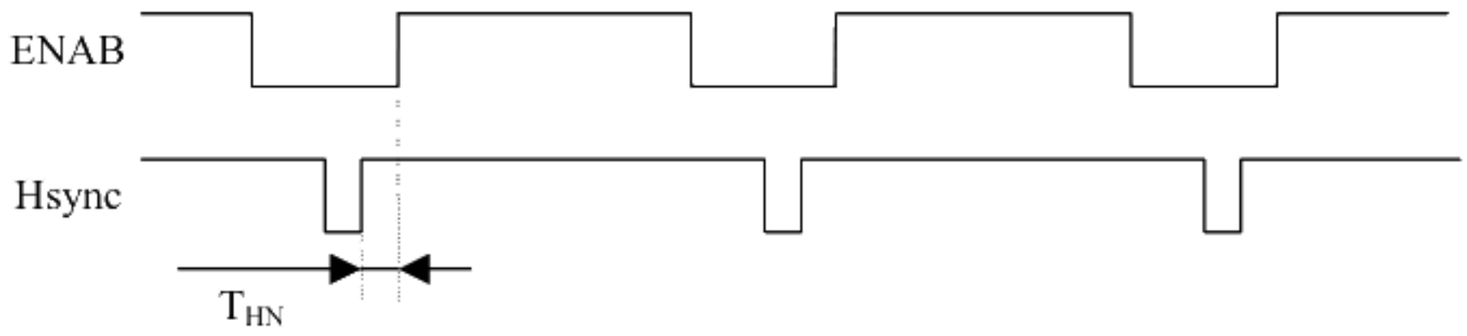
[Note1] In case of lower frequency, the deterioration of display quality, flicker etc., may be occurred.

(Hsync-Vsync Phase difference)



Item(symbol)	Min.	Typ.	Max.	Unit	Remark
Hsync-Vsync Phase difference (T_{HV})	1	-	T_{HA}-T_{HC}	clock	

(Hsync-ENAB Phase difference)



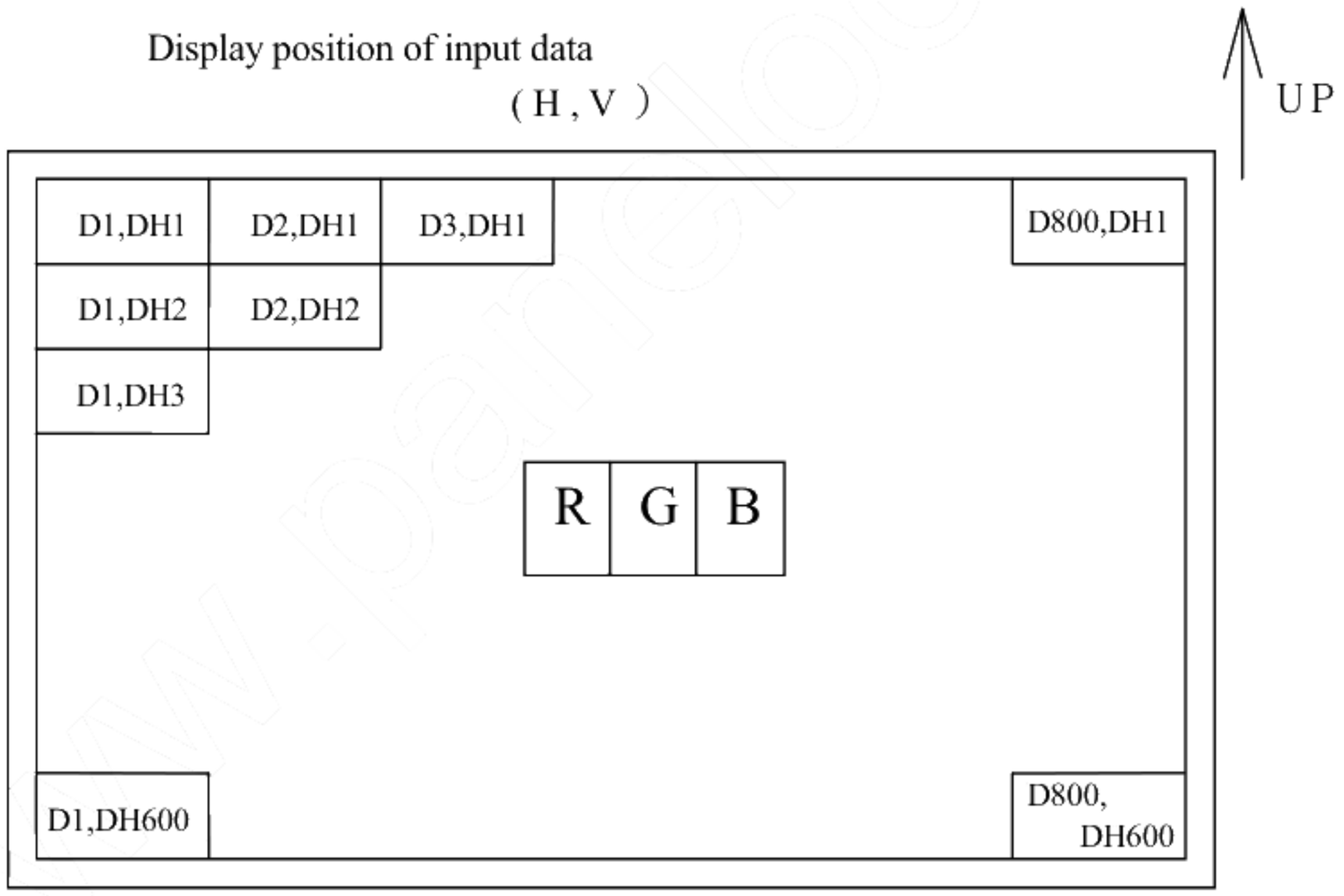
Item	Min.	Typ.	Max.	Unit	Remark
Hsync-ENAB Phase difference (T_{HN})	0	-	T_{HA}-T_{HC} -800	clock	

8-2 Display position

Item	Standards	Beginning	Ending	Unit	Remark
Horizontal	rising edge of ENAB	0	800	clock	
	rising edge of Hsync	88	888	clock	[Note1]
Vertical	rising edge of Vsync	23	623	line	

[Note1] In case that ENAB signal is fixed to low level. Do not keep ENAB signal high during operation.

8-3. Input Data Signals and Display Position on the screen



9. Input Signals, Basic Display Colors and Gray Scale of Each Color

	Colors & Gray scale	Data signal																	
		Gray Scale	R0	R1	R2	R3	R4	R5	G0	G1	G2	G3	G4	G5	B0	B1	B2	B3	B4	B5
Basic Color	Black	-	0	0	0	0	0	0	0	0	0	0	0	0	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
	Green	-	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Cyan	-	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Red	-	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	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	Black	GS0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	GS1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	GS2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	↓				↓						↓						↓		
	⇩	↓				↓						↓						↓		
	Brighter	GS61	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	⇩	GS62	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red	GS63	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale of Green	Black	GS0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	GS1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Darker	GS2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	⇧	↓				↓						↓						↓		
	⇩	↓				↓						↓						↓		
	Brighter	GS61	0	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0
	⇩	GS62	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0
	Green	GS63	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
Gray Scale of Blue	Black	GS0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	GS1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	Darker	GS2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	⇧	↓				↓						↓						↓		
	⇩	↓				↓						↓						↓		
	Brighter	GS61	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1
	⇩	GS62	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
	Blue	GS63	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

0 :Low level voltage, 1 : High level voltage

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

10. Optical Characteristics

Ta=25°C, Vcc=+3.3V / +5.0V

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing angle range	Horizontal	θ 21, θ 22	CR>10	60	70	-	Deg.	[Note1] [Note4]
	Vertical	θ 11		35	50	-	Deg.	
		θ 12		55	60	-	Deg.	
Contrast ratio		CRn	θ =0°	300	-	-	-	[Note2] [Note4]
		CRo	Optimum viewing angle	-	(600)	-	-	
Response time	Rise	τ r	θ =0°	-	10	-	ms	[Note3] [Note4]
	Decay	τ d		-	25	-	ms	
Chromaticity of white		x		0.263	0.313	0.363	-	[Note4]
		y		0.279	0.329	0.379	-	
Chromaticity of red		x		(TBD)	(TBD)	(TBD)	-	
		y		(TBD)	(TBD)	(TBD)	-	
Chromaticity of green		x		(TBD)	(TBD)	(TBD)	-	
		y		(TBD)	(TBD)	(TBD)	-	
Chromaticity of blue		x		(TBD)	(TBD)	(TBD)	-	
		y		(TBD)	(TBD)	(TBD)	-	
Luminance of white		Y_{L1}		(360)	(450)	-	cd/m^2	IL=6.0mArms fL=60kHz
White Uniformity		δW		-	-	1.25	-	[Note5]

[Note]

The measurement shall be executed 30 minutes after lighting at rating.

The optical characteristics shall be measured in a dark room or equivalent state with the method shown in Fig.3 below.

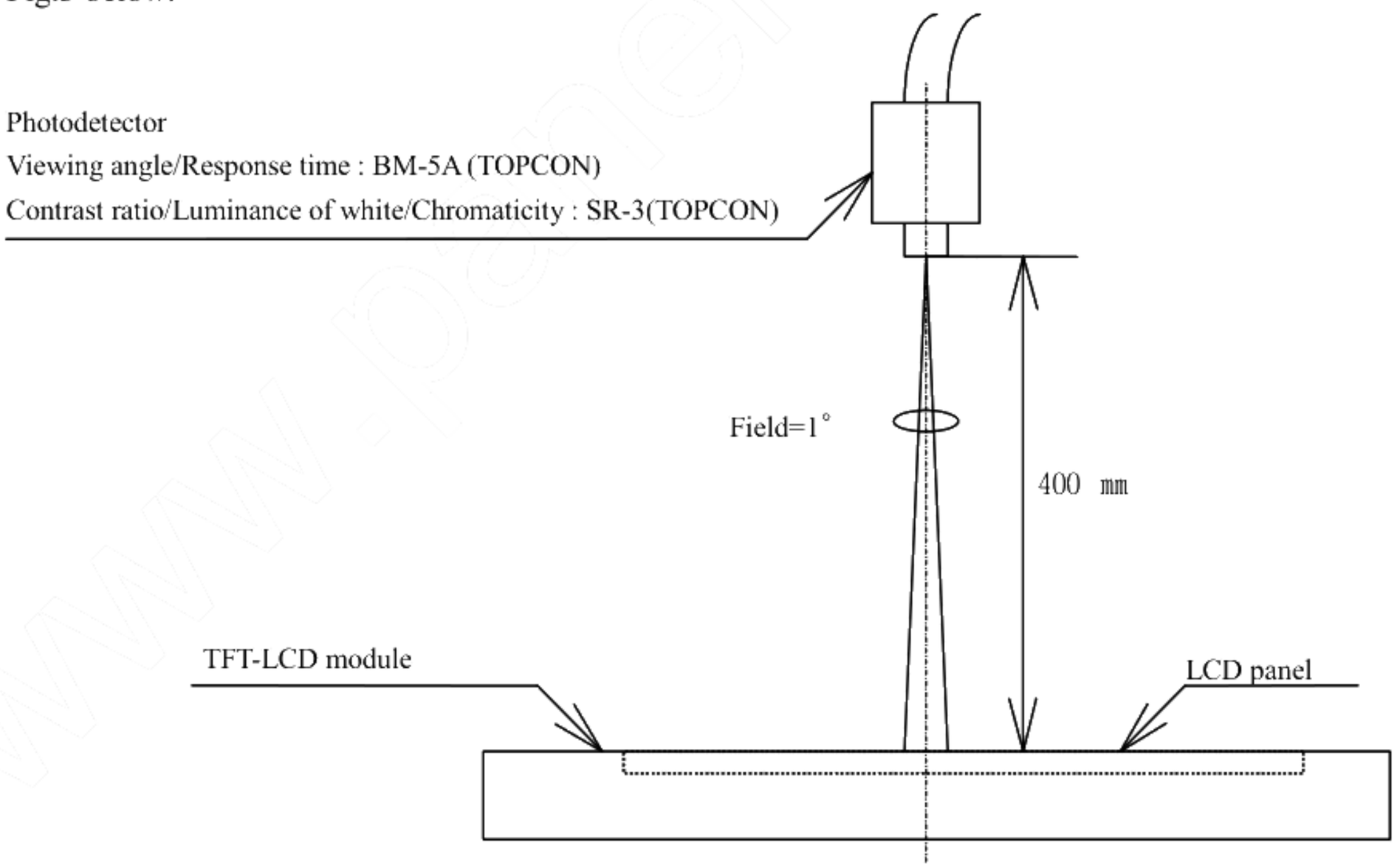
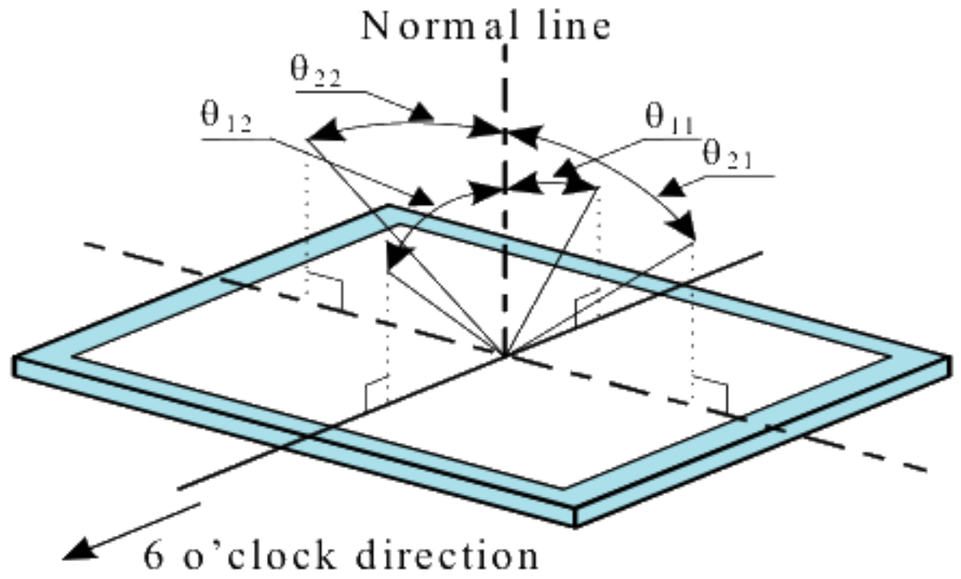


Fig.3 Optical characteristics measurement method

[Note1]Definitions of viewing angle range:



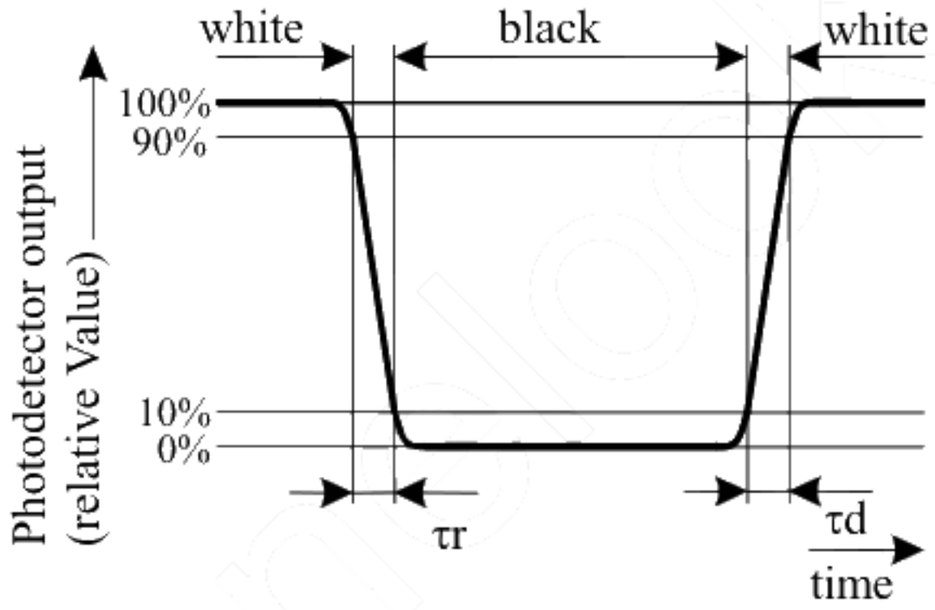
[Note2]Definition of contrast ratio:

The contrast ratio is defined as the following.

$$\text{Contrast Ratio (CR)} = \frac{\text{Luminance (brightness) with all pixels white}}{\text{Luminance (brightness) with all pixels black}}$$

[Note3]Definition of response time:

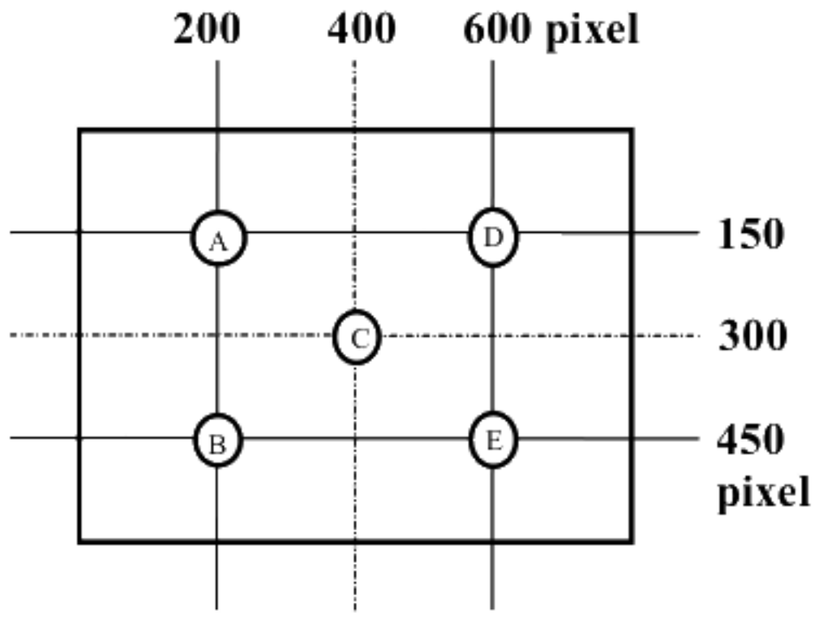
The response time is defined as the following figure and shall be measured by switching the input signal for "black" and "white" .



[Note4]This shall be measured at center of the screen.

[Note5]Definition of white uniformity:

White uniformity is defined as the following with five measurements (A~E).



$$\delta_W = \frac{\text{Maximum Luminance of five points (brightness)}}{\text{Minimum Luminance of five points (brightness)}}$$

11. Display Quality

The display quality of the color TFT-LCD module shall be in compliance with the Incoming Inspection Standard.

12.Handling Precautions

a) Be sure to turn off the power supply when inserting or disconnecting the cable.
b) Be sure to design the cabinet so that the module can be installed without any extra stress such as warp or twist.
c) Since the front polarizer is easily damaged, pay attention not to scratch it.
d) Wipe off water drop immediately. Long contact with water may cause discoloration or spots.
e) When the panel surface is soiled, wipe it with absorbent cotton or other soft cloth.
f) Since the panel is made of glass, it may break or crack if dropped or bumped on hard surface. Handle with care.
g) Since CMOS LSI is used in this module, take care of static electricity and injure the human earth when handling.Observe all other precautionary requirements in handling components.
h) Since there is a circuit board in the module back, stress is not added at the time of a design assembly. Please make it like. If stress is added, there is a possibility that circuit parts may be damaged.
i) Protection film is attached to the module surface to prevent it from being scratched . Peel the film off slowly , just before the use, with strict attention to electrostatic charges. Blow off 'dust' on the polarizer by using an ionized nitrogen.
j) The polarizer surface on the panel is treated with Anti-Glare for low reflection. In case of attaching protective board over the LCD, be careful about the optical interface fringe etc. which degrades display quality.
k) Do not expose the LCD panel to direct sunlight. Lightproof shade etc. should be attached when LCD panel is used under such environmentl
l) Connect GND to 4 place of mounting holes to stabilize against EMI and external noise.
m) There are high voltage portions on the backlight and very dangerous. Careless touch may lead to electrical shock. When exchange lamps or service, turn off the power without tail.
n) When handling LCD modules and assembling them into cabinets, please be noted that long-term storage in the environment of oxidization or deoxidization gas and the use of such materials as reagent,solvent, adhesive, resin, etc. which generate these gasses, may cause corrosion and discoloration of the LCD modules.
o) Cold cathode fluorescent lamp in LCD panel contains a small amount of mercury, please follow local ordinances or regulations for disposal.
p) Be careful of a back light lead not to pull by force at the time of the wiring to an inverter, or line processing.
q) When install LCD modules in the cabinet, please tighten with “torque=0.294±0.02N•m(3.0±0.2kgf•cm)”.

13. Packing form

Product countries / Areas	JAPAN	TAIWAN	CHINA
Piling number of cartons	(TBD)		
Package quantity in one carton	(TBD)		
Carton size	(TBD)		
Total mass of one carton filled with full modules	(TBD)		
Packing form is shown	(TBD)		

14.Reliability test items

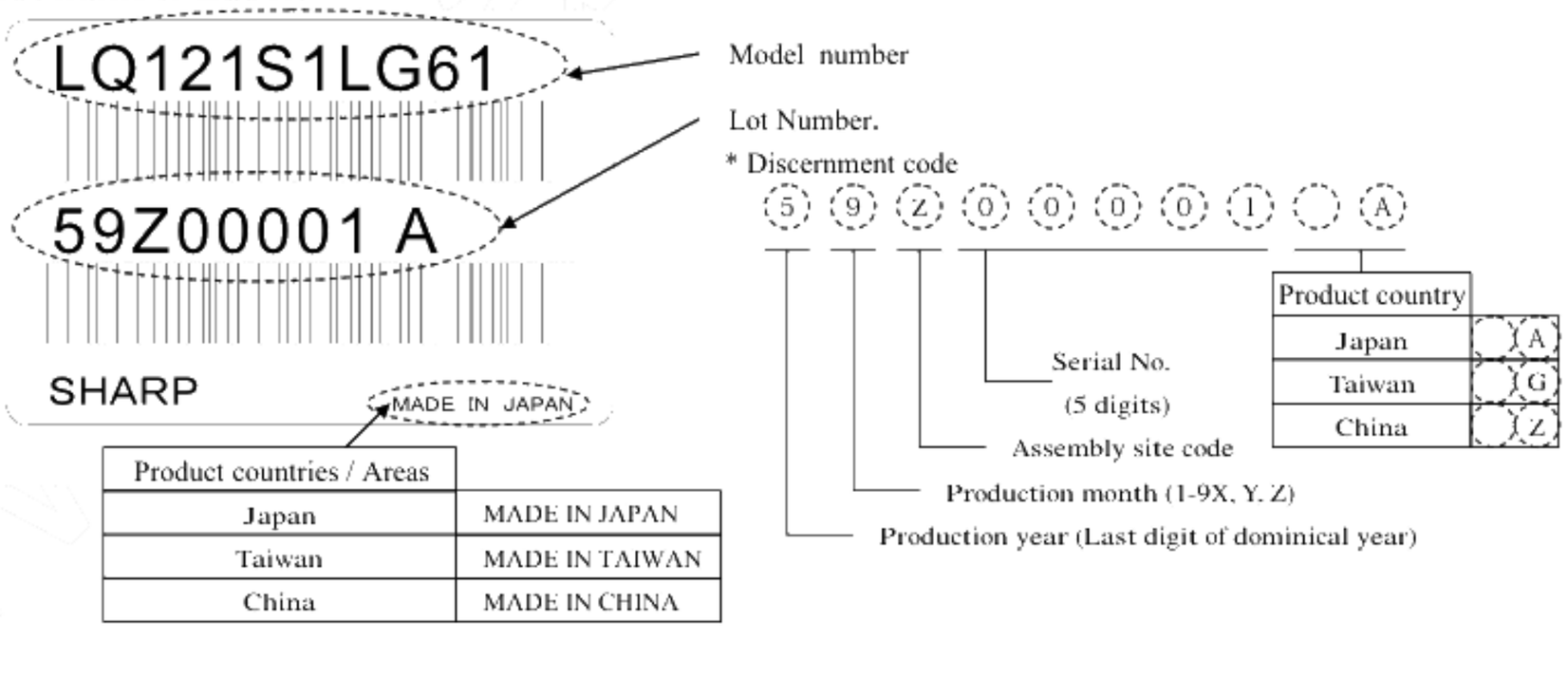
No.	Test item	Conditions	Remark
1	High temperature storage test	Ta=80℃ 240h	Panel surface
2	Low temperature storage test	Ta= -30℃ 240h	
3	High temperature & high humidity operation test	Ta=40℃ ; 95%RH 240h (No condensation)	
4	High temperature operation test	Ta=80℃ 240h	Panel surface
5	Low temperature operation test	Ta= -30℃ 240h	
6	Vibration test (non- operating)	Frequency: 10～57Hz/Vibration width (one side):0.153mm : 57～500Hz/Gravity: (19.6) m/s^2 Sweep time : 11 minutes Test period : 3 hours (1 hour for each direction of X,Y,Z)	
7	Shock test (non- operating)	Max. gravity : 490m/s^2 Pulse width : 11ms, half sine wave Direction : ±X,±Y,±Z once for each direction.	
8	ESD test	Contact discharge (150pF 330Ω) non-operating = ±10kV, operating = ±8kV Atmospheric discharge (150pF 330Ω) non-operating = ±20kV, operating = ±15kV	
9	EMI	Measurement in 10m site Display position on the screen = "H" (full-screen), GND to 4 place = un-connect, Vcc / Vsignal = typ.	VCCI (Class B)

[Result Evaluation Criteria]

Under the display quality test conditions with normal operation state, these shall be no change which may affect practical display function. (normal operation state：Temperature:15～35℃, Humidity:45～75%, Atmospheric pressure:86～106kpa)

15.Others

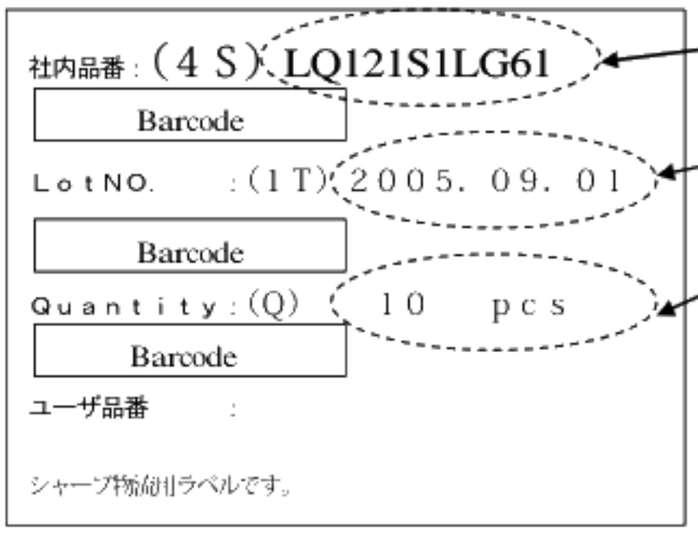
15-1 Lot number Label:



Product countries / Areas	
Japan	MADE IN JAPAN
Taiwan	MADE IN TAIWAN
China	MADE IN CHINA

15-2 Packing box Label:

Quantity of module : Japan



Model number

Lot number (DATE)

Quantity of module

Quantity of module : Taiwan or China

TYPE	LQ121S1LG61
QUANTITY	10pcs
DATE	2005.9.1

Product countries / Areas	
Japan	
Taiwan	LQ121S1LG61 G
China	LQ121S1LG61 Z

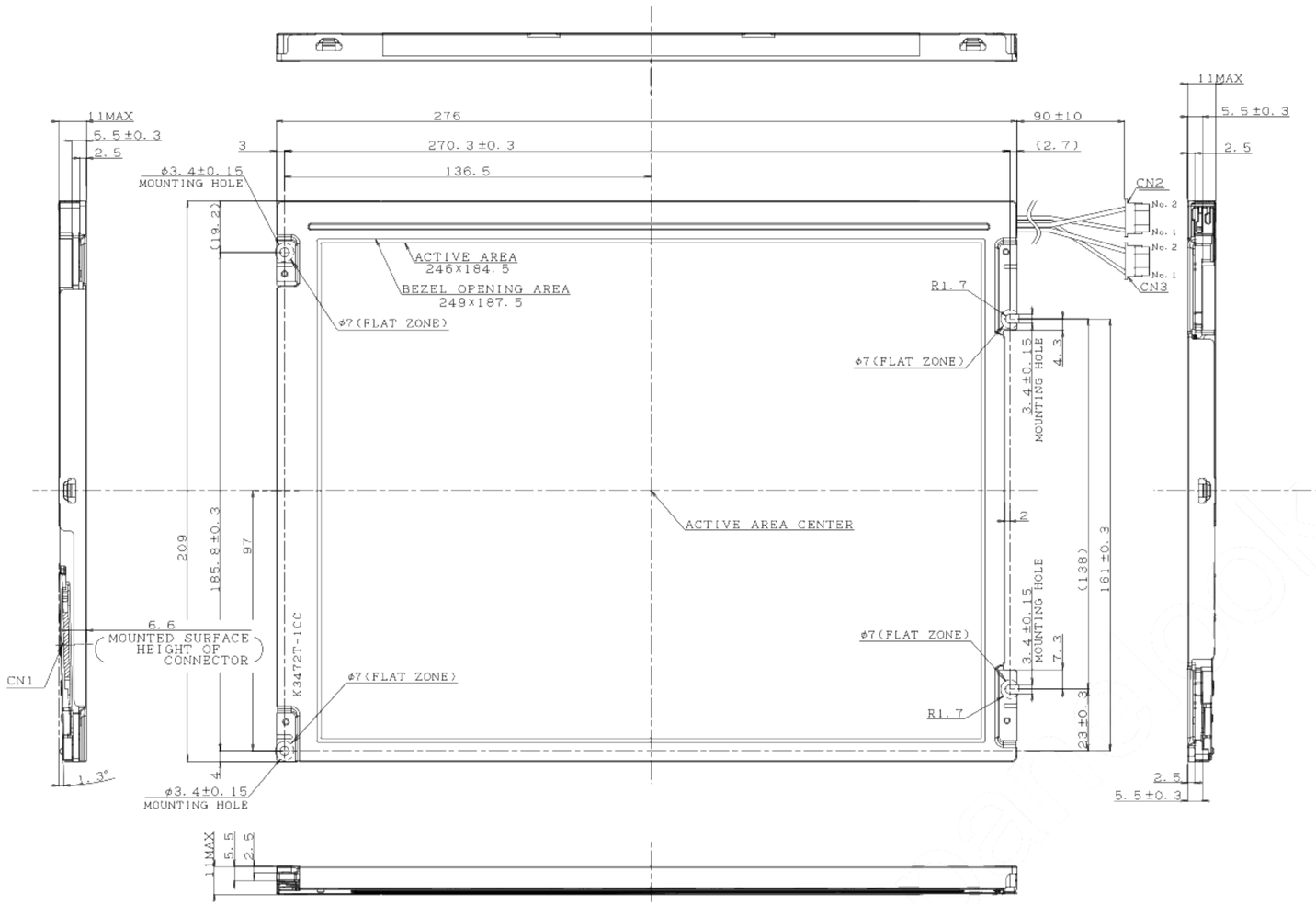
15-3 Adjusting volume have been set optimally before shipment, so do not change any adjusted value.
If adjusted value is changed, the specification may not be satisfied.

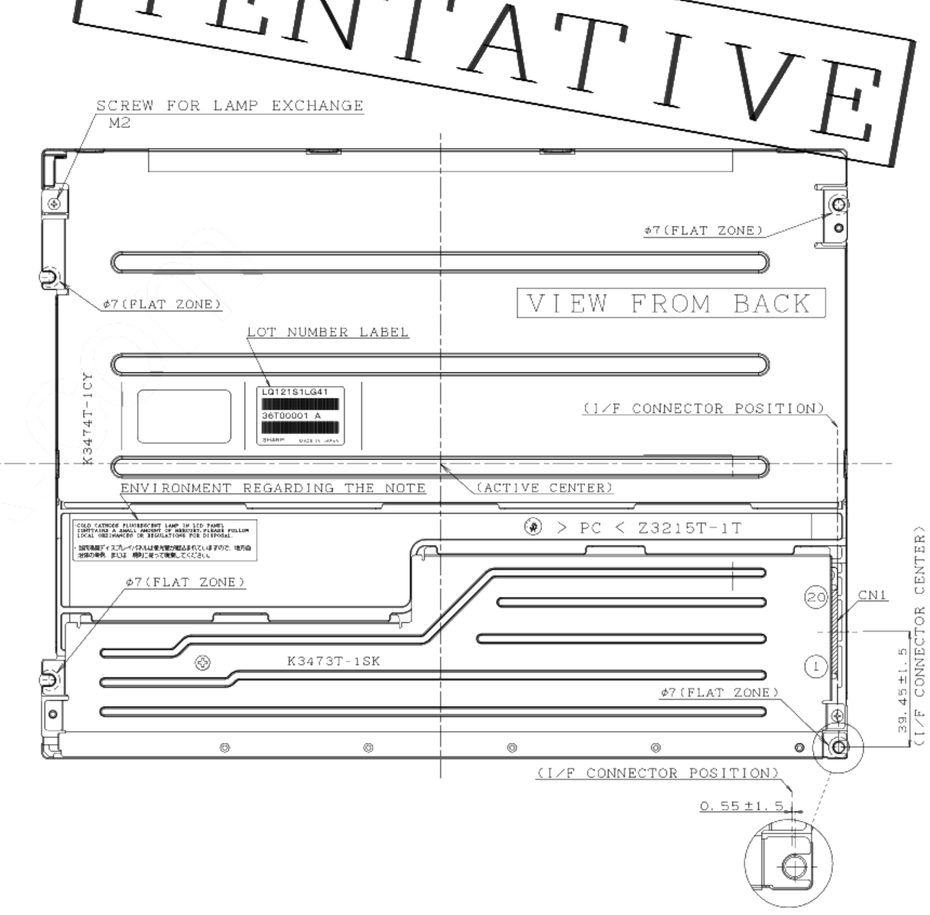
15-4 Disassembling the module can cause permanent damage and should be strictly avoided.

15-5 Please be careful since image retention may occur when a fixed pattern is displayed for a long time.

15-6 If any problem occurs in relation to the description of this specification , it shall be resolved through discussion with spirit of cooperation.

TENTATIVE



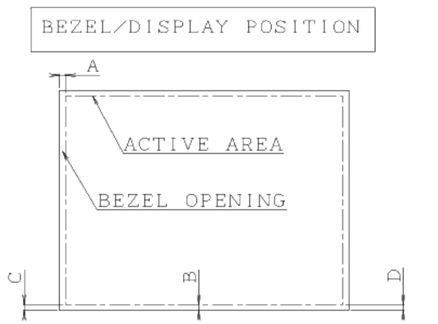


INTERFACE CONNECTOR

PIN LAYOUT

pin	1	2	3	4	5	6
	VCC	VCC	GND	GND	RXIN0−	RXIN0+
7	8	9	10	11	12	13
GND	RXIN1−	RXIN1+	GND	RXIN2−	RXIN2+	GND
14	15	16	17	18	19	20
RCLKIN−	RCLKIN+	GND	R/L	U/D	GND	GND

CORRESPONDING CONNECTOR:FI-SE20M. FI-S20S



1)TOLERANCE X-DIRECTION A:1.5±0.8
2)TOLERANCE Y-DIRECTION B:1.5±0.8
3)OBLIQUITY OF DISPLAY AREA |C-D|<0.8

CCFT CONNECTOR

CN2, CN3:BHR-02(8.0)VS-1N(JST)

PIN LAYOUT

1	High
2	GND

NOTES

1. UNSPECIFIED TOLERANCE TO BE ±0.5
2. WARP AND FLATING FOR PCB AND CHASSIS ARE EXCLUDED FROM THICKNESS AND DIMENSION OF THE UNIT.
3. RECOMMENDED TIGHTEN TORQUE FOR MOUNTING 0.294±0.02N·m(3.0±0.2kgf·cm)

Fig1. OUTLINE DIMENSIONS
(LQ121S1LG61)