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LQ121S1LG61

TFT-LCD Module

Spec. Issue Date: Jan. 27, 2006

No: LD-18123A

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DEVICE SPECIFICATION FOR

TFT-LCD Module

MODEL No.

LQ121S1LG61

These parts have corresponded with the RoHS directive.

☐ CUSTOMER'S APPROVAL

DATE _____

BY _____

PRESENTED
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SHARP CORPORATION

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RECORDS OF REVISION

LQ121S1LG61

SPEC No.	DATE	REVISED		SUMMARY	NOTE
		No.	PAGE		
LD-18123A	Jan. 27. 2006	–	–	–	1 st Issue

1. Application
    This specification applies to color TFT-LCD module, LQ121S1LG61

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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, 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 +3.3Vor+5.0V DC supply voltage for
TFT-LCD panel driving.
This module is super-high brightness (450cd/m^2) and high contrast (600:1).
This module is the type of wide viewingangle the viewing angle is 6 o'clock direction.
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	Max. 800	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-SE20ME (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 1],[Note 2]

R/L = High, U/D = Low   R/L = Low, U/D = Low
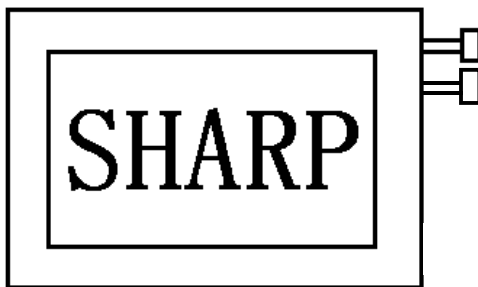
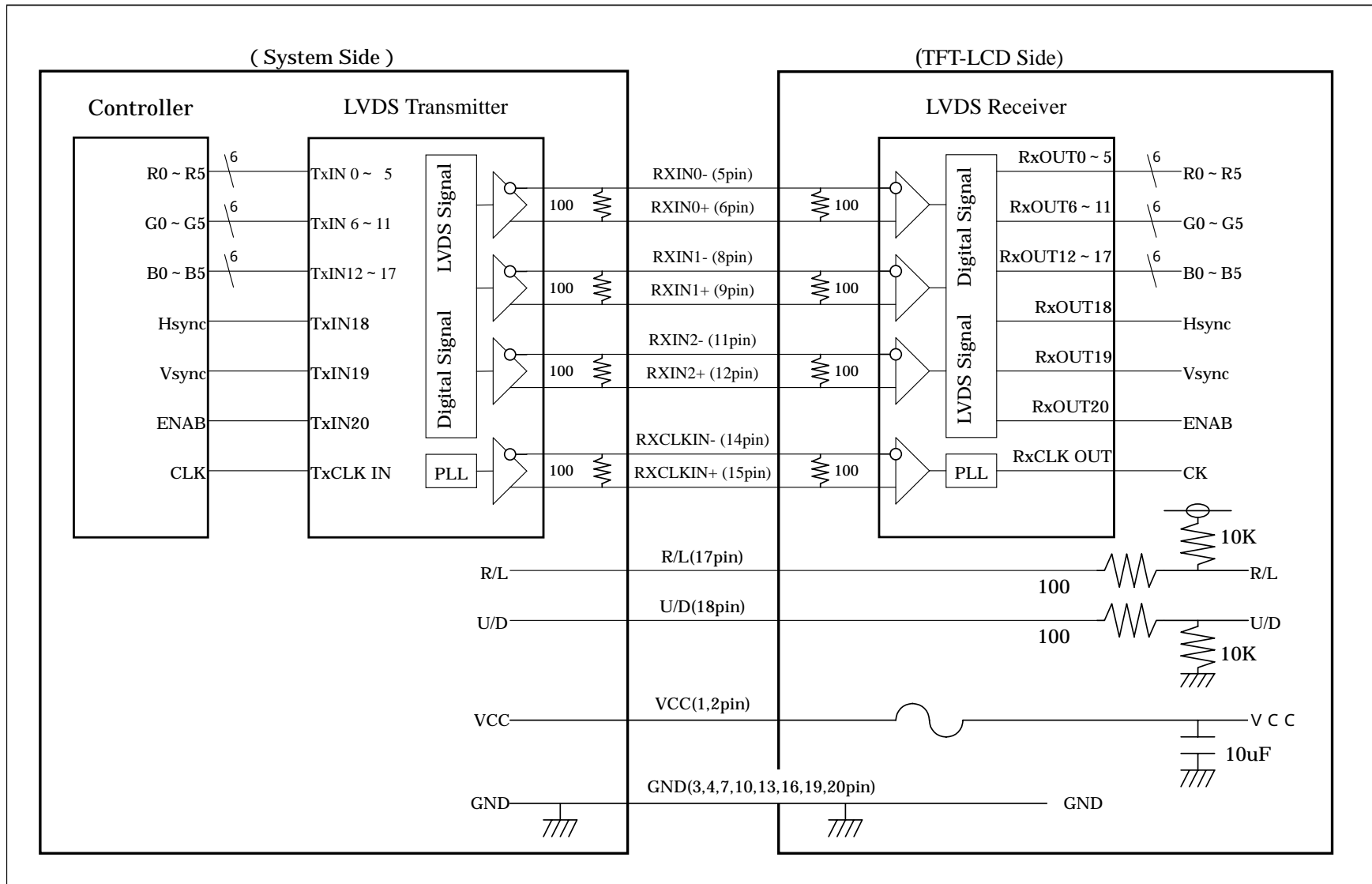R/L = High, U/D = High   R/L = Low, U/D = High

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4-2 LVDS Interface block diagram

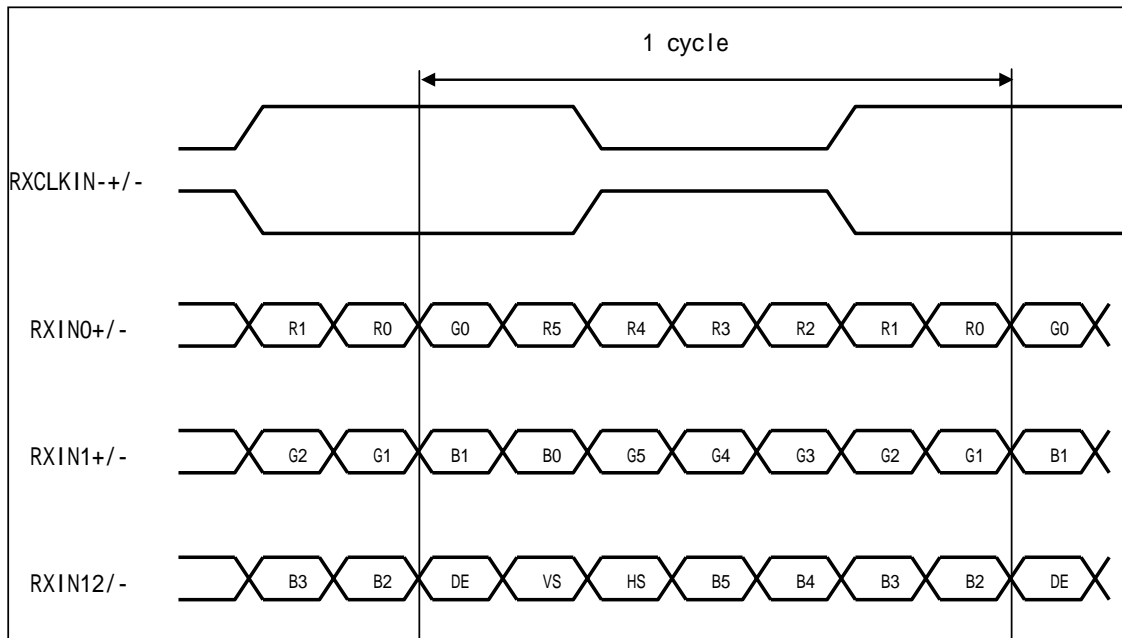Using receiver　Single LVDS interface, which equals THC63LVDF64A(THine),contained in a control IC

Corresponding Transmitter　DS90C363, DS90C363A, DS90C383, DS90C383A（National semiconductor）,

THC63LVDF63A,THC63LVDM63A(THine), SN75LVDS84(Ti)

System Side		(TFT-LCD Side)
Controller	LVDS Transmitter	LVDS Receiver

R0　R5 — TxIN 0　5 — LVDS Signal — 100 — RXIN0- (5pin) — 100 — Digital Signal — RxOUT0　5 — R0　R5

G0　G5 — TxIN 6　11 — RXIN0+ (6pin) — RxOUT6　11 — G0　G5

B0　B5 — TxIN12　17 — RXIN1- (8pin) — 100 — 100 — RxOUT12　17 — B0　B5

Hsync — TxIN18 — Digital Signal — RXIN1+ (9pin) — RxOUT18 — Hsync

Vsync — TxIN19 — RXIN2- (11pin) — 100 — 100 — LVDS Signal — RxOUT19 — Vsync

ENAB — TxIN20 — RXIN2+ (12pin) — RxOUT20 — ENAB

CLK — TxCLK IN — PLL — 100 — RXCLKIN- (14pin) — RXCLKIN+ (15pin) — 100 — PLL — RxCLK OUT — CK

R/L — R/L(17pin) — 100 — 10K — R/L

U/D — U/D(18pin) — 100 — 10K — U/D

VCC — VCC(1,2pin) — 10uF

GND — GND(3,4,7,10,13,16,19,20pin) — GND

[Note] Data Mapping

4-3. Backlight driving

CN2 ,CN3

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

Corresponding connector : SM02(8.0)B-BHS-1-TB(LF)(SN) or -1N-TB(LF)(SN) (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 ºC	Vcc	0 to + 6.0	V	
Input voltage	VI1	Ta=25ºC	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=25ºC	R/L , U/D	-0.3 to Vcc+0.3	V	
Lamp input voltage	VHIGH	-	-	1800	Vrms	
Storage temperature	Tstg	-	-	-30 to +80	ºC	[Note1]
Operating temperature	Topa	Panel surface	-	-30 to +80	ºC	

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

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

No condensation.

6.Recommended operation condition

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Supply voltage	Vcc	3.0	+3.3/+5.0	5.5		[Note1]
LVDS Signals	V_L	0		2.4		[Note2]
Input voltage	VI	0		Vcc		[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

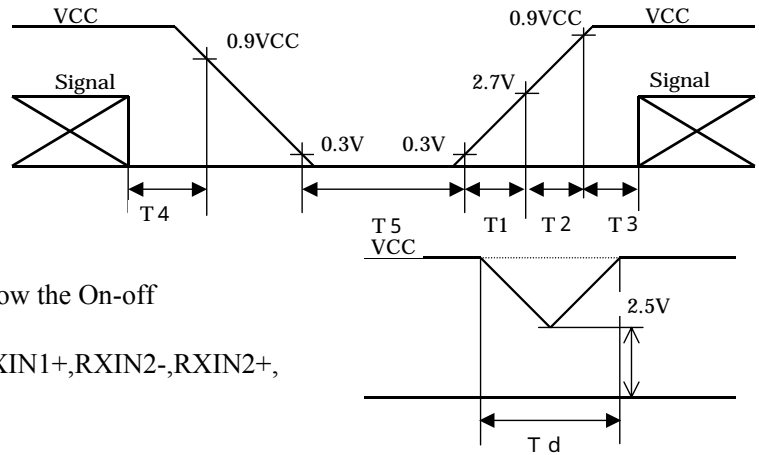[Note2]   RXIN0-, RXIN0+,RXIN1-,RXIN1+,RXIN2-,RXIN2+,

       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
	Low	VTL	VCM–100	-	-	mV	[Note3]
Input impedance (Differential input)		RT	-	100	-		[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	

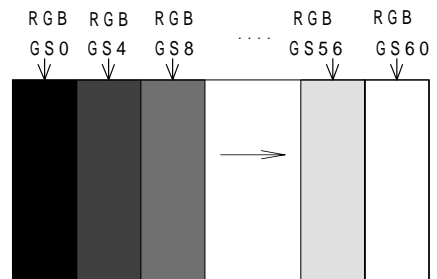[Note1] Typical current situation : 16-gray-bar pattern.

    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 two 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	-	-	1300	Vrms	Inverter output	[Note4]
		-	-	(2000)	Vrms	Transformer output at barast capacitor =12pF	Ta= -30 °C
Lamp life time	LL	50000	-	-	hour	IL=6.0 mArms	[Note5]
		60000	-	-	hour	IL=5.0 mArms	[Note5]

[Note1] Lamp current is measured with current meter for high frequency as shown below.
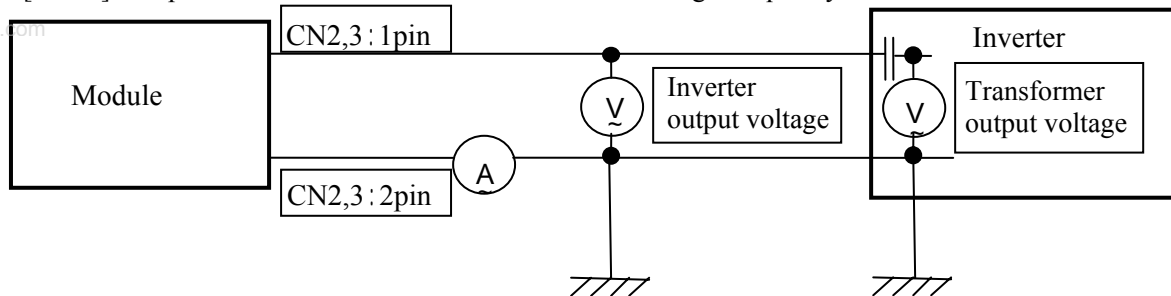
[Note2] Referential data per one CCFT by calculation. (I L × VL)
The data don't include loss at inverter.   (IL=6.0mArms)

[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   or   under this condition
(Continuous turning on at Ta=25 °C, IL=6.0mArms)
Brightness becomes 50% of the original value under standard condition.
Kick-off voltage at Ta=-30 °C exceeds maximum value,1300Vrms.
(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 "CXA-0454(TDK)".
("CXA-P1212B-WJL(TDK)" is also recommended under general temperature condition.)

[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 or lighting delay may occur.

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8. Timing characteristics of input signals

8-1. Timing characteristics

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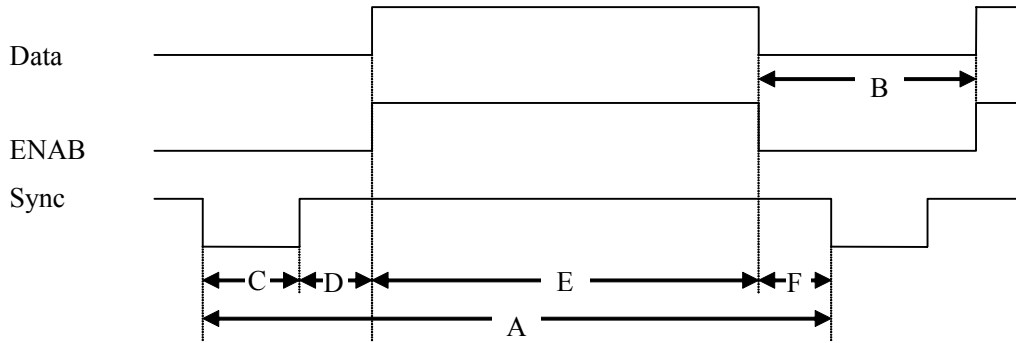
(Vertical timing)

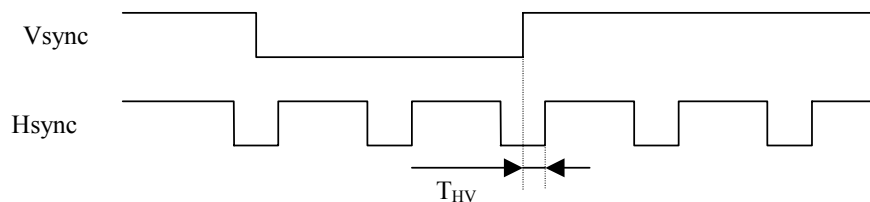| Item(symbol)	Min.	Typ.	Max.	Unit	
Vsync cycle (T_{VA})	-	17.6	-	ms	Negative
	628	666	798	line	
Blanking period(T_{VB})	28	66	-	line	
Vsync pulse width (T_{VC})	2	4	6	line	
Back porch (T_{VD})	23	23	23	line	
Vsync pulse width+Back porch ($T_{VC}+T_{VD}$)	25	27	29	line	
Active display area (T_{VE})	600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

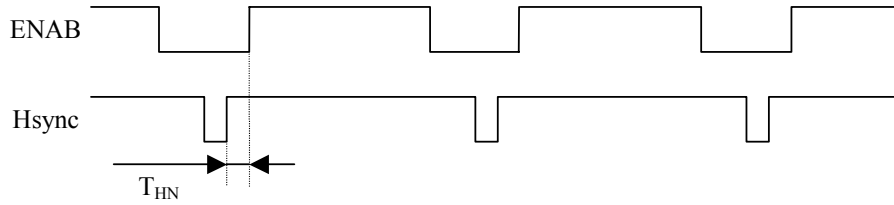| Item	Min.	Typ.	Max.	Unit	Remark
Frequency	35	40	42	MHz	[Note1]

[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

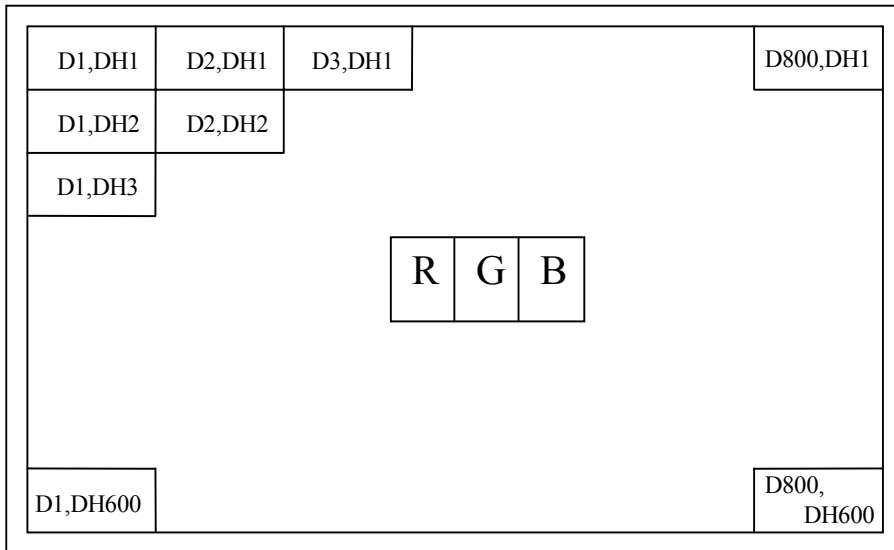| Item	Standards	Beginning	Ending	Unit	Remark
Horizontal	rising edge of ENAB	0	800	clock	
	rising edge of Hsync	88	888	clock	[Note1]
Vertical	rising edge of Vsync	23	623	line	

[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

Display position of input data

(H , V

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

Colors & Gray scale	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	21, 22	CR>10	60	70	-	Deg.	[Note1]
	Vertical	11		35	50	-	Deg.	[Note4]
		12		55	60	-	Deg.	
Contrast ratio		CRn	=0°	300	-	-	-	[Note2]
		CRo	Optimum viewing angle	-	600	-	-	[Note4]
Response time	Rise	r	=0°	-	10	-	ms	[Note3]
	Decay	d		-	25	-	ms	[Note4]
Chromaticity of white	x			0.263	0.313	0.363	-	[Note4]
	y			0.279	0.329	0.379	-	
Chromaticity of red	x			0.546	0.596	0.646	-	
	y			0.279	0.329	0.379	-	
Chromaticity of green	x			0.260	0.310	0.360	-	
	y			0.502	0.552	0.602	-	
Chromaticity of blue	x			0.117	0.167	0.217	-	
	y			0.132	0.182	0.232	-	
Luminance of white		Y_{L1}		360	450	-	cd/m²	IL=6.0mArms fL=60kHz
White Uniformity		δW		-	-	1.35	-	[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.
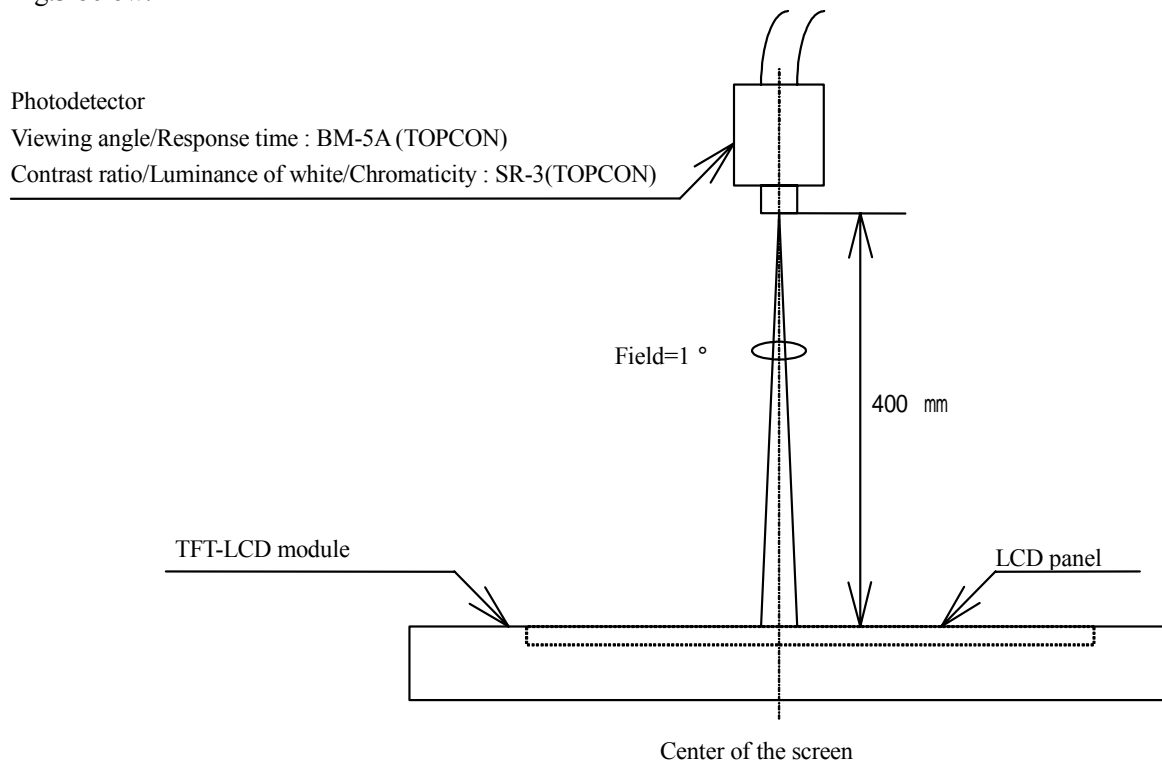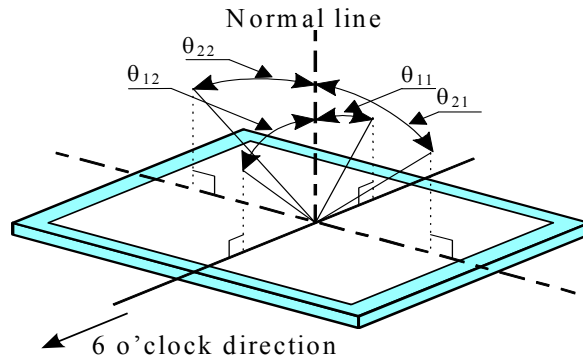
Photodetector

Viewing angle/Response time : BM-5A (TOPCON)

Contrast ratio/Luminance of white/Chromaticity : SR-3(TOPCON)

Field=1°

400 mm

TFT-LCD module

LCD panel

Center of the screen

Fig.3 Optical characteristics measurement method

[Note1]Definitions of viewing angle range:

Normal line

θ_{22}
θ_{12}
θ_{11}
θ_{21}

6 o'clock direction

[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" .

white   black   white

Photodetector output (relative Value)

100%
90%

10%
0%

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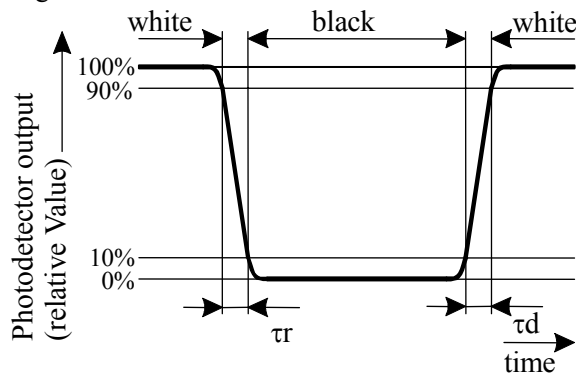
[Note4]This shall be measured at center of the screen.

[Note5]Definition of white uniformity:

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

200   400   600 pixel

A   D   150

C   300

B   E   450 pixel
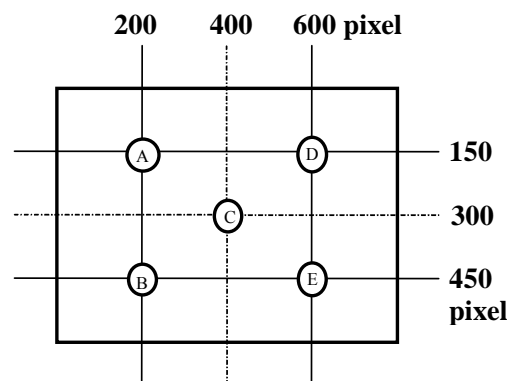
$$w \quad \frac{\text{Maximum Luminance of five points (brightness)}}{\text{Minimum Luminance of five points (brightness)}}$$

11. Display Quality

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

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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 environment.
　　　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)".
　　　r) Liquid crystal contained in the panel may leak if the LCD is broken. Rinse it as soon as possible if it
　　　　gets inside your eye or mouth by mistake.
　　　s) Notice:Never dismantle the module , because it will cause failure.
　　　t) Be careful when using it for long time with fixed pattern display as it may cause afterimage.
　　　u) 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.
　　　v) If a minute particle enters in the module and adheres to an optical material, it may cause display non-
　　　　uniformity issue, etc. Therefore, fine-pitch filters have to be installed to cooling and inhalation hole if
　　　　you intend to install a fan.

13. Packing form

| Product countries / Areas	JAPAN	TAIWAN	CHINA
Piling number of cartons	6		
Package quantity in one carton	10pcs		
Carton size	388(L) x 334(W) x 263(H)		
Total mass of one carton filled with full modules	10,000g		
Packing form is shown	Fig4		

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: 14.7 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 : $\pm$ X,$\pm$ Y,$\pm$ Z once for each direction.	
8	ESD test	Contact discharge (150pF 330Ω) non-operating = $\pm$ 10kV, operating = $\pm$ 8kV Atmospheric discharge (150pF 330Ω) non-operating = $\pm$ 20kV, operating = $\pm$ 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℃,
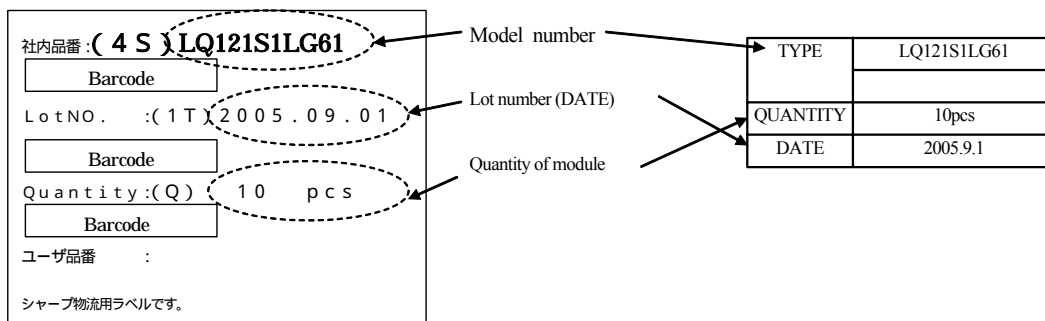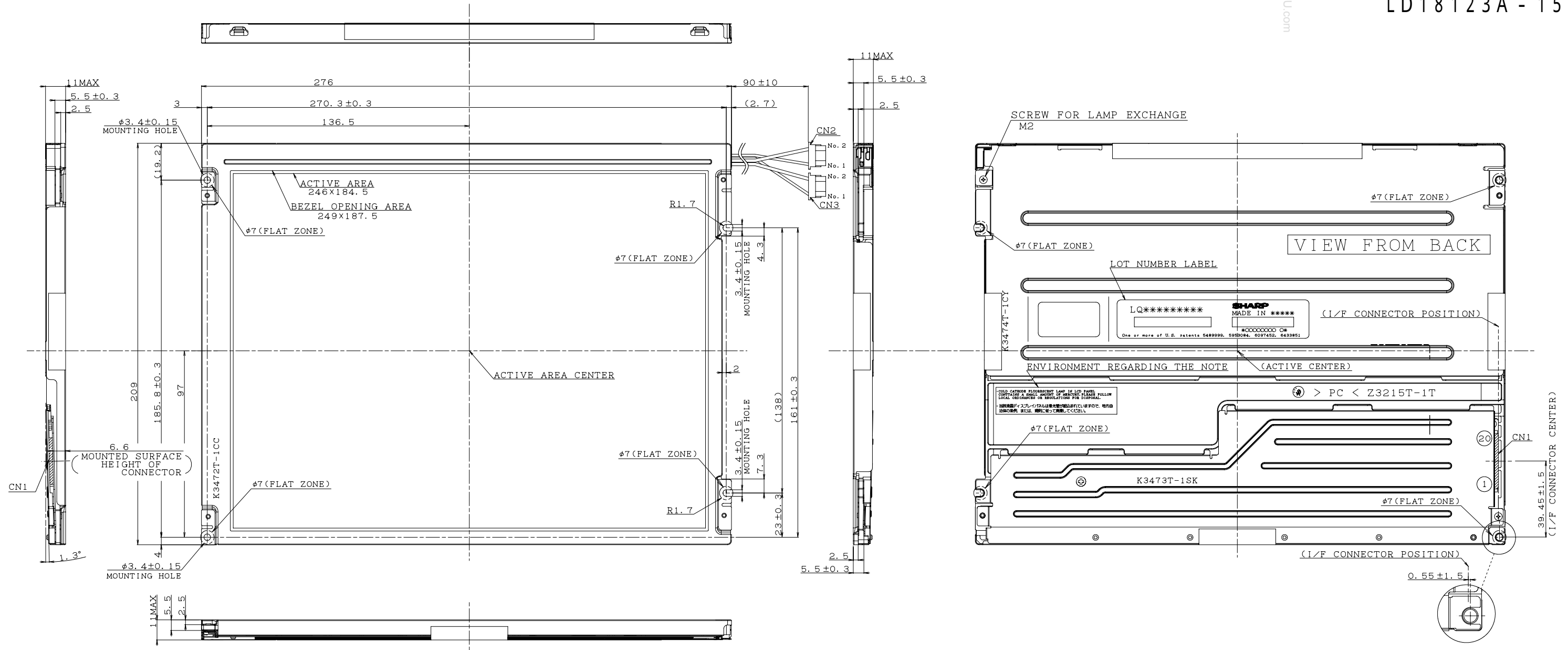Humidity:45～75℃, Atmospheric pressure:86～106kpa)

15.Others

15-1 Lot number Label:
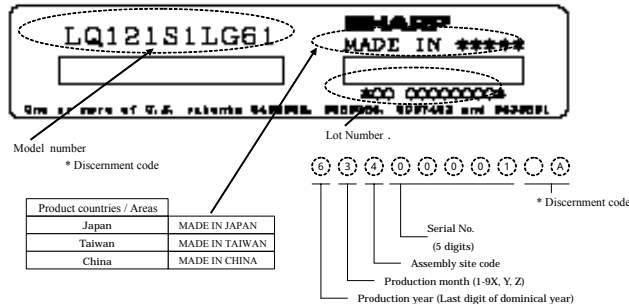
15-2 Packing box Label:

15-3 If any problem occurs in relation to the description of this specification , it shall be resolved
through discussion with spirit of cooperation.

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11MAX

276

90 ±10

11MAX

5.5 ±0.3
2.5

270.3 ±0.3
136.5

(2.7)

5.5 ±0.3
2.5

φ3.4 ±0.15
MOUNTING HOLE

3

CN2
No.2
No.1
No.2
No.1
CN3

SCREW FOR LAMP EXCHANGE
M2

(19.2)

ACTIVE AREA
246×184.5

BEZEL OPENING AREA
249×187.5

φ7(FLAT ZONE)

R1.7

φ7(FLAT ZONE)

φ7(FLAT ZONE)

VIEW FROM BACK

φ7(FLAT ZONE)

φ7(FLAT ZONE)

3.4 ±0.15 MOUNTING HOLE

4.3

LOT NUMBER LABEL

(I/F CONNECTOR POSITION)

K3474T-1CY

LQ*********

SHARP
MADE IN *****
0000000 O
One or more U.S. patents 5489999, 5950094, 6097452, 6433851

209

185.8 ±0.3

97

ACTIVE AREA CENTER

2

ENVIRONMENT REGARDING THE NOTE

(ACTIVE CENTER)

3.4 ±0.15 MOUNTING HOLE

161 ±0.3

(138)

COLD CATHODE FLUORESCENT LAMP IN LCD PANEL
CONTAINS A SMALL AMOUNT OF MERCURY. PLEASE FOLLOW
LOCAL ORDINANCES OR REGULATIONS FOR DISPOSAL.

> PC < Z3215T-1T

6.6
MOUNTED SURFACE
HEIGHT OF
CONNECTOR

K3472T-1CC

φ7(FLAT ZONE)

φ7(FLAT ZONE)

7.3

φ7(FLAT ZONE)

K3473T-1SK

20 CN1

(I/F CONNECTOR CENTER)

CN1

φ7(FLAT ZONE)

R1.7

23 ±0.3

1

39.45 ±1.5

1.3°

φ3.4 ±0.15
MOUNTING HOLE

4

(I/F CONNECTOR POSITION)

0.55 ±1.5

11MAX
5.5
2.5

2.5
5.5 ±0.3

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

BEZEL/DISPLAY POSITION

A

ACTIVE AREA

BEZEL OPENING

C

B

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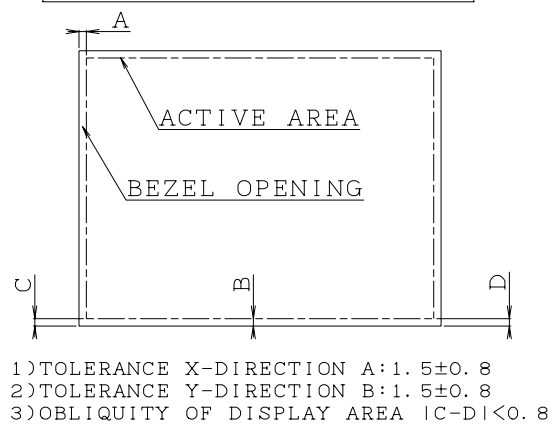
1)TOLERANCE X-DIRECTION A:1.5±0.8
2)TOLERANCE Y-DIRECTION B:1.5±0.8
3)OBLIQUITY OF DISPLAY AREA |C-D|<0.8

CCFT CONNECTOR
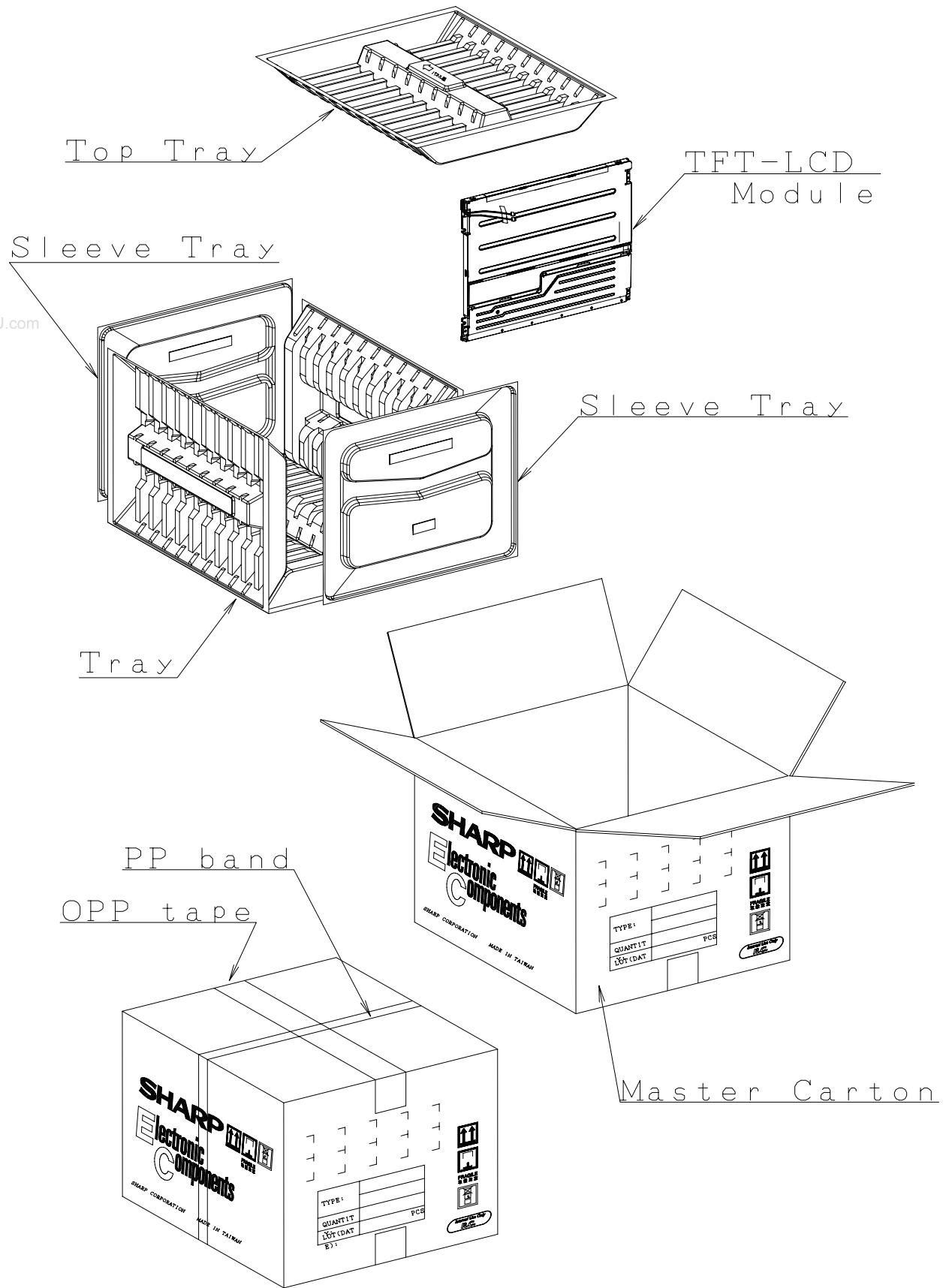
CN2,CN3:BHR-02(8.0)VS-1N(JST)
PIN LAYOUT

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)

Top Tray

TFT-LCD Module

Sleeve Tray

Sleeve Tray

Tray

PP band

OPP tape

Master Carton

SHARP
Electronic Components
SHARP CORPORATION   MADE IN TAIWAN
TYPE:
QUANTIT   PCS
LOT(DAT

SHARP
Electronic Components
SHARP CORPORATION   MADE IN TAIWAN
TYPE:
QUANTIT   PCS
LOT(DAT
E):

Fig4. Packing Form

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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