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	DISPLAY DEVICE GROUP SHARP(CHINA) INVESTMENT CO.,LTD **SPECIFICATION**	

DEVICE SPECIFICATION FOR

TFT-LCD module

MODEL No. LQ070K1LX80

CUSTOMER'S APPROVAL

DATE

BY

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DISPLAY DEVICE GROUP

SHARP

RECORDS OF REVISION

MODEL No.: LQ070K1LX80

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TFT-LCD MODULE

LQ070K1LX80

DEVICE SPECIFICATIONS

CONTENTS

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(1) Summary

This TFT-LCD module is a color active matrix LCD module incorporating amorphous silicon TFT.

An outline of the module is given in Table 4-1.

(2) Features

- The 7.0 screen produces a high resolution image that is composed of 1024,000 pixels elements in a stripe arrangement.
- Graphics and texts can be displayed on a WXGA(800×RGB×1280 dots) panel with 16,777,216 colors by supplying 24 bit data signals(8 bit/color).
- LVDS interface realizes high-speed data transmission. (*LVDS : Low-Voltage Differential Signaling)
- It is possible to reduce the backlight power consumption by using Dynamic Backlight Control function.

(3) Structure and Outline dimensions

Outline dimensions of the module are given in Fig 1.

Structures of the TFT-LCD module are given in Fig 2.

This TFT-LCD module is composed of the color TFT-LCD panel, driver ICs, FPC, PWB and backlight unit.

(LED Backlight-driving DC/DC converter is not built in this module.)

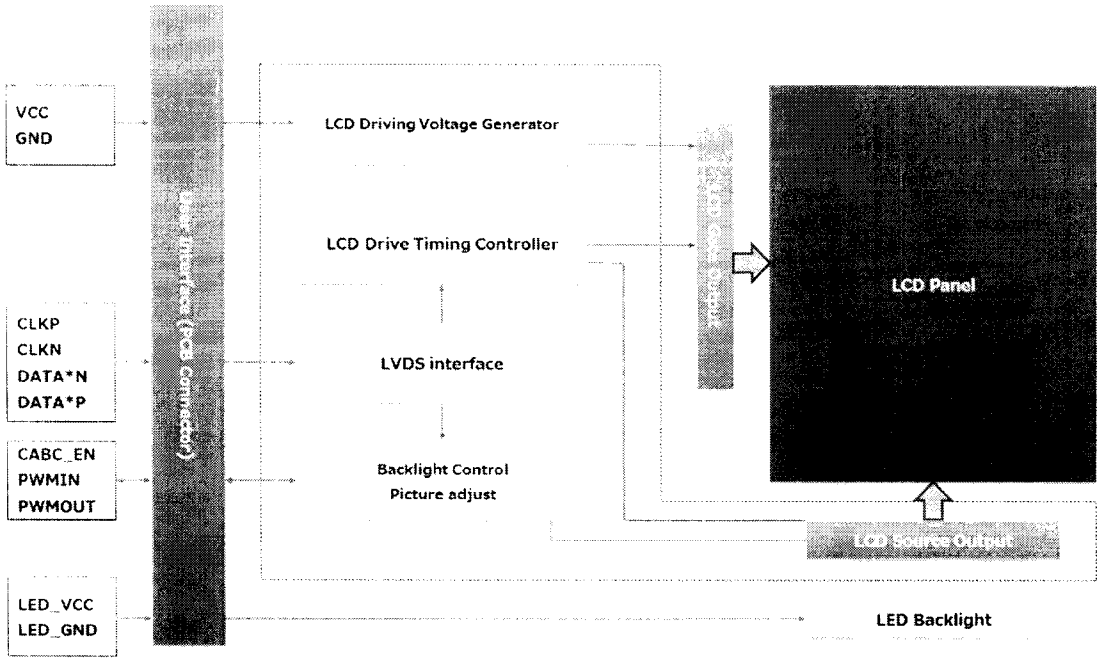
(4) Mechanical specifications

Table 4-1

Parameter	Specifications	Units	Remarks
Screen size (Diagonal)	17.7 [6.95″]	cm	
Active area	93.6(W) × 149.76(H)	mm	
Display format	800(W) × RGB × 1280(H)	dots	
Dot pitch	0.117(W) × 0.117(H)	mm	
Pixel configuration	R,G,B vertical stripes		
Outline dimension	104.0(W) × 162.4(H) ×(2.0)(D)	mm	[Note4-1]
Mass	MAX 80.7	g	

[Note4-1] Typical values are shown.
For detailed measurements and tolerances, please refer to Fig.1.
(FPC, electronic parts are excepted.)

(5)LCM FUNCTION BLOCK DIAGRAM



(6) I/O terminal name and functions

6-1) TFT-LCD panel driving part

PWB connector : 10064555-392110ELF (FCI) (upper side contact)

Table6-1 I/O terminal name and functions

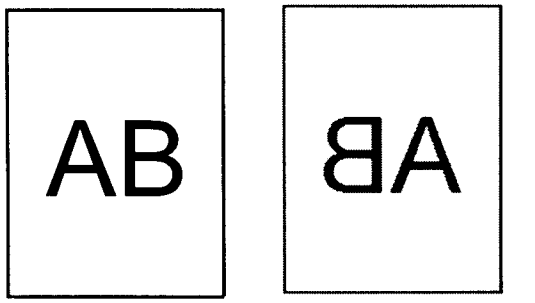
Pin No.	Symbol	i/o	Description	Remarks
1	VCC	-	System power supply	3.3V
2	VCC	-	System power supply	3.3V
3	VCC	-	System power supply	3.3V
4	NC	-	Open	Do not use
5	NC	-	Open	Do not use
6	NC	-	Open	Do not use
7	DATA0N	i	LVDS differential data input(-)	
8	DATA0P	i	LVDS differential data input(+)	
9	GND	-	GND	
10	DATA1N	i	LVDS differential data input(-)	
11	DATA1P	i	LVDS differential data input(+)	
12	GND	—	GND	
13	DATA2N	i	LVDS differential data input(-)	
14	DATA2P	i	LVDS differential data input(+)	
15	GND	-	GND	
16	CLKN	i	LVDS differential clock input(-)	
17	CLKP	i	LVDS differential clock input(+)	
18	GND	-	GND	
19	DATA3N	i	LVDS differential data input(-)	
20	DATA3P	i	LVDS differential data input(+)	
21	GND	i	GND	
22	NC	-	Open	Do not use
23	NC	-	Open	Do not use
24	GND	i	GND	
25	NC	-	Open	Do not use
26	NC	-	Open	Do not use
27	GND	-	GND	
28	HR	i	Reverse scanning display in horizontal	[Note5-1]
29	TEST	i	Please input Hi(same as VCC) voltage	
30	LED_GND	-	LED Backlight GND	
31	LED_GND	-	LED Backlight GND	
32	LED_GND	-	LED Backlight GND	
33	NC	-	Open	Do not use
34	PWMOUT	O	PWM control signal of LED converter	
35	PWMIN	i	Enable control signal of LED converter	
36	CABC_EN	i	Dynamic B/L Control function enable input	[Note5-2]
37	LED_VCC	-	LED Backlight power supply(+)	
38	LED_VCC	-	LED Backlight power supply(+)	
39	LED_VCC	-	LED Backlight power supply(+)	

[Note 6-1] A horizontal direction of the scanning can be controlled according to this signal.

Table 6-1 Display mode

Display mode	HR
Normal display	H
Right/Left reverse mode	L

L=GND , H=VCC



Normal display Right/Left reverse mode

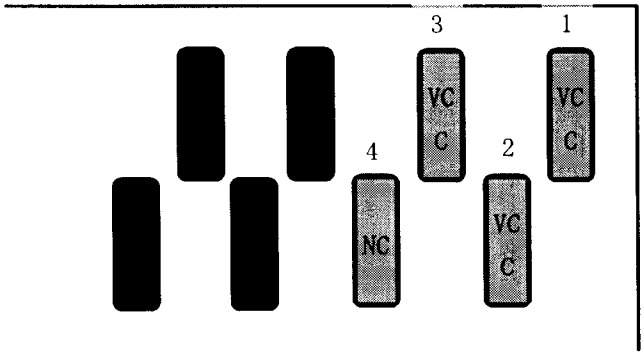
[Note6-2] Dynamic Backlight control function control signal

Table 6-2

Dynamic Backlight control function	Function _EN
function ON	L
function OFF	H

(Caution) Lo=GND , Hi=VCC

[Note6-3] Connector terminal configuration (Connector top view)



(7) Absolute maximum ratings

Teble7-1 Absolute maximum ratings GND=0V, Ta=25℃

Item	Symbol	MIN	TYP	MAX	Unit	Remark
Power Supply Voltage	VCC	-0.3	-	4.6	V	
Input Voltage	VIN	-0.3	-	VCC+ 0.3	V	Note7-1
Temperature for storage	Tstg.	-20	-	70	℃	Note7-2,3
Temperature for operation	Topr.	-10	-	60	℃	Note7-3,4,5
LED Backlight Power Supply Current	I_{LED_VCC}	0	-	90	mA	Note7-6
LED Backlight Power Supply Voltage	V_{LED_VCC}	0	-	28	V	Note7-6

[Note7-1] Apply to terminal of PWMIN,CABC_EN

[Note7-2]This rating applies to all parts of the module and should not be exceeded.

[Note7-3]Maximum wet-bulb temperature is at +39℃ or less, at Ta>+40℃.
Avoid dew condensation on the module.
Otherwise electrical current leaks will occur , and it cannot meet the specifications

[Note7-4]The operating temperature guarantees only operation of the circuit. For contrast, response speed and other factors related to display quality are determined in the circumstances with Ta=+25℃.

[Note7-5]Ambient temperature for lower limit, panel surface temperature for higher limit.

[Note7-6] Apply to terminal of VCC_LED

(8) Electrical characteristics

8-1) TFT-LCD panel driving section

Table8-1 Recommended operating conditions GND=0V , Ta=25℃

Parameter	Symbol	MIN	TYP	MAX	Unit	Remarks
Power Supply Voltage	VCC	3.0	3.3	3.6	V	
Power Supply Current	ICC	-	36	-	mA	Note8-1
INPUT H VOLTAGE	VIH	0.8VCC	-	VCC	V	Note8-2
INPUT L VOLTAGE	VIL	0	-	0.2VCC	V	Note8-2
INPUT H CURRENT	IIH	-	-	10	A	Note8-2 Note8-3
INPUT L CURRENT	IIL	-10	-	-	A	Note8-2 Note8-4
OUTPUT H VOLTAGE	VOH	0.8VCC	-	-	V	Note8-5 Note8-6
OUTPUT L VOLTAGE	VOL	-	-	0.2VCC	V	Note8-5 Note8-6

[Note8-1] The specified power supply current is under the conditions at VCC=3.3V,fv=60Hz and white(L255) pattern is displayed.

[Note8-2] Apply to terminal of PWMIN,CABC_EN

[Note8-3] Vin=VCC

[Note8-4] Vin=0V

[Note8-5] Apply to terminal of PWMOUT

[Note8-6] Output current=0.1mA

8-2) Backlight unit driving section

Table8-2 Ta=25°C

Parameter	Symbol	Value			Unit	Remark
		Min.	Typ.	Max.		
LED Backlight Power Supply Voltage	V_{LED_VCC}	22.8	23.6	24.4	V	[Note8-7]
LED Backlight Power Supply Current	I_{LED_VCC}	-	60	-	mA	
LED Backlight Power Consumption	P_{BL}	-	1.42	2	W	[Note8-8]
LED Backlight Life Time	L_{BL}	12000	-	-	Hrs	[Note8-9]

[Note8-7] For better LED Backlight driving quality, it is recommended to utilize the adaptive boost Converter with current balancing function to drive LED Backlight.

[Note8-8] $P_{BL} = I_{LED\_VCC} \times V_{LED\_VCC}$ (Without LED converter transfer efficiency)

[Note8-9] The lifetime of LED is defined as the time when it continues to operate under the conditions at Ta =25 ±3°C and I_{LED_VCC} = 60 mA until the brightness becomes ≦ 50% of its original value.

8-3) Timing characteristics of input signals

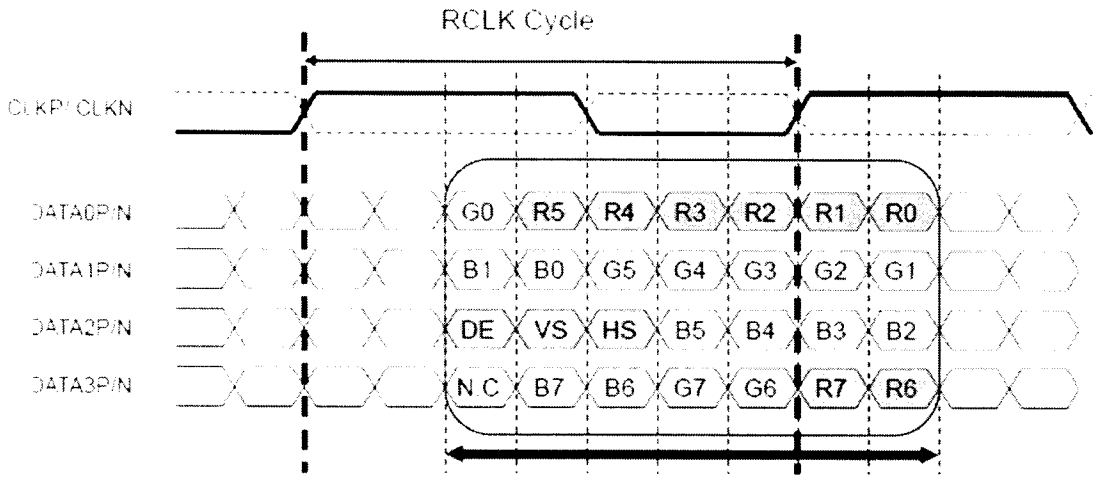


Fig8-1 PWM signal settings

Table8-3 DC characteristic (LVDS)

Parameter	Symbol	Unit	Test Condition	Min.	Typ.	Max.
LVDS Differential Input High Threshold	V_{TH}	mV	V_{OS}=+1.2V	-	-	+100
LVDS Differential Input Low Threshold	V_{TL}	mV		-100	-	-
Input Common Mode Voltage	V_{OS}	V		0.7	1.25	1.375
LVDS Terminating Resistor	ZID	Ω		80	100	125

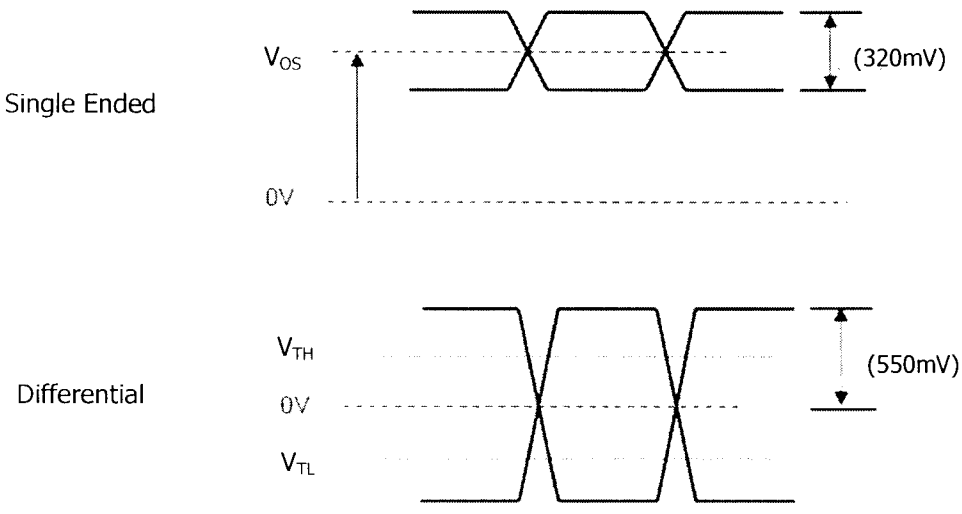


Fig8-2 DC characteristic

Timing diagrams of input signal are shown in Fig8-3

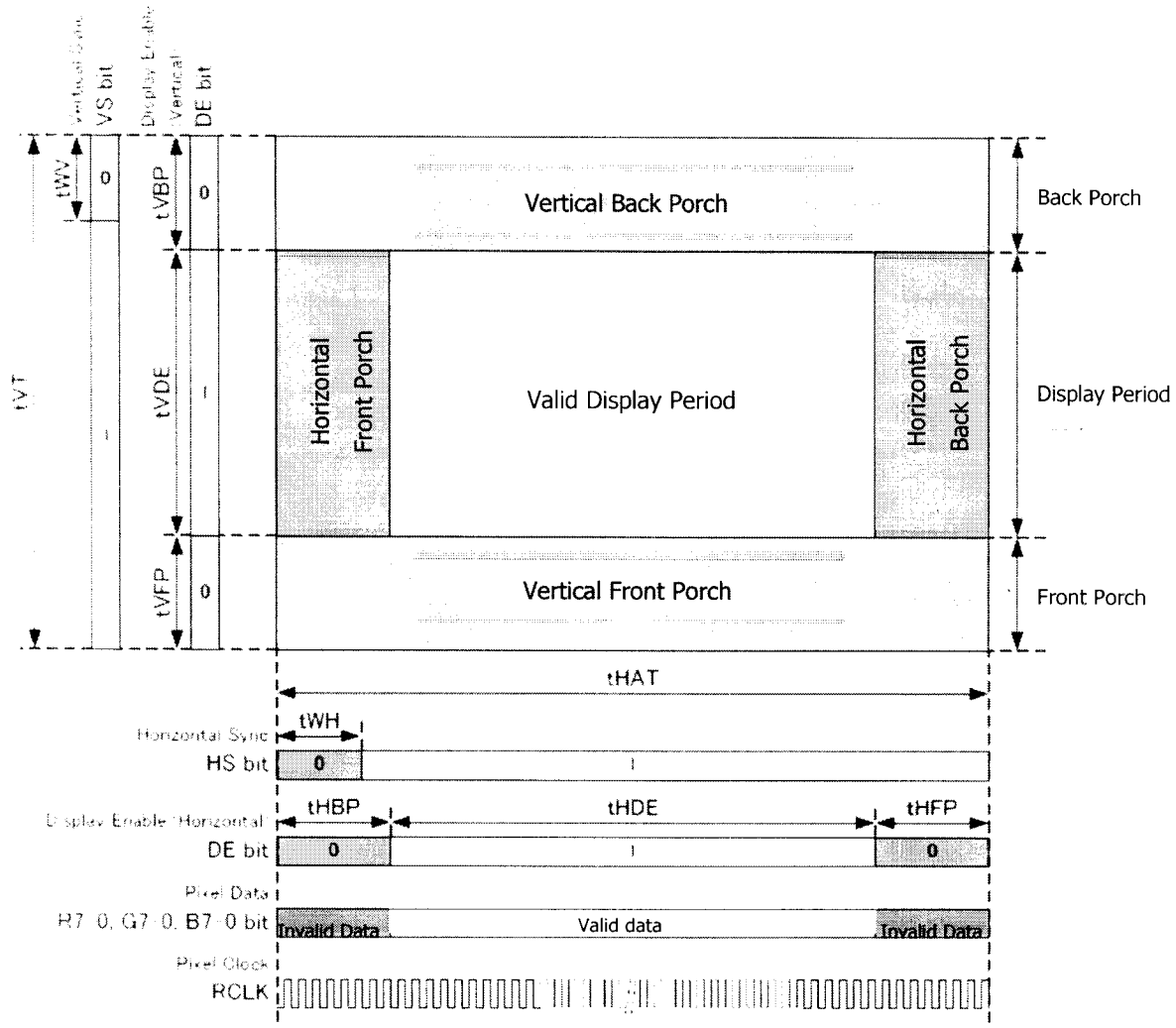


Fig8-3 Display Timing

Table8-4 Display Timing

Parameter	Symbol	MIN	TYP	MAX	Step	Unit
Vertical Address	tVDE		1280		1	Line
Vertical Synchronization	tWV	1	8	tVBP	1	Line
Vertical Back Porch	tVBP	6	8	[Note8-11]	1	Line
Vertical Front Porch	tVFP	4	8	[Note8-11]	1	Line
Vertical total Address	tVT	1290	1296	2047	1	Line
Horizontal Address	tHDE		800		1	RCLKCYC
Horizontal Synchronization	tWH	5	10	tHBP	1	RCLKCYC
Horizontal Back Porch	tHBP	15	15	[Note8-12]	1	RCLKCYC
Horizontal Front Porch	tHFP	110	120	[Note8-12]	1	RCLKCYC
Horizontal total Address	tHAT	925	930	2047	1	RCLKCYC

[Note8-10] RCLKCYC=73.3MHz
[Note8-11] tVDE + tVBP + tVFP ≦ tVT
[Note8-12] tHDE + tHBP + tHFP ≦ tHT

8-4) Input Data Signals and Display Position on the screen

Refer to the following figure Fig8-4

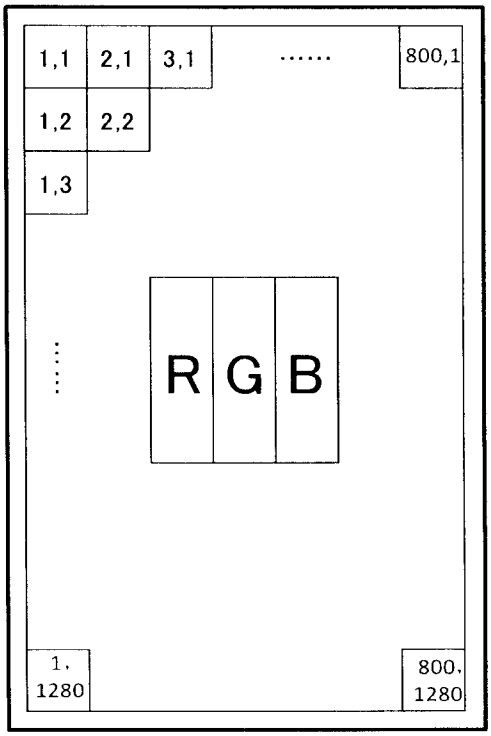


Fig8-4 Display position of input data[H,V]

8-5) Input signals, basic display color and gray scale of each color

The brightness of each primary color (red, green and blue) is based on the 8-bit gray scale data input for the color. The higher the binary input the brighter the color. The table below provides the assignment of color versus data input.

Table8-5 Input signals, basic display color and gray scale of each color

Color		Data Signal																	
		Red						Green						Blue					
		R7	R6	...	R2	R1	R0	G7	G6	...	G2	G1	G0	B7	B6	...	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	1	1	1	1	1	1	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
	Cyan	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	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	Red(0) Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red(2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Red(253)	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red(254)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(255)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale Of Green	Green(0) Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(1)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	Green(2)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green(253)	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0
	Green(254)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	Green(255)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
Gray Scale Of Blue	Blue(0) Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Blue(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Blue(253)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1
	Blue(254)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	Blue(255)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

[Note8-13] 0: Low Level Voltage, 1: High Level Voltage

8-6) LED Backlight Control

The LQ070K1LX80 has the dynamic backlight control function to control backlight brightness depending on image data reducing power consumption at the backlight with the slightest influence on image quality.

The backlight control circuit adjusts backlight brightness according to the histogram of image to reduce power consumption at the backlight. Brightness of the backlight and display data is adjusted.

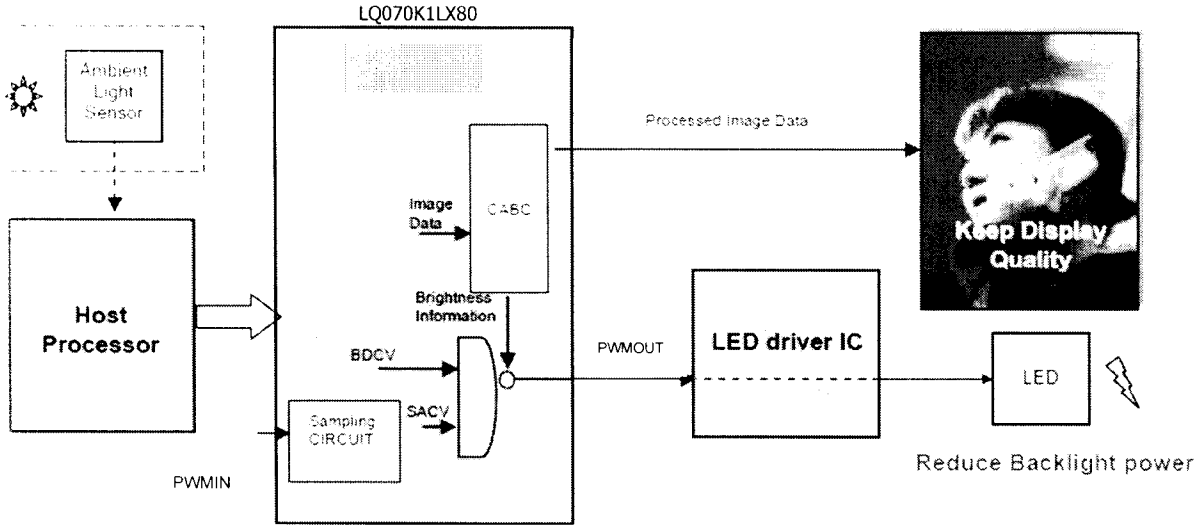


Fig8-5 Dynamic Backlight Control system for example

According to the luminosity information outputted from a LCM inner dynamic backlight control part, PWM signal is outputted from the PWMOUT terminal.

Table8-6 Recommended operating conditions GND=0V , Ta=25°C

Parameter	Symbol	MIN	TYP	MAX	Unit	Remarks
Dynamic backlight control		0.8VCC	-	VCC	V	Note8-15,16
Enable/DisEnable		0	-	0.2VCC	V	Note8-14,16
PWMIN Frequency	fPWMIN	190	-	2K	Hz	Note8-17
PWMIN Control Duty Ratio		10	-	100	%	Note8-17
PWMOUT Output Frequency	fPWMOUT	-	27.45K	-	Hz	Note8-18
PWMOUT Output	Hi	0.8VCC			V	Note8-18,19
Voltage level	Lo	-	-	0.2VCC	V	Note8-18,19

[Note8-14] Dynamic backlight control function is OFF state.

[Note8-15] Dynamic backlight control function is ON state.

[Note8-16] Apply to terminal of PWMIN,CABC_EN

[Note8-17] Apply to terminal of PWMIN

[Note8-18] Apply to terminal of PWMOUT

[Note8-19] Output current=0.1mA

8-7) Input Power Timing Charts

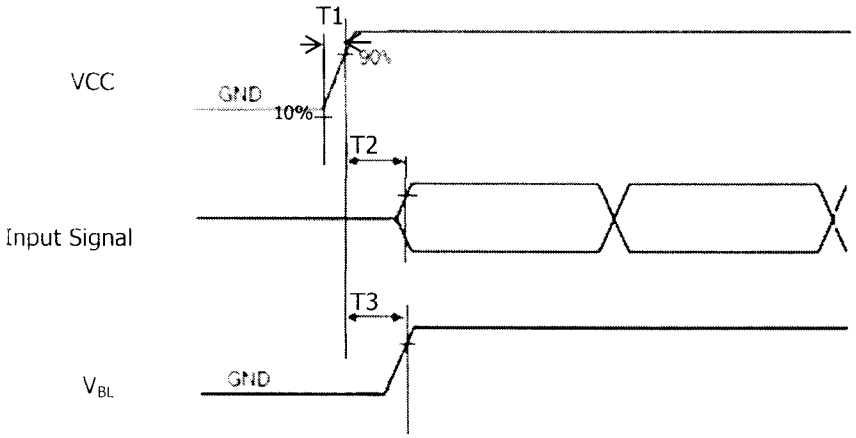


Fig8-7 Power on Timing

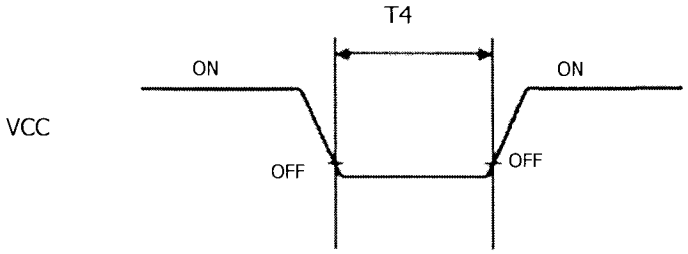


Fig8-8 Power OFF-ON Timing

Table8-5

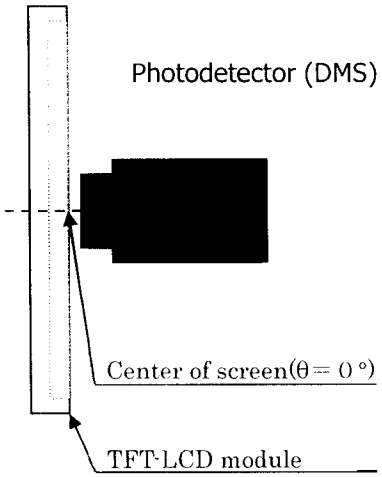
	MIN	TYP	MAX
T1	-	0.1ms	1ms
T2	110ms	-	-
T3	110ms	-	-
T4	1000ms	-	-

(9) Optical characteristics

Table9-1 Optical characteristics Ta=25°C

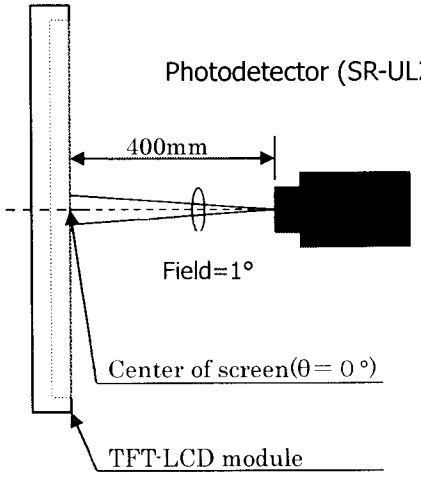
Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Response time	Rise+ Decay	$Tr+T_d$	θ=0°	-	25	-	ms	[Note9-3]
Brightness		Br	θ=0°	360	450	-	cd/m^2	[Note9-4]
Contrast ratio		CR	θ=0°	600	800	-	-	[Note9-2]
Viewing angle(with Polarizer)	Top		CR≥10	70	80	-	degree	[Note9-1]
	Bottom			70	80	-		
	Left			70	80	-		
	Right			70	80	-		
White Chromaticity		X	θ=0°	0.287	0.327	0.367	-	[Note9-4]
		Y		0.299	0.339	0.379	-	[Note9-4]
NTSC			-	-	55	-	%	[Note9-4]
UNIFORMITY		δW		80	-	-	%	[Note9-5]

* The optical characteristics measurements are operated under a stable luminescence (ILED = 60mA) and a dark condition. (Refer to Fig.9-1 and Fig.9-2)



Viewing angle / Response time measurement method

Fig9-1 Photodetector(DMS)



Luminance / Contrast / Chromaticity measurement method

Fig9-2 Photodetector(SR-UL2)

[Note 9-1] Viewing angle range is defined as Fig9-3.

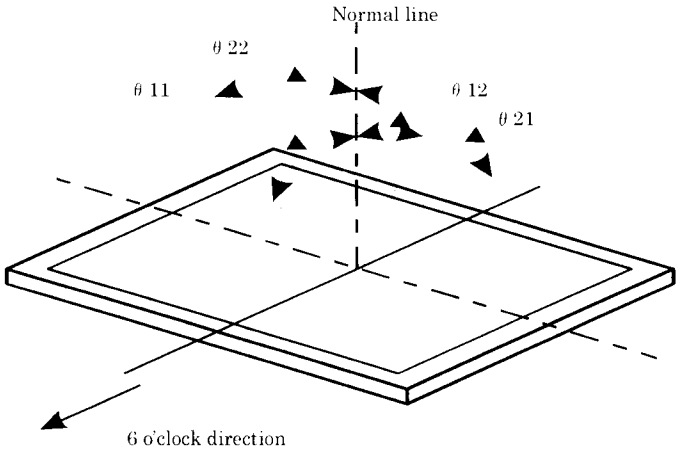


Fig9-3 Viewing angle range

[Note 9-2] Contrast ratio is defined as follows:

$$\text{Contrast ratio(CR)} = \frac{\text{Photo detector output with LCD being "white(GS255)"}}{\text{Photo detector output with LCD being "black(GS0)"}}$$

[Note 9-3] Response time is defined as follows:

Response time is obtained by measuring the transition time of photo detector output, when input signals are applied so as to make the area "black" to and from "white".

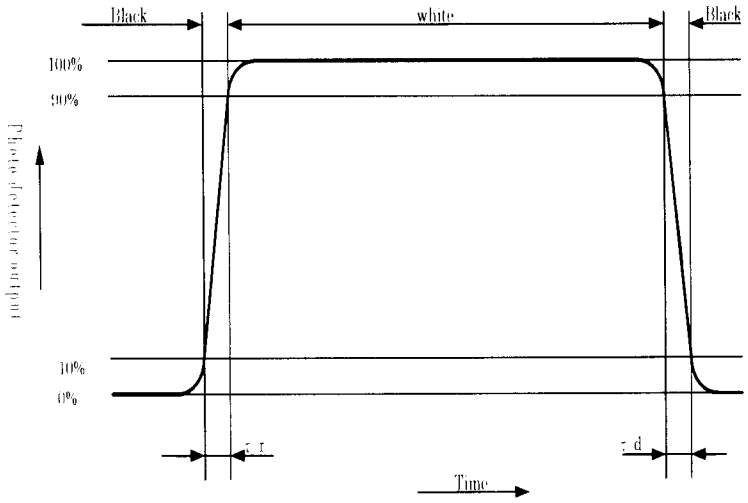


Fig9-4 Response time

[Note 9-4] Measured on the center area of the panel at a viewing cone 1-degree by luminance meter SR-UL2. (After 30 minutes operation)

[Note 9-5] Definition of Uniformity

$$\text{Uniformity} = \frac{\text{Minimum Brightness}}{\text{Maximum Brightness}} \cdot 100(\%)$$

The brightness should be measured on the 5-point as shown in the figure below.

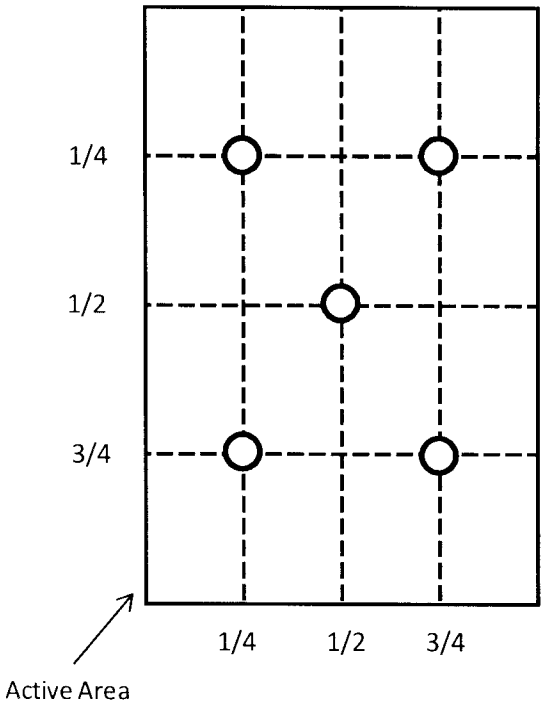


Fig9-5 Measurement of Uniformity

(10) Mechanical characteristics

10-1) External appearance

Do not exist extreme defects. (See Fig. 1)

10-2) I/O connector performance

A) Input/output connectors to control the LCD module

Applicable Connector: 10064555-392110ELF (FCI)

(11) Display quality

The display quality of the color TFT-LCD module is applied to the Incoming Inspection Standard.

(12) Handling instruction of TFT-LCD module

12-1) Handling of LCD Module

(1)Please be careful not to damage the electronic components on PWB.

(2)Please do not hang a LCD module or do not apply excessive power for PWB.

12-2) Installation of TFT-LCD module

(1)When incorporating the TFT-LCD module, be sure to fix the module on the same plane, and be careful not to add stress of wraps or twists to the module.

Do not add pressure to the module by force of pushing parts on the set side (touch-switches , etc.) directly, otherwise display images may be disordered.

(2)Attachment of input/output FPC and removal should surely turn off the power supply of a set.

(3)Be sure to connect the metallic shielding cases of the module and the GND of the inverter circuit surely. In case the connection is not correct, the following problems may occur.

a) The noise from the backlight unit will increase.

b) The output from inverter circuit will be unstable. Then, there may be a possibility that some problems happen.

c). In some cases, a part of module will heat.

12-3) Precautions in mounting

(1)Polarizer adhering to the surface of the LCD is made of a soft material and susceptible to flaw, it must be handled carefully. Protection sheet is applied on the surface to protect. It against scratches and dirties. It is recommended to remove the protection sheet immediately before the use, taking care of static electricity.

(2)Precautions in removing the protection sheet

A) Work environment

When the protection sheet is removed off, static electricity may cause dust to stick to the polarizer surface. To avoid this, the following working environment is desirable.

a) Floor : Conductive treatment of 1MΩ or more on the tile.

(conductive mat or conductive paint on the tile)

b) Clean room free form dust and with an adhesive mat on the doorway

c) Advisable humidity:50%～70% Advisable temperature:15℃～27℃

d) Workers shall wear conductive shoes, conductive work clothes, conductive gloves and an earth band.

B) Working procedures

a) Direct the wind of discharging blower somewhat downward to ensure that module is blown sufficiently. Keep the distance between module and discharging blower within 20 cm.

b) Attach adhesive tape to the protection sheet part near discharging blower so as to protect polarizer against flaw.

c) Remove the protection sheet , pulling adhesive tape slowly to your side.

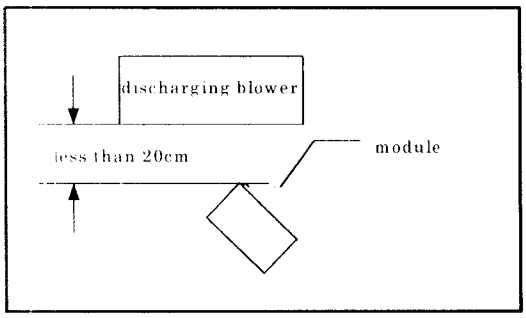
d) On removing off the protection sheet, pass the module to the next work process to prevent the module to get dust.

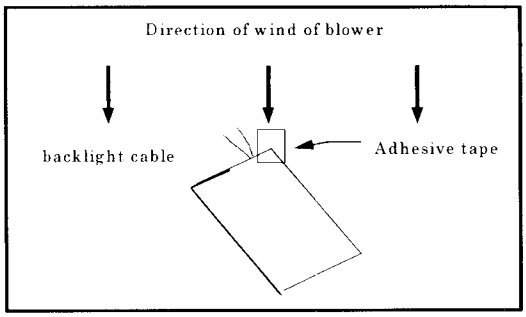
e) Method of removing dust from polarizer

·Blow off dust with N2 blower for which static electricity preventive measure has been taken.

·Since polarizer is vulnerable, wiping should be avoided.

But when the panel has stain or grease, we recommend using adhesive tape to softly remove them from the panel.





(3)When metal part of the TFT-LCD module (shielding case) soiled, wipe it with soft dry cloth. For stubborn dirt, wipe the part after breathing on there. For water drops or finger grease, wipe off immediately. Long contact with water may cause discoloration or spots.

(4)TFT-LCD module uses glass which breaks or cracks easily if dropped or bumped on hard surface. Handle with care. The LCD used in the module is made of glass. If drop the module or bump it on hard surface, the LCD should be broken.

(5)Since CMOS LSI is used in this module, take care of static electricity and earth your body when handling the module.

12-4) Caution of product design

(1)Protect the LCD module from water/salt-water by the waterproof cover, etc.

(2)Take measures against electromagnetic shield so that interferential radiation from the module

should not affect peripheral appliances.

(3)Because driving voltage for backlight is high, it is dangerous to use LCD module under the Conditions that are deviated from specification.

The equipment for which the LCD module is used shall have fail-safe design so that the safety can be ensured in case abnormality of inverter circuit, etc. should occur.

12-5) Other

(1)Do not expose the module to direct sunlight or intensive ultraviolet rays for many hours. Liquid crystal is deteriorated by ultraviolet rays.

(2)Store the module at a temperature near the room temperature. At lower than the rated storage temperature, liquid crystal solidifies, causing the panel to be damaged. At higher than the rated storage temperature, liquid crystal turns into isotropic liquid and may not recover.

(3)The voltage beyond a kick-off voltage may be required. because of leakage current to adjacent conductor part by rout of lump lead wire.

(4)If LCD panel breaks, there may be a possibility that the liquid crystal escapes from the panel. Since the liquid crystal is injurious, do not put it into the eyes or mouth. When liquid crystal sticks to hands, feet or clothes, wash it out immediately with soap.

(5)Be sure to adjust DC bias voltage of common electrode driving signal(COM DC) in the state of the last product. When not adjusted, it becomes the cause of a deterioration of display quality.

(6)Observe all precautionary requirements of general electronic components.

(13) Package form

13-1) Package form (Refer to Fig.3)

Packaging weight : Approx. 5.5kg

Packaging outline dimensions : 605mm × 320mm × 254mm

Quantities : MAX 40modules / 1carton

13-2) Carton keeping conditions

1 The cartons can be piled up maximum 10 layers.

2 Environments

Temperature	:	0～40℃
Humidity	:	60%RH or less(at 40℃) No dew condensation at low temperature and high humidity.
Atmosphere	:	Harmful gas such as acid or alkaline that bites electronic components or wires, must not be detected.
Opening of the package	:	In order to prevent the LCD module from breakdown by electrostatic charges, please control the humidity over 50%RH and open the package taking sufficient countermeasures against electrostatic charges, such as earth, etc.

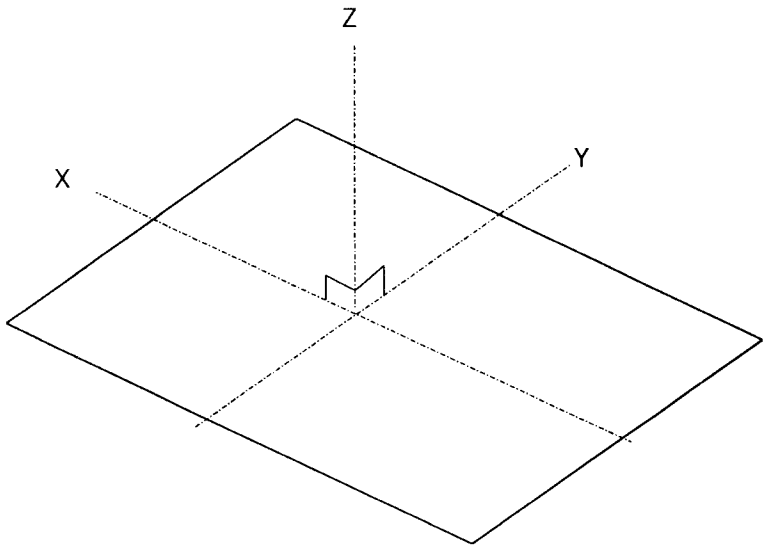
(14) Reliability test contents

The reliability test condition of This LCD module is shown in Table 14-1.

Table 14-1.

No.	Test items	Test conditions
1	Temperature Cycling Storage	-20°C(0.5h)----- 70°C (0.5h)*1cycle 100 cycle
2	High Temp. Storage	Ta=70°C 240h
3	Low Temp. Storage	Ta=-20°C 240h
4	High Temperature & High Humidity Storage	Ta=+60°C, 90%RH 240h
5	High Temp. Operation	Ta=60°C 240h
6	Low Temp. Operation	Ta= -10°C 240h
7	ESD	Discharge resistance: 0Ω Discharge capacitor:200Pf Discharge voltage: ±200V MAX Discharge 1 time to each input line "GND" of display module is connected GND of test system ground
8	Shock test	980m/s^2 · 6ms, ±X ; ±Y ; ±Z 3 times for each direction (JIS C0041, A-7 Condition C) [Note 14-1]
9	Vibration test	Frequency : 8~33.3Hz , Stroke : 1.3mm Frequency : 33.3Hz~400Hz,Acceleration : 28.4m/s^2 Cycle : 15 minutes X,Z 2 hours for each directions, 4 hours for Y direction (total 8 hours) (JIS D1601) [Note 14-1]

[Note 14-1] Definition of X, Y, Z direction is shown as follows



(15) Other

15-1) Indication of the lot number

The lot number is shown on a label. Attached location is shown in Fig.1 (Outline Dimensions).

Indicated contents of the ink:

LQ070K1LX80 ○○○○○○○○○○ SHARP

Model name lot number

Contents of the lot number

the 1st figure	production year	ex. 2012 ⇒ 2
the 2nd figure	production month	1,2,3,・・・・・,9,X,Y,Z
the 3rd~8th figure	serial number	000001~
the 9th figure	revision marks	Blank,A,B,C・・・・・
the 10th figure	Internal code	Q,L

15-2) RoHS

This TFT-LCD module is RoHS compliant products.

15-3) Attention when abandoning it

Please abandon it according to regulations and the ordinance when this module.

15-4) The country of origin of the TFT-LCD module

This LCD module manufacturing in CHINA (Wuxi Sharp Electronic Components Co., Ltd.)

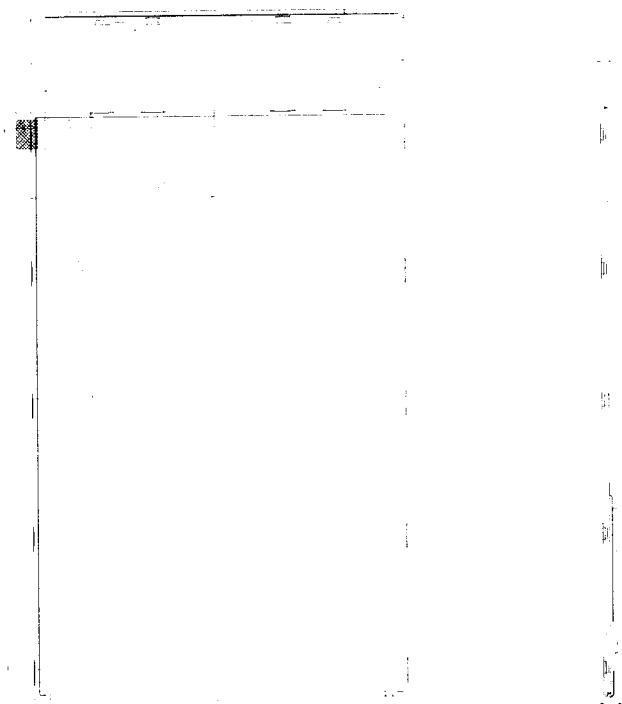


Fig.1 Outline Dimensions

SHARP(CHINA)INVESTMENT CO.,LTD

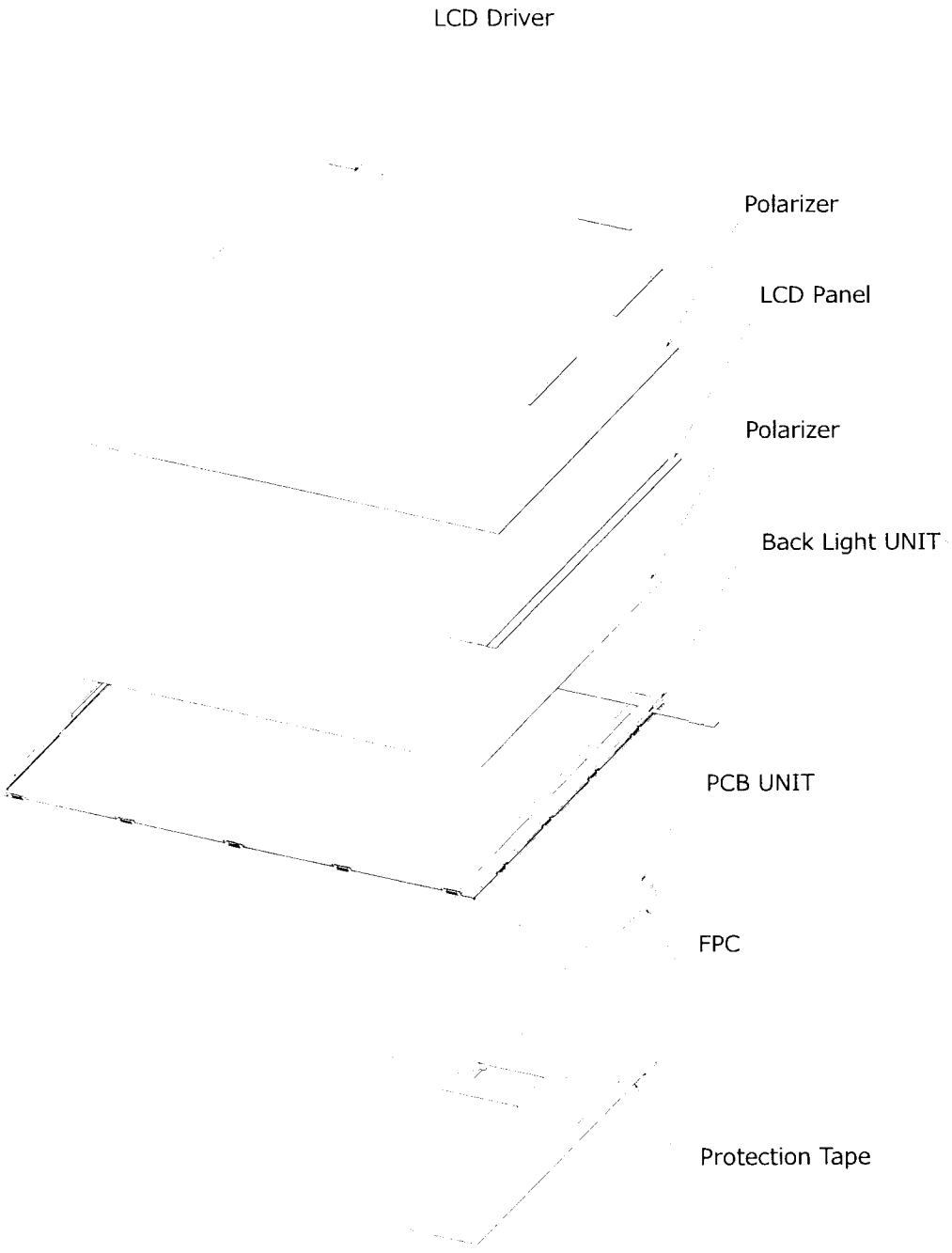


Fig.2. Structure of TFT-LCD module

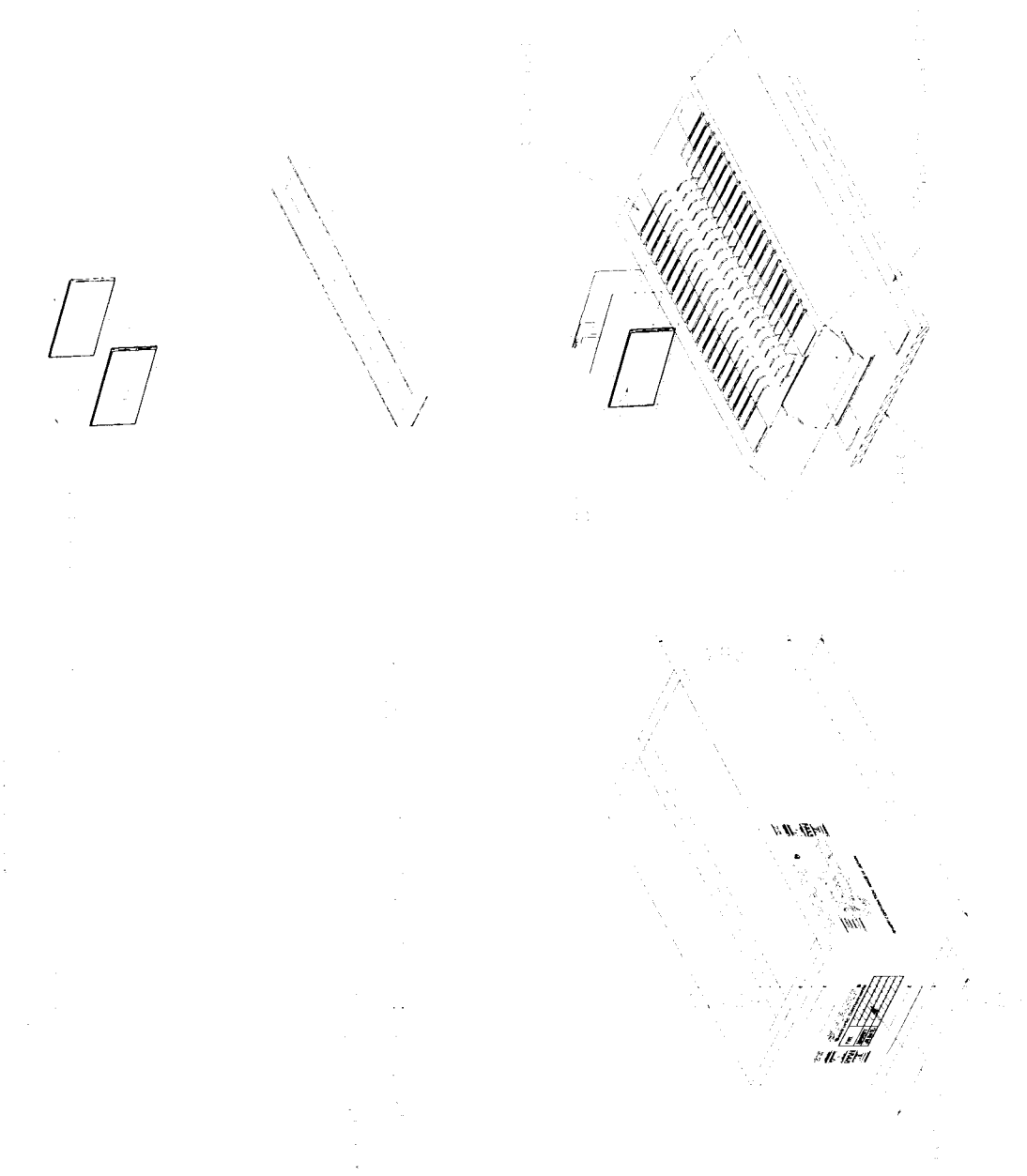


Fig.3. Package form