LCD Specification

LQ070Y3DG3B LCD Module

Product Specification
March 2009

WVGA Module featuring LED backlight,
touch panel, 16:9 aspect ratio,
excellent color rendition,
280 nits brightness, and 300:1 contrast.
Full Specifications Listing

SHARP®

SHARP

DEVICE SPECIFICATION FOR

TFT-LCD Module

MODEL No.

LQ070Y3DG3B

☐ CUSTOMER'S APPROVAL

DATE _____

BY _____

PRESENTED

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RECORDS OF REVISION

LQ070Y3DG3B

^SPEC No.	DATE	REVISED		SUMMARY	NOTE
		No.	PAGE		
LD-21305A	Mar.11.2009	–	–		1st Issue

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Table of contents

1. Application

   This specification applies to a color TFT-LCD module, LQ070Y3DG3B.

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, power supply circuit, a backlight unit, and a touch panel. Graphics and texts can be displayed on a 800×3×480 dots panel with 16,194,277 colors by using 24bit digital signal interface (RGB×8bit)and supplying +3.3V DC supply voltage for TFT-LCD panel driving and supply voltage for backlight.

   In this TFT-LCD panel , low reflection / color filters of excellent color performance and backlights of high brightness are incorporated to realize brighter and clearer pictures, making this model optimum for use in multi-media applications.

   Optimum viewing direction is 6 o'clock.

   <u>White-LED Backlight-driving DC/DC converter is not built in this module.</u>

3. Mechanical Specifications

Parameter	Specifications	Unit
Display size	17.8 (7.0")　Diagonal	cm
Active area	152.4(H)×91.4 (V)	mm
Pixel format	800 (H)×480 (V)	pixel
	(1 pixel = R+G+B dots)	
Aspect ratio	15 : 9	
Pixel pitch	0.1905 (H)×0.1905 (V)	mm
Pixel configuration	R,G,B Horizontal stripe	
Display mode	Normally white	
Surface treatment	Anti Glare and hard-coating 3H	

Parameter		Min.	Typ.	Max.	Unit	Remark
Unit outline dimensions [Note 1]	Width	162.9	163.2	163.5	mm	[Note 1]
	Height	103.7	104.0	104.3	mm	
	Depth	－	5.0	5.3	mm	
		－	7.1	7.4	mm	[Note 2]
Mass		－	170	185	g	

[Note 1] Excluding the FPC/FFC and parts mounting area.

      Outline dimensions is shown in Fig.3

[Note 2] Including the FPC/FFC/TP and parts mounting area.

4. Input Terminals

4-1. TFT-LCD panel driving
(Timing signal,DATA signals and +3.3V DC power supply)

Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	GND		21	B0	BLUE data signal(LSB)
2	GND		22	B1	BLUE data signal
3	VCC	+3.3V Power Supply	23	B2	BLUE data signal
4	VCC	+3.3V Power Supply	24	B3	BLUE data signal
5	R0	RED data signal(LSB)	25	B4	BLUE data signal
6	R1	RED data signal	26	B4	BLUE data signal
7	R2	RED data signal	27	B6	BLUE data signal
8	R3	RED data signal	28	B7	BLUE data signal(MSB)
9	R4	RED data signal	29	GND	
10	R5	RED data signal	30	DOTCLK	Dot-clock signal
11	R6	RED data signal	31	NC	
12	R7	RED data signal(MSB)	32	HSYNC	Line synchronization signal
13	G0	GREEN data signal(LSB)	33	VSYNC	Frame synchronization signal
14	G1	GREEN data signal	34	DEN	Display enable signal
15	G2	GREEN data signal	35	NC	
16	G3	GREEN data signal	36	NC	
17	G4	GREEN data signal	37	GND	
18	G5	GREEN data signal	38	GND	
19	G6	GREEN data signal	39	NC	
20	G7	GREEN data signal(MSB)	40	NC	

[Note 1] Please use NC by OPEN or GND. NC terminal is not connected with the internal circuit.

Using FFC: SML2CD-40X77.5-ADX7(BL)-P0.5-S40+4.0-M-N(35)-AUP-HF
        UL21147 (Sumitomo Electric Industries,Ltd.)
Recommendation connector : FH28H-40S-0.5SH(05)   (HIROSE)：Bottom contact
                FH12A-40S-0.5SH(55)   (HIROSE)：Top contact
(Sharp is not responsible to its product quality, if the user applies a connector not corresponding to the above model.)

4-2. LED Backlight driving

Pin No.	Symbol	Function
1	LED_A1	Power Supply for LED (Anode)
2	LED_C1	Power Supply for LED (Cathode)
3	LED_A2	Power Supply for LED (Anode)
4	LED_C2	Power Supply for LED (Cathode)
5	LED_A3	Power Supply for LED (Anode)
6	LED_C3	Power Supply for LED (Cathode)

[Note1]LED-FPC outline dimensions is shown in Fig.3
Recommendation connector : 04-6298-006-000-883+   (Kyocera)：Top contact

                04-6277-006-000 or 001-883+   (Kyocera)：Dual-sided contact

4-3. Touch panel driving

Pin No.	Symbol	Function
1	Y2	TP Top
2	X2	TP Left
3	Y1	TP Bottom
4	X1	TP Right

Recommendation connector : FH19C-4S-0.5SH (Hirose)

5. Absolute Maximum Ratings

Parameter	Symbol	Condition	Ratings		Unit	Remark
			Min.	Max.		
Input voltage	V_I	Ta=25℃	-0.3	Vcc+0.3	V	[Note 1]
+3.3V supply voltage	VCC	Ta=25℃	0	+4.0	V	
LED forward current	I_{LED}	Ta=25℃	0	30	mA	[Note 2]
LED reverse voltage	V_{LED_R}	Ta=25℃	—	5	V	
Storage temperature	Tstg	—	-30	+70	℃	[Note 3]
Operating temperature	Topa	—	-20	+50	℃	

[Note 1] R0-7, B0-7, G0-7, DOTCLK, HSYNC, VSYNC, DEN

[Note 2] LED_An to LED_Cn (n=1,2,3) Absolute maximum ratings for each pair.

[Note 3] Humidity：95%RH Max. at Ta≦+40℃.

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

No condensation.

6. Electrical Characteristics

6-1.TFT-LCD panel driving

Ta＝+25℃

Parameter		Symbol	Min.	Typ.	Max.	Unit	Remark
Supply voltage		VCC	+3.0	+3.3	+3.6	V	[Note 1]
Current dissipation		Icc	—	140	185	mA	[Note 2]
Permissive input ripple voltage		V_{RP}	—	—	100	mV_{P-P}	Vcc = +3.3V
Input voltage range	Low	V_{IL}	0		0.3×Vcc	V	[Note 3,4]
	Hi	V_{IH}	0.7×Vcc		Vcc	V	
Input leak current	Low	I_{IL}	—	—	±10	μA	$V_I = V_{CC}$ [Note 3,4]
	Hi	I_{IH}	—	—	±10	μA	$V_I = 0V$ [Note 3,4]

[Note 1] On-off conditions for supply voltage
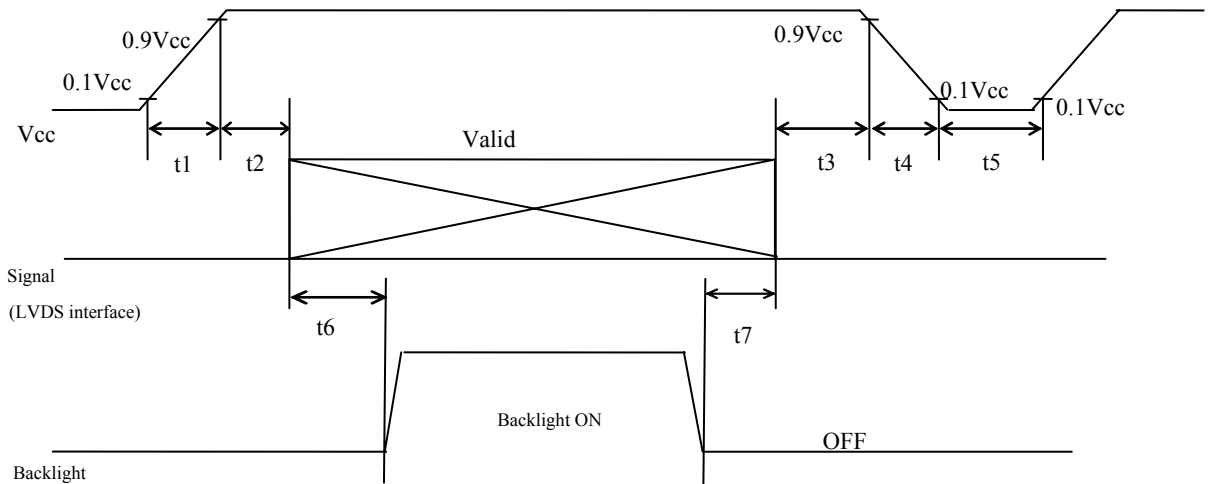
Symbol	Min.	Max.	Unit	Remark
t1	0	10	ms	
t2	0	1	s	
t3	0	1	s	
t4	0	400	ms	
t5	200	—	ms	
t6	180	—	ms	*1
t7	5	—	ms	*1

*1 : As for the power sequence for backlight, it is recommended to apply above mentioned input timing. If the backlight is lit on and off at a timing other than shown above, displaying image may get disturbed.

[Note] Do not keep the interface signal high-impedance or unusual signal when power is on.
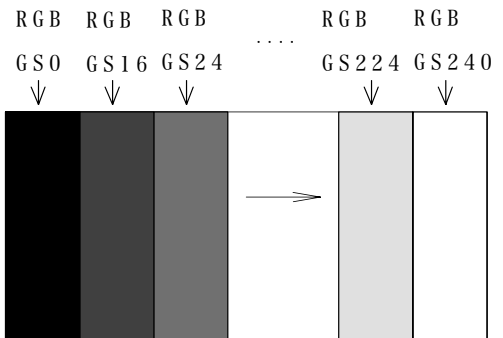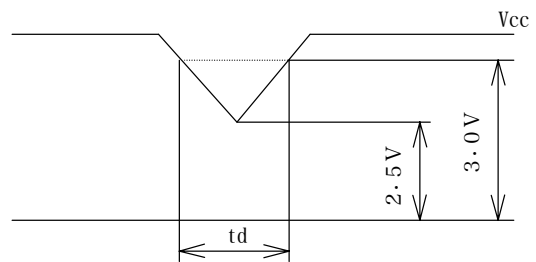
Vcc-dip conditions

1) 2.5 V ≦ Vcc ＜ 3.0 V

td ≦ 10 ms

Under above condition, the display image should return to an appropriate figure after Vcc voltage recovers.

2) Vcc ＜ 2.5 V

Vcc-dip conditions should also follow the On-off conditions for supply voltage
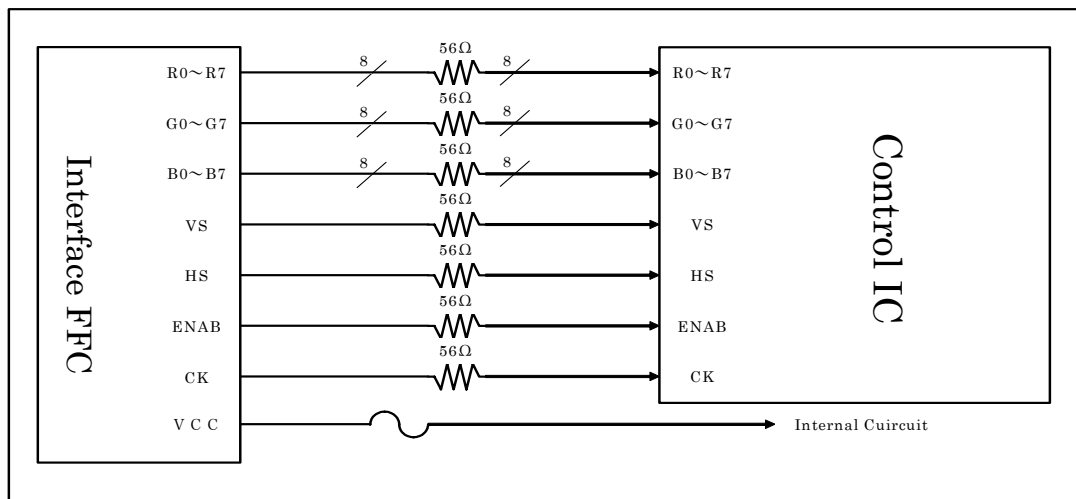
[Note 2]   Typical current situation :

Vcc=+3.3V, f_{VSYNC} = 60Hz

Measuring pattern:GS0-GS60 Vertical gray scale.

GS(4n) n:Natural number(0～15)

[Note 3] DEN,B7-B0,G7-G0,R7-R0,VSYNC,HSYNC,DOTCLK

[Note 4] Interface block diagram of the LCD

6-2. Backlight driving

The backlight system is edge-lighting type with 24 White-LED(White Light Emitting Diode).

The characteristics of White-LED are shown in the following table. (Ta=25 $^{\circ}$C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
LED voltage	V_L	—	25.6	28	V	I_L=20mA
LED current range	I_L		20	25	mA	
Number of circuit strings		—	3	—		[Note 1]
LED power consumption	W_L	—	1.54	—	W	[Note 2]
LED life time	L_L	10000	—	—	Hour	[Note 3]

[Note 1] The LED backlight is composed by 3 strings from which 8 LED is connected with the series.
The figure below shows the circuit chart.
In each string, there is a ceramic capacitor for the electrostatic protection.
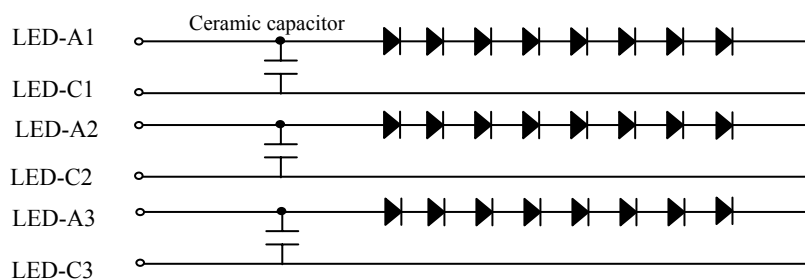
[Note 2] Calculated value for reference ($I_L \times V_L \times$ 3pairs)
[Note 3] LED life time is defined as the time when Brightness becomes 50 % of the original value.
under the condition of Ta = 25°C and I_L = 20 mA,and continuous lighting.

7. Touch panel characteristics

Parameter	Min.	Typ.	Max.	Unit	Remark
Input voltage	-	-	7.0	V	
Resistor between terminals(TP_X1-TP_X2)	100	600	900	Ω	Provisional
Resistor between terminals(TP_Y1-TP_Y2)	100	300	900	Ω	specification
Line linearity(X direction)	-1.5	-	1.5	%	
Line linearity(Y direction)	-1.5	-	1.5	%	
Insuration resistance	10	-	-	MΩ	at DC25V
Minimum tension for detecting	-	-	0.8	N	
Chattering	-	-	10	ms	

[Note 1] Wiring diagram of touch panel
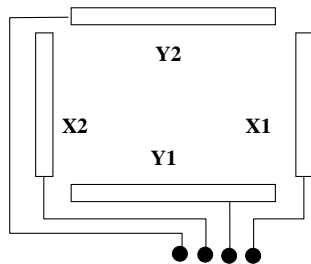
8. Timing Characteristics of Input Signals

8-1. Timing characteristics

Characteristics		Symbol	Min.	Typ.	Max.	Unit	Remark
DOTCLK	Frequency	1/Tc	31.95	33.26	34.6	MHz	
	High Width	Tch	10	—	—	ns	
	Lo Width	Tc1	10	—	—	ns	
	Duty	Th/T	40	50	60	%	
DATA	Setup Time	Tds	5	—	—	ns	
	Hold Time	Tdh	5	—	—	ns	
HSYNC	Period	TH	31.45	31.75	—	μs	
			1024	1056	1088	clock	
	Pulse Width	THp	5	128	186	clock	
VSYNC	Period	TV	520	525	530	line	
	Pulse Width	TVp	2	—	TV-515	line	
Horizonral Display Area		THd	800	800	800	clock	
Phase difference of HSYNC - DOTCLK		THc	8	—	Tc-10	ns	
Phase difference of HSYNC - VSYNC		TVh	1	—	TH-THp10	clock	
Vertical Back Porch		TVs	35	35	35	line	
Vertical Front Porch		TVf	5	—	—	line	
Vertical Display Area		TVd	480	480	480	line	

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

8-2. Display position

Characteristics		Symbol	Min.	Typ.	Max.	Unit	Remark
DEN	Setup time	Tes	5	—	Tc-10	ns	
	Pulse width	Tep	—	800	—	clock	
Phase difference of HSYNC - DEN		THe	88	—	215	clock	

[Note]

(Horizontal display direction)

When "DEN" signal is fixed low, 215 clocks are counted from Hsync negative edge and data from after are available. If you need other timing, please use "DEN" signal.

(Vertical display direction)

35 lines are counted from Vsync negative edge and data from next line are available.
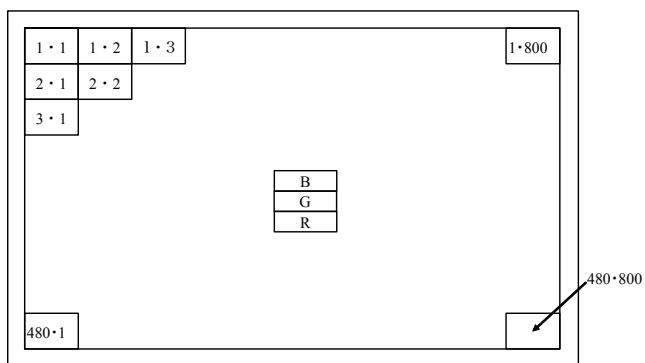
("DEN" signal)

When "DEN" signal is active, "DEN" signal input continuously or fixed "L" in Vertical invalid data period.

Caution

Image will not be displayed on the right position otherwise.

8-3. Input data signals and display position on the screen
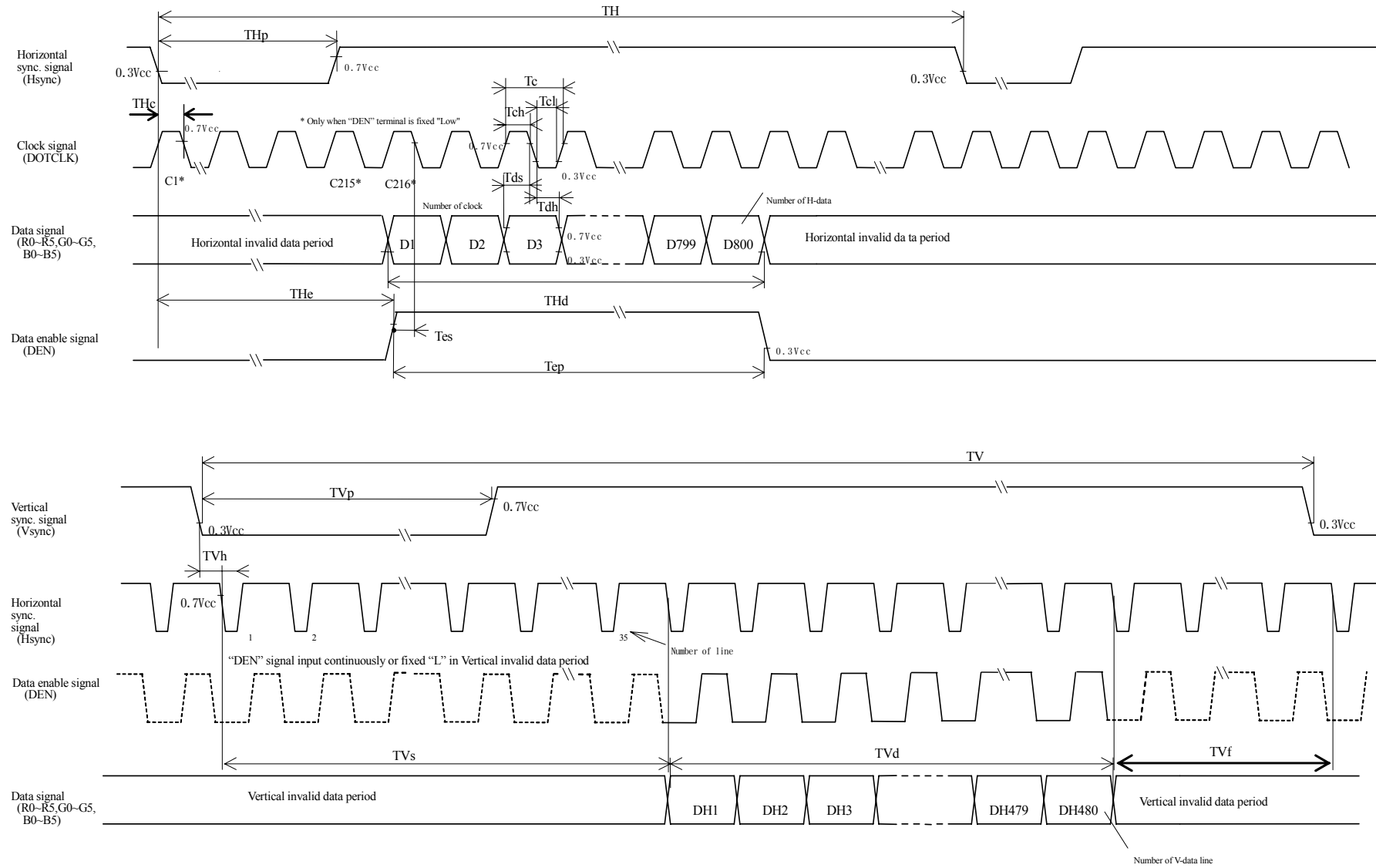

Display position of input data(V・H)

Fig 1. Input signal timing char

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

Colors & Gray scale		Gray Scale	R0	R1	R2	R3	R4	R5	R6	R7	G0	G1	G2	G3	G4	G5	G6	G7	B0	B1	B2	B3	B4	B5	B6	B7
LED-C1	Black	—	0	0	0	0	0	0	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	0	0	0	0	X	X	1	1	1	1	1	1
	Green	—	0	0	0	0	0	0	0	0	X	X	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Cyan	—	0	0	0	0	0	0	0	0	X	X	1	1	1	1	1	1	X	X	1	1	1	1	1	1
	Red	—	X	X	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Magenta	—	X	X	1	1	1	1	1	1	0	0	0	0	0	0	0	0	X	X	1	1	1	1	1	1
	Yellow	—	X	X	1	1	1	1	1	1	X	X	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	—	X	X	1	1	1	1	1	1	X	X	1	1	1	1	1	1	X	X	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	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	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	0	0	0	0	0	0
	⇧	↓				↓								↓								↓				
	⇩	↓				↓								↓								↓				
	Brighter	GS250	0	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇩	GS251	1	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	GS252	X	X	1	1	1	1	1	1	0	0	0	0	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	0	0	0	0	0	0
	⇧	GS1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	GS2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	↓				↓								↓								↓				
	⇩	↓				↓								↓								↓				
	Brighter	GS250	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0
	⇩	GS251	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0
	Green	GS252	0	0	0	0	0	0	0	0	X	X	1	1	1	1	1	1	0	0	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	0	0	0	0	0	0
	⇧	GS1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Darker	GS2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	⇧	↓				↓								↓								↓				
	⇩	↓				↓								↓								↓				
	Brighter	GS250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1
	⇩	GS251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	1
	Blue	GS252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	X	1	1	1	1	1	1

0 : Low level voltage,   1 : High level voltage.   X : Don't care (GS252～GS255 are same grayscale)

Each basic color can be displayed in 253 gray scales from 8 bit data signals. According to the combination of

total 24 bit data signals, the 16-million-color display can be achieved on the screen.
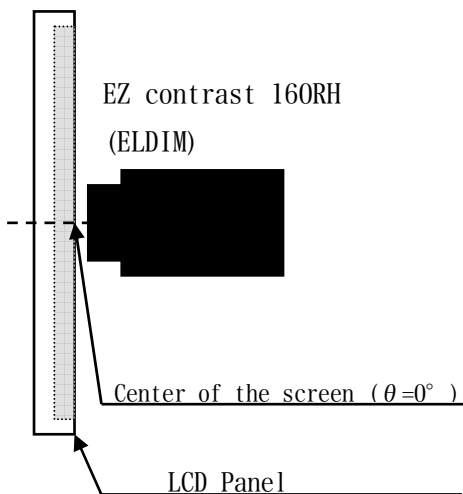
10. Optical Characteristics

Ta=+25°C, Vcc=+3.3V

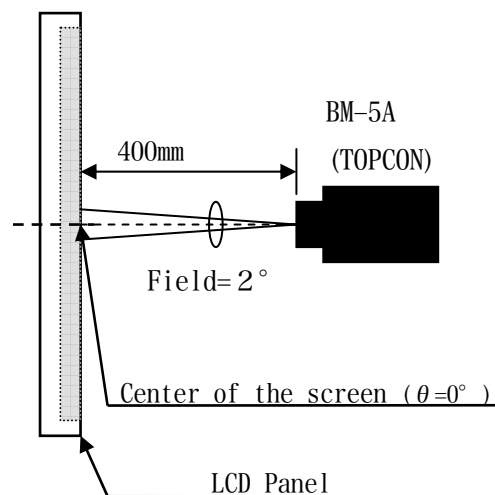| Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing angle range	Horizontal	$\theta 21, \theta 22$	CR>10	—	65	—	Deg.	[Note 1,3,6]
	Vertical	$\theta 11$		—	50	—	Deg.	
		$\theta 12$		—	60	—	Deg.	
Contrast ratio		CRn	$\theta =0°$	300		—		[Note 2,4,6]
Response time		$\tau r+\tau d$		—	35	40	ms	[Note 2,5,6]
Chromaticity of white		x	$\theta =0°$	0.260	0.310	0.360		[Note 2,6]
		y		0.290	0.340	0.390		
Chromaticity of red		x		0.538	0.588	0.638		
		y		0.275	0.325	0.375		
Chromaticity of green		x		0.278	0.328	0.378		
		y		0.502	0.552	0.602		
Chromaticity of blue		x		0.103	0.153	0.203		
		y		0.054	0.104	0.154		
Luminance of white		Y_{LI}		220	280	—	cd/m^2	I_f=20mA [Note 2,6]

※ The measurement shall be executed 30 minutes after lighting at rating. Condition : (I_f=20mA)

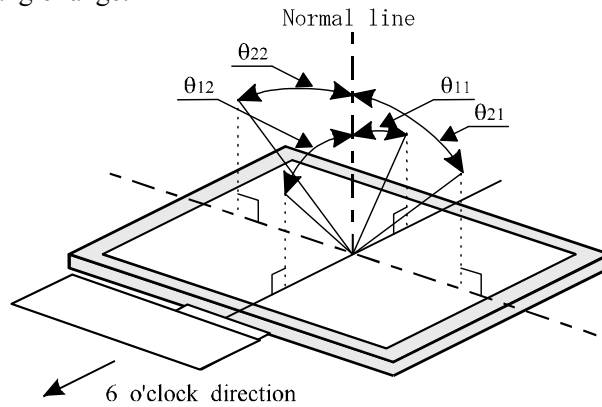The optical characteristics shall be measured in a dark room or equivalent.

[Note 1] Measuring Viewing Angle Range

[Note 2] Other Measurements

EZ contrast 160RH
(ELDIM)

Center of the screen (θ=0°)

LCD Panel

BM-5A
(TOPCON)

400mm

Field=2°

Center of the screen (θ=0°)

LCD Panel

[Note 3] Definitions of viewing angle range:

Normal line

θ_{22}
θ_{12}
θ_{11}
θ_{21}

6 o'clock direction

[Note 4] Definition of contrast ratio:

The contrast ratio is defined as the following.

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

[Note 5] 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
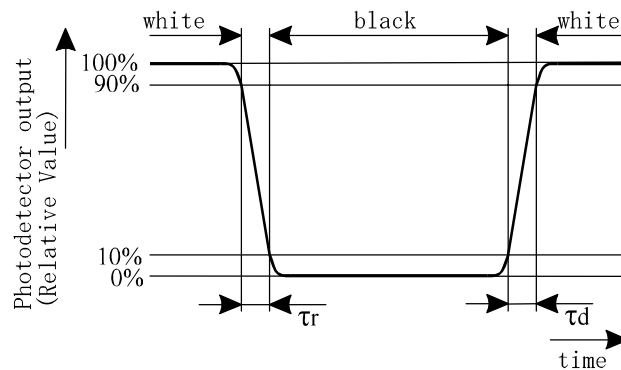
[Note 6] This shall be measured at center of the screen.

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.

Please insert for too much stress not to join FFC/FPC in case of insertion of FFC/FPC.

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 touch panel surface 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) This module has its circuitry PCBs on the rear side and should be handled carefully in order not to be stressed.

i) Do not expose the LCD module to a direct sunlight, for a long period of time to protect the module from the ultra

violet ray.

j) Connect GND of mounting holes to stabilize against EMI and external noise.

k) 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.

l) 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.

m) Disassembling the module can cause permanent damage and should be strictly avoided.

Please don't remove the fixed tape, insulating tape etc that was pasted on the original module.

n) Be careful when using it for long time with fied pattern display as it may cause afterimage.

(Please use a screen saver etc., in order to avoid an afterimage.)

o) 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.

p) If a minute particle enters in the module and adheres to an optical material, it may cause display non-uniformity

isse, etc. Therefore, fine-pitch filters have to be installed to cooling and inhalation hole if you intend to install a

fan.

r) Epoxy resin (amine series curing agent)，silicone adhesive material (dealcoholization series and oxime series),

tray forming agent (azo compound) etc, in the cabinet or the packing materials may induce abnormal display with

polarizer film deterioration regardless of contact or noncontact to polarizer film.

Be sure to confirm the component of them.

s) Do not use polychloroprene. If you use it, there is some possibility of generating Cl_2 gas that influences the

reliability of the connection between LCD panel and driver IC.

t) Don't give stress on the surface of the touch panel continuously. It causes unevenness (in such cases as the

Newton's Ring) in the touch panel surface.

13. Design guidances for touch panel (T/P)

  a) Example of housing design

    (1) Keep the gap (over 0.5mm) between the housing-bezel-edge and T/P surface, to avoid the

       contact. (See the figure above) Otherwsie, a "short" with bottom Electrode layer may occur.

    (2) We recommend inserting cushion material between the housing bezel and the T/P.

    (3) Keep the distance (Min0.5mm) between the cushion material to transparent-insulataion-paste.

       Otherwise a "short" may occur.

    (4) There is a possibility that the electrode is left in the side edge of T/P.

       Please design to keep this area insulate from the perimeter to prevent mis-operation and so on.

  b) Mounting on display and housing bezel

    (1) In all cases, the T/P should be supported from the backside of the plastic housing.

    (2) Do not to use an adhesive-tape bonding T/P and the housing bezel.

    (3) T/P top layer(PET-film) bulging with internal air, like a balloon. Do not expand the top layer.

      Otherwise the life of the T/P will be extremely short.

    (4) Top layer (PET Film) dimension may change with environmental temperature and humidity.

      Please avoid a stress from housing bezel to top layer, because it may cause "waving".

    (5) The input to the touch panel sometimes distors touch panel itself.
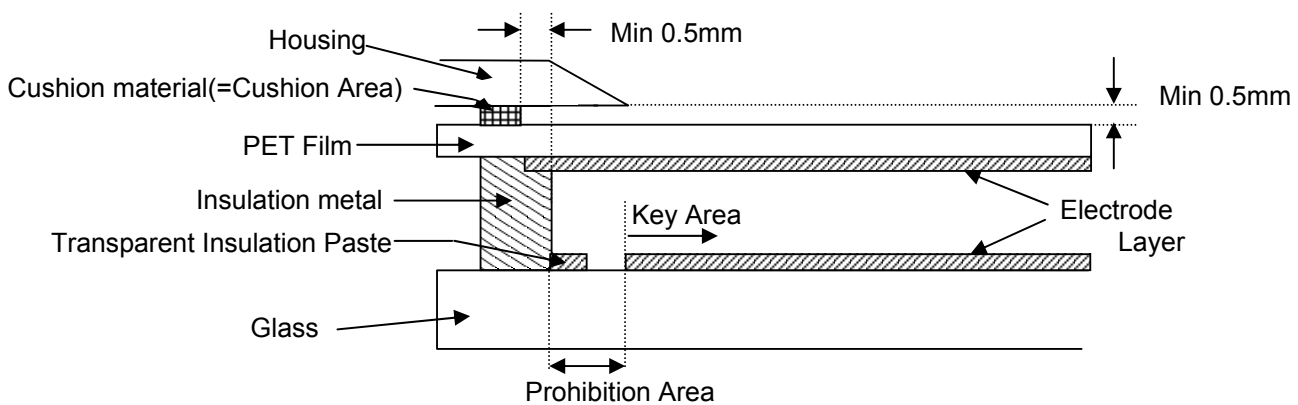
14. Packing form

Piling number of cartons	Max.8
Package quantity in one carton	40pcs
Carton size	380 (W)×575(D)×225(H) mm
Total mass of one carton filled with full modules	11.4 kg
Packing form	Fig.2

15. Reliability Test Items

| No.	Test item	Conditions
1	High temperature operation test	Ta = +50℃ 240h
2	Low temperature operation test	Ta = -20℃ 240h
3	High temperature storage test	Ta = +70℃ 240h
4	Low temperature storage test	Ta = -30℃ 240h
5	High temperature & high humidity operation test	Ta = +40℃ ; 95 %RH 240h (No condensation)
6	Vibration test (non- operating)	Frequency range: 10 to 55Hz Sweep: 1.5mm Sweep time: 1minute Test period: 2 hours for each direction of X,Y,Z
7	Shock test	Direction: ±X, ±Y, ±Z, Time: 3 times for each direction. Impact value: 980m/s², Action time 6ms

[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)

16. Label

1) Module label:

Notation: ①Model No. ②Serial No.

```
①                              ②

LQ070Y3DG3B      94000001
```
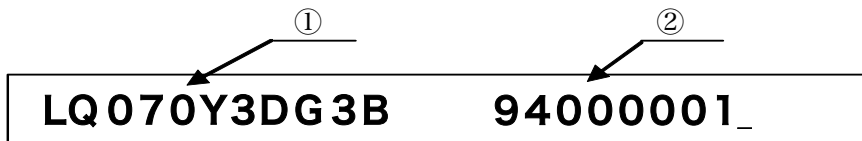
Details of Serial No

(Example)   9 4 0 0 0 0 0 1 _

Production year(9～)
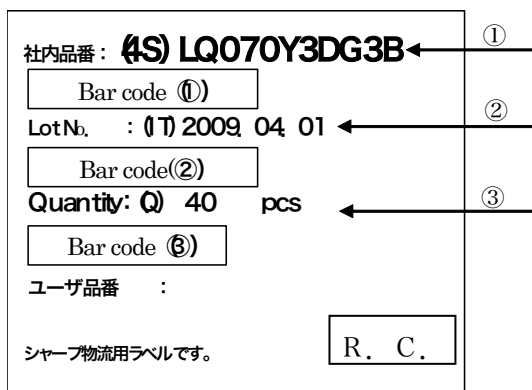
Production Month(1～9,X,Y,Z)

Revision Code(None, A,B,・・・)

Serial No(000001～)

[Note] Production year ： 9(2009)、0(2010)、1(2011)、・・・・

Production Month： 1(Jan)、2(Feb)、・・・、9(Sep)、X(Oct)、Y(Nov)、Z(Dec)

2) Packing bar code label

Notation/ Bar code: ①Model No. ②Date   ③Quantity

```
社内品番： (4S) LQ070Y3DG3B      ①

    Bar code (①)
                                ②
Lot No.   : (IT) 2009. 04. 01

    Bar code(②)
                                ③
Quantity: (Q)  40    pcs

    Bar code (③)

ユーザ品番   :

シャープ物流用ラベルです。        R．C．
```

※R.C.（RoHS Compliance） means these parts have corresponded with the RoHS directive.

17. Storage conditions

<Environmental condition range of   storage temperature and humidity>

Temperature   0 to 40 degrees Celsius

Relative humidity   70% and below

Direct sun light

Please keep the product in a dark room or cover the product to protect from direct sun light.

Atmospheric condition

Please refrain from keeping the product with possible corrosive gas or volatile flux.

Prevention of dew

* Please store the product carton either on a wooden pallet or a stand / rak to prevent dew.

  Do not place directly on the floor. In addition, to obtain moderate ventilation in between the pallet's

  top and bottom surfaces, pile the cartons up in a single direction and in order.

* Please place the product cartons away from the strage wall.

* Please maintain the storage area with an appropriate ventilation. It is recommendable to furnish

  the storage area with equipments such as ventilation systems.

* Please maintain the ambient temperature within the range of natural environmental fluctuation.
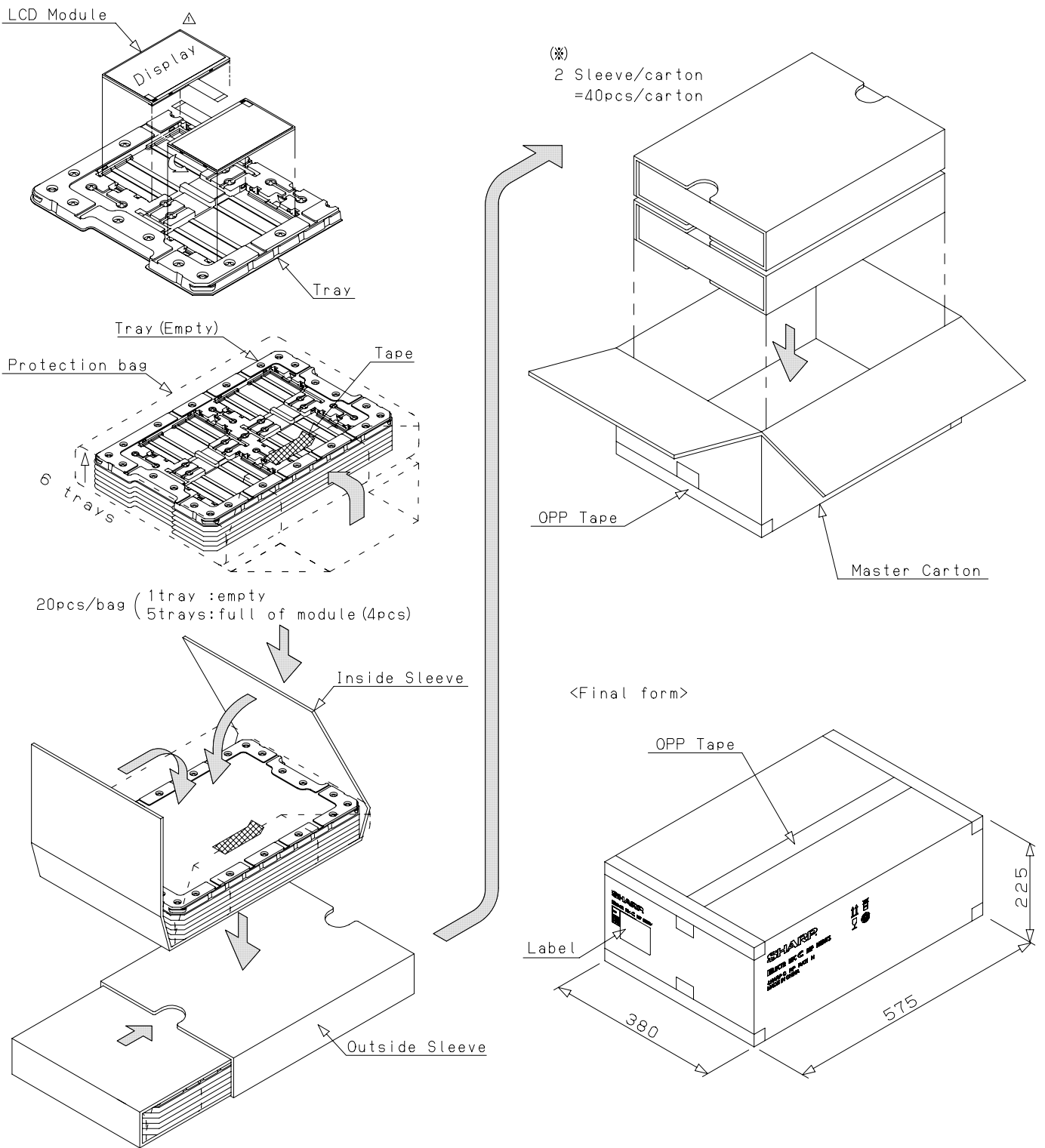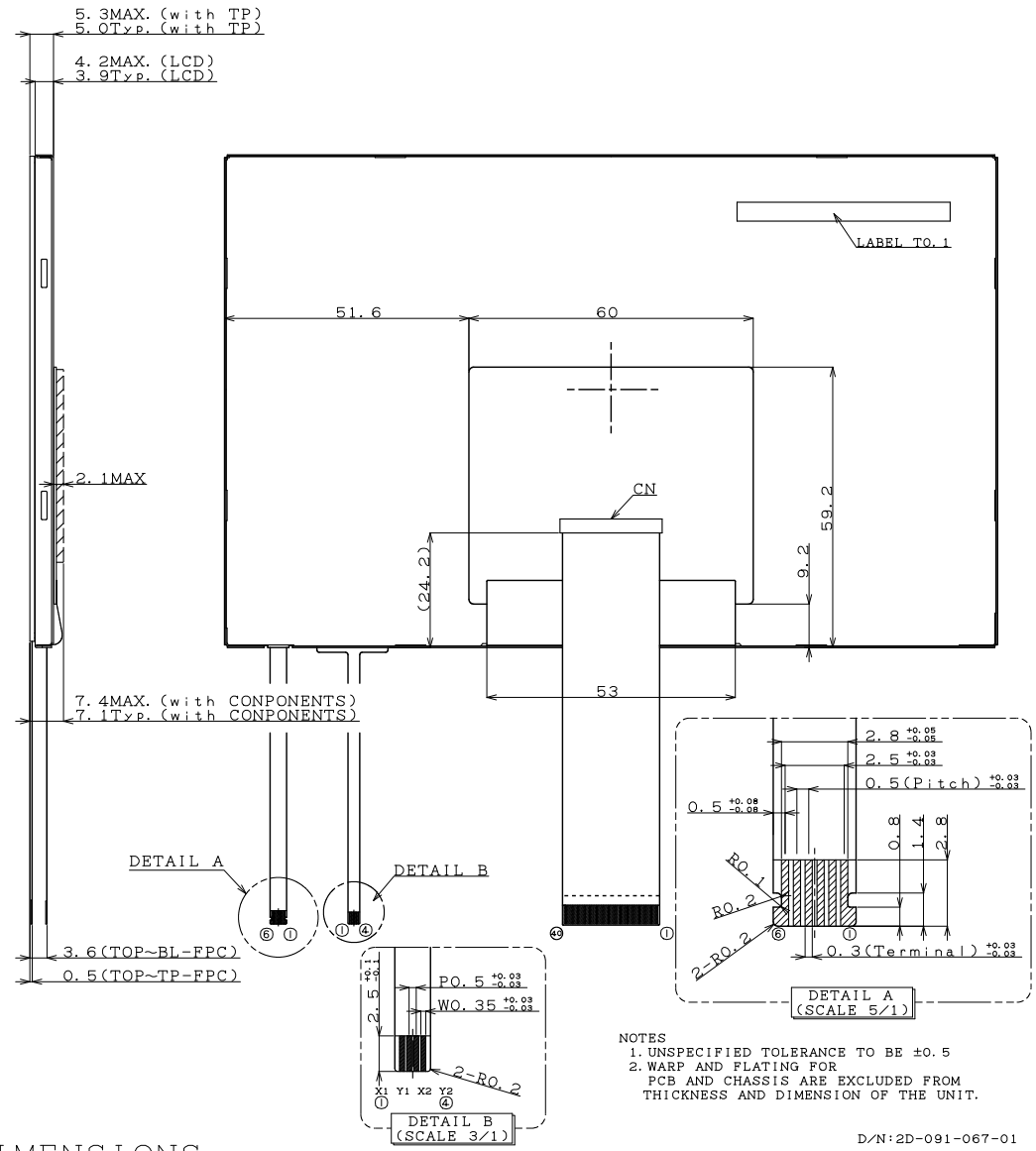
LCD Module

Display

Tray

Tray (Empty)

Protection bag

Tape

6 trays

20pcs/bag (1tray :empty
          5trays:full of module (4pcs))

Inside Sleeve

Outside Sleeve

(※)
2 Sleeve/carton
=40pcs/carton

OPP Tape

Master Carton

<Final form>

OPP Tape

Label

SHARP

225

380

575

Fig 2. Packing form

163.2 +0.3 -0.3
162.2(TP)
155.4MAX(TP Gascket Area)   (3.9)
(154.4)(TP View Area)   (4.4)
153.4MIN(TP Key Area)   (4.9)
152.4(LCD A/A)   (5.4)

0.7

81.6

5.3MAX.(with TP)
5.0Typ.(with TP)

4.2MAX.(LCD)
3.9Typ.(LCD)

Active Area Center

LABEL T0.1

51.6   60

104 +0.3 -0.3 (TP)
102.4(TP)
94.44MAX(TP Gascket Area)
(93.44)(TP View Area)
92.44MIN(TP Key Area)
91.44(LCD A/A)
49.52

2.1MAX

CN

(24.2)

59.2

9.2

53

1.3
(7.26)
(7.76)
(8.26)
(8.76)

1.5MAX

58.38 +0.5 -0.5
6(Stiffener)

59.63

I/F-FPC

TP-FPC

BL-FPC

2-58.33 +0.5 -0.5

7.4MAX.(with CONPONENTS)
7.1Typ.(with CONPONENTS)

2.8 +0.05 -0.05
2.5 +0.03 -0.03
0.5(Pitch) +0.03 -0.03

0.5 +0.08 -0.08

0.8
1.4
2.8

R0.1
R0.2
2-R0.2

0.3(Terminal) +0.03 -0.03

DETAIL A
(SCALE 5/1)

DETAIL A

DETAIL B

20.5 +0.1 -0.1

2.5 +0.1 -0.1

3.5 +0.1 -0.1

9.6 +0.5 -0.5

26.05 +0.5 -0.5

81.6 +0.5 -0.5

3.6(TOP~BL-FPC)
0.5(TOP~TP-FPC)

P0.5 +0.03 -0.03
W0.35 +0.03 -0.03
2.5

X1 Y1 X2 Y2

2-R0.2

DETAIL B
(SCALE 3/1)
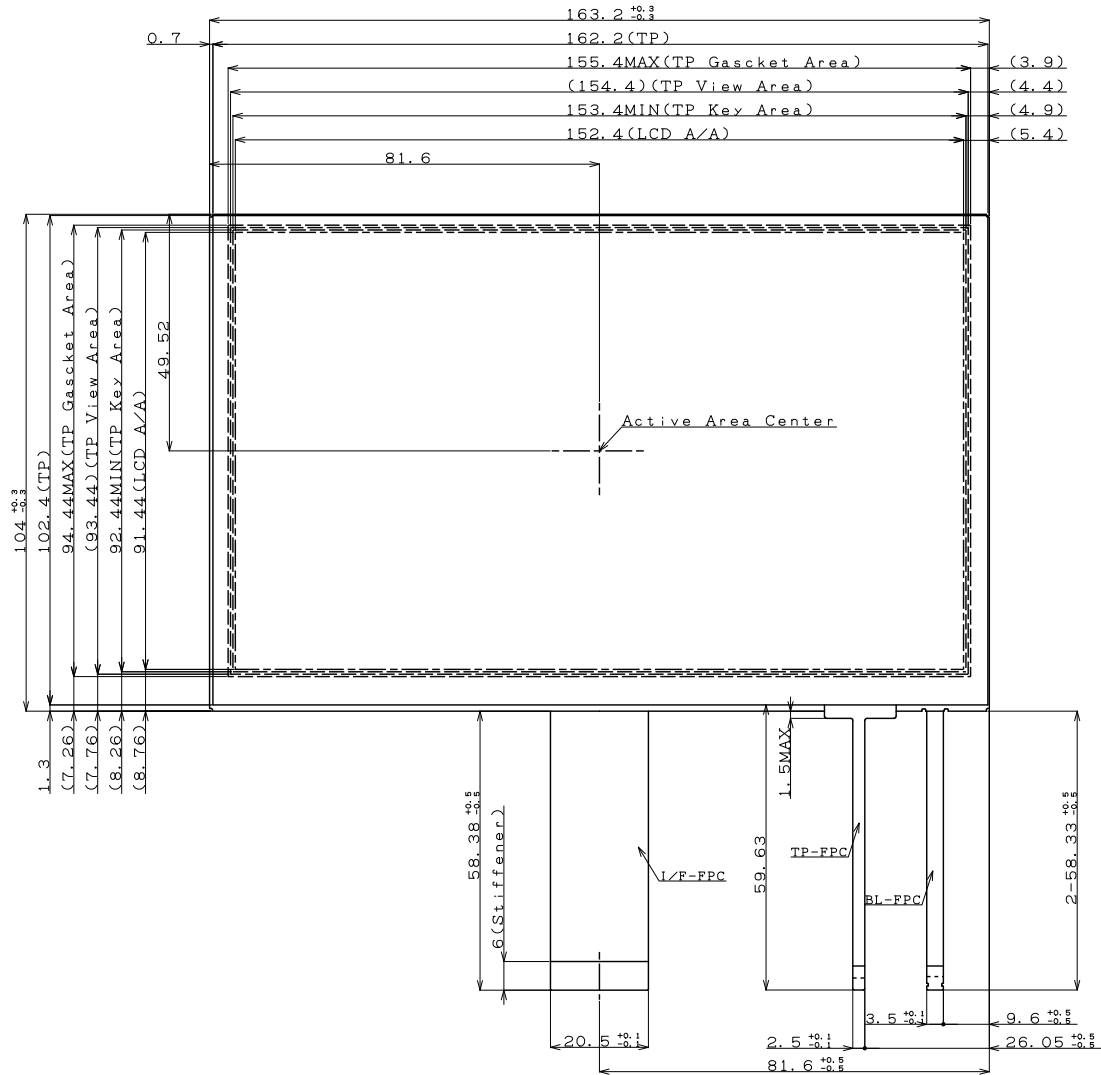
NOTES
1. UNSPECIFIED TOLERANCE TO BE ±0.5
2. WARP AND FLATING FOR
   PCB AND CHASSIS ARE EXCLUDED FROM
   THICKNESS AND DIMENSION OF THE UNIT.

Fig LQ070Y3DG3B OUTLINE DIMENSIONS

D/N:2D-091-067-01

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