SHARP

AVC Liquid Crystal Displays Group

LQ038Q5DR01

TFT-LCD Module

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DEVICE SPECIFICATION FOR

TFT - LCD module

MODEL No. LQ038Q5DR01

CUSTOMER'S APPROVAL

DATE _____

BY _____

PRESENTED

BY *H. Yakushigawa*

H.YAKUSHIGAWA
Department General manager
Engineering Department.2
Mobile LCD Design Center I
Mobile Liquid Crystal Display Group
SHARP CORPORATION

RECORDS OF REVISION

	NO.	PAGE	SUMMARY	NOTE
2000. 4.14		-	-	1st Issue
2001. 6. 6			NOTICE　　　　　　　　　[Addition] 　Lamp in the devices contain amount of 　mercury 　Note5-2　　　　　　　　[Change] 　Ta　65　　　Ta　60 　Backligt driving section　　[Addition] 　　Caution of Lamp voltage and current 　　wave form 　Note9-7　　　　　　　　[Deletion] 　　Caution of Lamp voltage and current 　　wave form 　Table 14　No.5　　　　　[Change] 　　Test condition Tp=　30　　Ta=　30	2nd Issue
2003.2.18	B	3	to modify the name of used connector from KX14-40K5D1 to KX14-40K5D-VI. to modify the name of fit connector from KX15-40K*D1 to KX15-40K*D-VI,KX15-40 K*D1 or KX15-40KLDL.	3rd Issue
2005.5.13	C		Adapted RoHs direction　　　　[Change] Adapted lead free PWB & Lamp Indicatin of lot number label　　[Change] 　LQ038Q5DR01 T　　　LQ038Q5DR01 A	4th Issue
2005.8.4	D	3　17	to modify the name of used connector from KX14-40K5D-VI to KX14-40K5D-VIE. Adapted RoHs direction　　　　[Change]	5th Issue
		14	Carton size　　　　　　　　[Correction] 　　483(W)× 166　H　× 314　D　mm 　　503(W)× 166　H　× 338　D　mm Total mass of one carton filled with full Modules. 7.7kg　7.5kg	

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1　Application

This specification literature applies to color TFT-LCD module , LQ038Q5DR01.

2　Summary and Features

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-PWB, FPC, frame, front shielding case, back-light unit.

Graphics and texts can be displayed on a 320× 3× 240 dots panel with 262,144 colors by supplying.

DC/AC inverter isn't composed.

The 3.8 screen produces a high resolution image that is composed of 76,800 pixel elements in a stripe arrangement.

Wide viewing angle technology is employed. (The most suitable viewing angle is in the 6 o'clock direction.)

By adopting an active matrix drive, a picture with high contrast is realized.

Through the use of TN-normally white mode, an image with highly natural color image is realized.

It is used the Low-reflection (LR) and an antiglare (AG) surface polarization plate.

An inverted video display in the vertical and horizontal directions is possible.

3　Mechanical specifications

table 3-1

Parameter	Specifications	Units	Remarks
Display format	76,800	pixels	
	320(W)× RGB× 240(H)	dots	
Active area	78.72　W　× 53.64　H	mm	
Screen size (Diagonal)	9.6　[3.8"]	cm	
Dot pitch	0.082　W　× 0.2235　H	mm	
Pixel configuration	R,G,B Stripe configuration		
Outline dimension	117.6× 69.45× 13.45	mm	Note3-1
Mass	125± 10		
Surface treatment	AG+LR		

Note 3-1

Typical values are given. For detailed measurements and tolerances, please refer to Fig. 1.

Input terminal

4-1   TFT-LCD panel driving part

Used connector   :KX14-40K5D-VIE(JAE Co. , Ltd)

Fit connector   :KX15-40K   D-VI , KX15-40K   D1 or KX15-40KLDL (JAE Co. , Ltd)

(lock type) :   :2,3,

Table 4-1

CN1   Note4-4

Pin No.	Symbol	Description	Remarks
		ground	
		Power supply voltage	
	sync	Horizontal synchronous signal	Note4-1
		GREEN data signal	
		thermistor output1	
		GREEN data signal	
		thermistor output2	
		GREEN data signal(MSB)	
		Selection for horizontal and vertical scanning direction	Note4-3
		ground	
		ground	
		BLUE data signal(LSB)	
		Clock signal for sampling each data signal	
		BLUE data signal	
		ground	
		BLUE data signal	
		RED data signal(LSB)	
		ground	
		RED data signal	
		BLUE data signal	
		RED data signal	
		BLUE data signal	
		ground	
		BLUE data signal(MSB)	
		RED data signal	
		ground	
		RED data signal	
	sync	Vertical synchronous signal	Note4-1
		RED data signal(MSB)	
		Open use only	
		Ground	
		Open use only	
		GREEN data signal(LSB)	
		Open use only	
		GREEN data signal	
		Open use only	
		GREEN data signal	
		Signal to settle the horizontal display position	Note4-2
		Power supply voltage	
		ground	

Note 4-1

Hsync	positive
Vsync	positive

Note 4-2

The horizontal display start timing is settled in accordance with a rising timing of ENAB signal. In case ENAB is fixed "Low", the horizontal start timing is determined as described in Fig3-A.

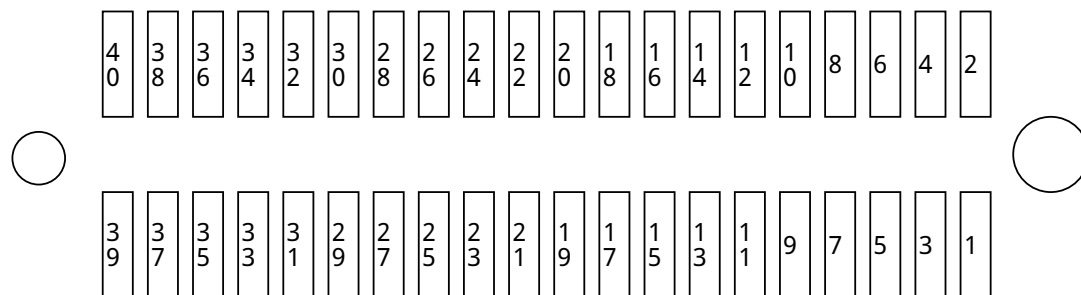(Don't keep ENAB "High" during operation.(Fig3-B).)

Note 4-3

HVR = "Low" : Regular video

HVR = "High" : Horizontally and Vertically inverted video

Note 4-4

The position of pin number

4-2   Back-light fluorescent tube driving part

Used connector:BHR-02(8.0)VS-1N(JST Co. ,Ltd)

Fit connctor:SM02(8.0)B-BHS-1N(JST Co. ,Ltd)

Table 4-2

No.	Symbol	/o	Function	Color of FL cable
1	VL1	I	input terminal (High Voltage)	RED
2	VL2	I	input terminal (Low Voltage)	BLACK

Used thermistor :203GT 1(Ishizuka electoronics Corporation)=20.0k ±   %

5   Absolute maximum ratings

Table 5-1

Parameter	Symbol			Unit	Note
Input voltage	V_I	-0.3	VCC+0.3	V	Note 5-1 Ta=25
+3.3V power supply	VCC	0	5.5		Ta=25
Storage temperature	stg	- 40	+95		Note 5-2
Operating temperature panel surface	opr1	- 30	+85		Note 5-2
Operating temperature Ambient temperature	opr2	- 30	+60		Note 5-2

Note 5-1   CK,R0 R5,G0 G5,B0 B5,Hsync,Vsync,ENAB,HVR

Note 5-2   Humidity:95%RH Max. at Ta   60

Maximum wet-bulb temperature is less than at 58   at Ta>60 .

Condensation of dew must be avoided as electrical current leaks will occur, causing a

Degradation of performance specifications.

6 Electrical characteristics

6-1 TFT-LCD panel driving section

Table 6-1

Parameter		Symbol				Unit	Remarks
+3.3V	Supply voltage	Vcc	+2.9	+3.3	+3.7	V	Note 6-1
	Current dissipation	I cc		140	180	mA	Note 6-2,3
Permissive input ripple		V_{RF}			100	mVpp	
Input Low voltage		V_{IL}			0.3VCC	V	Note 6-4
Input High voltage		V_{IH}	0.7VCC				
Input current (Low)		I_{IL}			1.0	μA	V_I=0V Note 6-5
Input current (High)		I_{IH}	3.0		75	μA	V_I=VCC Note 6-5
Input current (Low)		I_{IL}	3.0		75	μA	V_I=0V Note 6-6
Input current (High)		I_{IH}			1.0	μA	V_I=VCC Note 6-6
Input current (Low)		I_{IL}	6.0		150	μA	V_I=0V Note 6-7
Input current (High)		I_{IH}			2.0	μA	V_I=VCC Note 6-7

Note 6-1

On-off conditions for supply voltage

0<t1   10ms

0<t2   10ms

0<t3   1s

t4   1s
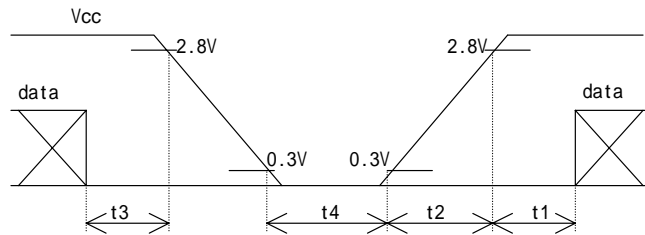
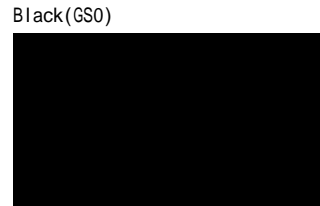Vcc-dip conditions

1) 2.8V   Vcc   3.0V

td   10ms

2) Vcc<2.8V

Vcc-dip conditions should also follow the on-off conditions.
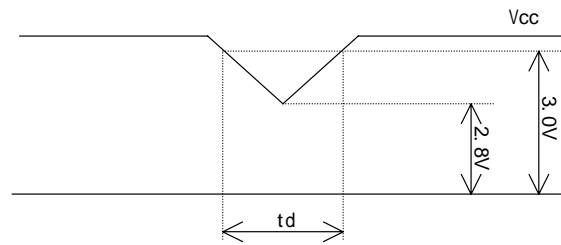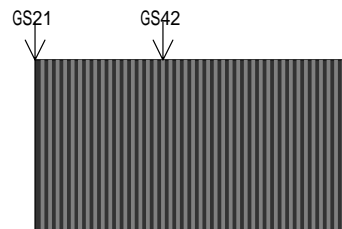

Note 6-2

Typical current situation: Black (GS0) pattern

Timing: Typical

VCC= +3.3 V

Black(GS0)

Note 6-3   Maximum current situation: Vertical stripe pattern alternating 21 gray scale (GS21) with 42 gray scale (GS42) every 1 dot.

Timing; Typical

VCC= +3.3 V

GS21   GS42

Note 6-4   CK,R0   R5,G0   G5,B0   B5,Hsync,Vsync,ENAB,HVR

Note 6-5   CK,R0   R5,G0   G5,B0   B5,Hsync,Vsync

Note 6-6   ENAB

Note 6-7   HVR

6-2   Backlight driving section

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

Table 6-2

Parameter	Symbol				Unit	Remarks
lamp voltage		470	530	590	Vrms	5.5mArms
lamp current		5.0	5.5	6.0	mArms	ordinary state
				9.0	mArms	PWM dimming state Note 6-8
lamp frequency		30		60	kHz	
kick-off voltage				1650	Vrms	Ta=+25
				1700	Vrms	Ta=-30

Inverter   HIU-288 [Harison electric co.,ltd] (Output capasitor:22pF,frequency:49kHz)

Note 6-8   available area
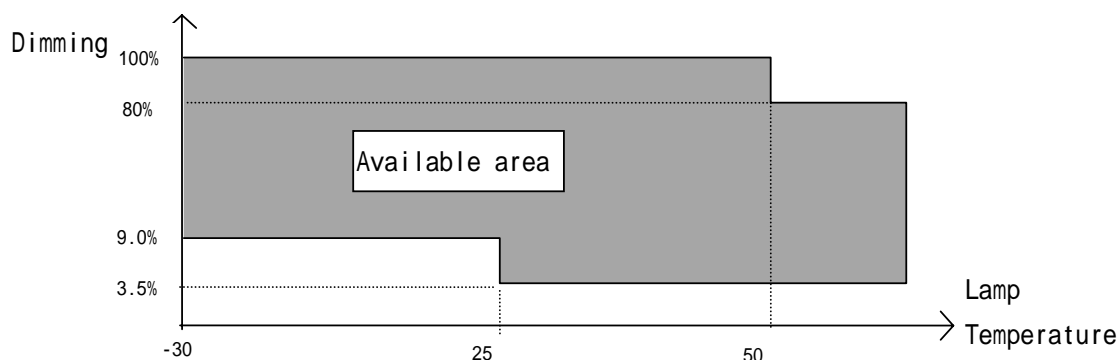
* Please turn on the lamp with symmetrical (negative and positive)voltage and current wave form.
Don't use the unsymmetrical voltage and current wave which have spike wave.

7   Timing Characteristics of input signals

Timing diagrams of input signal are shown in Fig.3-A, Fig.3-B.

7-1   Timing characteristics

Table 7-1

Parameter		Symbol	MIN	TYP	MAX	Unit	Remarks
Clock	frequency	1/Tc	4.5	6.3	6.8	MHz	
	High time	Tch	50			ns	
	Low time	Tcl	50			ns	
Data	Setup time	Tds	50			ns	
	Hold time	Tdh	50			ns	
Hsync-Clock phase difference		THc	50		120	ns	
Hsync-Vsync phase difference		TVh	0		TH-10	μ s	

Note) In case of lower frequency, the deterioration of display quality, flicker etc., may be occurred.

7-2 Horizontal display position

In case ENAB is active

The horizontal display position is determined by ENAB signal and the input data corresponding to the rising edge of ENAB signal is displayed at the left end of the active area. (shown in Fig.3-A.)

Parameter		symbol	Min.	Typ.	Max.	Unit	Remark
Horizontal sync. signal	Cycle	TH	50	63.5	80	μ s	
			THe+308	400	440	clock	
	Pulse width	THp	4	12	30	clock	
Enable signal	Setup time	Tes	50		Tc 10	ns	
	Pulse width	Tep		320		clock	
Hsync-Enable signal phase difference		THe	14		72	clock	
Horizontal display period		THd	320	320	320	clock	

In case ENAB is "Low" . (shown in Fig.3-B)

Parameter		symbol	Min.	Typ.	Max.	Unit	Remark
Horizontal sync. signal	Cycle	TH	56	63.5	80	μ s	
			380	400	440	clock	
	Pulse width	THp	4	12	30	clock	
Hsync-data signal phase difference		THe	72	72	72	clock	
Horizontal display period		THd	320	320	320	clock	

7-3 Vertical display position

Parameter		Symbol	MIN	TYP	MAX	Unit	Remarks
Vertical sync. signal	Cycle	TV	246	263	330	line	
	Pulse width	TVp	1			line	
Vertical display start position		TVs	6	6	6	line	
Vertical display period		TVd	240	240	240	line	

ENAB signal has no relation to the vertical display position.

7-4 Input Data Signals and Display Position on the screen
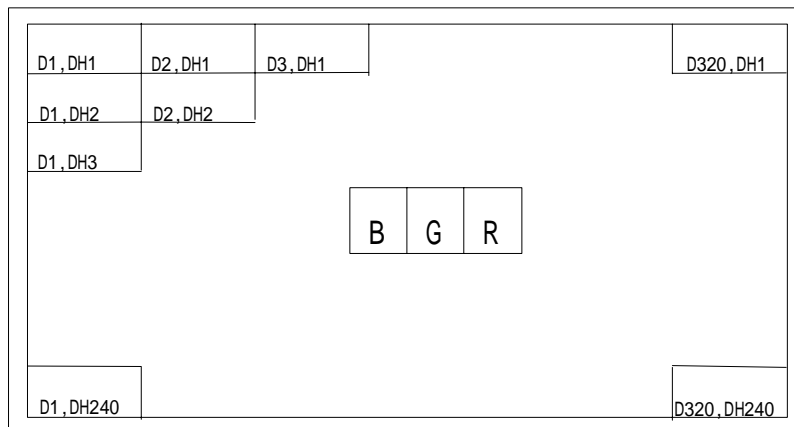
Display position of input data (H,V)

Input Signals, Basic Display Color 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 bleu	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.

9 Optical characteristics

Table 9-1   Ta=+25 , VCC=+3.3V

Parameter		Symbol	Condition	Min	Typ	Max	Unit	Remarks
Viewing angle range		11		60	65		° (degree)	Note 9-1,4
		12	CR 5	35	40		° (degree)	
		2		60	65		° (degree)	
Contrast ratio		CRmax	Optimal	100				Note 9-2,4
Response time	Rise	r	°		30	60	ms	Note 9-3,4
	Fall	d			50	100	ms	
Luminance		Y	IL=5.5mArms	350	450		cd/m²	Note 9-5
White chromaticity		x	IL=5.5mArms	0.263	0.313	0.363		
		y	IL=5.5mArms	0.279	0.329	0.379		
lamp life time	+25	-	continuation	20,000			hour	Note 9-6
	-30	-	intermission	2,000			time	Note 9-7

DC/AC inverter for external connection shown in following.

Inverter HIU-288 [Harison electric co.,ltd] (Output capasitor:22pF,frequency:49kHz)
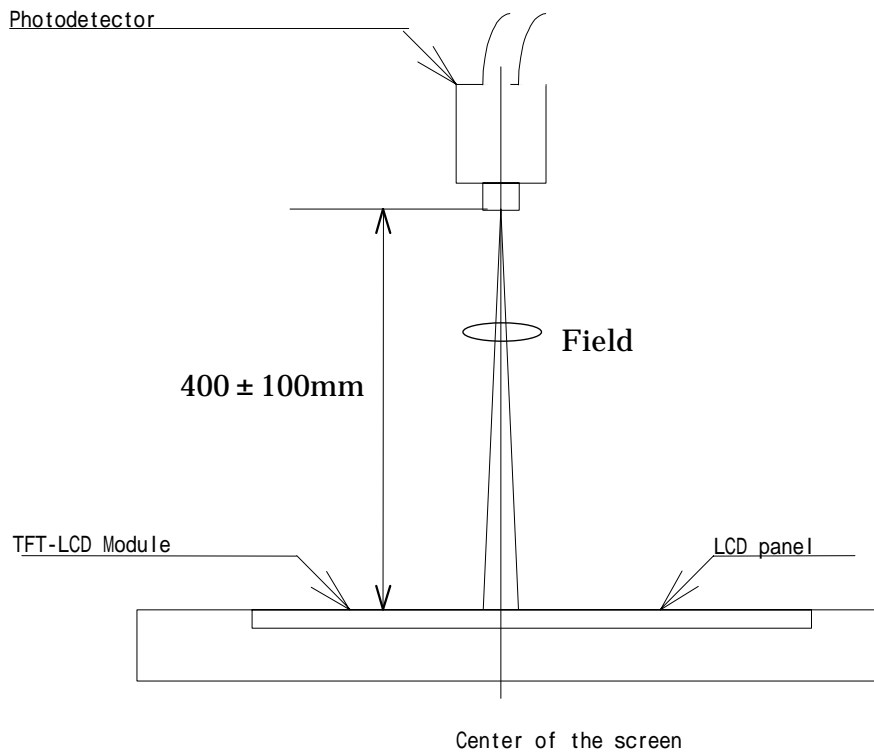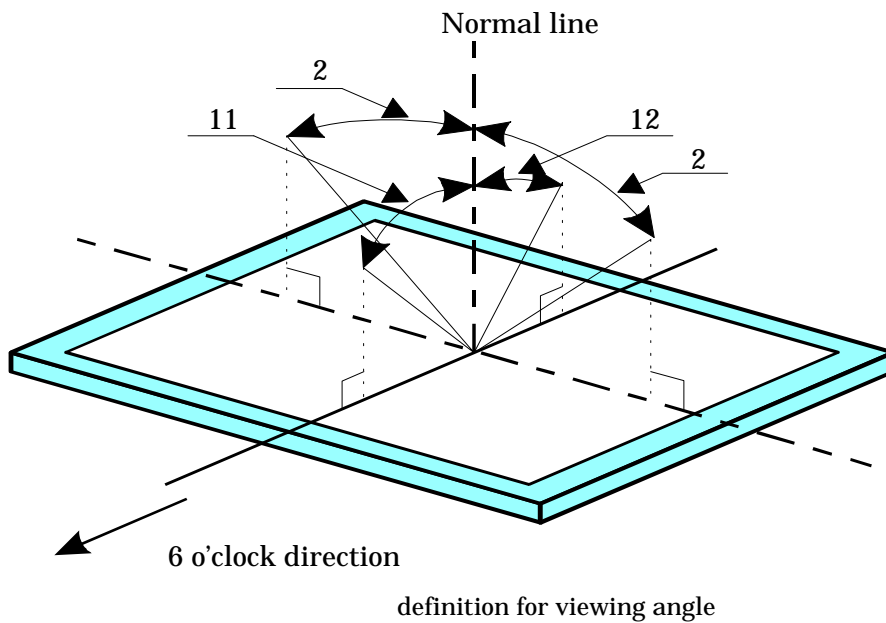
measuring after operating during 30minutes.

Fig.9-1 Optical characteristics measurement method

Note 9-1   Viewing angle range is defined as follows.

Normal line

2

11

12

2

6 o'clock direction

definition for viewing angle

Note 9-2   Contrast ratio is defined as follows:

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

Note 9-3   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".

White   Black   White

Photodetecter output
(arbitrary unit)

Time
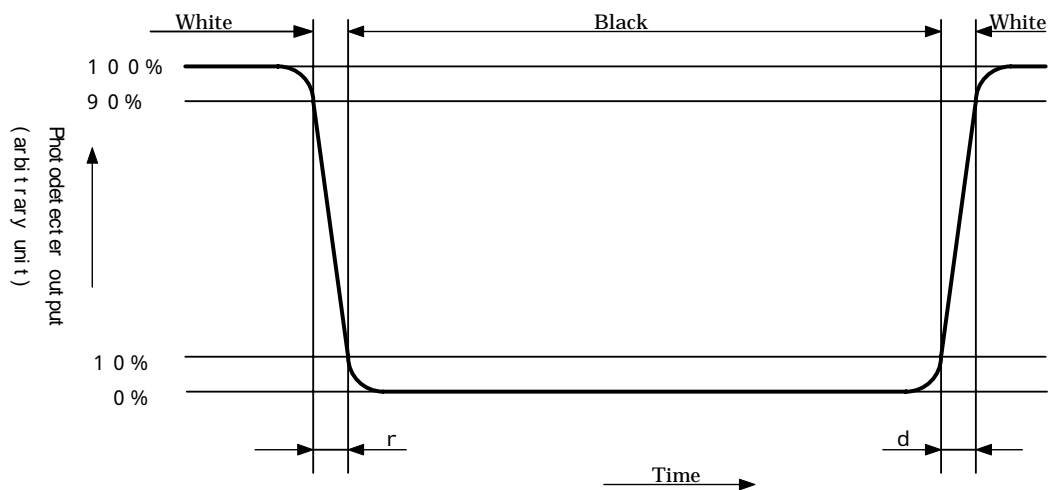
Note 9-4   Measured on the center area of the panel at a viewing cone 2° (= Filed) by
TOPCON luminance meter BM-5A or ELDIM luminance meter EZ Contrast.
(After 30 minutes operation)
    DC/AC inverter driving frequency:(49 kHz)

Note 9-5   Measured on the center area of the panel at a viewing cone 1° (= Filed) by
   TOPCON luminance meter BM-7.(After 30 minutes operation)
    DC/AC inverter driving frequency:(49 kHz)

Note 9-6   Lamp life time is defined as the time when either or occurs in the continuous
operation under the condition of lamp current IL=5.5mArms
    Brightness not to become under 50% of the original value.

Note 9-7   The intermittent cycles is defined as a time when brightness not to become under 50%
of the original value under the condition of following cycle.

Ambient temperature:-30

HIGH(9mArms)

OFF

5min   5min   5min   5min
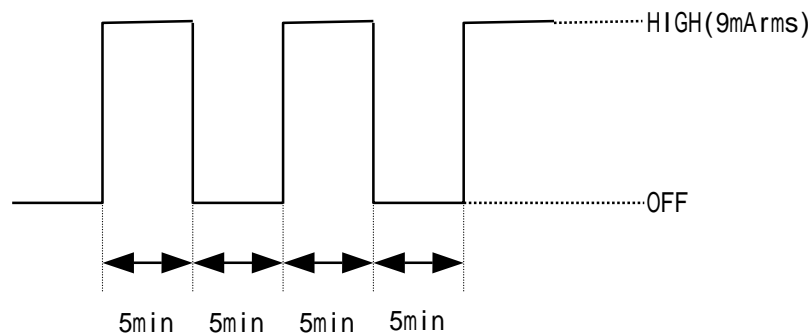
10   Mechanical characteristics

10-1   External appearance

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

10-2   Panel toughness

The panel shall not be broken ,when 19N is pressed on the center of the panel by a   smooth sphere having 15 mm diameter.

Caution: In spite of very soft toughness, if, in the long-term, add pressure on the   active area, it is possible to occur the functional damage.

10-3   Input/output connector performance

I/O connector of backlight driving circuit   JST

Lump connector

Symbol	Used Connector	Corresponding connector
CN A, B	BHR-02(8.0)VS-1N	SM02(8.0)B-BHS-1N(assembled on PWB) SM02(8.0)B-BHS-TB(assembled on PWB)
		BHMR-03V (interconnecter)

11   Display quality

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

12   Handling instructions

12-1   Mounting of module

The TFT-LCD module is designed to be mounted on equipment using the mounting tabs in the four corners of the module at the rear side.

On mounting the module, as the M2.6 tapping screw fastening torque is 0.3 through 0.5N m is recommended, be sure to fix the module on the same plane, taking care not to wrap or twist the module.

Don't reach the pressure of touch-switches of the set side to a module directly, because images may be disturbed.

Please power off the module when you connect the input/output connector.

Please connect the metallic shielding cases of the module and the ground pattern of the inverter circuit surely.   If that connection is not perfect, there may be a possibility that the following problems happen.

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.

12-2 Precautions in mounting
    Polarizer which is made of soft material and susceptible to flaw must be handled carefully.
    Protective film (Laminator) is applied on the surface to protect it against scratches and dirties.
It is recommended to peel off the laminator immediately before the use, taking care of static
electricity.
    Precautions in peeling off the laminator

  A) Working environment
      When the laminator is peeled 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 1M   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 laminator part near discharging blower so as to protect
          polarizer against flaw.
        c) Peel off laminator, pulling adhesive tape slowly to your side taking 5 or more second.
        d)On peeling off the laminator, 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.

discharging blower less than 20cm module	Direction of wind of blower Adhesive tape backlight cable
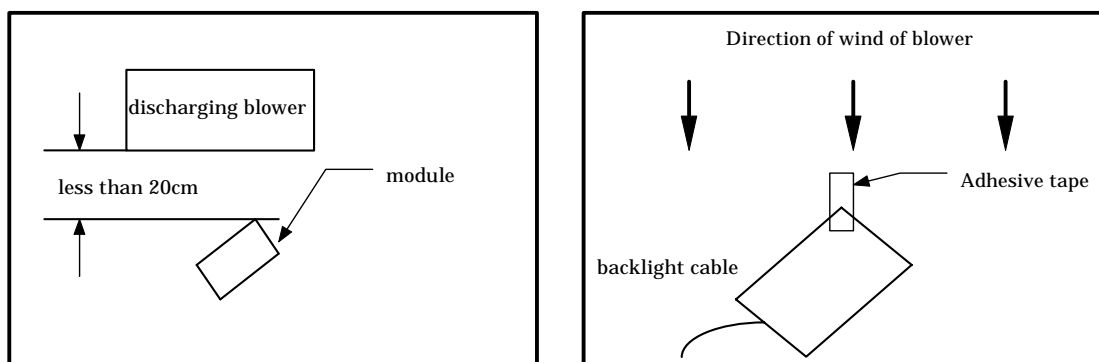
    But when the panel has stain or grease, we recommend to use adhesive tape to softly   remove
them from the panel.
    When metal part of the TFT-LCD module (shielding lid and rear case) is soiled, wipe it with soft
dry cloth. For stubborn dirties, wipe the part, breathing on it. Wipe off water drop or finger grease
immediately.   Long contact with water may cause discoloration or spots. TFT-LCD module uses
glass which breaks or cracks easily if dropped or bumped on hard surface. Handle with care. Since
CMOS LSI is used in this module, take care of static electricity and earth your body when handling.

12-3   Precautions in adjusting module
   Adjusting volumes on the rear face of the module have been set optimally before shipment.
Therefore, do not change any adjusted values.   If adjusted values are changed, the specifications
described here may not be satisfied.

12-4   Caution of product design
   The LCD module shall be protected against water salt-water by the waterproof cover.
   Please take measures to interferential radiation from module, to do not interfere surrounding
appliances.

12-5   Others
   Do not expose the module to direct sunlight or intensive ultraviolet rays for many hours;   liquid
crystal is deteriorated by ultraviolet rays. 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. The voltage of beginning electric discharge may over the
normal voltage because of leakage current from approach conductor by to draw lump read lead line
around. 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. Observe all other
precautionary requirements in handling general electronic components.

13   Packing form (shown in Fig.5.)
Piling number of cartons   : MAX 10
Package quantity in one carton   : 50 pcs
Carton size   : 503 (W)× 166 (H)× 338 (D) mm
Total mass of one carton filled with full modules   : 7.5kg
Conditions for storage.
      Environment
            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 alkali which bites electronic
                                     components and/or wires, must not be detected.
            Period   : about 3 months
            Opening of the package : In order to prevent the LCD module from breakdown by
                                     electrostatic charges, please control the room humidity
                                     over 50%RH and open the package taking sufficient
                                     countermeasures against electrostatic charges, such as
                                     earth, etc.

14   Reliability test
   Reliability test conditions for the TFT-LCD module are shown in Table 14.

15   Others
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.
Disassembling the module can cause permanent damage and should be strictly avoided.
Please be careful since image retention may occur when a fixed pattern is displayed for a long time.

15-1   Indication of lot number

Attached location of the label   : See Fig. 1

Indicated contents of the

LQ038Q5DR01 A

model No.   lot No.

contents of lot No.   the 1st figure   production year   (ex. 2005 : 5)
the 2nd figure   production month   1,2,3,   ,9,X,Y,Z
the 3rd   8th figure   serial No.   000001
the 9th figure   revision marks   A,B,C

Reliability Test Conditions for TFT-LCD Module

Table 14

Remark) Temperature condition is based on operating temperature conditions on (5)-Table 5-1.

No.	Test items	Test conditions
	High temperature storage test	Ta= +95 240h
	Low temperature storage test	Ta= 40 240h
	High temperature and high humidity operating test	Tp= +60 , 95%RH 240h
	High temperature operating test	Tp= +85 240h
	Low temperature operating test	Ta= 30 240h
	Electro static discharge test	± 200V 200pF(0) 1 time for each terminals
	Shock test	980m/s² 6ms, ± X ± Y ± Z 3 times for each direction JIS C0041, A-7 Condition C)
	Vibration test	Frequency range 8 33.3Hz Stroke 1.3mm Sweep 33.3Hz 400Hz Acceleration 28.4m/s² Cycle 15 minutes X,Z 2 hours for each directions, 4 hours for Y direction (total 8 hours) caution JIS D1601
	Heat shock test	Ta= -40 +95 / 200 cycles (0.5h) (0.5h)

Note   Ta= Ambient temperature, Tp= Panel temperature

Check items   In the standard condition, there shall be no practical problems that may affect   the display function.

caution   X,Y,Z directions are shown as follows:
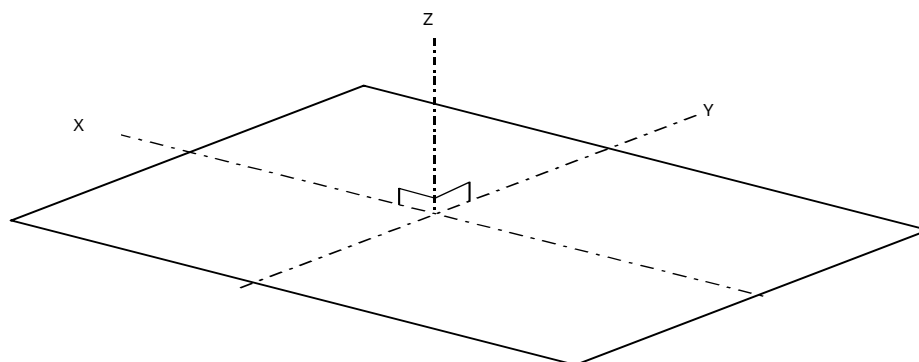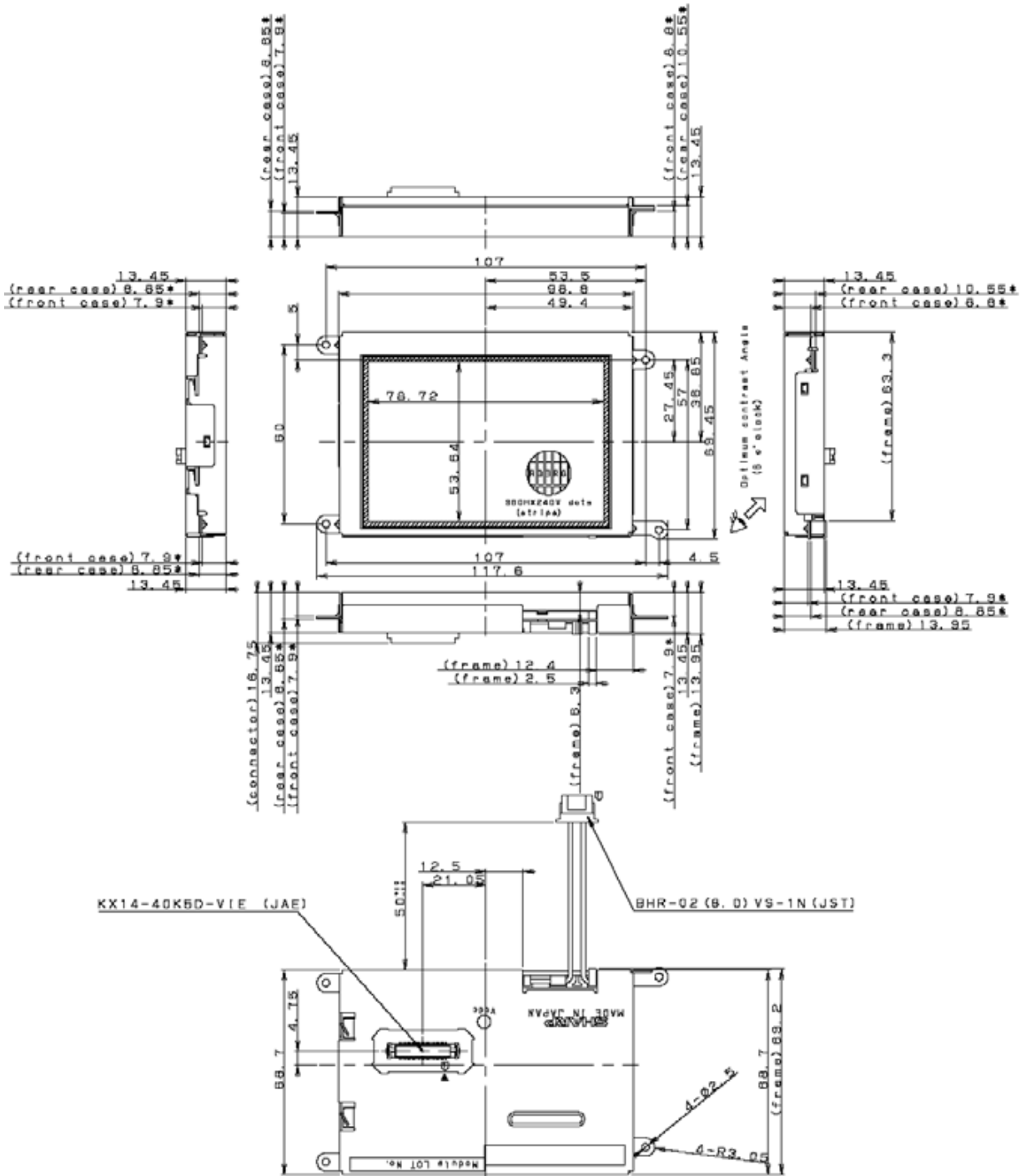
note1) General tolerance is ±0.3
note2) Unit is mm
note3) The dimension marked * shows
        the base of mounting tab
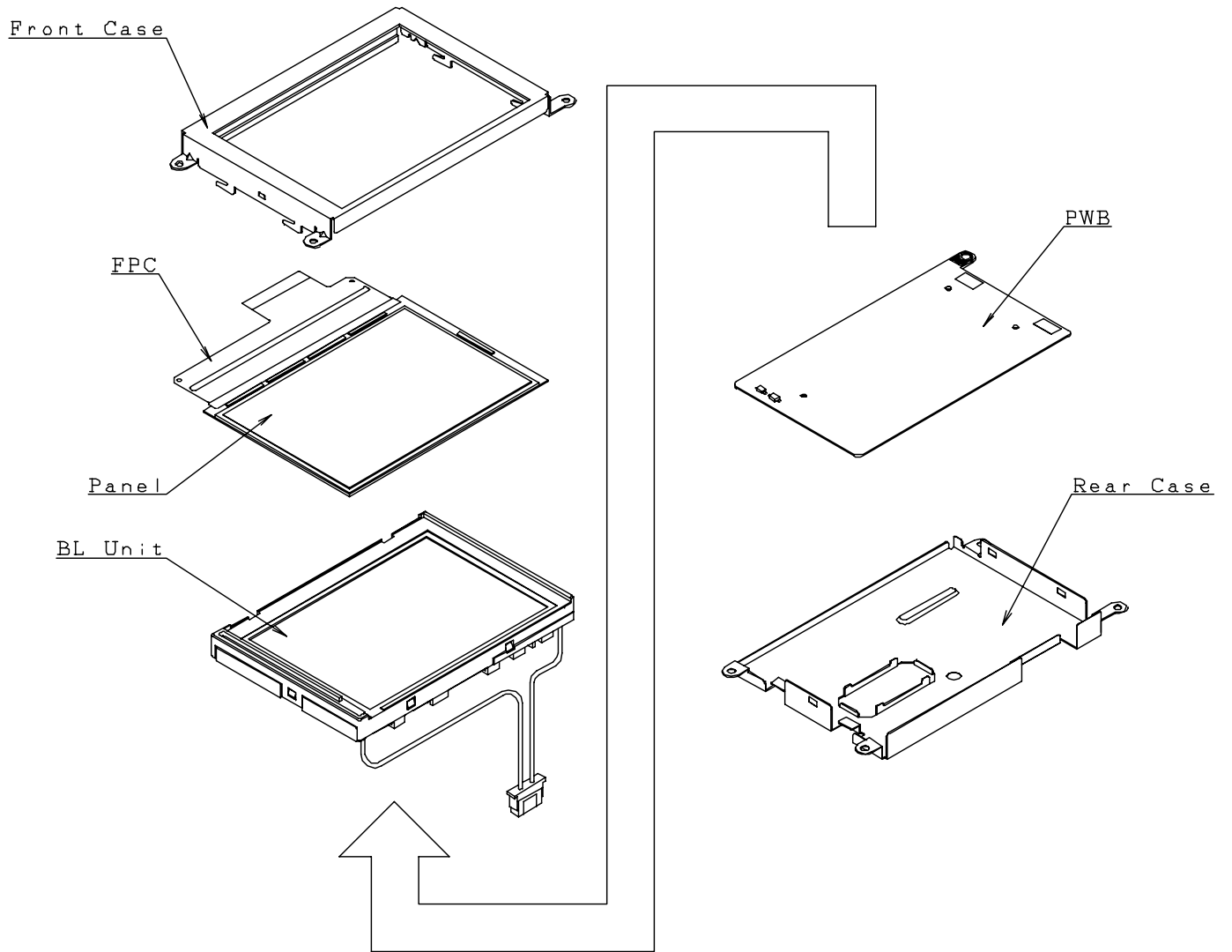
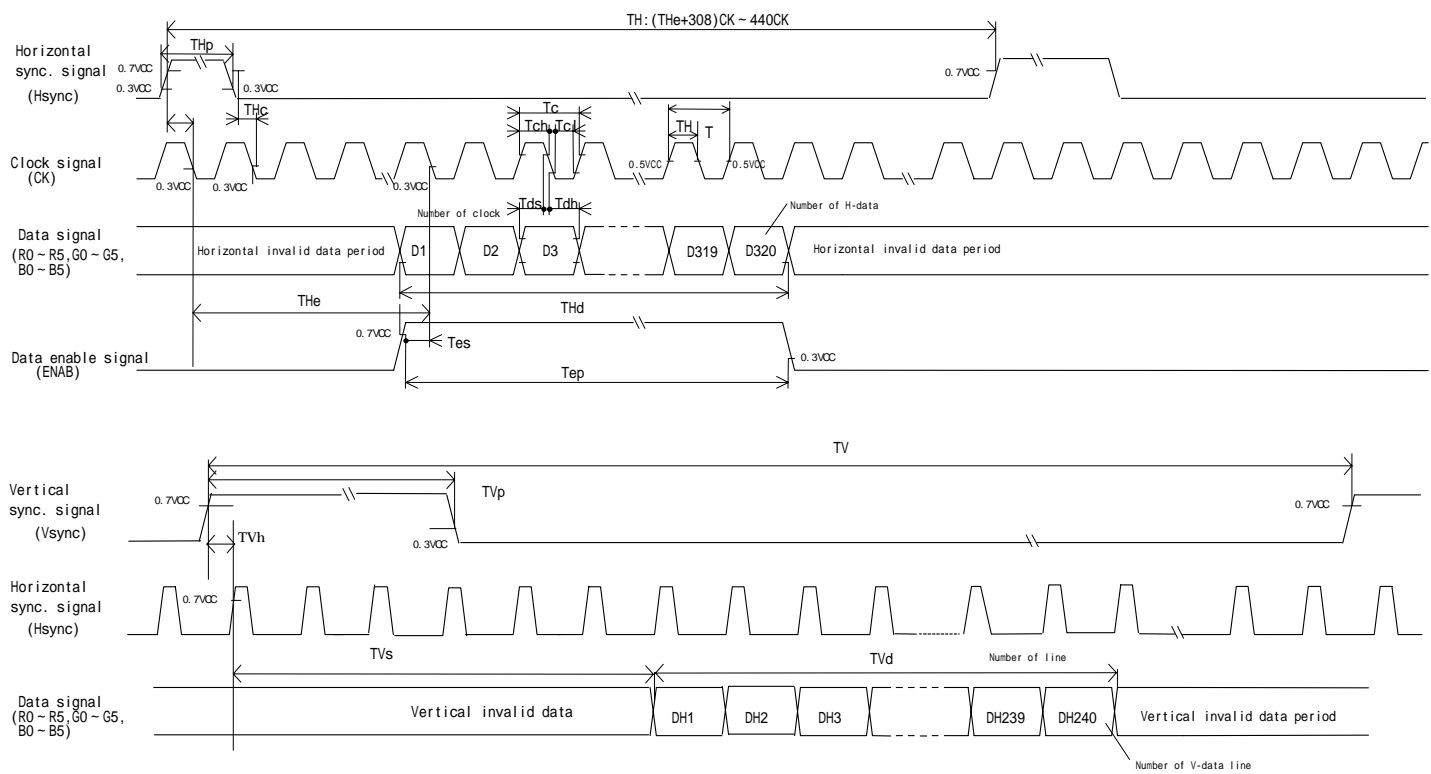OUTLINE DIMENSIONS of LQ038Q5DR01

2005.8.3
No:LCM-00040A

Front Case

FPC

Panel

BL Unit

PWB

Rear Case

Fig.2. Structure of the module

Fig.3-A Input signal waveform

Fig.3-B Input signal waveform

Master carton

Caution mark
is upside

Tape

SHARP

Tray

LCD Modul

Tray

Tape

Maximum 50 units
per 1 carton

Model No.

Lot No. (date)

Quantity

Caton No.

バーコードラベル

Fig.4.Packing form

SHARP

LCP-00000-1

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SHARP®

NORTH AMERICA

SHARP Microelectronics of the Americas
5700 NW Pacific Rim Blvd.
Camas, WA 98607, U.S.A.
Phone: (1) 360-834-2500
Fax: (1) 360-834-8903
Fast Info: (1) 800-833-9437
www.sharpsma.com

EUROPE

SHARP Microelectronics Europe
Division of Sharp Electronics (Europe) GmbH
Sonninstrasse 3
20097 Hamburg, Germany
Phone: (49) 40-2376-2286
Fax: (49) 40-2376-2232
www.sharpsme.com

JAPAN

SHARP Corporation
Electronic Components & Devices
22-22 Nagaike-cho, Abeno-Ku
Osaka 545-8522, Japan
Phone: (81) 6-6621-1221
Fax: (81) 6117-725300/6117-725301
www.sharp-world.com

TAIWAN

SHARP Electronic Components
(Taiwan) Corporation
8F-A, No. 16, Sec. 4, Nanking E. Rd.
Taipei, Taiwan, Republic of China
Phone: (886) 2-2577-7341
Fax: (886) 2-2577-7326/2-2577-7328

SINGAPORE

SHARP Electronics (Singapore) PTE., Ltd.
438A, Alexandra Road, #05-01/02
Alexandra Technopark,
Singapore 119967
Phone: (65) 271-3566
Fax: (65) 271-3855

KOREA

SHARP Electronic Components
(Korea) Corporation
RM 501 Geosung B/D, 541
Dohwa-dong, Mapo-ku
Seoul 121-701, Korea
Phone: (82) 2-711-5813 ~ 8
Fax: (82) 2-711-5819

CHINA

SHARP Microelectronics of China
(Shanghai) Co., Ltd.
28 Xin Jin Qiao Road King Tower 16F
Pudong Shanghai, 201206 P.R. China
Phone: (86) 21-5854-7710/21-5834-6056
Fax: (86) 21-5854-4340/21-5834-6057
Head Office:
No. 360, Bashen Road,
Xin Development Bldg. 22
Waigaoqiao Free Trade Zone Shanghai
200131 P.R. China
Email: smc@china.global.sharp.co.jp

HONG KONG

SHARP-ROXY (Hong Kong) Ltd.
3rd Business Division,
17/F, Admiralty Centre, Tower 1
18 Harcourt Road, Hong Kong
Phone: (852) 28229311
Fax: (852) 28660779
www.sharp.com.hk
Shenzhen Representative Office:
Room 13B1, Tower C,
Electronics Science & Technology Building
Shen Nan Zhong Road
Shenzhen, P.R. China
Phone: (86) 755-3273731
Fax: (86) 755-3273735