

TFT-Display Datenblatt

Modell OT070FGDDDV-00

Kurzdaten

Hersteller	ONation
Diagonale	7,0" / 17,8 cm
Format	wide
Auflösung	800 x 480
Backlight	LED / 320 cd/m ²
Interface	RGB
Touchscreen	nein
Temperatur	-20... +70°C (Betrieb)

ONation Corporation

CUSTOMER'S APPROVAL SPECIFICATIONS

MODEL: OT070FGDDDV-00
(Complied with RoHS)

CUSTOMER: _____

Version:P0.4

C O N T E N T S

ISSUE:August.12.2011

Spec Condition: preliminary

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CUSTOMER	ONATION		
APPROVAL	APPROVAL	CHECKER	PREPARE
	ch lee	ch lee	kevin

2.RECORD OF REVISION

Rev	DATE	PAGE	SUMMARY
0.1	2008.10.30	ALL	Preliminary specification was first issued
0.2	2008.11.11	14	ADD 12.PACKAGE METHOD
0.3	2008.11.13	3~4	ADD REMARK TO EXPLAIN
0.4	2011.08.12	ALL	MODIFY THE SPECIFICATION NAME SD0700T10→OT070FGDDDV-00

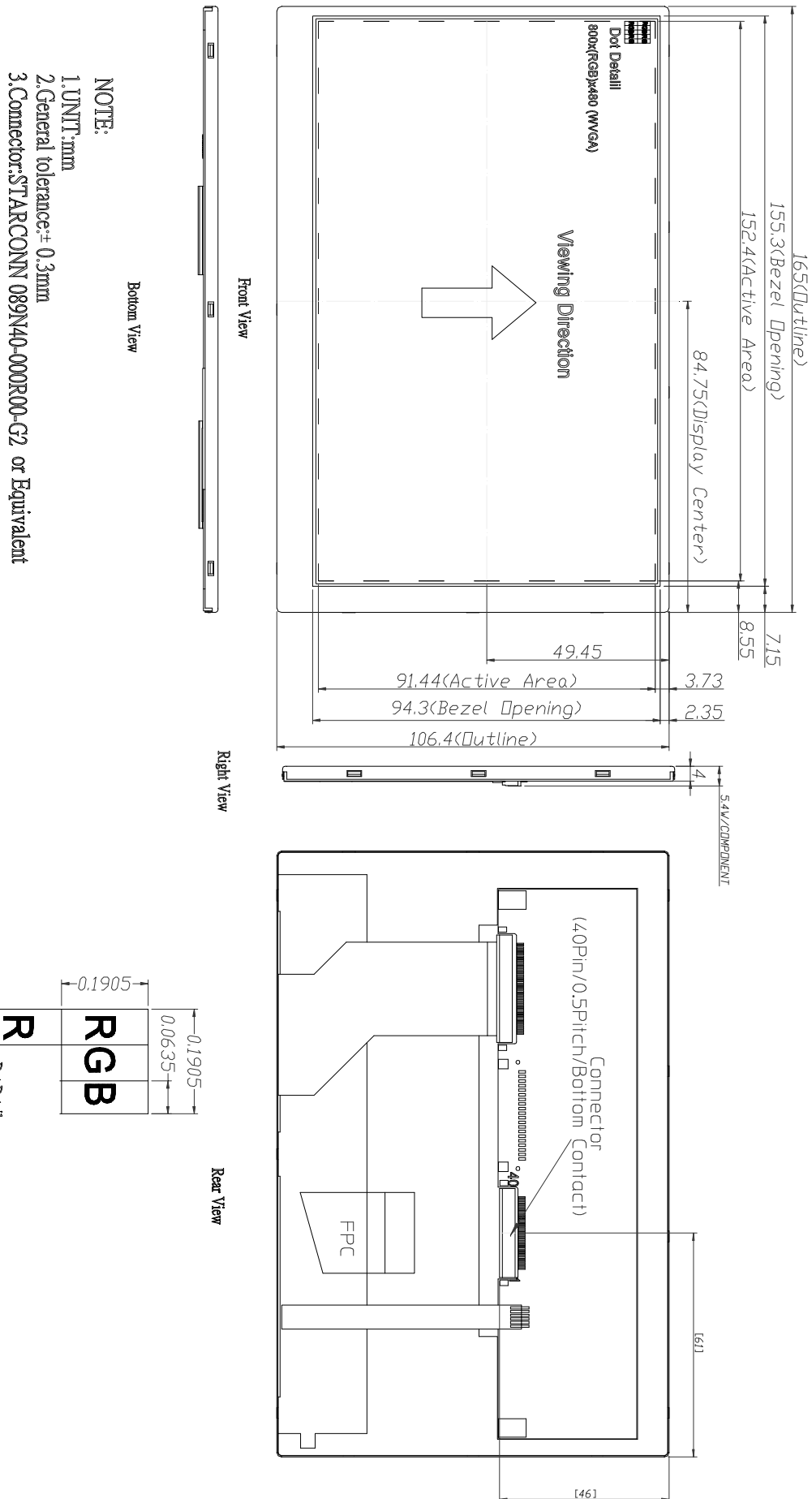
3.MECHANICAL SPECIFICATIONS

(1)	Number Of Dots (Dots)	800(R.G.B) X 480
(2)	Module Size(mm)	165.0(W) X 106.4(H) X 5.4(D) (**)
(3)	Active Area(mm)	152.4(H) X 91.44(V)
(4)	Pixel Size(mm)	0.0635(H) X 0.1905(V)
(5)	Pixel Pitch(mm)	0.1905(H) X 0.1905(V)
(6)	LCD / Polarizer Model	TFT , Transmissive, Normally/White, Anti-glare
(7)	Backlight Color	LED , White
(8)	Viewing Direction	6 O'clock
(9)	Color Configuration	R.G.B Stripe
(10)	Module Weight(g)	(110)

(**)Module include PCB and component.

3.1 Liquid Crystal Display (LCD) / Liquid Crystal Module (LCM) Handling Guidelines Customer Acceptance Standard Specifications: QT3-RD-F-0001

4. OUTLINE DIMENSIONS



5. INTERFACE PIN CONNECTION

5.1 LCM PANEL DRIVING SECTION (CN1 Connector: Starconn 089N40-000R00-G2)

PIN No.	SIGNAL	FUNCTION
1	GND	GROUND
2	GND	GROUND
3	ADJ	Brightness control for LED B/L(3.0 ~3.3V)
4	VLED	POWER SUPPLY FOR LED DRIVER CIRCUIT
5	VLED	POWER SUPPLY FOR LED DRIVER CIRCUIT
6	VLED	POWER SUPPLY FOR LED DRIVER CIRCUIT
7	VCC	POWER SUPPLY FOR DIGITAL CIRCUIT
8	VCC	POWER SUPPLY FOR DIGITAL CIRCUIT
9	DE	DATA ENABLE
10	GND	GROUND
11	GND	GROUND
12	GND	GROUND
13	B5	BLUE DATA SIGNAL(MSB)
14	B4	BLUE DATA SIGNAL
15	B3	BLUE DATA SIGNAL
16	GND	GROUND
17	B2	BLUE DATA SIGNAL
18	B1	BLUE DATA SIGNAL
19	B0	BLUE DATA SIGNAL(LSB)
20	GND	GROUND
21	G5	GREEN DATA SIGNAL(MSB)
22	G4	GREEN DATA SIGNAL
23	G3	GREEN DATA SIGNAL
24	GND	GROUND
25	G2	GREEN DATA SIGNAL
26	G1	GREEN DATA SIGNAL
27	G0	GREEN DATA SIGNAL(LSB)
28	GND	GROUND
29	R5	RED DATA SIGNA(MSB)
30	R4	RED DATA SIGNA
31	R3	RED DATA SIGNA
32	GND	GROUND
33	R2	RED DATA SIGNA
34	R1	RED DATA SIGNA
35	R0	RED DATA SIGNA(LSB)
36	GND	GROUND
37	GND	GROUND
38	DCLK	CLOCK SIGNALS
39	GND	GROUND
40	GND	GROUND

Remarks:

- (1) ADJ is brightness control Pin. The larger of the pulse duty is, the higher of the brightness.
- (2) ADJ signal is 0~3.3V. Operation frequency is 20KHz.
- (3) GND PIN must be grounding, can not be floating.

Remarks:

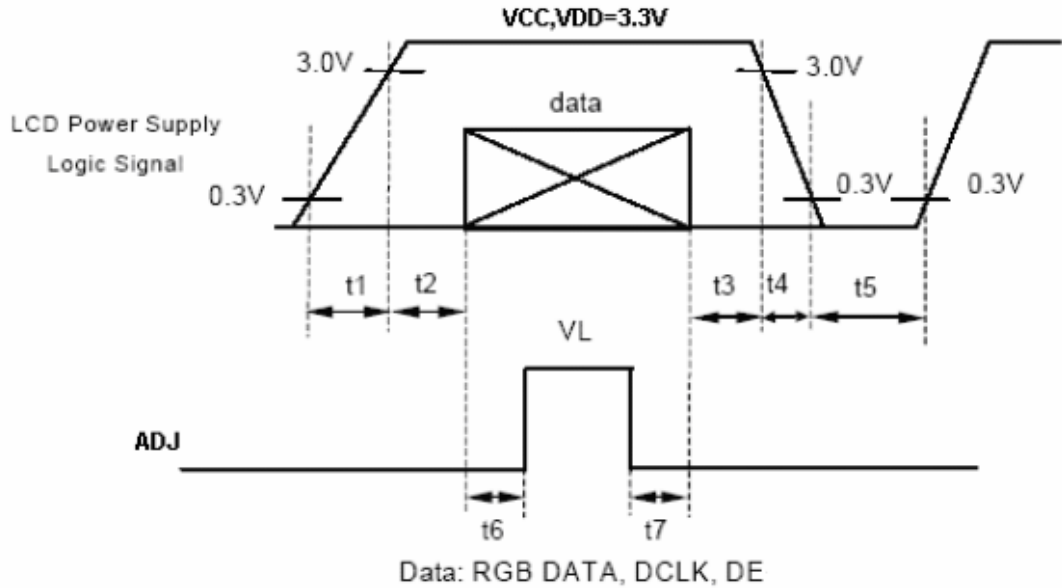
Power Signal sequence:

$t1 \leq 10\text{ms}$; $1 \text{ sec} \leq t5$

$50\text{ms} \leq t2$; $200\text{ms} \leq t6$

$0 < t3 \leq 50\text{ms}$; $200\text{ms} \leq t7$

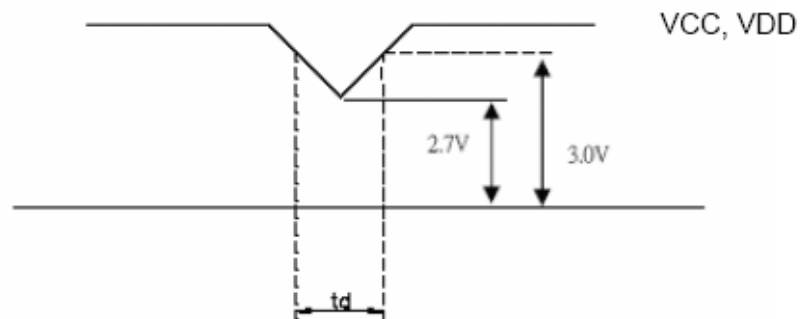
$0 < t4 \leq 10\text{ms}$



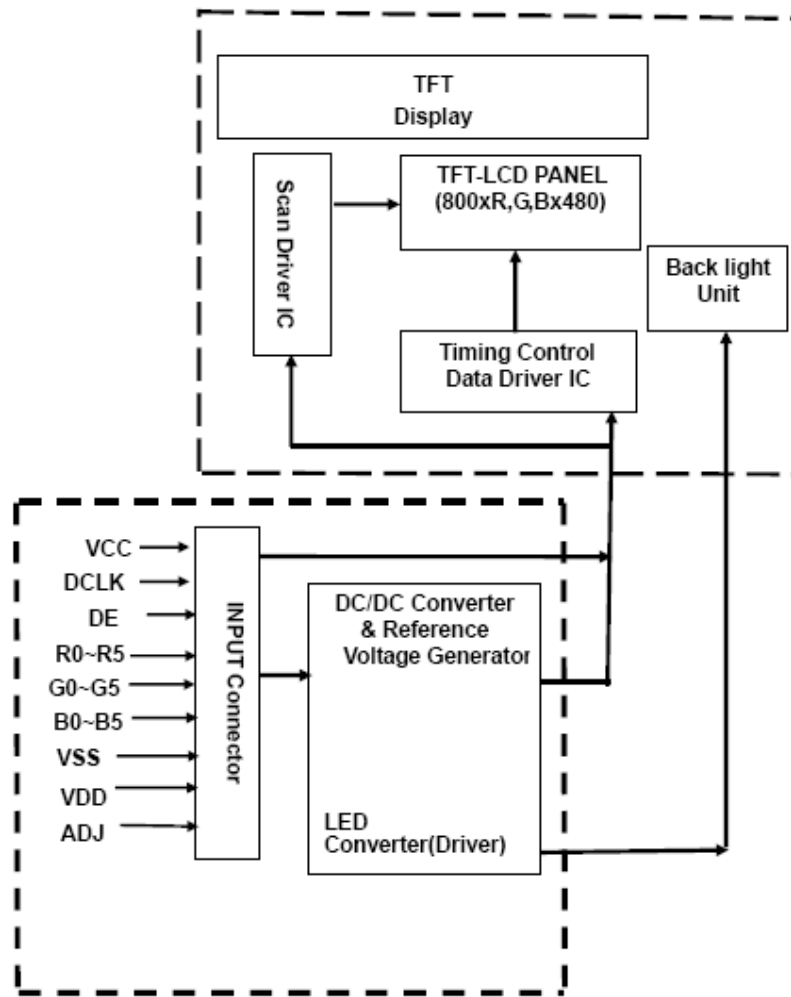
VCC, VDD -dip condition:

(1) $2.7\text{V} \leq VCC, VDD \leq 3.0\text{V}$: $t_d \leq 10 \text{ ms}$

(2) $VCC, VDD > 3.0\text{V}$: VCC, VDD -dip condition should be the same with VCC, VDD-turn-on condition.



6. BLOCK DIAGRAM



7. ABSOLUTE MAXIMUM RATINGS

7.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	COMMENT
Power Supply Voltage	VCC	-0.3	+7.0	V	
Logic Output Voltage	V _I	-0.3	VCC+0.3	V	

7.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	OPERATING		STORAGE		COMMENT
	MIN	MAX	MIN	MAX	
Ambient Temperature(°C)	-20	70	-30	80	Note 1,2,3
Humidity(% RH)	-	90	-	90	Note 4

Note 1 : The response time will become lower when operated at low temperature.

Note 2 : Background color changes slightly depending on ambient temperature.

Note 3 : Operation Ta=70°C & -20°C ≤ 240Hrs.

Note 4 : Operation Ta=60°C & H=90% ≤ 240Hrs.

8. ELECTRICAL CHARACTERISTICS

8.1 ELECTRICAL CHARACTERISTICS OF LCD

Ta=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
Power Voltage for LCD	VCC	3.0	3.3	3.6	V
	ICC	-	(175)	(262)	mA
LED Driving Voltage	VDD	3	5	5.5	V
LED Driving Current	IDD(VDD=3.3V)	-	650	850	mA
	IDD(VDD=5V)	-	400	550	mA
Input High Voltage	V _{IH}	0.7*VCC	-	VCC	V
Input Low Voltage	V _{IL}	GND	-	0.3*VCC	V
Output High Voltage	V _{OH}	0.8VCC	-	VCC	V
Output Low Voltage	V _{OL}	GND	-	0.2VCC	V
ADJ Input Voltage	V _{IH}	3.0	-	3.3	V
	V _{IL}	0	-	0.3	V
ADJ frequency	-	19	20	21	KHZ
LED Life Time	-	20000	-	-	Hr

9. OPTICAL CHARACTERISTICS

Ta=25°C

Item	Symbol	Conditions	Specifications				REMARK	
			Min.	Typ.	Max.	Unit		
Contrast Ratio	CR	Viewing	300	400	-	-	Note (1)	
Response Time	TR	Normal	-	5	10	ms	Note (2)	
	TF	Angle	-	15	20	ms		
Chromaticity	White	XW	$\Theta_x = \Theta_y = 0^\circ$	(0.26)	(0.31)	(0.36)	-	Note (4)
		YW		(0.28)	(0.33)	(0.38)	-	
Viewing Angle	Hor.	Θ_{x+}	Viewing	60	70	-	Deg.	Note (3)
		Θ_{x-}	Angle	60	70	-		
	Ver.	Θ_{y+}	$\Theta_x = \Theta_y = 0^\circ$	40	50	-		
		Θ_{y-}	$CR \geq 10$	50	60	-		
Luminance	L	ADJ=	280	320	-	cd/m ²		
Luminance uniformity	YU	3.3V	70	80	-	%	Note (5)	

*Note (1) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{63} / L_0$$

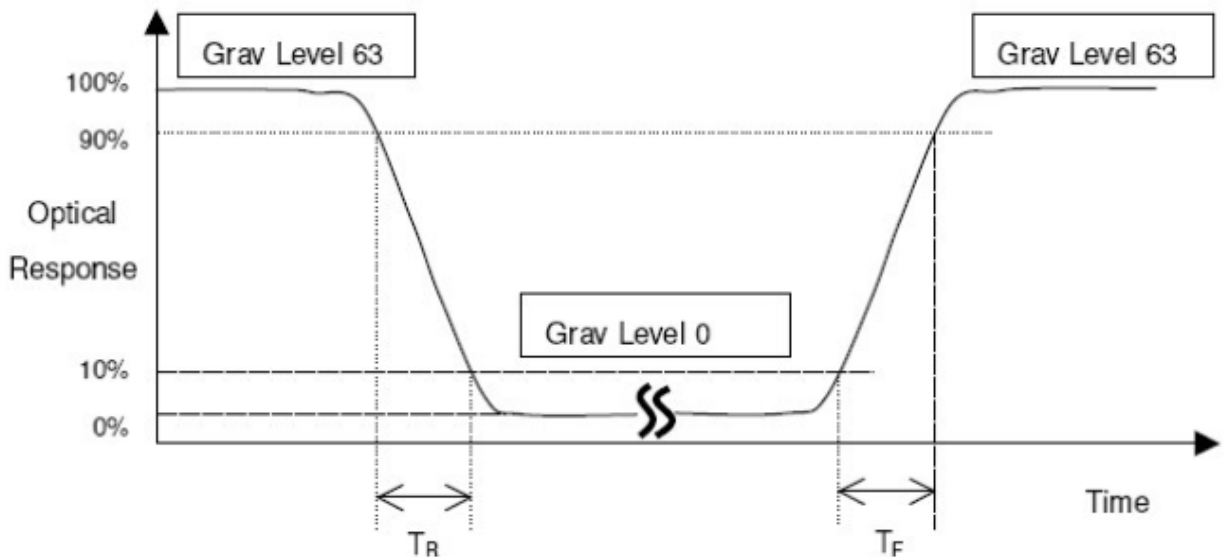
L63: Luminance of gray level 63

L 0: Luminance of gray level 0

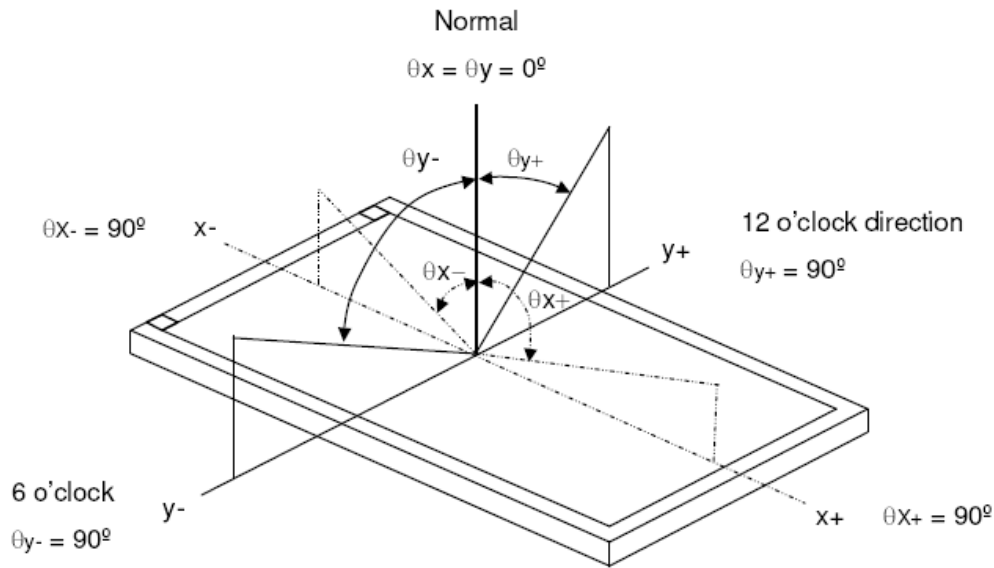
$$CR = CR (5)$$

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note (5).

*Note (2) Definition of Response Time (TR, TF):

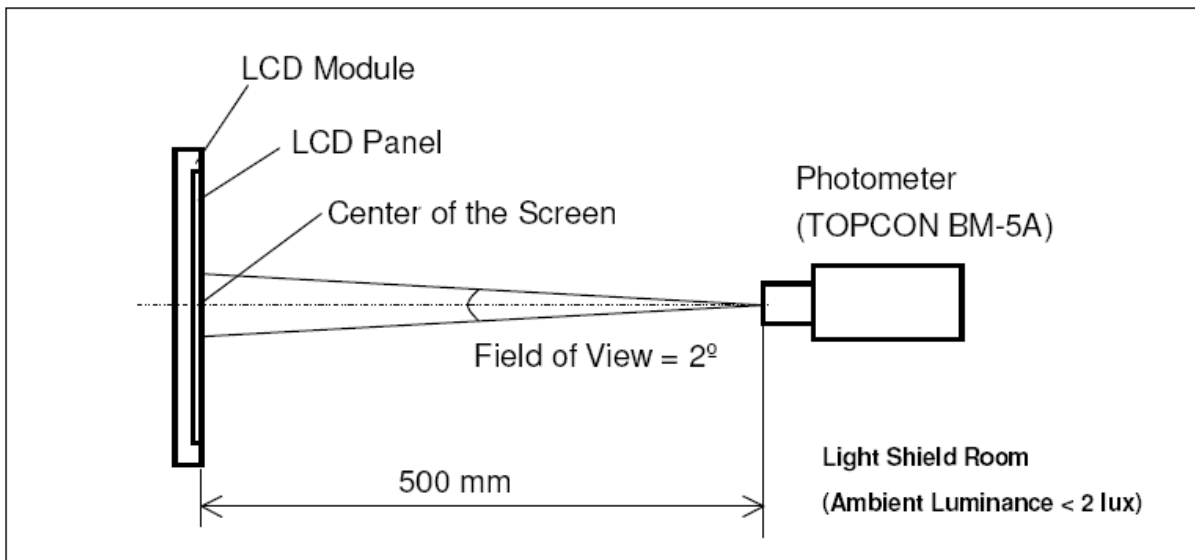


*Note(3) Definition of Viewing Angle

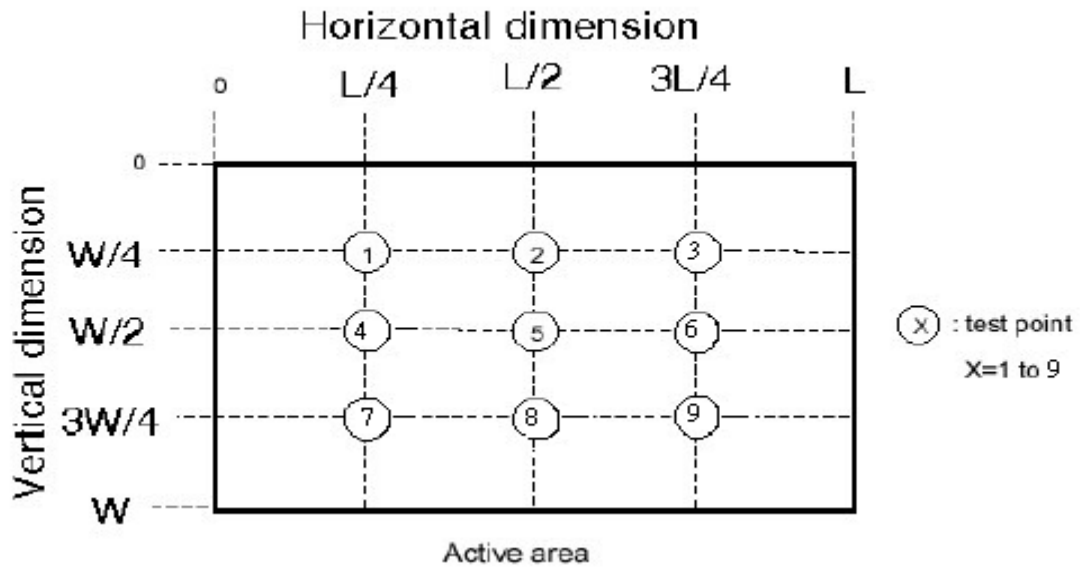


*Note (4) Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.



*Note (5)



$$\left(1 - \frac{\text{MAX Luminance} - \text{Average Luminance}}{\text{Average Luminance}} \right) \times 100\% > 70\%$$

10. TIMING SPECIFICATIONS

10.1.1 AC Electrical Characteristics

PARAMETER	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
HS setup time	T_{hst}	6	-	-	ns
HS hold time	T_{hhd}	6	-	-	ns
VS setup time	T_{vst}	6	-	-	ns
VS hold time	T_{vhd}	6	-	-	ns
Data setup time	T_{dsu}	6	-	-	ns
Data hold time	T_{dhd}	6	-	-	ns
DE setup time	T_{esu}	6	-	-	ns
Source output settling time	T_{ST}	-	-	15	μ s
Source output loading R	R_{SL}	-	2	-	K ohm
Source output loading C	C_{SL}	-	60	-	pF

10.1.2 Resolution : 800x480

- sync mode

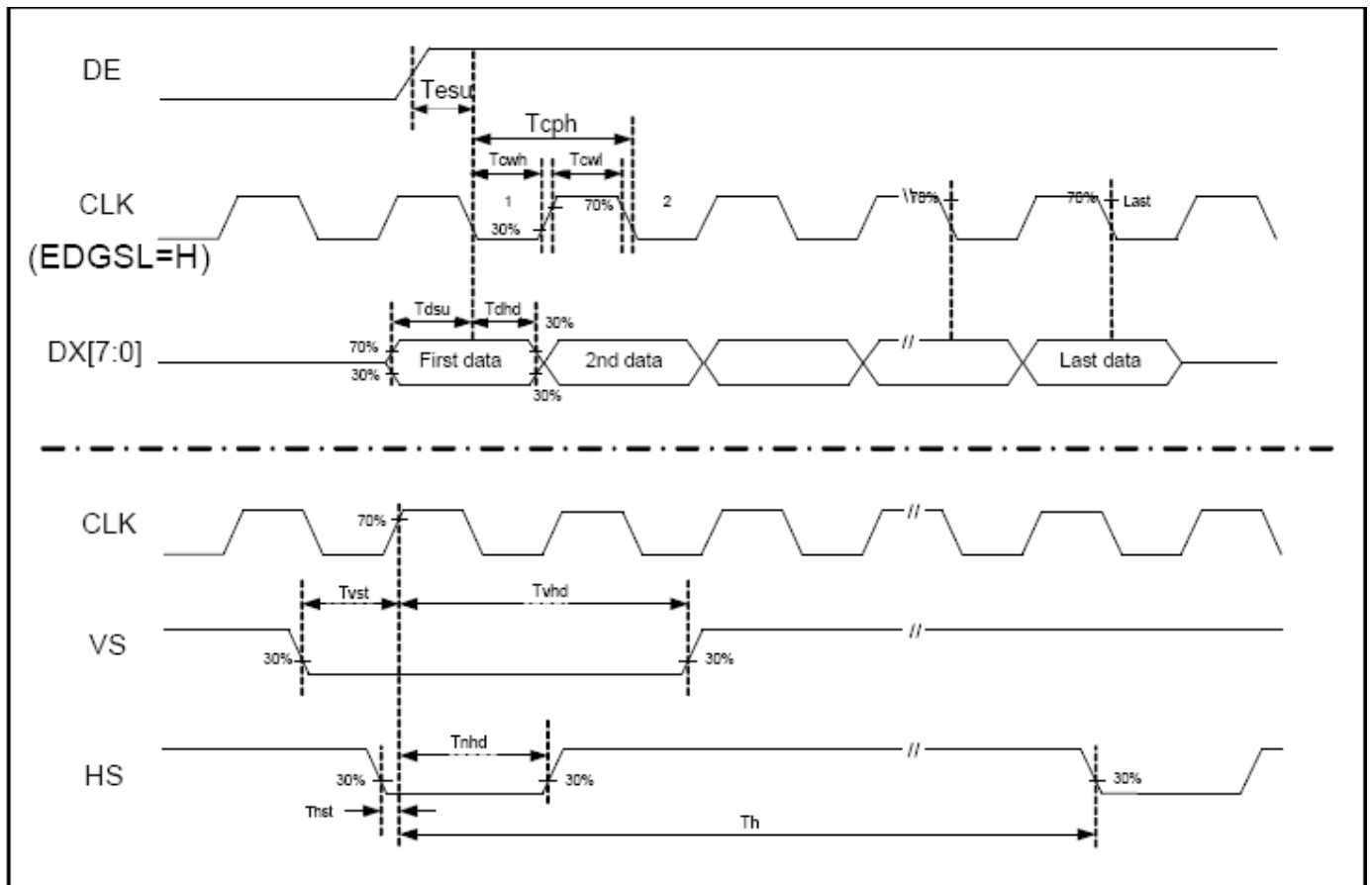
PARAMETER	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
CLK frequency	F_{CPH}	-	33.26	-	MHz
CLK period	T_{CPH}	-	30.06	-	ns
CLK pulse duty	T_{CWH}	40	50	60	%
HS period	T_H	930	1056	1057	T_{CPH}
HS pulse width	T_{WH}	1	128	-	T_{CPH}
HS-first horizontal data time	T_{HS}	STHD[7:0]+88 ⁽¹⁾			T_{CPH}
HS Active Time	T_{HA}	-	800	-	T_{CPH}
VS period	T_V	-	525	-	T_H
VS pulse width	T_{VW}	1	2	-	T_H
VS-DE time	T_{VS}	STVD[6:0]+8			T_H
VS Active Time	T_{VA}	-	480	-	T_H

- DE mode

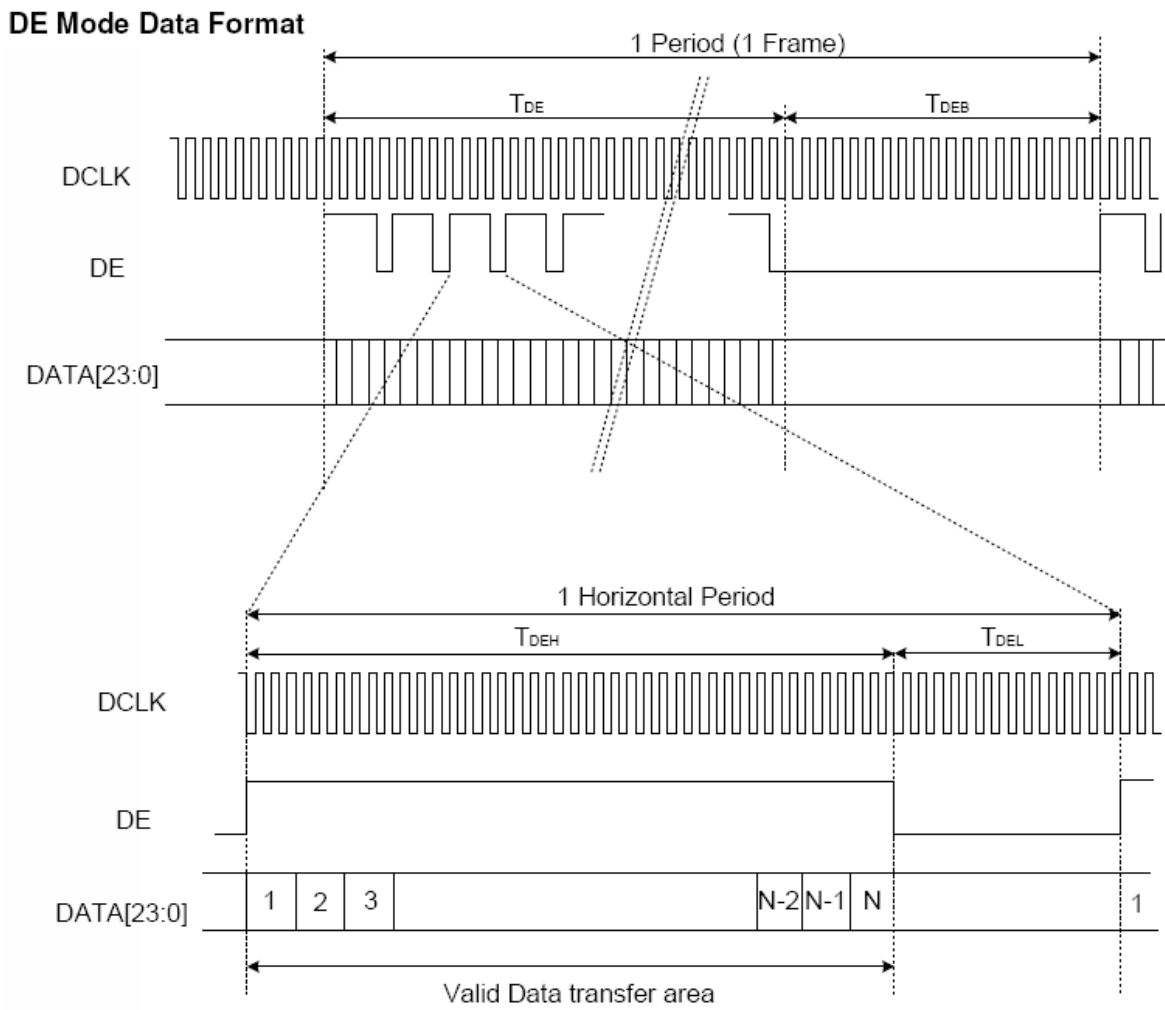
PARAMETER	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
CLK frequency	F_{CPH}	25	33.26	50	MHz
CLK period	T_{CPH}	-	30.06	-	ns
CLK pulse duty	T_{CWH}	40	50	60	%
DE period	$T_{DEH}+T_{DEL}$	1000	1056	1200	T_{CPH}
DE pulse width	T_{DEH}	-	800	-	T_{CPH}
DE frame blanking	T_{DEB}	10	45	110	$T_{DEH}+T_{DEL}$
DE frame width	T_{DE}	-	480	-	$T_{DEH}+T_{DEL}$

PARAMETER	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DE Horizontal Period	T_{HP}	1000	1056	1200	T_{CLK}
DE Horizontal Valid	T_{HV}	800	800	800	
DE Horizontal Blank	T_{HBK}	200	256	400	
DE Vertical Period	T_{VP}	490	525	590	T_{HP}
DE Vertical Valid	T_{VV}	480	480	480	
DE Vertical Blank	T_{VBK}	10	45	110	
DE Vertical Frequency	FV	51	60	70	Hz

10.2 CLOCK AND DATA WAVEFORMS

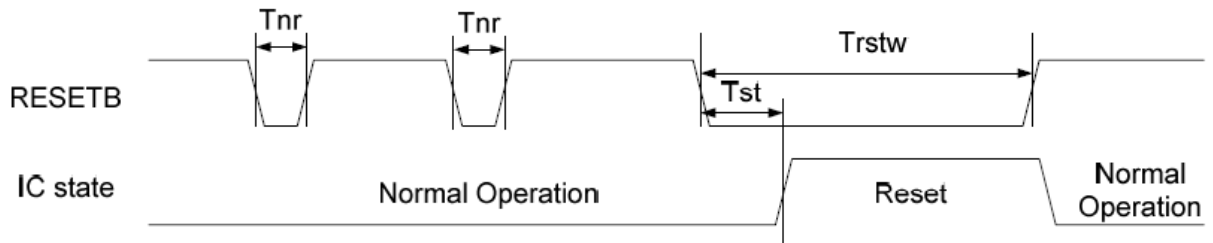


10.3 DATA INPUT FORMAT



10.4 HARDWARE RESET TIMING

PARAMETER	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
RESETB low pulse width	T_{rstw}	10	-	-	μs
Negative noise pulse width	T_{nr}		-	4	μs
Reset start time	T_{st}	4	-		μs



11. RELIABILITY TEST

Ta = 25°C

Environmental Test					
NO.	ITEM	CONDITIONS	TIME PERIOD	SAMPLE	REMARK
1	High Temperature Storage	80°C	240HRS	3	
2	Low Temperature Storage	-30±3°C	240HRS	3	
3	High Temperature Humidity Storage	60°C 90%RH	240HRS	3	NOTE(2)
4	High Temperature Operation	70°C	240HRS	3	NOTE(2)
5	Low Temperature Operation	-20°C	240HRS	3	NOTE(2)
6	Temperature Cycle	-20°C ← 25°C → 70°C (30min) (5min) (30min)	30CYCLE	3	NOTE(2)
7	High Temperature Humidity Operation	60°C 90%RH	96HRS	3	NOTE(2)
Mechanical Test					
8	Vibration test	10~22Hz, →1.5mmp-p 22~500Hz→1.5G	0.5HRS	3	
9	Shock test	50G Half sign wave 11 mesdc 3 times of each direction	-	3	
10	Atmospheric pressure test	115mbar	40hrs	3	
11	Static electricity test	VS=800V,RS=1.5KΩ CS=100pF	1time	3	

※(Supply voltage for logic system=3.3V. Supply voltage for LCD system = Operating voltage at 25°C)

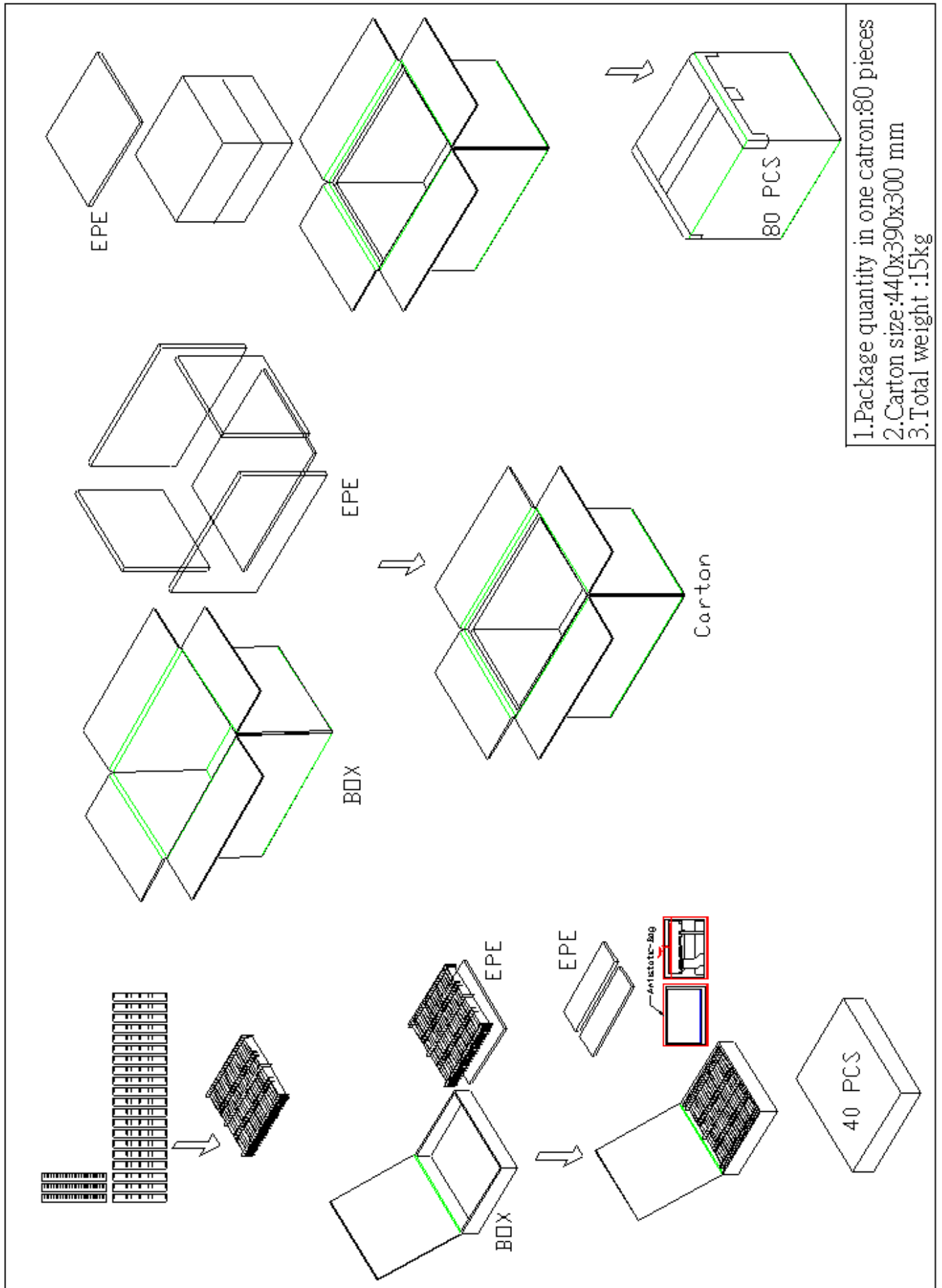
NOTE (1): a. THE MODULE SHOULD WORK PROPERLY.

b. BEFORE AND AFTER FUNCTION TEST, THE DIFFERENCE OF CONSUMPTIVE CURRENT.SHOULD BE WITHIN 10%

NOTE (2) : a. THE MODULE SHOULD WORK PROPERLY.

b. THE MODLUE WON'T BE DEFORMATIVE, COLOR CHANGEABLE OR BROKEN.
c. THE MODULES CAN'T BE APART.

12.PACKAGE METHOD



- 1.Package quantity in one carton:80 pieces
- 2.Carton size:440x390x300 mm
- 3.Total weight :15kg