

TFT-Display Datenblatt

Modell OT070KGDDLV-01

Kurzdaten

Hersteller	ONation
Diagonale	7,0" / 17,8 cm
Format	wide
Auflösung	800 x 480
Backlight	LED / 1000 cd/m ²
Interface	RGB
Touchscreen	nein
Temperatur	-20... +70°C (Betrieb)



ONation Corporation

CUSTOMER' S APPROVAL SPECIFICATIONS

MODEL: OT070KGDDL V-01
(Complied with RoHS)

CUSTOMER: _____

Version:P0.1

C O N T E N T S

ISSUE:OCT.03.2012

Spec Condition: preliminary

No.	ITEM	PAGE
1	COVER	--
2	RECORD OF REVISION	0-1
3	MECHANICAL SPECIFICATIONS	1
4	OUTLINE DIMENSIONS	2
5	INTERFACE PIN CONNECTION	3 ~4
6	BLOCK DIAGRAM	5
7	ABSOLUTE MAXIMUM RATINGS	5
8	ELECTRICAL CHARACTERISTICS	6
9	OPTICAL CHARACTERISTICS	7~9
10	TIMING SPECIFICATIONS	10~13
11	RELIABILITY TEST	14
12	PACKAGE METHOD	15

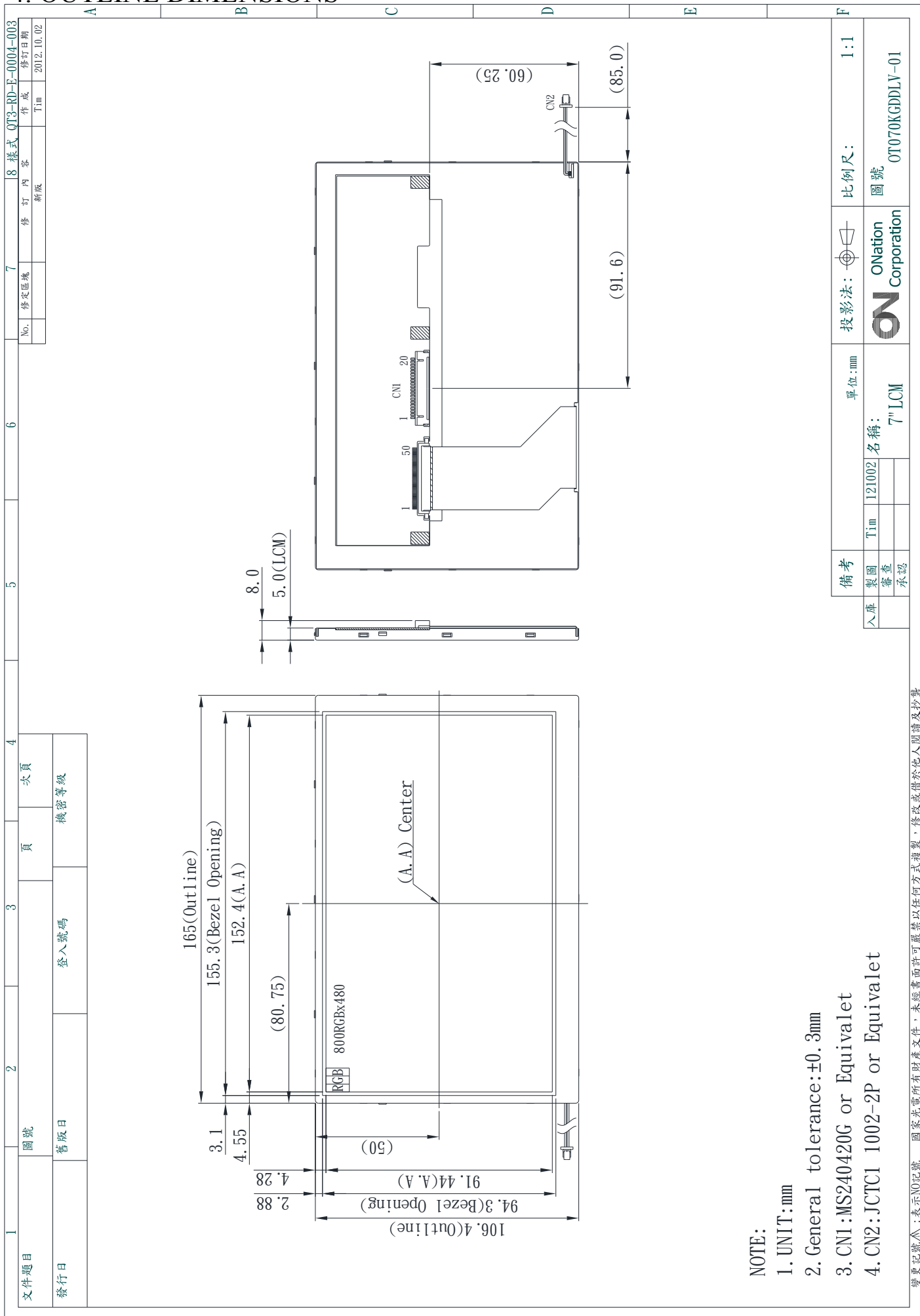
CUSTOMER	ONATION		
APPROVAL	APPROVAL	CHECKER	PREPARE
	<i>ch lee</i>	<i>ch lee</i>	<i>kevin</i>

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 8.0(D)
(3)	Active Area(mm)	152.4(H) X 91.44(V)
(4)	Pixel Pitch(mm)	0.1905(H) X 0.1905(V)
(5)	LCD Model	TFT , Transmissive, Normally/White
(6)	Polarizer Model	Anti-glare
(7)	LED Backlight Color	White
(8)	Viewing Direction	12 O'clock
(9)	Gray Scale Inversion Direction	6 O'clock
(10)	Color Configuration	R.G.B Stripe
(11)	Module Weight(g)	140 ± 5%

**Viewing direction for best image quality is different from TFT definition, there is the 180 degrees shift.

4. OUTLINE DIMENSIONS



1	文件題目	圖號	2	3	4	5	6	7	8
	發行日	舊版日	登入號碼	頁	次頁			修改區域	樣式
								新板	OT3-RD-E-0004-003
								作成	修訂日期
								Tim	2012.10.02

備考	單位:mm	投影法:	比例尺:
製圖	Tim	ON Corporation	1:1
入庫	121002	圖號	OT070KGDDL-01
審查	名稱:		
承認	7" LCM		

變更記號△:表示NO記號 國家光電所有財產文件, 未經書面許可嚴禁以任何方式複製, 修改或借於他人閱讀及抄襲

5. INTERFACE PIN CONNECTION

5.1 LCM PANEL DRIVING SECTION (CN1 Connector: MS240420 G or Equivalent)

PIN No.	SIGNAL	FUNCTION
1	VCC	Power Supply For Digital Circuit
2	VCC	Power Supply For Digital Circuit
3	GND	Ground
4	GND	Ground
5	RxIN0-	Differential Data Input, CH0(G0,R5~R0)
6	RxIN0+	Differential Data Input, CH0(G0,R5~R0)
7	GND	Ground
8	RxIN1-	Differential Data Input, CH1(B1,B0,G5~G1)
9	RxIN1+	Differential Data Input, CH1(B1,B0,G5~G1)
10	GND	Ground
11	RxIN2-	Differential Data Input, CH2(DE,B5~B2)
12	RxIN2+	Differential Data Input, CH2(DE,B5~B2)
13	GND	Ground
14	CKIN-	Differential Clock Input
15	CKIN+	Differential Clock Input
16	GND	Ground
17	NC	No connection
18	NC	No connection
19	GND	Ground
20	NC	No connection

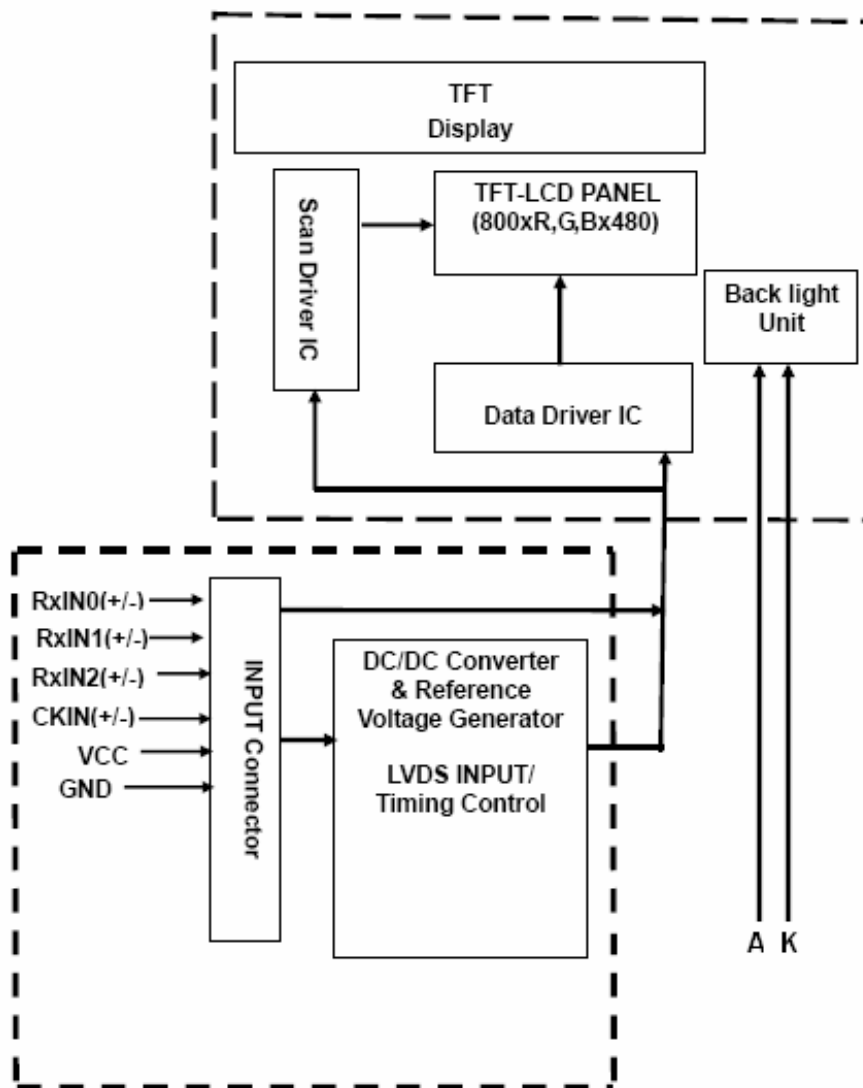
5.2 BACKLIGHT DRIVING SECTION

CN2 Connector: JCTC1 1002-2P

Mating Connector: 87213-0200G or Compatible.

PIN No	SYMBOL	FUNCTION	REMARK
1	A	Power Supply For Backlight Driver Circuit	RED
2	K	Ground	WHITE

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 : Storage 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
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

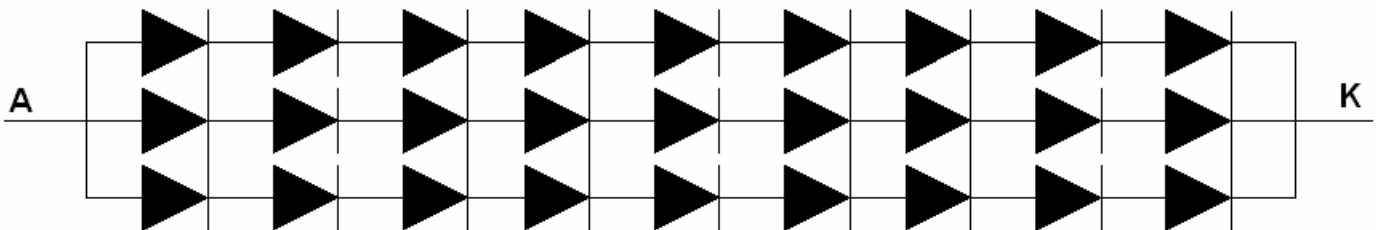
8.2 BACKLIGHT UNITS

Ta=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
LED Driving Voltage	V _{A-K}	-	24.5	32	V
LED Driving Current	I _{A-K}	-	100	-	mA
LED Life Time	-	20000	-	-	Hr

Note 1: If the module is driven at high ambient temperature & humidity condition. The operating life will be reduced.

Note 2: Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.



9. OPTICAL CHARACTERISTICS

Ta=25°C

ITEM	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT	REMARK	
Contrast Ratio	CR	Viewing	300	400	-	-	Note (1)	
Response Time	TR	Normal	-	5	10	ms	Note (2)	
	TF	Angle	-	15	20	ms		
Chromaticity	White	x	0.26	0.31	0.36	-	Note (4)	
		y						0.28
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 ≥ 10	50	60		
Luminance	L		900	1000	-	cd/m ²		
Luminance uniformity	YU	I _{A-K} =100mA	70	75	-	%	Note (5)	

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

The contrast ratio can be calculated by the following expression.

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

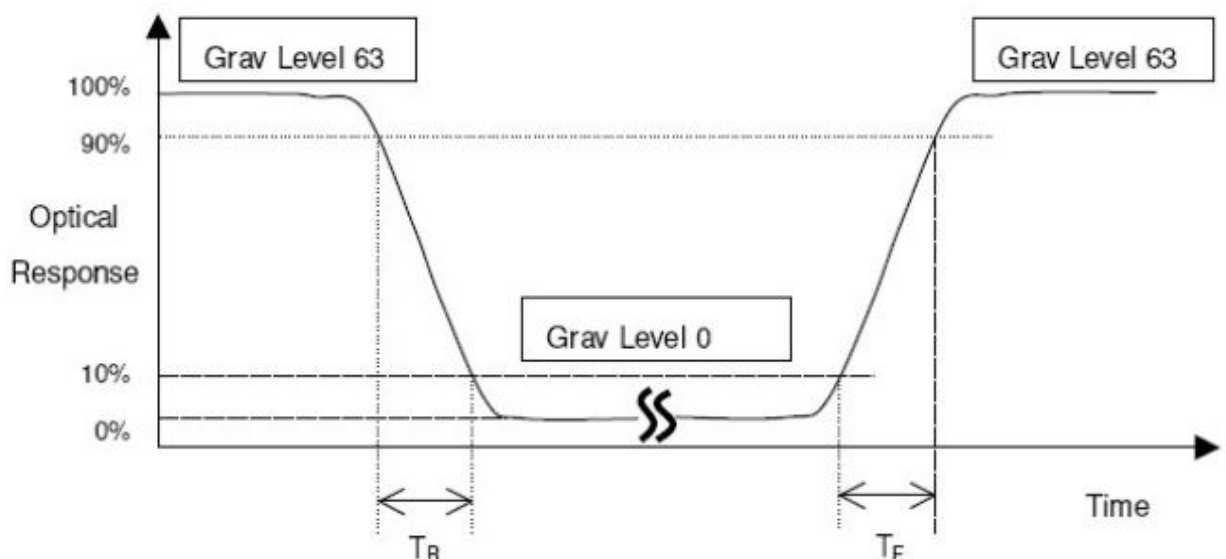
L₆₃: Luminance of gray level 63

L₀: Luminance of gray level 0

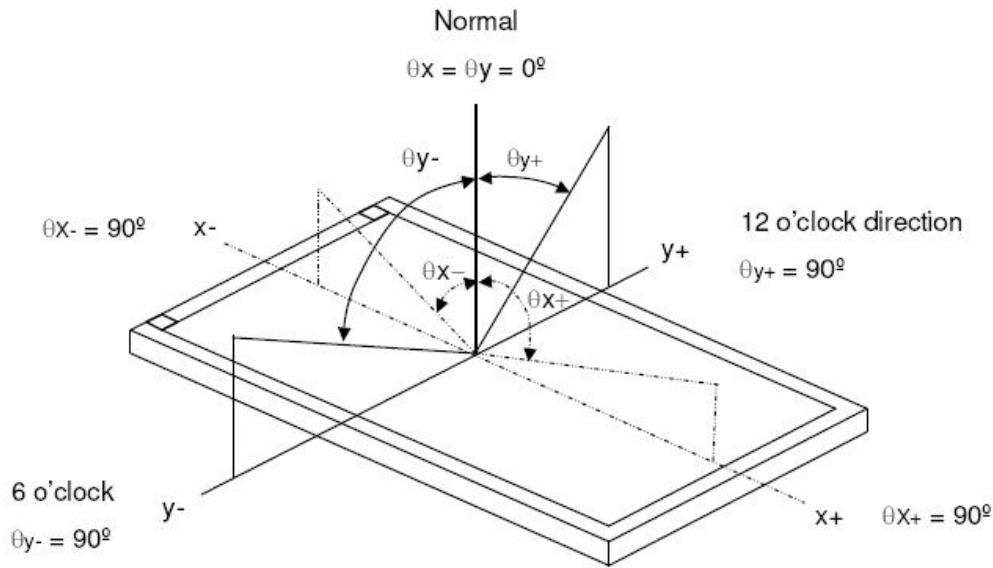
$$CR = CR (5)$$

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

*Note (2) Definition of Response Time (T_R, T_F):

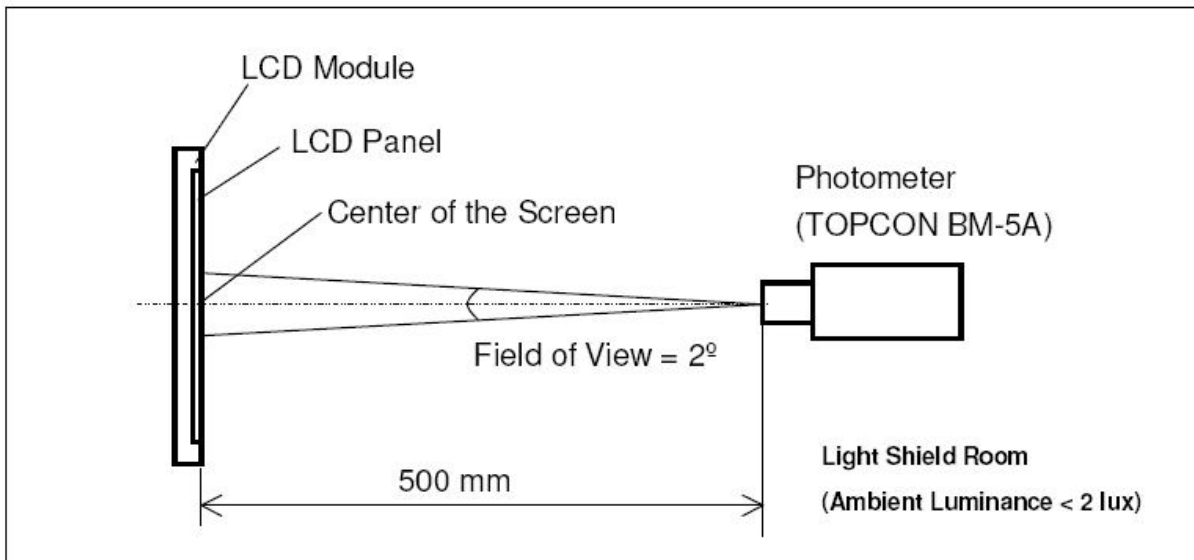


*Note(3) Definition of Viewing Angle

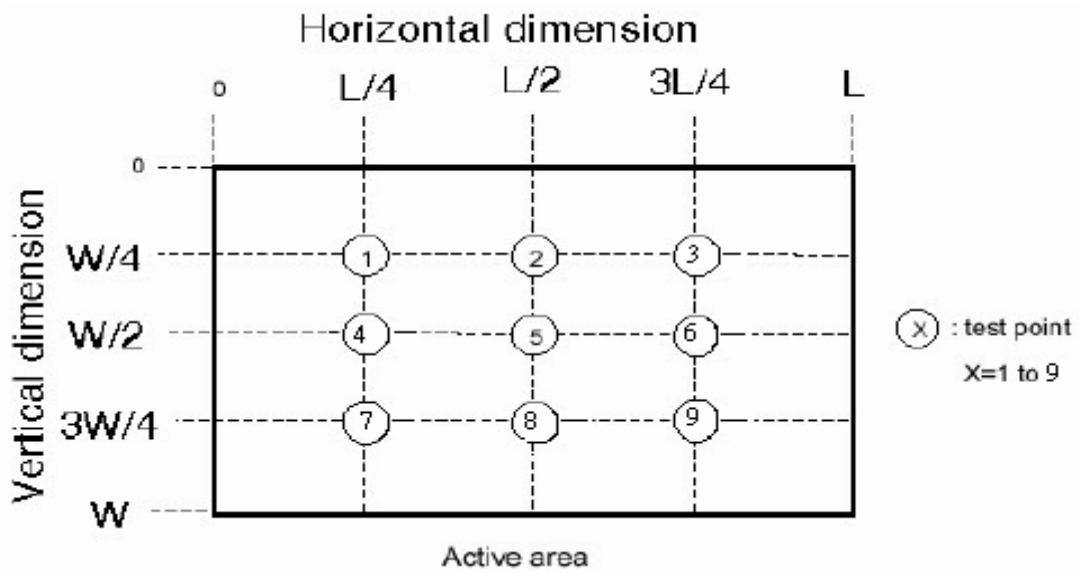


*Note (4) Measurement Set-Up:

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

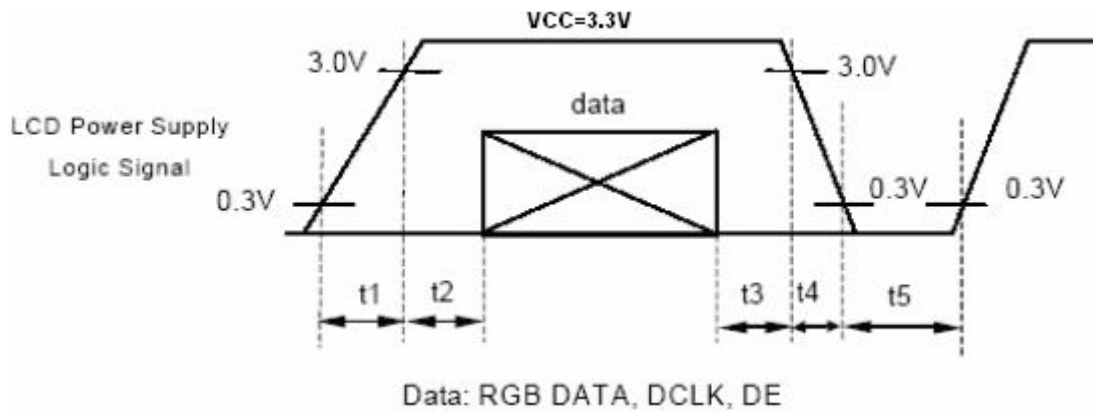
PARAMETER	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
CLK frequency	F_{CPH}	-	33.26	-	MHz
CLK period	T_{CPH}	-	30.06	-	ns
CLK pulse duty	T_{CWH}	40	50	60	%
HS period	T_H	930	1056	1057	T_{CPH}
HS pulse width	T_{WH}	1	128	-	T_{CPH}
HS-first horizontal data time	T_{HS}	STHD[7:0]+88 ⁽¹⁾			T_{CPH}
HS Active Time	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	-	$T_{DEH}+T_{DEL}$

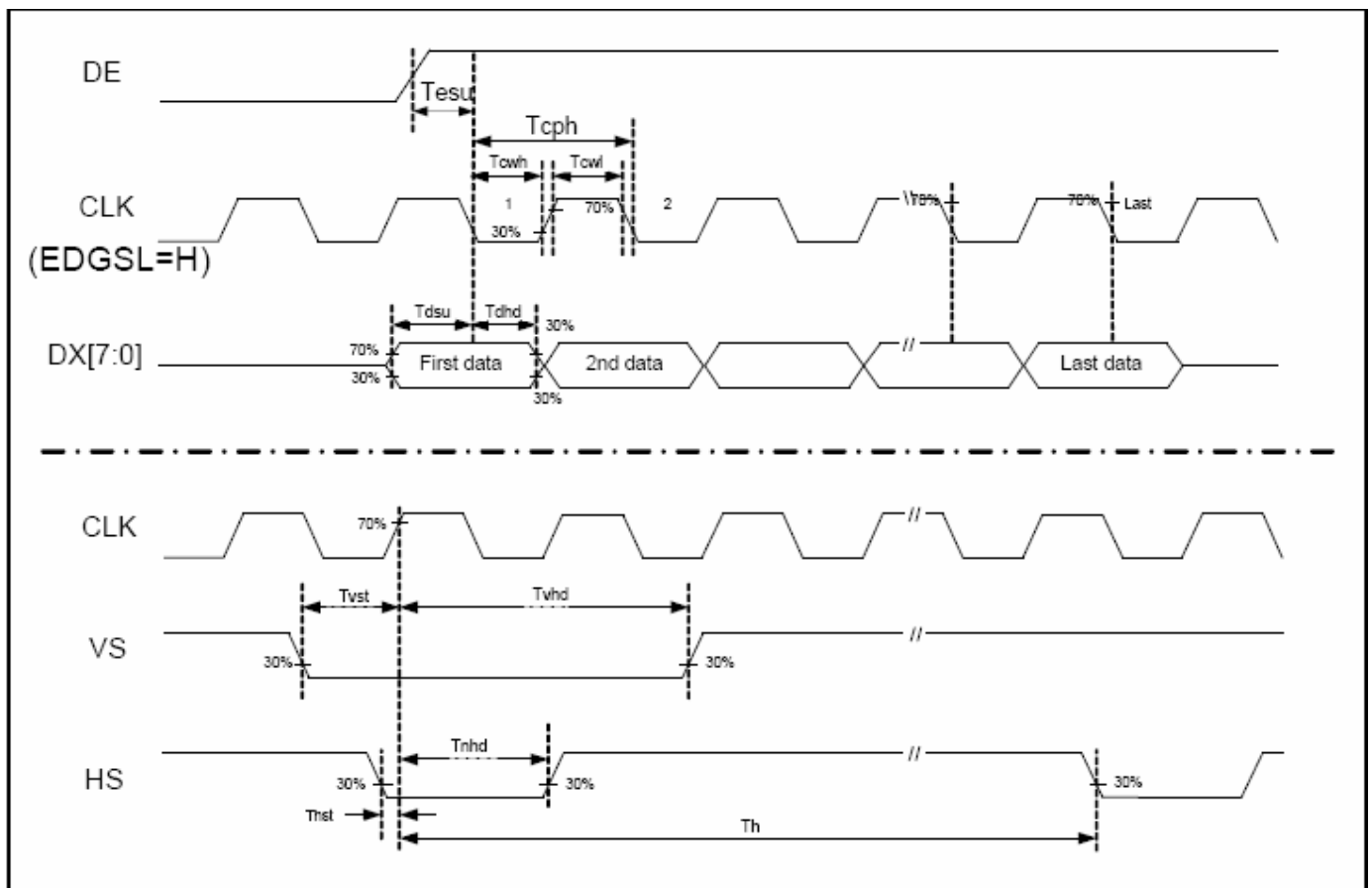
PARAMETER	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DE Horizontal Period	T_{HP}	1000	1056	1200	T_{CLK}
DE Horizontal Valid	T_{HV}	800	800	800	
DE Horizontal Blank	T_{HBK}	200	256	400	
DE Vertical Period	T_{VP}	490	525	590	T_{HP}
DE Vertical Valid	T_{VV}	480	480	480	
DE Vertical Blank	T_{VBK}	10	45	110	
DE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

10.2 POWER SIGNAL SEQUENCE

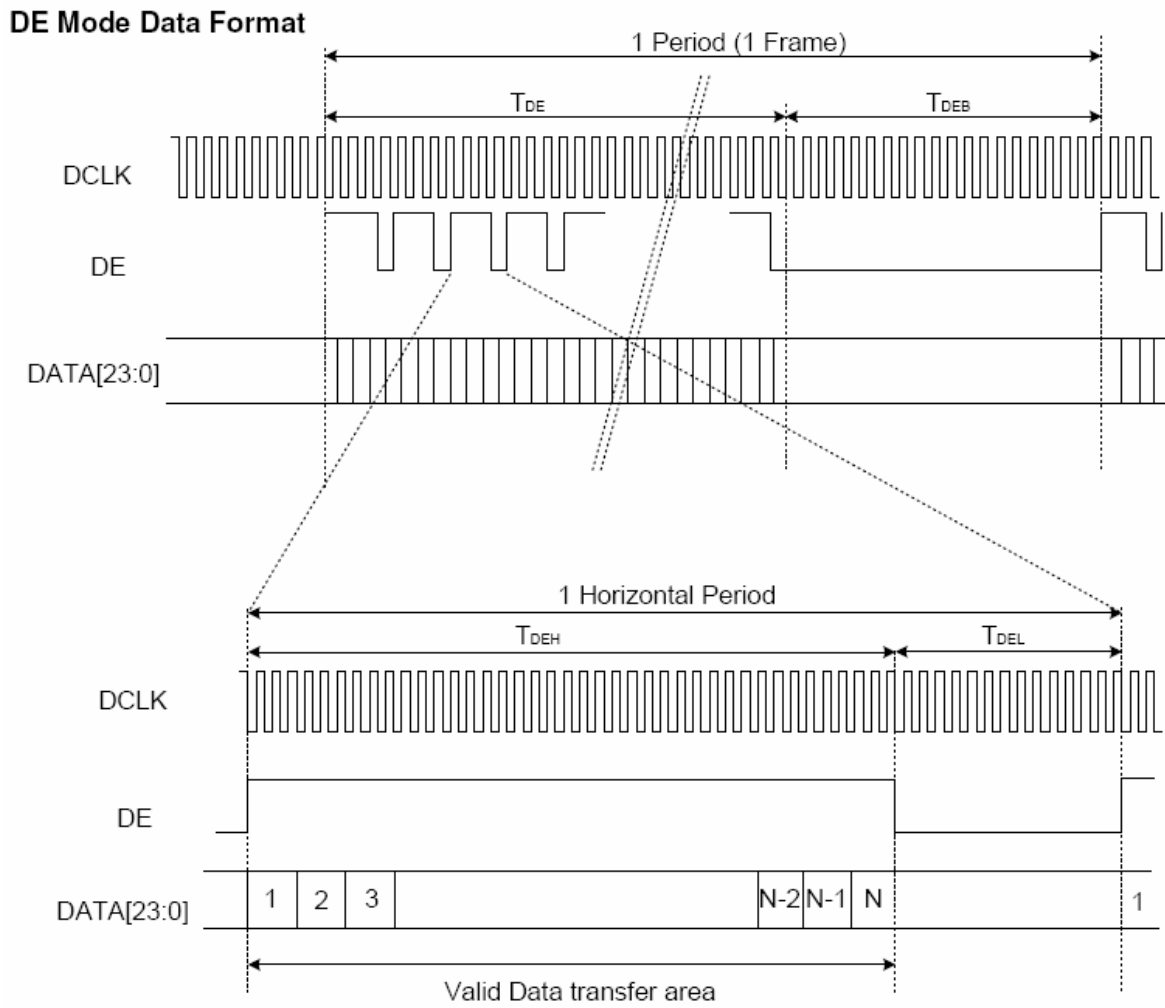


PARAMETER	MIN.	TYP.	MAX.	UNIT
T1	-	-	10	ms
T2	50	-	-	ms
T3	0	-	50	ms
T4	0	-	10	ms
T5	60	-	-	ms

10.3 CLOCK AND DATA WAVEFORMS

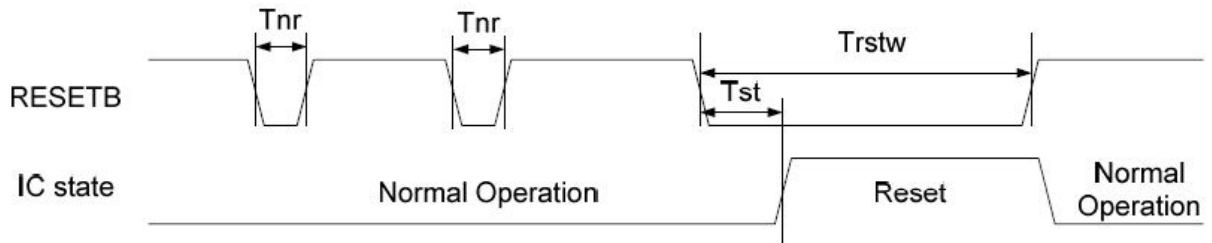


10.4 DATA INPUT FORMAT



10.5 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	REMARK
1	High Temperature Storage	80°C	240HRS	
2	Low Temperature Storage	-30±3°C	240HRS	
3	High Temperature Humidity Storage	60°C 90%RH	240HRS	NOTE(2)
4	High Temperature Operation	70°C	240HRS	NOTE(2)
5	Low Temperature Operation	-20°C	240HRS	NOTE(2)
6	Temperature Cycle	-30°C ← 25°C → 80°C (30min) (5min) (30min)	10CYCLE	NOTE(2)

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.

NOTE (3): BEFORE COSMETIC AND FUNCTION TEST, THE PRODUCT MUST HAVE ENOUGH RECOVERY TIME, AT LEAST 2 HOURS AT ROOM TEMPERATURE.

12. PACKAGE METHOD

TBD