TFT-Display Datenblatt

Modell OT057BQDDDV-00

Kurzdaten

Hersteller	ONation
Diagonale	5,7“ / 14,5 cm
Format	wide
Auflösung	320 x 240
Backlight	LED / 1000 cd/m²
Interface	RGB
Touchscreen	nein
Temperatur	-20… +70°C (Betrieb)

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CUSTOMER' S APPROVAL SPECIFICATIONS

MODEL: OT057BQDDDV-00
(Complied with RoHS)

CUSTOMER: _____

Version: 2.0

C O N T E N T S **ISSUE:NOV.18.2011**

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CUSTOMER	ONATION		
APPROVAL	APPROVAL	CHECKER	PREPARE
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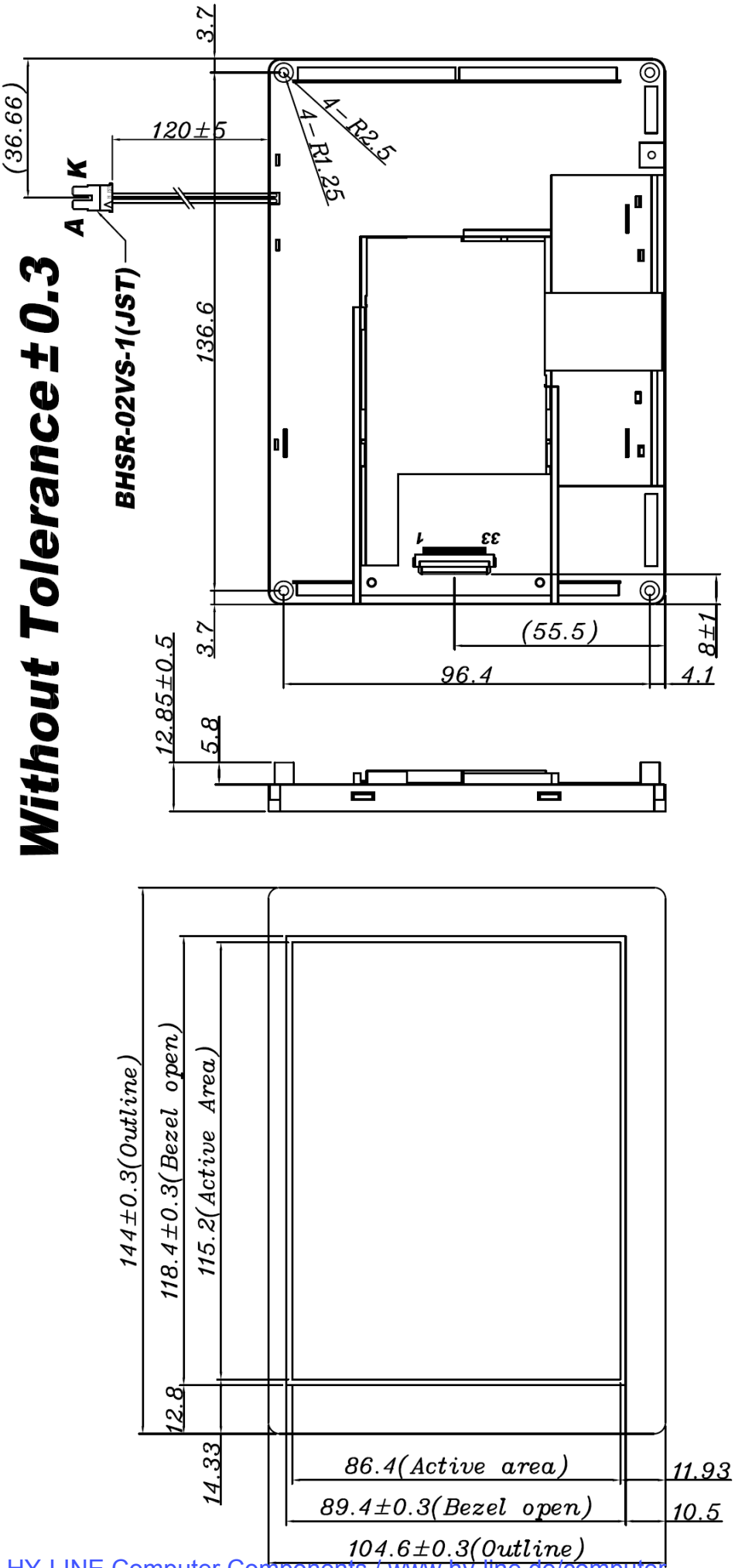
2.RECORD OF REVISION

Rev	DATE	PAGE	SUMMARY
1.0	2009.07.16	ALL	Preliminary specification was first issued.
2.0	2011.11.18	ALL	Modify: SD0570T10→OT057BQDDDV-00

3.MECHANICAL SPECIFICATIONS

(1)	Number Of Dots (Dots)	(320 X R.G.B) (W) X 240 (H)
(2)	Module Size(mm)	144 (W) X 104.6 (H) X 12.85 (D)
(3)	Active Area(mm)	115.2 (W) X 86.4 (H)
(4)	Pixel Pitch(mm)	0.12 (W) X 0.36 (H)
(5)	LCD / Polarizer Model	TFT , Transmissive / Normally white/Anti-glare
(6)	Backlight	LED
(7)	Viewing Direction	6 O'clock
(8)	Driving Method	COG TYPE
(9)	Module Weight(g)	(205g)

4. OUTLINE DIMENSIONS



5. INTERFACE

5.1 INOUT PIN CONNECTION (CN3：Starconn 089H33-000110-G2-R)

Pin No	Symbol	Function	Remark
1	GND	Ground for logic circuit	
2	CLK1	Data sampling clock	
3	HS(HSYNC)	Horizontal synchronous signal	
4	VS(VSYNC)	Vertical synchronous signal	
5	GND	Ground for logic circuit	
6	R0	Red pixel data (LSB)	
7	R1	Red pixel data	
8	R2	Red pixel data	
9	R3	Red pixel data	
10	R4	Red pixel data	
11	R5	Red pixel data (MSB)	
12	GND	Ground for logic circuit	
13	G0	Green pixel data (LSB)	
14	G1	Green pixel data	
15	G2	Green pixel data	
16	G3	Green pixel data	
17	G4	Green pixel data	
18	G5	Green pixel data (MSB)	
19	GND	Ground for logic circuit	
20	B0	Blue pixel data (LSB)	
21	B1	Blue pixel data	
22	B2	Blue pixel data	
23	B3	Blue pixel data	
24	B4	Blue pixel data	
25	B5	Blue pixel data (MSB)	
26	GND	Ground for logic circuit	
27	DE	Data Enable (connected to GND, if sync mode)	*1
28	VCC	Power Supply：+3.3V	
29	VCC	Power Supply：+3.3V	
30	R/ L	Horizontal display mode select signal Left / Right Scan control input	*2
31	U/D	Vertical display mode select signal Up / Down Scan control input	*2
32	NC	No connector	
33	GND	Ground for logic circuit	

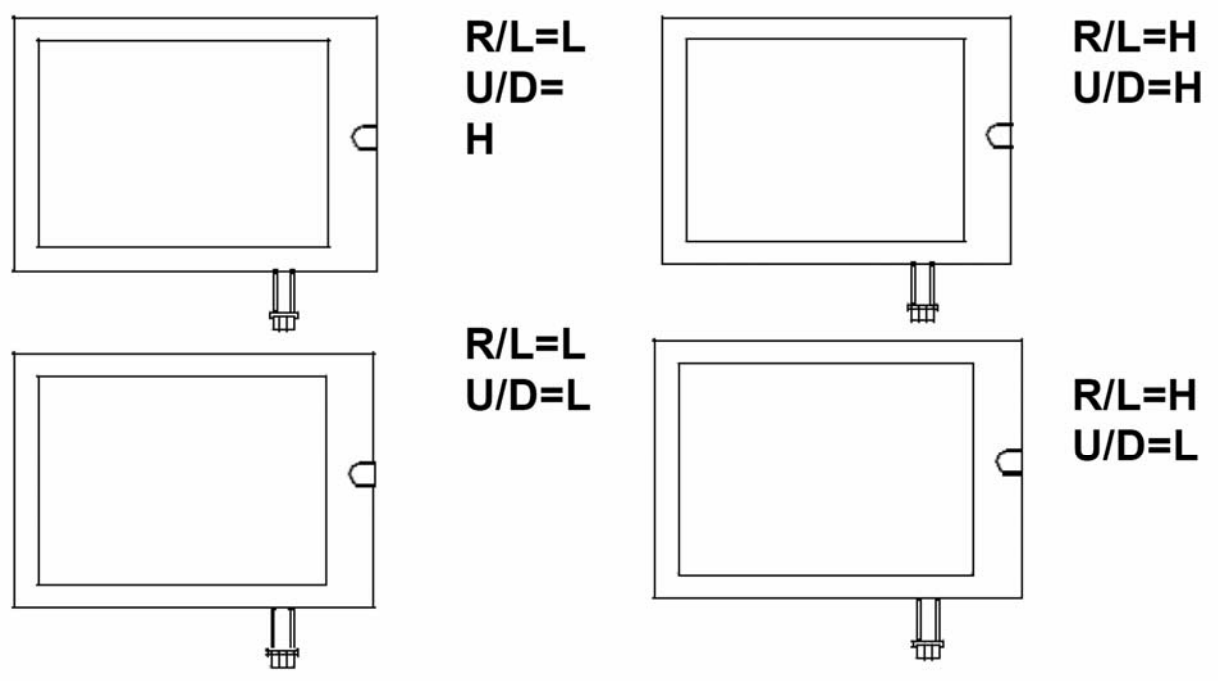
*1 The horizontal display start timing is setting is settled in accordance with a rising timing of DE signal. In case DE is fixed “LOW”, the horizontal start timing is determined as described in 9-1. Don’t keep DE “High” during operation.

5.2 BACKLIGHT UNIT SECTION

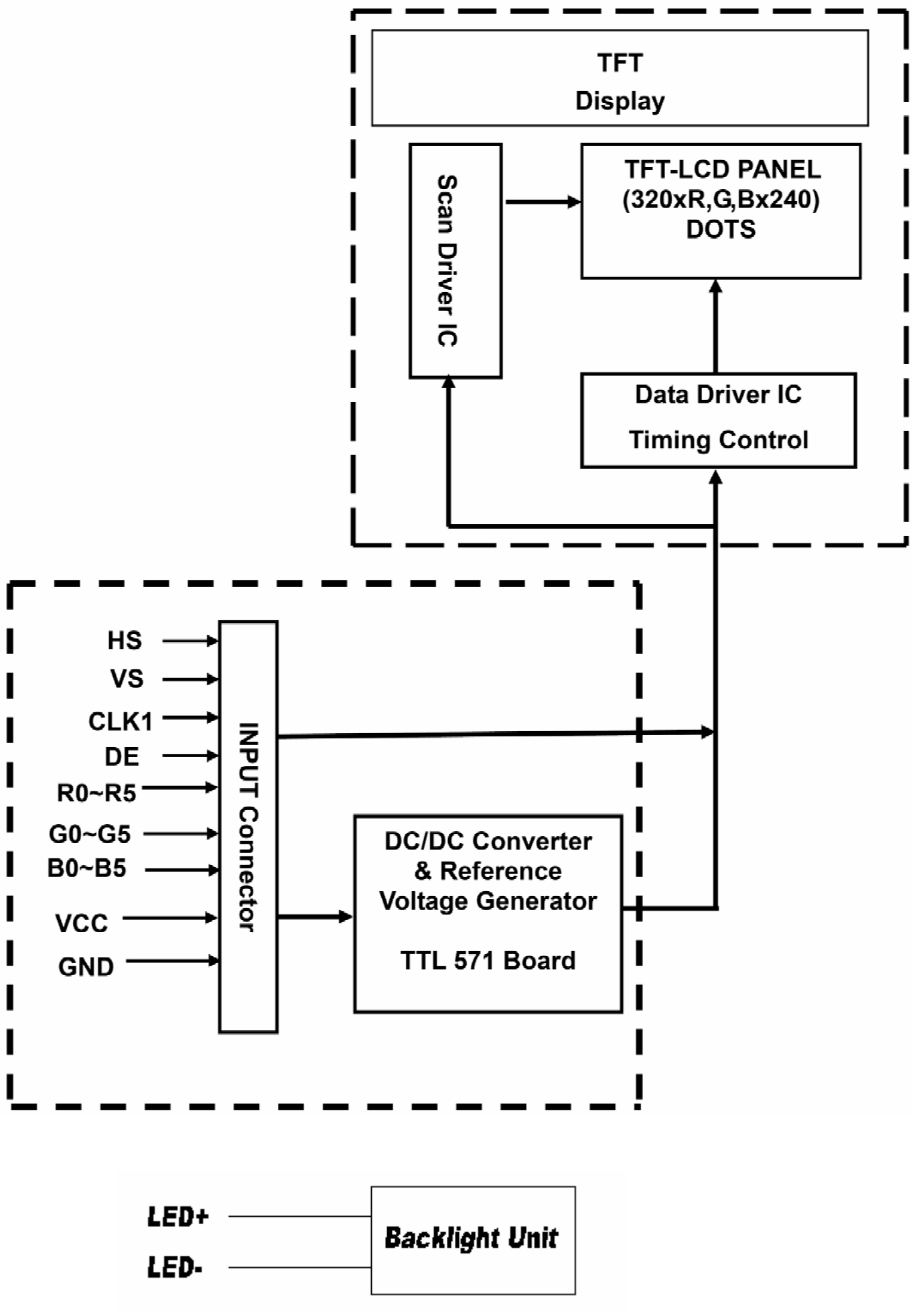
(Connector:BHSR-02VS-1)

PIN No.	SYMBOL	I/O	FUNCTION	REMARK
1	LED+	P	POWER SUPPLY FOR BACKLIGHT UNIT(HIGH VOLTAGE)	RED(A)
2	LED-	P	GROUND FOR BACKLIGHT UNIT	BLACK(K)

*2



6. BLOCK DIAGRAM



7. ELECTRICAL CHARACTERISTICS

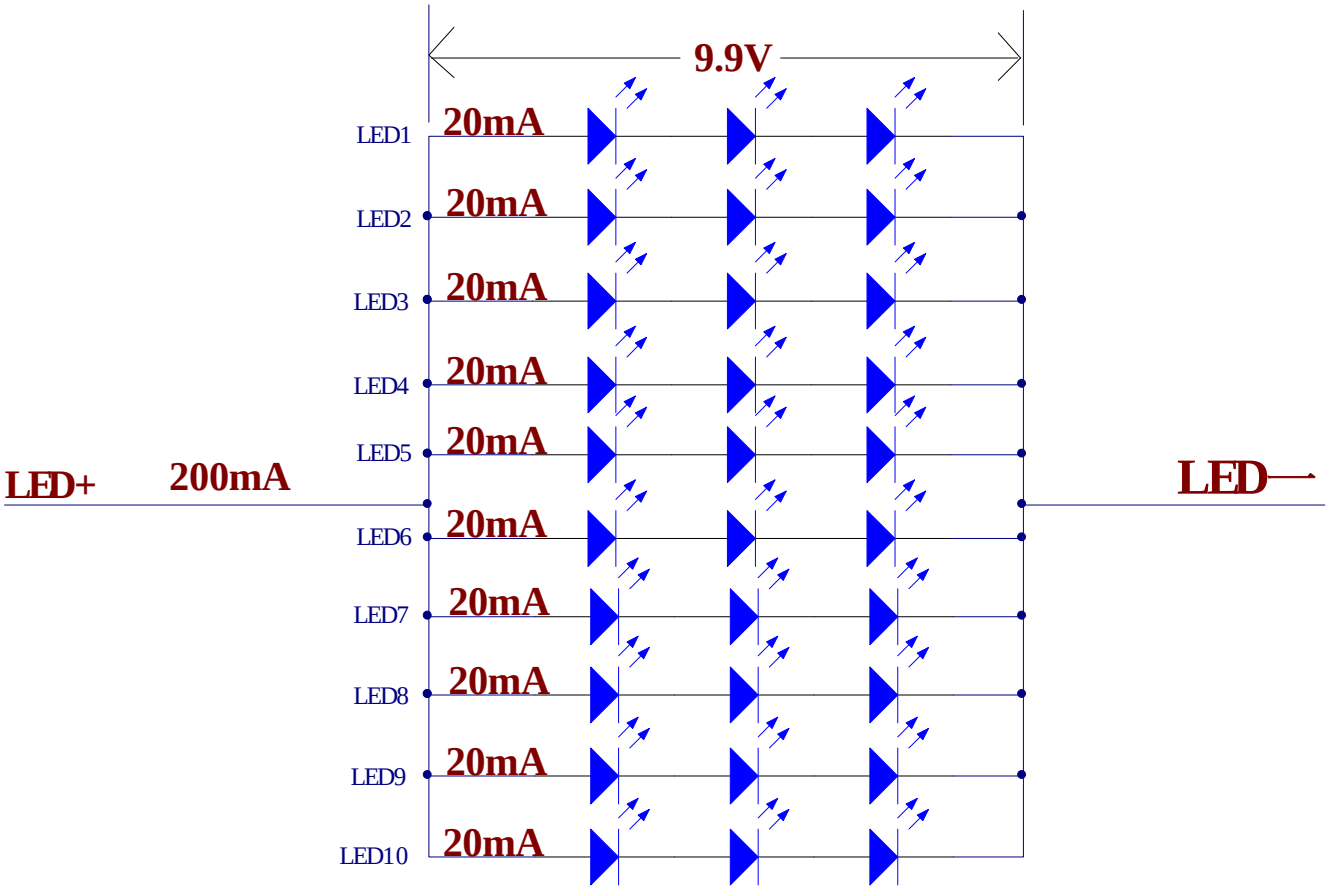
7.1 ELECTRICAL CHARACTERISTICS OF LCD

(Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Power Supply voltage	V_{CC}	+3.0	+3.3	+3.6	V	-
Power Supply Current	I_{CC}	-	130	150	mA	V_{CC} = 3.3V
"H" level logical input voltage	V_{IH}	0.7 V_{CC}	-	-	V	-
"L" level logical input voltage	V_{IL}	-	-	0.3 V_{CC}	V	-
Operating temperature	Topa	-20	-	70	℃	Ambient temperature
Storage temperature	Tstg	-30	-	80	℃	Ambient temperature

7.2 BACKLIGHT DRIVING CONDITION

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
LED Driver Voltage	VLED	-	(9.9)	-	V
LED Driver Current	ILED	-	200	-	mA
LED Life Time	-	-	50000	-	Hr

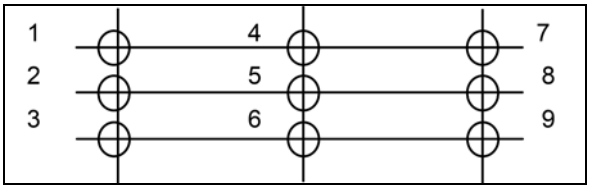


8. OPTICAL CHARACTERISTICS

8.1 OPTICAL CHARACTERISTICS OF LCD PANEL

Item		Symbol	condition	Min.	Typ.	Max.	Unit	Remark
Response Time	Rise	Tr	θ=0°	-	15	30	ms	Note4,6
	Fall	Tf		-	35	50	ms	
Contrast ratio		CR	At optimized viewing angle	300	350	-	-	Note5,6
Viewing angle	Top	θy+	CR≧5	60	70	-	Deg.	Note6,7
	Bottom	θy-		40	50	-		
	Left	θx-		60	70	-		
	Right	θx+		60	70	-		
Brightness		-	θ=0°	900	1000	-	cd/m^2	Note8
Uniformity		-		80	-	-	%	
White chromaticity		X	θ=0°	0.25	0.30	0.35	-	Note8
		y		0.30	0.35	0.40	-	

Measured by：TOPCON BM-7



$$\text{Brightness} = \frac{1+2+3+4+5+6+7+8+9}{9}$$

Note 1： Ambient temperature=25℃. LED current IL=TBD mA.

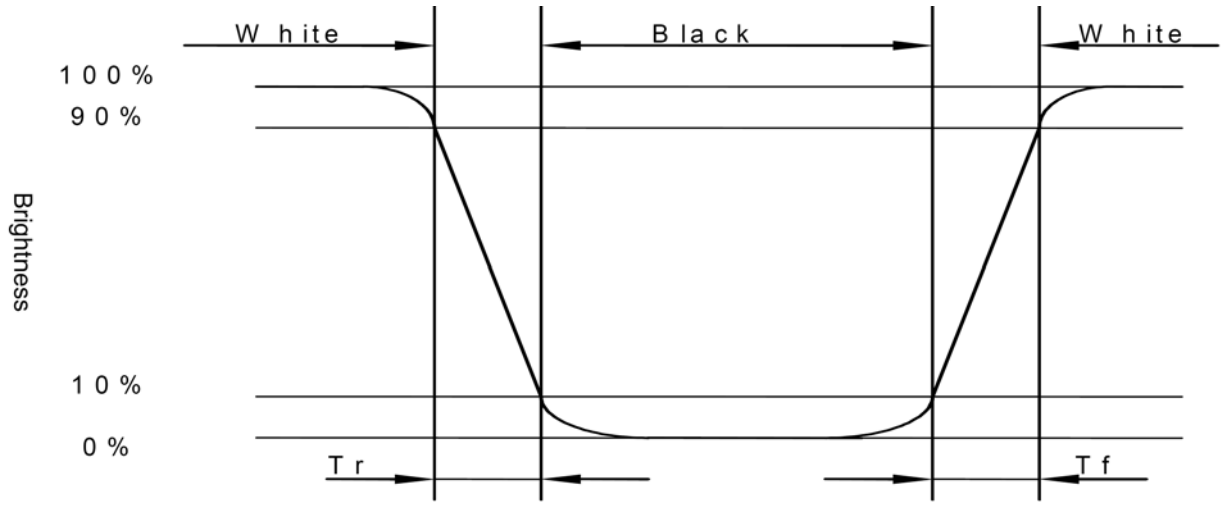
Note 2： To be measured in the dark room.

Note 3： To be measured on the center area of panel with a viewing cone of 1° by Topcon. luminance meter BM-7, after 10 minutes operation.

Note 4： Definition of response time：

The output signals of photo-detector are measured when the input signals are changed from “white” to “black” (rising time) and from “black” to “white” (falling time), respectively.

The response time is defined as the time interval between the 10% and 90% of amplitudes. Refer to figure as shown below.



Note 5： Definition of contrast ratio：

Contrast ratio is calculated with the following formula.

$$\text{Contrast ratio (CR)} = \frac{\text{Photo-detector output when LCD is at “White” state}}{\text{Photo-detector output when LCD is at “Black” state}}$$

Note 6： White Vi=V_{i50} -/+ 1.5V Black Vi=V_{i50} +/- 2.0V

“+/-” means that the analog input signal swings in phase with COM signal.

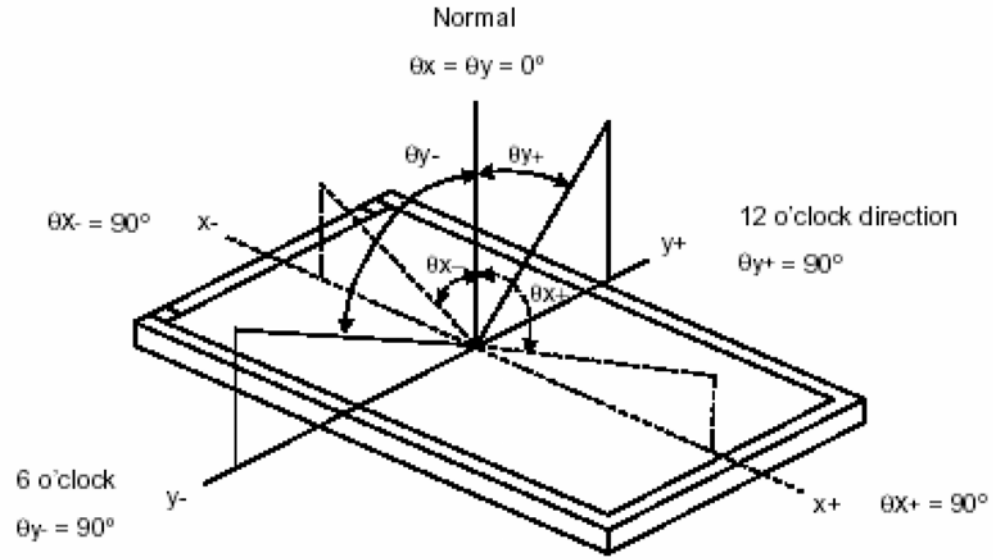
“-/+” means that the analog input signal swings in phase with COM signal.

V_{i50}：The analog input voltage when transmission is 50%.

The 100% transmission is defined as the transmission of LCD panel when all the input terminals of module are electrically opened.

Note 7： Definition of viewing angle：

Refer to figure as below.



Note 8： Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

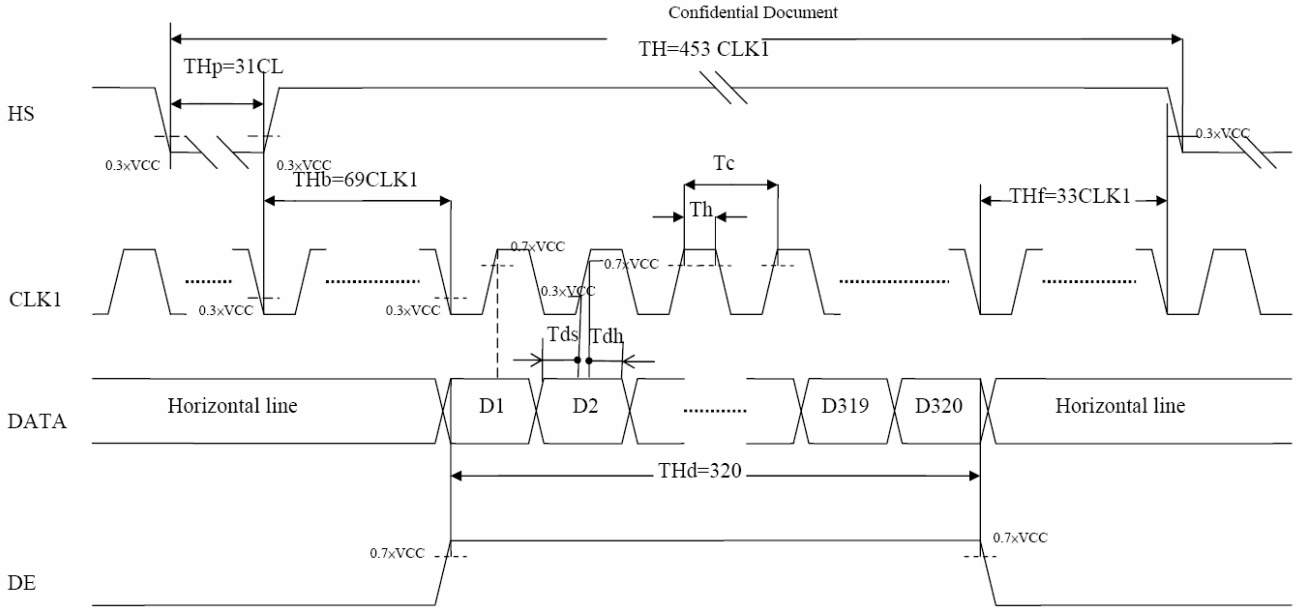
9. TIMING CHART

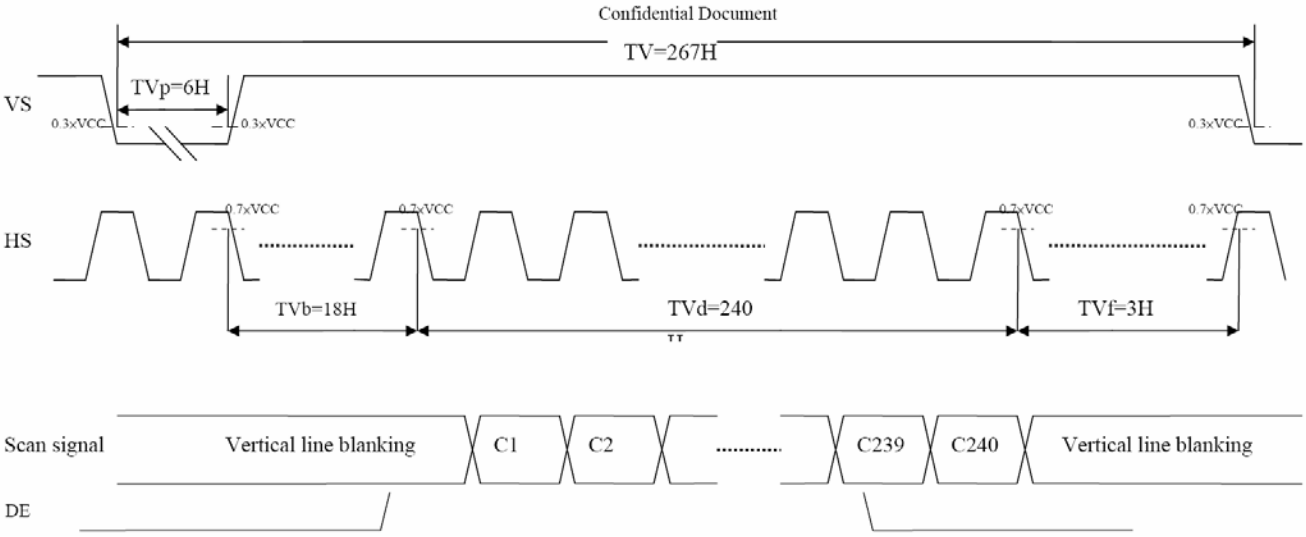
9.1 INPUT SIGNAL TIMING

The specification of input signals timing is as the following table and timing diagram.

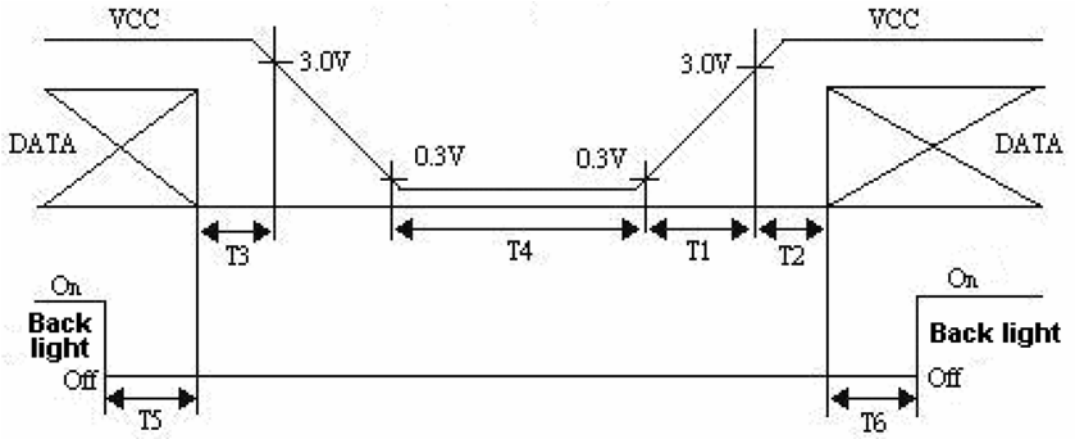
Parameter		Symbol	Min.	Typ.	Max.	Unit	Remark
CLK	Frequency	1/Tc	-	7.21	-	MHz	
	Duty ratio	Th/Tc	40	50	60	%	
DATA	Setup time	Tds	12	-	-	ns	
	Hold time	Tdh	12	-	-	ns	
Horizontal synchronizing	Period	TH	-	453	-	Clock	
	Pulse width	THp	-	31	-	Clock	
	Horizontal period	THd	-	320	-	Clock	
	Blank porch	THb	-	69	-	Clock	
	Front porch	THf	-	33	-	Clock	
Vertical synchronizing	Period	TV	-	267	-	Line	
	Pulse width	TVp	-	6	-	Line	
	Vertical period	TVd	-	240	-	Line	
	Blank porch	TVb	-	18	-	Line	
	Front porch	TVf	-	3	-	Line	

Note： 1. In case of using the slow frequency, the deterioration of display flicker ect may occur.
2. The timing characteristics are basically fixed as above.





9.2 POWER OFF/ON SEQUENCE TIMING



Timing Specifications:

0<T1≦15ms

T2>0.5s

0<T3≦0.1s

T4>1s

T5>0.1s

T6>0.1s

10. RELIABILITY TEST

Environmental Test				
NO.	ITEM	CONDITIONS	TIME PERIOD	REMARK
1	High Temperature Storage	80℃	240HRS	-
2	Low Temperature Storage	-30℃	240HRS	-
3	High Temperature Humidity Operation	60℃ 90%RH	240HRS	-
4	High Temperature Operation	70℃	240HRS	-
5	Low Temperature Operation	-20℃	240HRS	-
6	Temperature Cycle	-30℃←→80℃ (30min) (5min) (30min)	100CYCLE	-