

EXAMINED BY :	EMERGING DISPLAY TECHNOLOGIES CORPORATION	FILE NO . CAS-51456
Vincent Wn		ISSUE : APR.19, 2007
APPROVED BY:		TOTAL PAGE : 8
David Chang		VERSION : 3
CUSTOMER ACCEPTANCE SPECIFICATIONS		
MODEL NO. : EW 5 0 7 9 3 F L W P (RoHS) FOR MESSRS : 		
CUSTOMER'S APPROVAL DATE : BY : 		

EMERGING DISPLAY
TECHNOLOGIES CORPORATION

MODEL NO .
E W 5 0 7 9 3 F L W P(RoHS)

VERSION
3

PAGE
0-1

RECORDS OF REVISION

DOC . FIRST ISSUE

AUG.18, 2006

DATE

REVISED
PAGE
NO.

SUMMARY

SEP.21, 2006

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3.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS .

PARAMETER	SYMBOL	MIN	MAX	UNIT	REMARK
POWER SUPPLY FOR LOGIC	VDD - VSS	0	4.0	V	

↓

PARAMETER	SYMBOL	MIN	MAX	UNIT	REMARK
POWER SUPPLY FOR LOGIC	VDD - VSS	0	6.0	V	

APR.19,2007

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5.OPTICAL CHARACTERISTICS

I T E M	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT	NOTE
THE BRIGHTNESS OF MODULE	L	VLED-VSS=5.0V	8	10	—	cd / m ²	1,2

↓

I T E M	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT	NOTE
THE BRIGHTNESS OF MODULE	L	VLED-VSS=5.0V	14	16	—	cd / m ²	1,2

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1. GENERAL SPECIFICATIONS

1.1 GENERAL SPECIFICATIONS

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

E U - 0 0 2 B

1.2 APPLICATION NOTES FOR CONTROLLER / DRIVER :

PLEASE REFER TO :

E P S O N - S 1 D 1 3 7 0 0

1.3 THIS INDIVIDUAL SPECIFICATION IS PRIOR TO GENERAL SPECIFICATIONS .

1.4 MATERIAL SAFETY DESCRIPTION

ASSEMBLIES SHALL COMPLY WITH EUROPEAN ROHS REQUIREMENTS, INCLUDING PROHIBITED MATERIALS/COMPONENTS CONTAINING LEAD, MERCURY, CADMIUM, HEXAVALENT CHROMIUM, POLYBROMINATED BIPHENYLS (PBB) AND POLYBROMINATED DIPHENYL ETHERS (PBDE)

2. MECHANICAL SPECIFICATIONS

- | | | | |
|------|-------------------|-------|--|
| (1) | NUMBER OF DOTS | ----- | 320W * 240H DOTS |
| (2) | MODULE SIZE | ----- | 96.3W * 66.6H * 9.2D (max.) mm |
| (3) | EFFECTIVE AREA | ----- | 78.8W * 59.6H mm |
| (4) | ACTIVE AREA | ----- | 76.79W * 57.59H mm |
| (5) | DOT SIZE | ----- | 0.23W * 0.23H mm |
| (6) | DOT PITCH | ----- | 0.24W * 0.24H mm |
| (7) | LCD TYPE | ----- | FSTN , POSITIVE , WHITE ,
TRANSFLECTIVE , PG POLARIZER
FRONT POLARIZER : ANTIGLARE |
| (8) | DRIVING METHOD | ----- | 1 / 242 DUTY MULTIPLEX DRIVE |
| (9) | BACKLIGHT | ----- | LED , COLOR : WHITE |
| (10) | VIEWING DIRECTION | ----- | 6 O'CLOCK |

3. ABSOLUTE MAXIMUM RATINGS

3.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS .

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	REMARK
POWER SUPPLY FOR LOGIC	VDD – VSS	0	6.0	V	
INPUT VOLTAGE	VI	VSS	VDD	V	
STATIC ELECTRICITY	—	—	100	V	NOTE (1)
POWER SUPPLY FOR LED BACK-LIGHT	VLED – VLSS	—	5	V	

NOTE (1) : TEST METHOD AND CONDITIONS :
AFTER CHARGING UP 200 pF CAPACITOR BY STATED VOLTAGE ,
THE CAPACITOR IS CONNECTED WITH INTERFACE PINS OF THE
MODULE .

3.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS .

I T E M	OPERATING		STORAGE		REMARK
	MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	- 2 0 °C	7 0 °C	- 3 0 °C	8 0 °C	NOTE (1) , (2)
HUMIDITY	NOTE (3)		NOTE (3)		WITHOUT CONDENSATION
VIBRATION	—	2.45m /s ² (0.25G)	—	11.76m /s ² (1.2G)	10~100 Hz XYZ DIRECTIONS 1 Hr . EACH
SHOCK	—	29.4 m /s ² (3G)	—	490.0m /s ² (50G)	10 mSECONDS XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

NOTE (1) : BACKGROUND COLOR CHANGES SLIGHTLY DEPENDING ON AMBIENT
TEMPERATURE THIS PHENOMENON IS REVERSIBLE .

NOTE (2) : Ta AT -30°C : WILL BE < 48HRS.

80°C : WILL BE < 168HRS.

NOTE (3) : Ta ≤ 60°C : 85%RH MAX. (96HRS MAX.)

Ta < 60°C : ABSOLUTE HUMIDITY MUST BE LOWER THAN THE
HUMIDITY OF 85% AT 60°C(96HRS MAX.)

4 . ELECTRICAL CHARACTERISTICS

$T_a = 25\text{ }^{\circ}\text{C}$ $V_{DD}-V_{SS} = 5.0\text{ V}$

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
POWER SUPPLY VOLTAGE FOR LOGIC	$V_{DD} - V_{SS}$	—	3.3	5.0	5.5	V
INPUT VOLTAGE NOTE (1)	V_{IH}	CMOS LEVEL $V_{DD}=\text{MAX.}$	3.5	—	—	V
	V_{IL}	CMOS LEVEL $V_{DD}=\text{MIN.}$	—	—	1.0	V
OUTPUT VOLTAGE NOTE (1)	V_{OH}	$V_{DD}=\text{MIN.}$ $I_{OH}=-8\text{mA}$	$V_{DD}-0.4$	—	—	V
	V_{OL}	$V_{DD}=\text{MIN.}$ $I_{OL}=8\text{mA}$	—	—	0.4	V
POWER SUPPLY CURRENT FOR LOGIC NOTE (2)	I_{DD}	$V_{DD} - V_{SS} = 5.0\text{ V}$ $V_{LCD} - V_{SS} = 21.7\text{ V}$	—	60.0	80.0	mA
RECOMMENDED LCD DRIVING VOLTAGE	V_{OP} $\theta_y = 10^{\circ}$, $\theta_x = 0^{\circ}$ DUTY = 1 / 242	$T_a = -20\text{ }^{\circ}\text{C}$ NOTE(3)	21.5	22.5	23.5	V
		$T_a = 25\text{ }^{\circ}\text{C}$ NOTE(4)	20.7	21.7	22.7	V
		$T_a = 70\text{ }^{\circ}\text{C}$ NOTE(4)	19.9	20.9	21.9	V
CLOCK OSCILLATION FREQUENCY	f_{OSC}	—	—	32	—	MHz
POWER SUPPLY FOR LED BACK - LIGHT	$V_{LED} - V_{LSS}$	$I_F = 75\text{ mA}$	—	5.0	—	V

NOTE (1) : APPLIED TO TERMINALS D0 TO D7 , A0 , $\overline{CS}$, $\overline{WR}(\text{R} / \overline{W})$, $\overline{RD}(\text{E})$, SEL1 .

NOTE (2) : THE DISPLAY PATTERN IS ALL “ OFF ” / “ ON ” .

NOTE (3) : THIS DISPLAY PATTERN IS BAR (ONLY , $T_a=-20^{\circ}\text{C}$)

NOTE (4) : THIS DISPLAY PATTERN IS ALL “Q”.

5. OPTICAL CHARACTERISTICS

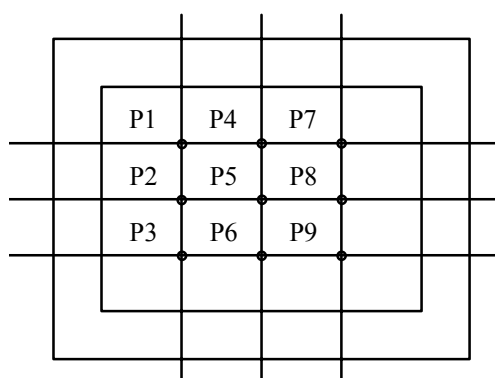
Ta = 25 °C

VDD-VSS = 5.0 V

I T E M	SYMBOL	CONDITION		MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING ANGLE	θ_{y+}	$K \geq 2.0$	$\theta_x = 0^\circ$	45	50	—	deg.	1
	θ_{y-}			45	50	—		
	θ_{x+}		$\theta_y = 0^\circ$	40	45	—	deg.	1
	θ_{x-}			30	35	—		
CONTRAST RATIO	K	$\theta_{y-} = 10^\circ$ $\theta_x = 0^\circ$		1.5	5.9	—	—	1
RESPONSE TIME	t r (rise)	$\theta_{y-} = 10^\circ$ $\theta_x = 0^\circ$	Ta=-20°C	—	4500	5850	msec	1
			Ta=25°C		300	390		
			Ta=70°C		70	91		
	t f (fall)	$\theta_{y-} = 10^\circ$ $\theta_x = 0^\circ$	Ta=-20°C	—	3000	3900	msec	1
			Ta=25°C		190	247		
			Ta=70°C		90	117		
THE BRIGHTNESS OF MODULE	L	VLED-VSS=5.0V		14	16	—	cd / m ²	1,2
THE UNIFORMITY OF MODULE	—			—	—	30	%	2,3

NOTE (1) : PLEASE REFER TO :
CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS. (EU – 002B)

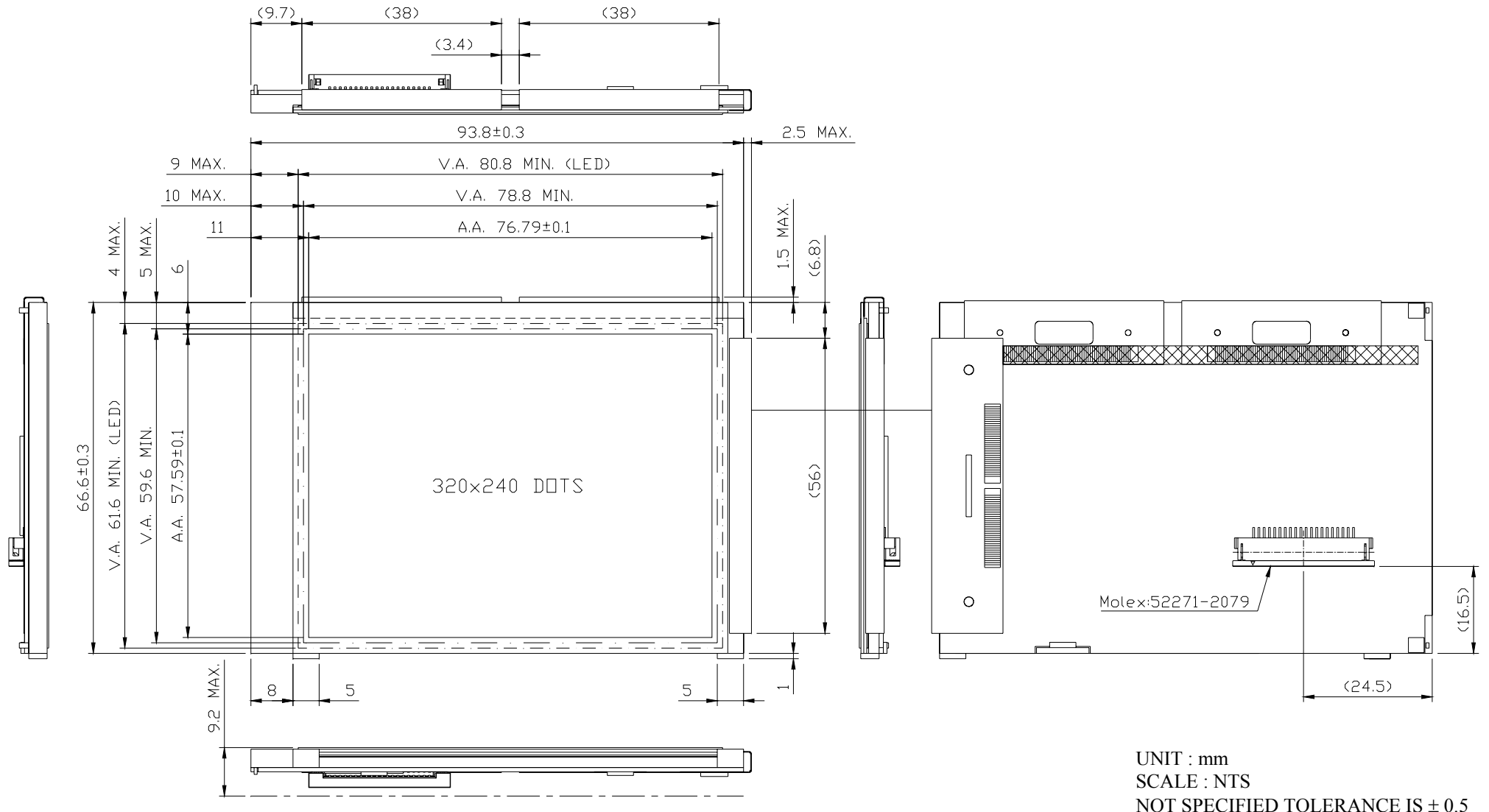
NOTE (2) : MEASUREMENT OF THE FOLLOWING 9 PLACES ON THE DISPLAY.
DEFINITION OF THE BRIGHTNESS TOLERANCE .



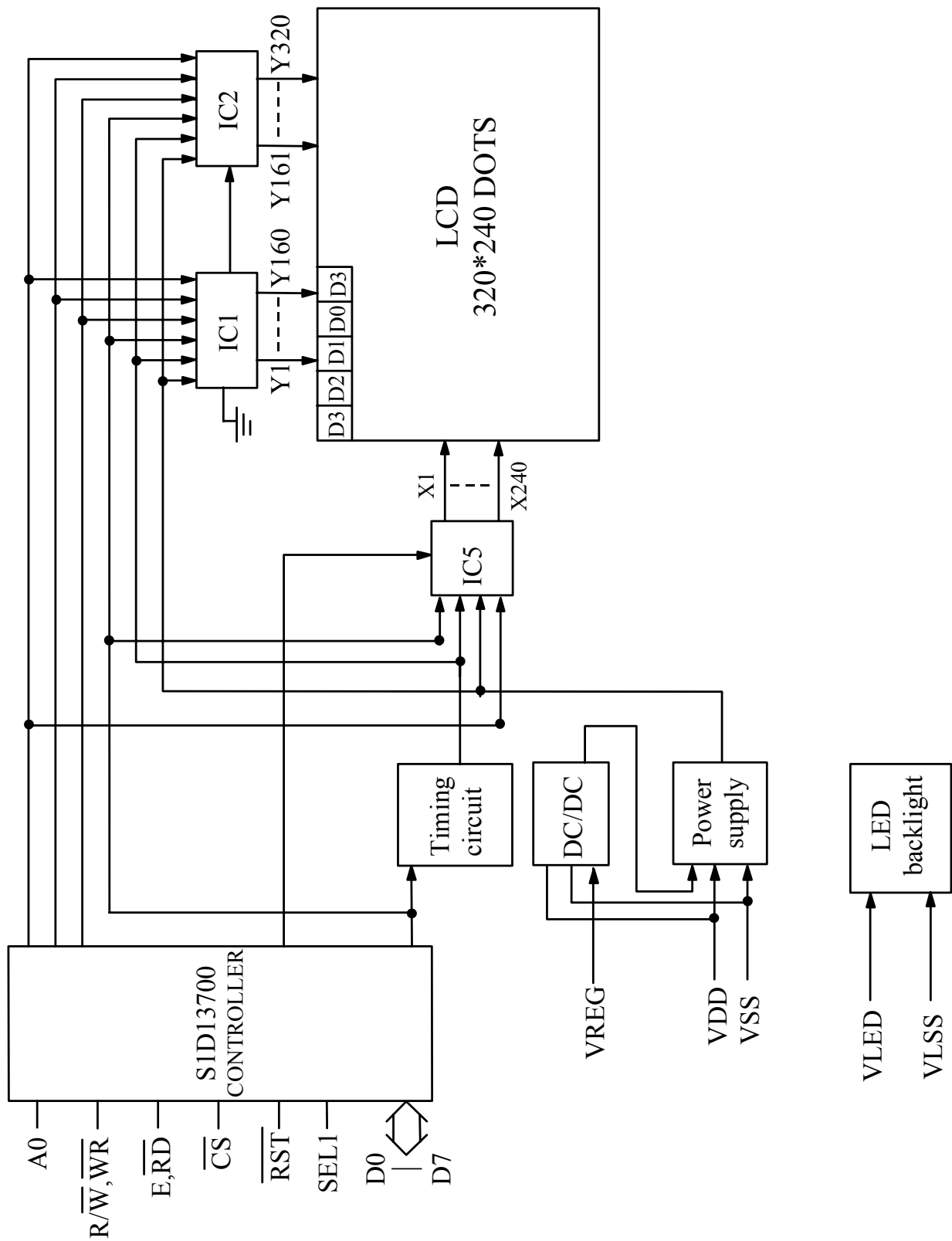
NOTE (3) : BRIGHTNESS UNIFORMITY IS DEFINED AS FOLLOWING

$$\sum_X = \left[\frac{(\text{MAXIMUN BRIGHTNESS} - \text{MINIMUN BRIGHTNESS})}{\text{AVERAGE BRIGHTNESS}} \right] \times 100\%$$

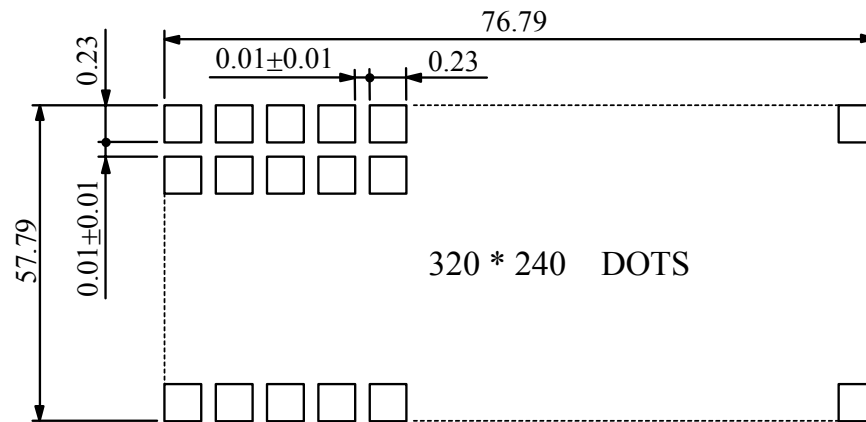
6. OUTLINE DIMENSIONS



7. BLOCK DIAGRAM



8. DETAIL DRAWING OF DOT MATRIX



UNIT : mm
SCALE : NTS
NOT SPECIFIED TOLERANCE IS ± 0.1

9. INTERFACE SIGNALS

PIN NO	SYMBOL	LEVEL	FUNCTION																																								
1	VSS	—	GROUND																																								
2	VDD	—	POWER SUPPLY FOR LOGIC CIRCUIT																																								
3	N.C	—	N.C.																																								
4	A0	—	8080 FAMILY INTERFACE <table> <tr> <th>AO</th><th>$\overline{RD}$</th><th>$\overline{WR}$</th><th>FUNCTION</th></tr> <tr> <td>0</td><td>0</td><td>1</td><td>STATUS FLAG READ</td></tr> <tr> <td>1</td><td>0</td><td>1</td><td>DISPLAY DATA AND CURSOR ADDRESS READ</td></tr> <tr> <td>0</td><td>1</td><td>0</td><td>DISPLAY DATA AND PARAMETER WRITE</td></tr> <tr> <td>1</td><td>1</td><td>0</td><td>COMMAND WRITE</td></tr> </table> 6800 FAMILY INTERFACE <table> <tr> <th>AO</th><th>R / $\overline{W}$</th><th>E</th><th>FUNCTION</th></tr> <tr> <td>0</td><td>1</td><td>1</td><td>STATUS FLAG READ</td></tr> <tr> <td>1</td><td>1</td><td>1</td><td>DISPLAY DATA AND CURSOR ADDRESS READ</td></tr> <tr> <td>0</td><td>0</td><td>1</td><td>DISPLAY DATA AND PARAMETER WRITE</td></tr> <tr> <td>1</td><td>0</td><td>1</td><td>COMMAND WRITE</td></tr> </table>	AO	$\overline{RD}$	$\overline{WR}$	FUNCTION	0	0	1	STATUS FLAG READ	1	0	1	DISPLAY DATA AND CURSOR ADDRESS READ	0	1	0	DISPLAY DATA AND PARAMETER WRITE	1	1	0	COMMAND WRITE	AO	R / $\overline{W}$	E	FUNCTION	0	1	1	STATUS FLAG READ	1	1	1	DISPLAY DATA AND CURSOR ADDRESS READ	0	0	1	DISPLAY DATA AND PARAMETER WRITE	1	0	1	COMMAND WRITE
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5	$\overline{WR}, R / \overline{W}$	H/L	8080 FAMILY INTERFACE ACTS AS THE ACTIVE-LOW WRITE STROBE . 6800 FAMILY INTERFACE ACTS AS THE READ/ WRITE CONTROL SIGNAL .																																								
6	$\overline{RD}, E$	H/L	8080 FAMILY INTERFACE ACTS AS THE ACTIVE-LOW READ STROBE . 6800 FAMILY INTERFACE ACTS AS THE ACTIVE-HIGH ENABLE CLOCK .																																								
7 14	D0 D7	H/L	DISPLAY DATA																																								
15	$\overline{CS}$	H/L	CHIP SELECT																																								
16	$\overline{RST}$	H/L	RESET																																								
17	VREG	—	CONNECTION RESISTOR TO GND (FOR CONTRAST ADJUST)																																								
18	SEL1	H/L	8080 OR 6800 FAMILY INTERFACE SELECT , H:6800 , L:8080																																								
19	VLED	—	POWER SUPPLY FOR LED BACK - LIGHT																																								
20	VLSS	—	POWER SUPPLY FOR LED BACK - LIGHT																																								

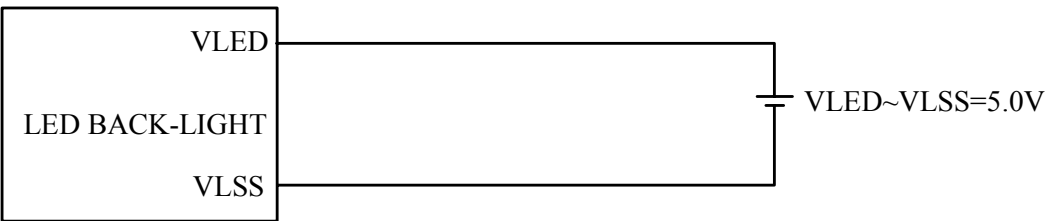
1 0 . POWER SUPPLY

1 0 . 1 POWER SUPPLY FOR LCM



VR: 20K Ω

1 0 . 2 POWER SUPPLY FOR LED BACK - LIGHT



1 0 . 3 TIMING OF POWER SUPPLY AND INTERFACE SIGNAL

