EXAMINED BY : Vincent Wu	EMERGING DISPLAY	FILE NO . CAS-50342
		ISSUE : OCT.25,2002
APPROVED BY: Roger Yang	TECHNOLOGIES CORPORATION	TOTAL PAGE : 1 0
		VERSION : 4

CUSTOMER ACCEPTANCE SPECIFICATIONS

MODEL NO . :

E G 6 4 E 0 0 B C W U

FOR MESSRS :

CUSTOMER'S APPROVAL

DATE :

BY :

ACDS 175-177 route de Genas - 69100 VILLEURBANNE - France
Tél : +33 4 72 91 26 80 - **Fax** : +33 4 72 35 18 06
Web site: http://www.acds.fr Email: info@acds.fr

EMERGING DISPLAY TECHNOLOGIES CORPORATION	MODEL NO. EG64E00BCWU	VERSION 4
RECORDS OF REVISION	DOC. FIRST ISSUE NOV.5,1994	

<table>
<tr><th>DATE</th><th>REVISED DRAWING NO.</th><th>SUMMARY</th></tr>
<tr><td>APR.28,'95</td><td>1</td><td>(2)MODULE SIZE
273.0W*142.0H*20.0D CHANGE TO
273.0W*141.0H*20.0D</td></tr>
<tr><td></td><td>3</td><td>
<table>
<tr><th>SYMBOL</th><th>MIN</th><th>TYP</th><th>MAX</th></tr>
<tr><td>VEE-VSS</td><td>-20.5</td><td>-21.0</td><td>-21.5</td></tr>
<tr><td colspan="4">CHANGE TO</td></tr>
<tr><td>VEE-VSS</td><td>—</td><td>-19.0</td><td>—</td></tr>
</table>
<table>
<tr><th>SYMBOL</th><th>CONDITION</th><th>MIN</th><th>TYP</th><th>MAX</th></tr>
<tr><td rowspan="3">VDD-VO</td><td>Ta=10°C</td><td>—</td><td>—</td><td>26.5</td></tr>
<tr><td>Ta=25°C</td><td>—</td><td>23.5</td><td>—</td></tr>
<tr><td>Ta=40°C</td><td>20.4</td><td>—</td><td>—</td></tr>
<tr><td colspan="5">CHANGE TO</td></tr>
<tr><td rowspan="3">VDD-VO</td><td>Ta=10°C</td><td>—</td><td>22.5</td><td>—</td></tr>
<tr><td>Ta=25°C</td><td>—</td><td>21.5</td><td>—</td></tr>
<tr><td>Ta=40°C</td><td>—</td><td>20.5</td><td>—</td></tr>
</table>
</td></tr>
<tr><td></td><td>7</td><td>7. OUTLINE DIMENSION REVISE THE WHOLE PAGE</td></tr>
<tr><td>JUL.15,2002</td><td>2</td><td>3.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS
<table>
<tr><th rowspan="2">ITEM</th><th colspan="2">OPERATING</th><th colspan="2">STORAGE</th><th rowspan="2">COMMENT</th></tr>
<tr><th>MIN.</th><th>MAX.</th><th>MIN.</th><th>MAX.</th></tr>
<tr><td>AMBIENT TEMPERATURE</td><td>10°C</td><td>40°C</td><td>-20°C</td><td>60°C</td><td>NOTE (2)(3)</td></tr>
</table>
→
<table>
<tr><th rowspan="2">ITEM</th><th colspan="2">OPERATING</th><th colspan="2">STORAGE</th><th rowspan="2">COMMENT</th></tr>
<tr><th>MIN.</th><th>MAX.</th><th>MIN.</th><th>MAX.</th></tr>
<tr><td>AMBIENT TEMPERATURE</td><td>0°C</td><td>50°C</td><td>-20°C</td><td>60°C</td><td>NOTE (2)(3)</td></tr>
</table>
</td></tr>
<tr><td></td><td>3</td><td>4. ELECTRICAL CHARACTERISTICS
RECOMMENDED LCD DRIVING VOLTAGE :
Ta = 10°C → 0 °C , Ta = 40°C → 50 °C</td></tr>
<tr><td></td><td>10</td><td>11.2 POWER SUPPLY FOR CCFL BACK-LIGHT
RECOMMENDED INVERTER : IA-EM02A1(EMERGING DISPLAY) →
RECOMMENDED INVERTER : CXA-M10M-L (TDK)</td></tr>
<tr><td>OCT.25,2002</td><td>9</td><td>10. INTERFACE SIGNALS
<table>
<tr><th>PIN NO</th><th>SYMBOL</th><th>LEVEL</th><th>FUNCTION</th></tr>
<tr><td>5</td><td>VO</td><td>—</td><td>OPERATING VOLTAGE FOR LCD DRIVING</td></tr>
<tr><td colspan="4">|</td></tr>
<tr><td>8</td><td>VEE</td><td>—</td><td>POWER SUPPLY FOR LCD DRIVING</td></tr>
<tr><td colspan="4">⇓</td></tr>
<tr><td>5</td><td>VEE</td><td>—</td><td>POWER SUPPLY FOR LCD DRIVING</td></tr>
<tr><td colspan="4">|</td></tr>
<tr><td>8</td><td>VO</td><td>—</td><td>OPERATING VOLTAGE FOR LCD DRIVING</td></tr>
</table>
</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

ACDS 175-177 route de Genas - 69100 VILLEURBANNE - France
Tél : +33 4 72 91 26 80 - **Fax** : +33 4 72 35 18 06
Web site: http://www.acds.fr Email: info@acds.fr

TABLE OF CONTENTS

ACDS 175-177 route de Genas - 69100 VILLEURBANNE - France
Tél : +33 4 72 91 26 80 - **Fax** : +33 4 72 35 18 06
Web site: http://www.acds.fr Email: info@acds.fr

1. GENERAL SPECIFICATIONS

1.1 GENERAL SPECIFICATIONS
PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

EU-001A

1.2 THIS INDIVIDUAL SPECIFICATION IS PRIOR TO GENERAL SPECIFICATIONS .

2. MECHANICAL SPECIFICATIONS

(1)	NUMBER OF DOTS	640W * 200H DOTS
(2)	MODULE SIZE	273.0W * 141.0H * 20.0D mm
(3)	EFFECTIVE AREA	232.0W * 106.0H mm
(4)	ACTIVE AREA	223.97W * 97.97H mm
(5)	DOT SIZE	0.32W * 0.46H mm
(6)	DOT PITCH	0.35W * 0.49H mm
(7)	LCD TYPE	STN, BLUE, TRANSMISSIVE,NEGATIVE
(8)	DRIVING METHOD	1/200 DUTY MULTIPLEX DRIVE
(9)	VIEWING DIRECTION	12 O'CLOCK
(10)	BACK-LIGHT	CCFL

3. ABSOLUTE MAXIMUM RATINGS

3.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	COMMENT
POWER SUPPLY FOR LOGIC	VDD – VSS	0	6.0	V	
POWER SUPPLY FOR LCD DRIVING	VDD – VEE	0	27.0	V	
INPUT VOLTAGE	VI	VSS	VDD	V	
STATIC ELECTRICITY	—	—	100	V	NOTE (1)

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.

ITEM	OPERATING		STORAGE		COMMENT
	MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	0 °C	50 °C	-20 °C	60 °C	NOTE (2) (3)
HUMIDITY	—	85 % RH	—	85 % RH	WITHOUT CONDENSATION
VIBRATION	—	2.45 m/s^2 (0.25 G)	—	11.76 m/s^2 (1.2 G)	10~100 HZ XYZ DIRECTIONS 1 Hr. EACH
SHOCK	—	29.4 m/s^2 (3 G)	—	490.0 m/s^2 (50 G)	1 Mseconds XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

NOTE (2) : Ta AT -20°C : 48HR MAX.
60°C : 48HR MAX.

NOTE (3) : BACKGROUND COLOR CHANGES SLIGHTLY DEPENDING ON AMBIENT TEMPERATURE THIS PHENOMENON IS REVERSIBLE.

4. ELECTRICAL CHARACTERISTICS

Ta = 25 °C VDD = 5.0 V

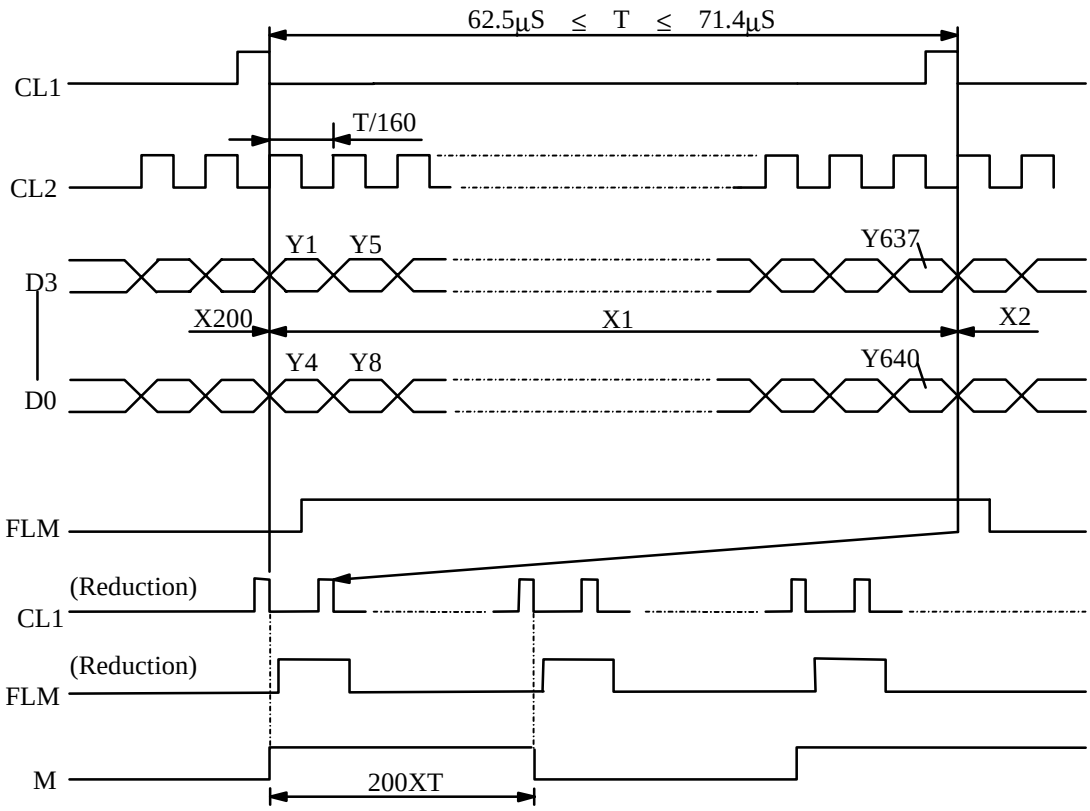
PARAMETER		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
POWER SUPPLY VOLTAGE FOR LOGIC		VDD–VSS	—	4.75	5.0	5.25	V
POWER SUPPLY VOLTAGE FOR LCD DRIVE		VEE–VSS	—	—	-19.0	—	V
INPUT VOLTAGE NOTE (1)		VIH	H LEVEL	0.8*VDD	—	—	V
		VIL	L LEVEL	—	—	0.2*VDD	V
POWER SUPPLY CURRENT FOR LOGIC		IDD	VDD – VSS = 5.0 V VEE – VSS = -19.0	—	9	—	mA
POWER SUPPLY CURRENT FOR LCD DRIVE		IEE	VDD – VSS = 5.0 V VEE – VSS = -19.0	—	8	—	mA
RECOMMENDED LCD DRIVING VOLTAGE NOTE (2)		VDD – VO ∅ = 10 ° θ = 180 °	Ta = 0 °C	—	22.5	—	V
			Ta = 25 °C	—	21.5	—	V
			Ta = 50 °C	—	20.5	—	V
FLM FREQUENCY		f FLM	—	70	75	80	HZ
POWER SUPPLY FOR CCFL	VOLTAGE	VCCFL	—	—	300	—	Vrms
	FREQUENCY	f CCFL	—	—	30K	—	HZ
	CURRENT	IL	—	—	5	—	mA

NOTE (1): APPLIED TO TERMINALS M, FLM, CL1, CL2, UD0~UD3, $\overline{\text{DISPOFF}}$.

NOTE (2): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT ± 1.0V BY EACH MODULE.

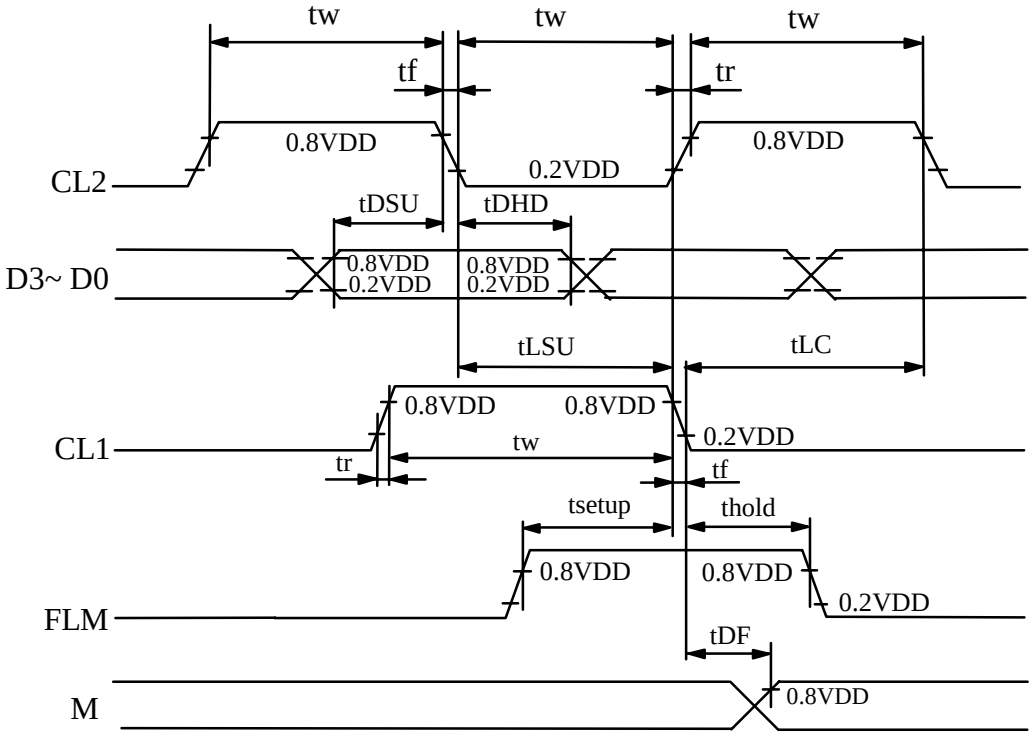
5. TIMING CHARACTERISTICS

5.1 INTERFACE TIMING



5.2 SWITCHING CHARACTERISTICS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Frequency of maximum clock	fcp	—	—	8	MHZ
CL1 , CL2 , pulse width	tw	45	—	—	ns
Rise , fall time	tr,tf	—	—	30	ns
Data setup time	tDSU	20	—	—	ns
Data hold time	tDHD	20	—	—	ns
CL1 setup time	tLSU	80	—	—	ns
CL1 → CL2 time	tLC	80	—	—	ns
FLM setup time	tsetup	100	—	—	ns
FLM hold time	thold	100	—	—	ns
M delay time	tDF	—	—	300	ns



6. OPTICAL CHARACTERISTICS

Ta = 25 °C VDD = 5.0 V VDD - VO = 21.5 V

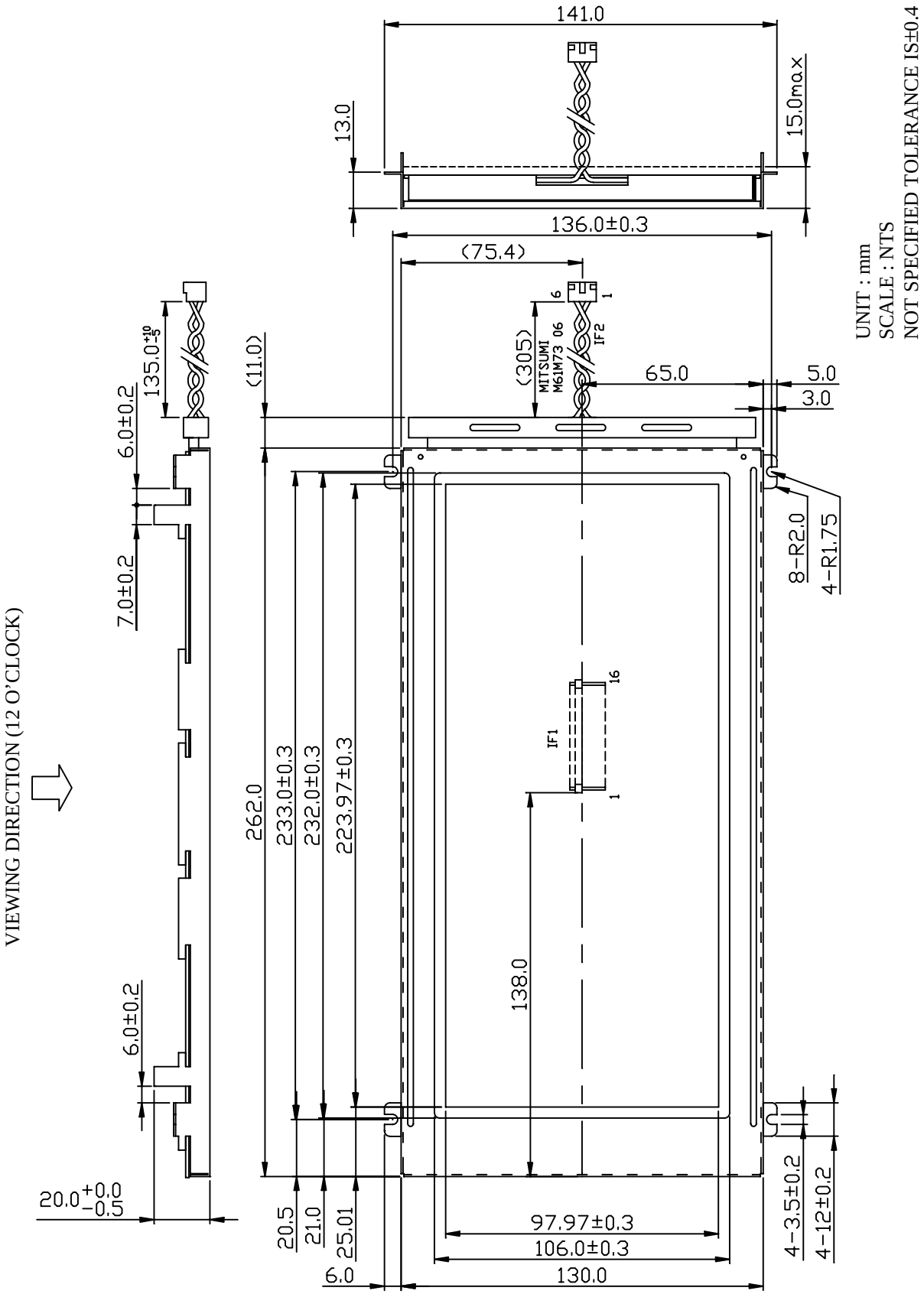
ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING AREA	∅2 – ∅1	K ≥ 2.0	40	—	—	deg.	1
CONTRAST RATIO	K	∅ = 10 ° θ = 180 °	—	5	—	—	1
RESPONSE TIME	tr(rise)	∅ = 10 ° θ = 180 °	—	250	—	ms	1
	tf(fall)	∅ = 10 ° θ = 180°	—	350	—	ms	1
BRIGHTNESS OF BACKLIGHT	B	—	—	30	—	cd/m^2	1
RISE TIME OF BACKLIGHT	TC	—	—	3	—	MINUTE	
BRIGHTNESS UNIFORMITY	—	—	—	—	±20	%	2

NOTE (1): PLEASE REFER TO :
CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS. (EU - 001A)

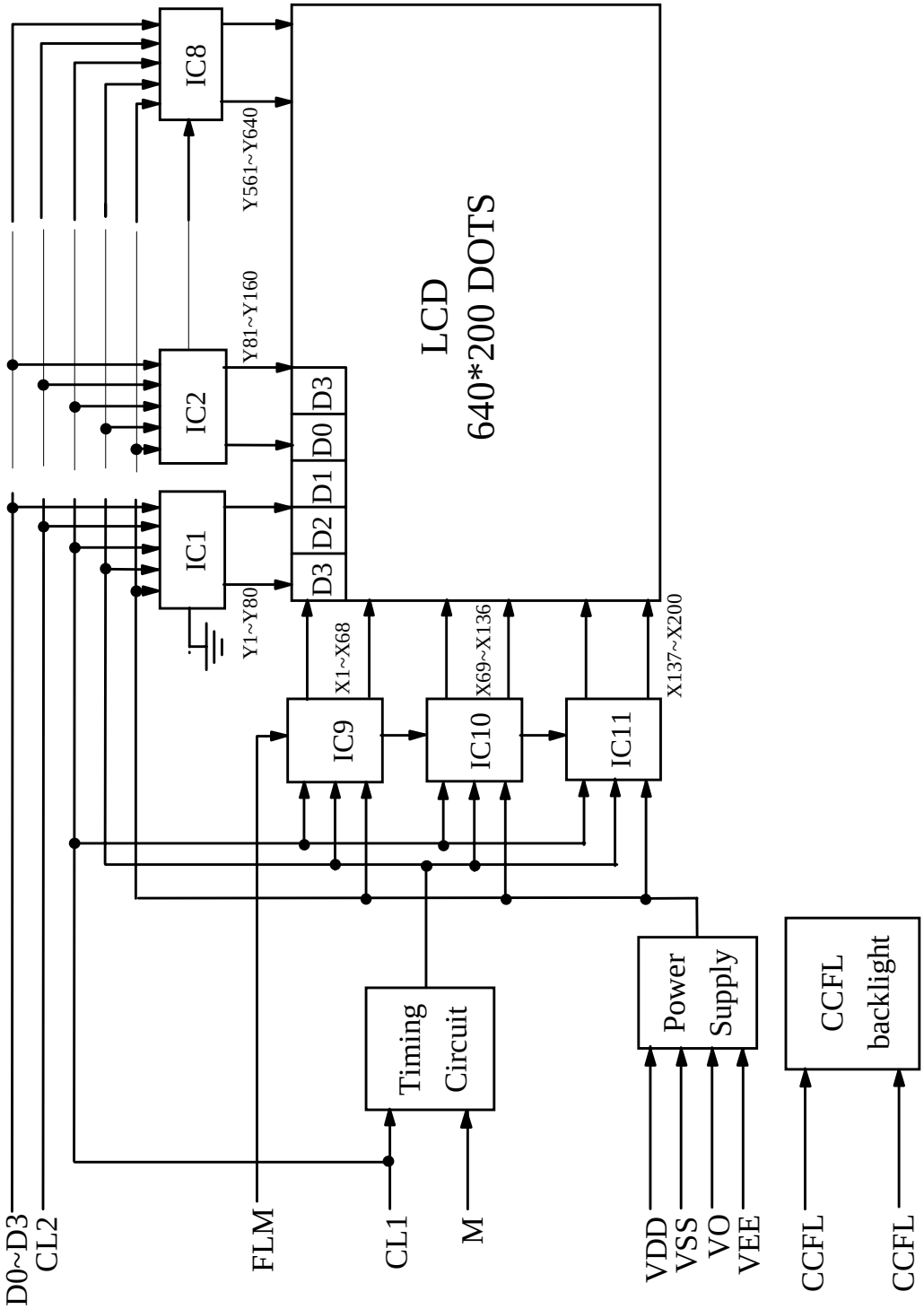
NOTE (2): BRIGHTNESS UNIFORMITY IS DEFINED AS FOLLOWING

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

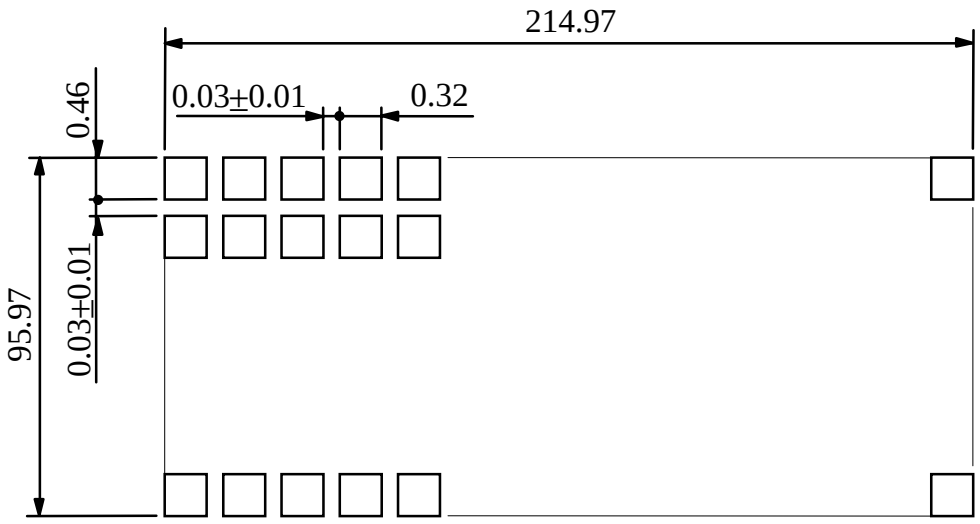
7. OUTLINE DIMENSION



8. BLOCK DIAGRAM



9. DETAIL DRAWING OF DOT MATRIX



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

10. INTERFACE SIGNALS

IF1：

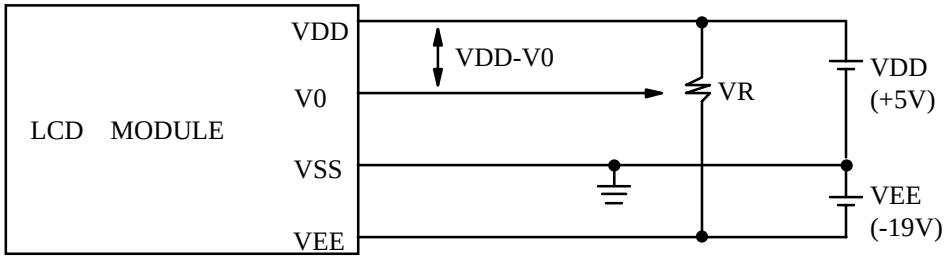
PIN NO	SYMBOL	LEVEL	FUNCTION
1	FLM	H	THE FLM SIGNAL INDICATING THE BEGINNING OF EACH DISPLAY CYCLE
2	CL1	H → L	DISPLAY DATA LATCH
3	CL2	H → L	DISPLAY DATA SHIFT
4	M	H / L	CONTROL SIGNAL FOR AC DRIVING
5	VEE	—	POWER SUPPLY FOR LCD DRIVING
6	VDD	—	POWER SUPPLY FOR LOGIC CIRCUIT
7	VSS	—	GROUND
8	VO	—	OPERATING VOLTAGE FOR LCD DRIVING
9	D0	H / L	DISPLAY DATA
10	D1	H / L	
11	D2	H / L	
12	D3	H / L	
13~16	NC	—	NO CONNECTION

IF2：

INTERFACE	PIN	SINGAL	VEVEL	FUNCTION
CCFL	1	VCCFL	—	POWER SUPPLY FOR CCFL DRIVING
	2~5	NC	—	NO CONNECTION
	6	VCCFL	—	POWER SUPPLY FOR CCFL DRIVING

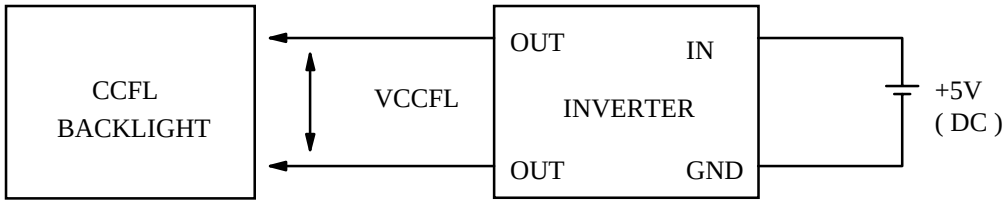
11. POWER SUPPLY

11.1 POWER SUPPLY FOR LCM



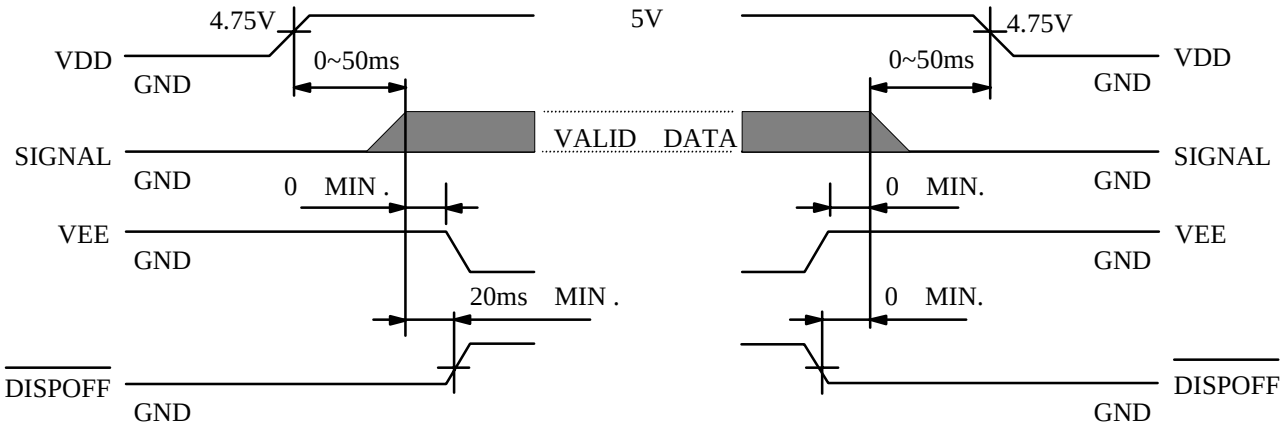
VDD – V0 : LCD DRIVING VOLTAGE
VR : 100KΩ ~ 200KΩ

11.2 POWER SUPPLY FOR CCFL BACK - LIGHT



RECOMMENDED INVERTER : CXA-M10M-L (TDK)

11.3 TIMING OF POWER SUPPLY AND INTERFACE SIGNAL



POWER ON POWER OFF