

EXAMINED BY :	EMERGING DISPLAY TECHNOLOGIES CORPORATION	FILE NO . CAS-50342
<i>Vincent Uh</i>		ISSUE : OCT.25,2002
APPROVED BY:		TOTAL PAGE : 10
<i>Roger Yang</i>		VERSION : 4

CUSTOMER	ACCEPTANCE	SPECIFICATIONS
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MODEL NO. :

EG64E00BCWU

FOR MESSRS :

CUSTOMER'S APPROVAL

DATE :

BY :

EMERGING DISPLAY
TECHNOLOGIES CORPORATION

MODEL NO.
EG64E00BCWU

VERSION
4

DOC. FIRST ISSUE

NOV.5,1994

RECORDS OF REVISION

DATE	REVISED DRAWING NO.	SUMMARY																																																				
APR.28,'95	1	(2)MODULE SIZE 273.0W*142.0H*20.0D CHANGE TO 273.0W*141.0H*20.0D																																																				
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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 * 97.97 H mm |
| (5) DOT SIZE | ----- | 0.32 W * 0.46 H 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	—	—	1 0 0	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 .

I T E M	OPERATING		STORAGE		COMMENT
	MIN .	MAX .	MIN .	MAX .	
AMBIENT TEMPERATURE	0 °C	5 0 °C	- 2 0 °C	6 0 °C	NOTE (2) (3)
HUMIDITY	—	8 5 % RH	—	8 5 % 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 (5 0 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

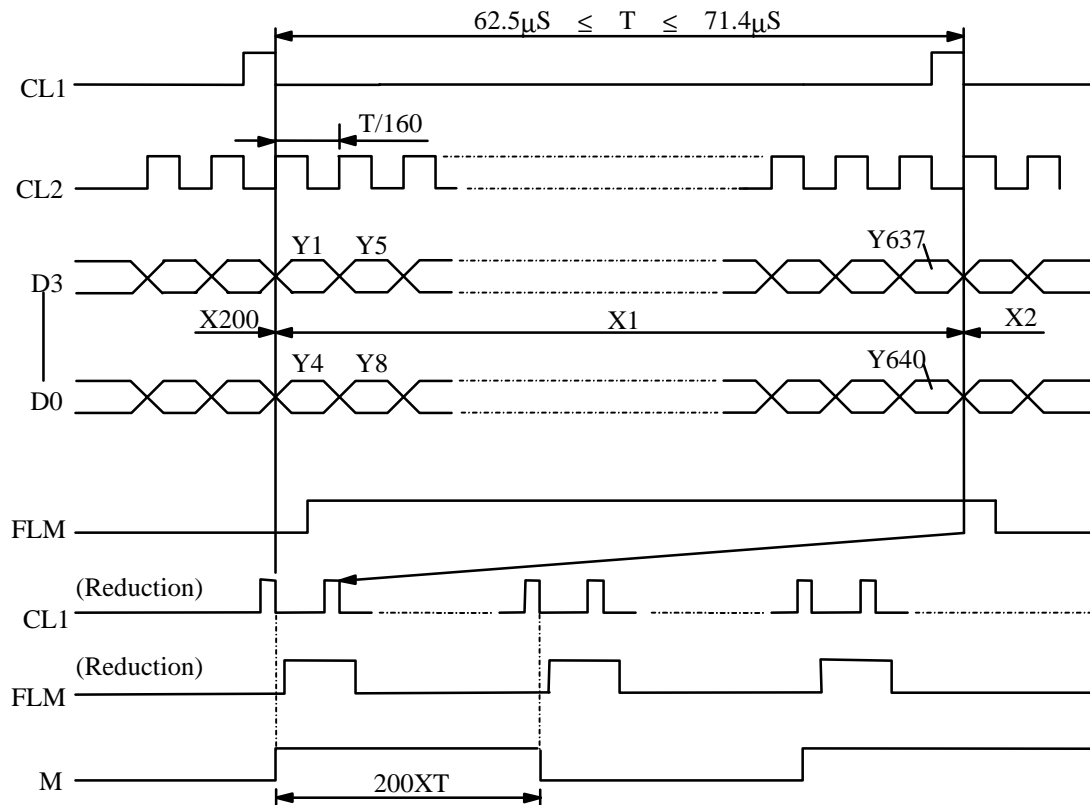
VDD = 5.0 V

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, DISPOFF.

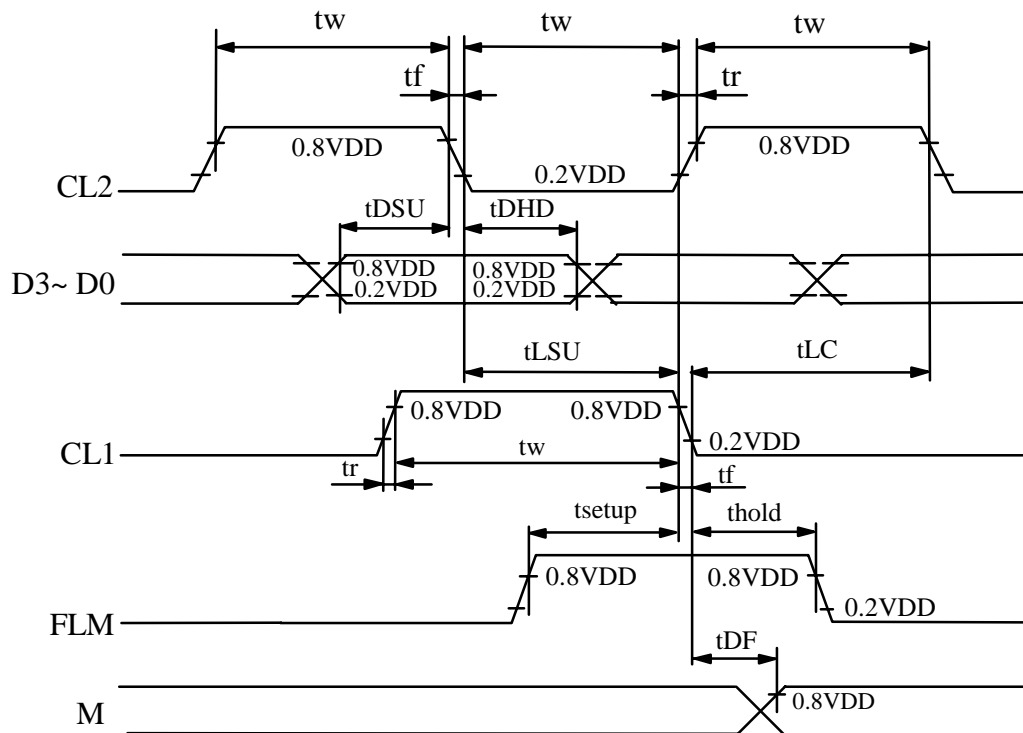
NOTE (2): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT ± 1.0V BY EACH MODULE.

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

I T E M	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING AREA	Ø 2 - Ø 1	K ≥ 2.0	40	—	—	deg.	1
CONTRAST RATIO	K	Ø = 10° θ = 180°	—	5	—	—	1
RESPONSE TIME	tr(rise)	Ø = 10° θ = 180°	—	250	—	ms	1
	tf(fall)	Ø = 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 :

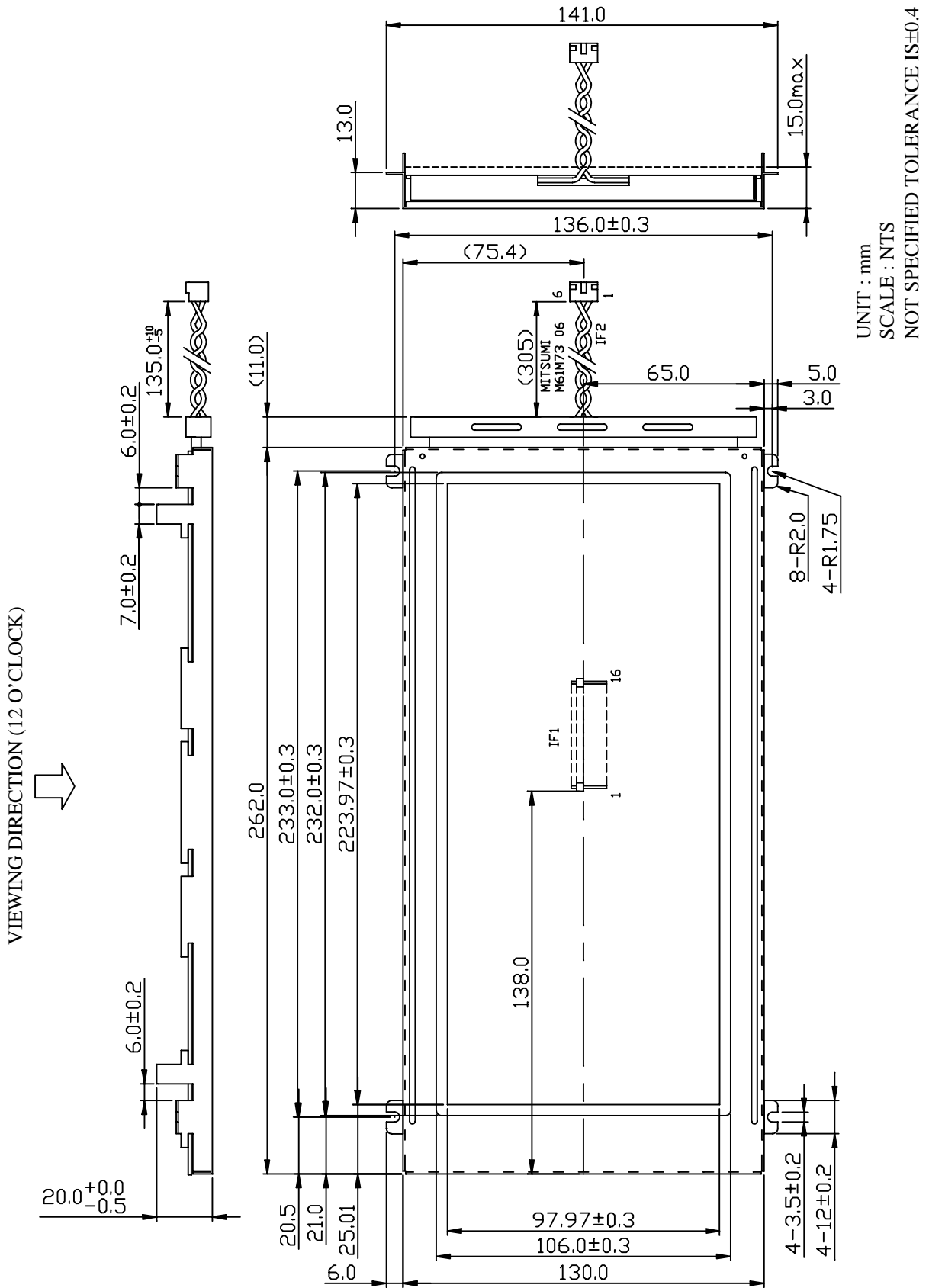
CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS. (EU - 001A)

NOTE (2) : BRIGHTNESS UNIFORMITY IS DEFINED AS FOLLOWING

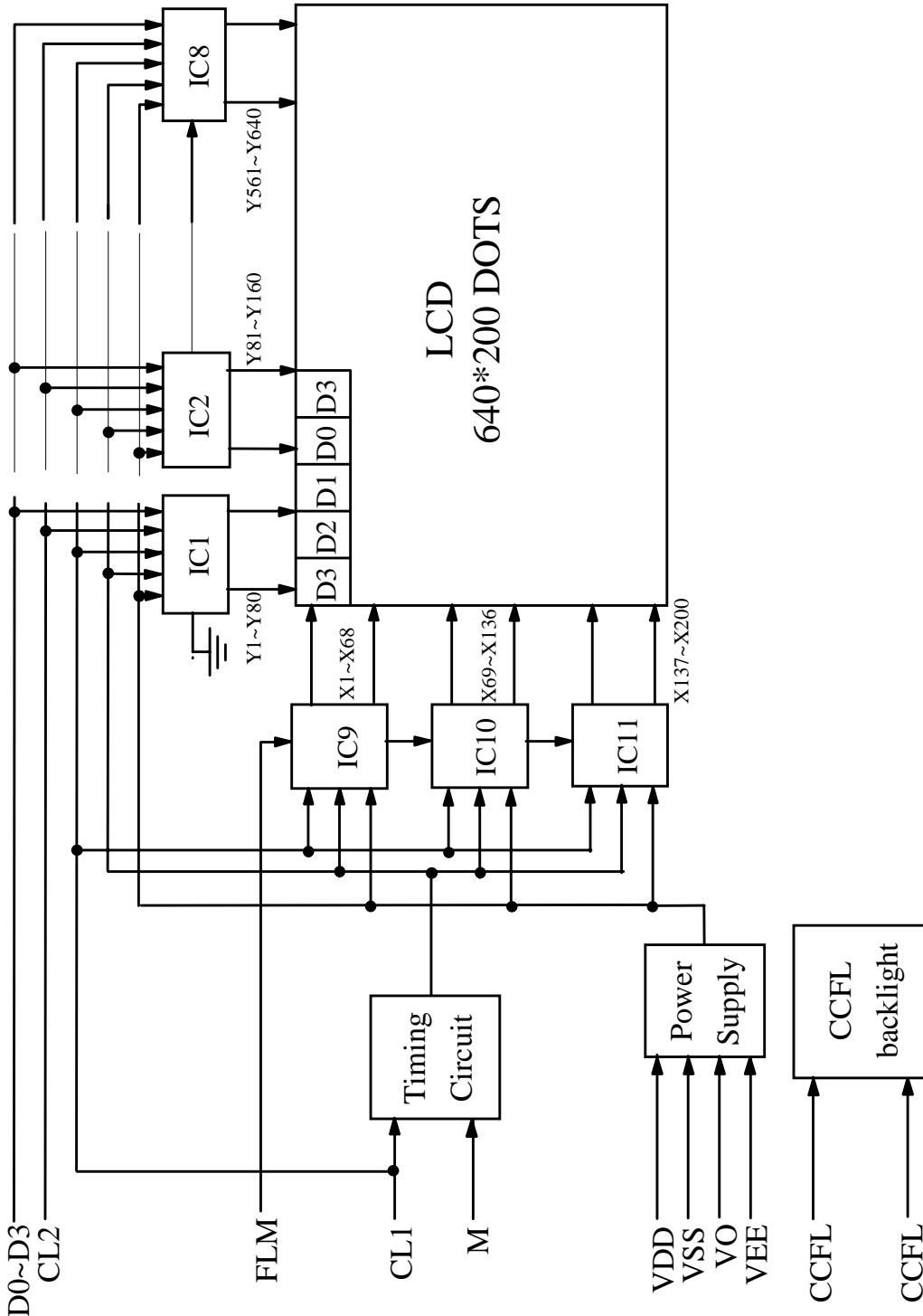
$$\sum_X = \left[\frac{(\text{MAXIMUM BRIGHTNESS OR MINIMUM BRIGHTNESS}) - \text{AVERAGE BRIGHTNESS}}{\text{AVERAGE BRIGHTNESS}} \right] \times 100\%$$

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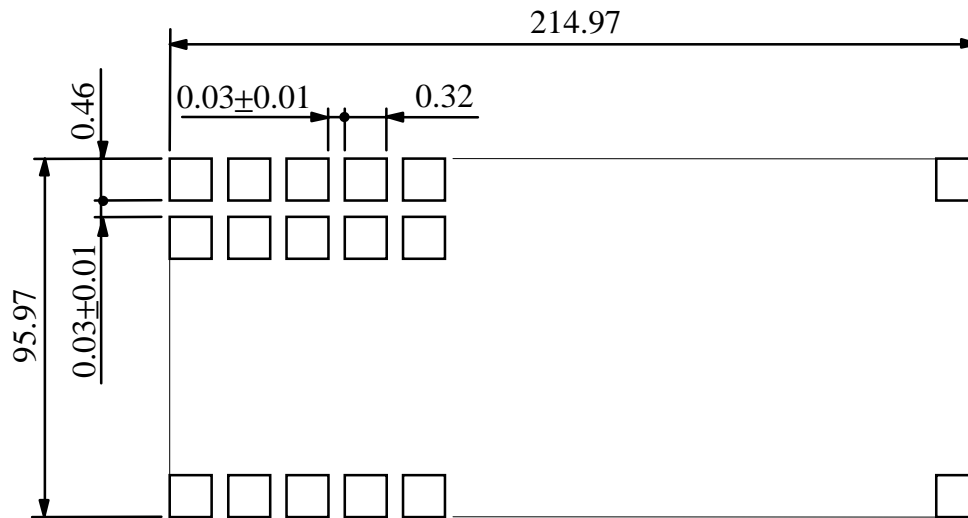
7. OUTLINE DIMENSION



8. BLOCK DIAGRAM



9. DETAIL DRAWING OF DOT MATRIX



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

10. INTERFACE SIGNALS

IF1 :

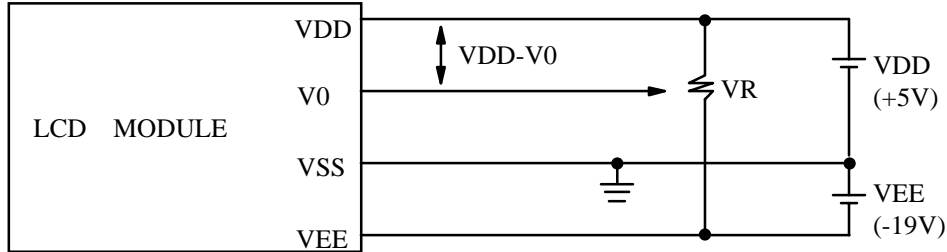
PIN NO	SYMBOL	LEVEL	FUNCTION
1	FLM	H	THE FLM SIGNAL INDICATING THE BEGINNING OF EACH DISPLAY CYCLE
2	CL1	H → L	DISPLAY DATA LATCH
3	CL2	H → L	DISPLAY DATA SHIFT
4	M	H / L	CONTROL SIGNAL FOR AC DRIVING
5	VEE	—	POWER SUPPLY FOR LCD DRIVING
6	VDD	—	POWER SUPPLY FOR LOGIC CIRCUIT
7	VSS	—	GROUND
8	VO	—	OPERATING 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

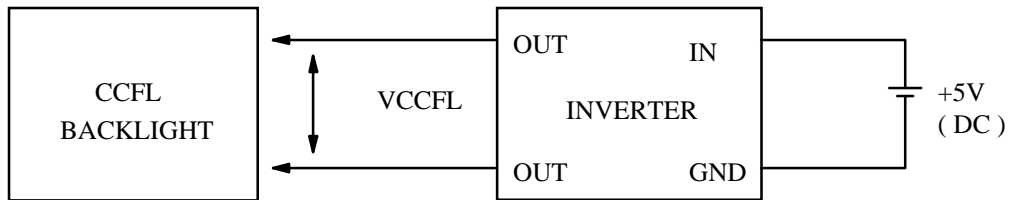
1 1 . POWER SUPPLY

1 1 . 1 POWER SUPPLY FOR LCM



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

1 1 . 2 POWER SUPPLY FOR CCFL BACK - LIGHT



RECOMMENDED INVERTER : CXA-M10M-L (TDK)

1 1 . 3 TIMING OF POWER SUPPLY AND INTERFACE SIGNAL

