

CUSTOMER	:	
MODEL	:	MOG-240GB02D-S-ABP0F
DESCRIPTION	:	LCD MODULE

◆ CUSTOMER APPROVAL

	CHECKED	CHECKED	APPROVAL
APPROVAL			
REMARK			

◆ SUPPLIER APPROVAL

PREPARED	CHECKED		APPROVAL

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## 1. MECHANICAL DATA

- (1) NUMBER OF DOT ----- 240 W\* 64 H DOTS
- (2) MODULE SIZE ----- 125.0 W \* 60.0 H \* 15.0 T (Max) mm
- (3) EFFECTIVE AREA ----- 111.6 W \* 37.0 H mm
- (4) ACTIVE AREA ----- 105.57 W \* 31.97 H mm
- (5) DOT SIZE ----- 0.41 W \* 0.47 H mm
- (6) DOT PITCH----- 0.44 W \* 0.50 H mm
- (7) VIEWING DIRECTION ----- 6 O'CLOCK
- (8) LCD TYPE----- STN.YELLOW-GREEN.TRANSFLECTIVE
- (9) LED COLOR ----- YELLOW-GREEN

## 2. ABSOLUTE MAX. RATINGS

### 2.1 ELECTRICAL ABSOLUTE MAX. RATINGS

<i>I T E M</i>	<i>SYMBOL</i>	<i>MIN.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>COMMENT</i>
POWER SUPPLY FOR LOGIC	V <sub>DD</sub> -V <sub>SS</sub>	0	6.0	V	-----
INPUT VOLTAGE	V <sub>I</sub>	V <sub>SS</sub>	V <sub>DD</sub>	V	-----
STATIC ELECTRICITY	-----	-----	100	V	NOTE(1)
POWER SUPPLY FOR LED	V <sub>LED</sub>	-----	6.0	V	-----

NOTE (1): ELECTRO-STATIC DISCHARGE RESISTANCE IS TESTED BY CHARGING A 200pF CAPACITOR AND DISCHARGING IT BY CONTACT WITH A INTERFACE CONNECTOR PIN.

### 2.2 ENVIRONMENTAL ABSOLUTE MAX. RATINGS

<i>I T E M</i>	<i>OPERATING</i>		<i>STORAGE</i>		<i>COMMENT</i>
	<i>MIN.</i>	<i>MAX.</i>	<i>MIN.</i>	<i>MAX.</i>	
AMBIENT TEMPERATURE	-20 °C	70 °C	-20 °C	70 °C	-----
HUMIDITY	NOTE (2)		NOTE (2)		NO CONDENSATION
VIBRATION NOTE (3)	-----	0.5G	-----	2G	10 ~ 300Hz XYZ DIRECTIONS 1 Hr EACH
SHOCK NOTE (3)	-----	3G	-----	50G	10 msec XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		-----

NOTE (2) : Ta \* 50 °C : 90 %RH MAX. °

Ta ≥ 50 °C : ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 90 % RH AT 50 °C . (80 % RH AT 60 °C)

NOTE (3): 1G = 9.8 m/s<sup>2</sup>

### 3. ELECTRICAL CHARACTERISTIC

$T_a = 25^\circ\text{C}$      $V_{DD} = 5.0 \pm 0.25\text{ V}$

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>
POWER SUPPLY VOLTAGE FOR CIRCUIT	$V_{DD}-V_{SS}$	-----	4.75	5.0	5.25	V
INPUT VOLTAGE	$V_{IH}$	H LEVEL	2.0	-----	$V_{DD}$	V
	$V_{IL}$	L LEVEL	0	-----	0.8	V
OUTPUT VOLTAGE	$V_{OH}$	$I_{OH} = -0.3\text{ mA}$	2.4	-----	-----	V
	$V_{OL}$	$I_{OH} = 3.0\text{ mA}$	-----	-----	0.4	V
POWER SUPPLY CURRENT	$I_{DD}$	$V_{DD}-V_{SS} = 5.0\text{ V}$	-----	30.0	35.0	mA
RECOMMENDED LCD DRIVING VOLTAGE	$V_{DD}-V_O$ DUTY = 1/64	$T_a = -20^\circ\text{C}$	-----	8.5	-----	V
		$T_a = 25^\circ\text{C}$	-----	8.5	-----	V
		$T_a = 70^\circ\text{C}$	-----	8.1	-----	V
THE BRIGHTNESS OF BACKLIGHTING SOURCE	$I_{LED}$	$V_{LED} = 5.0\text{ V}$	-----	230	350	mA

NOTE (1): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT 60.5V BY EACH MODULE.

### 4. OPTICAL CHARACTERISTIC

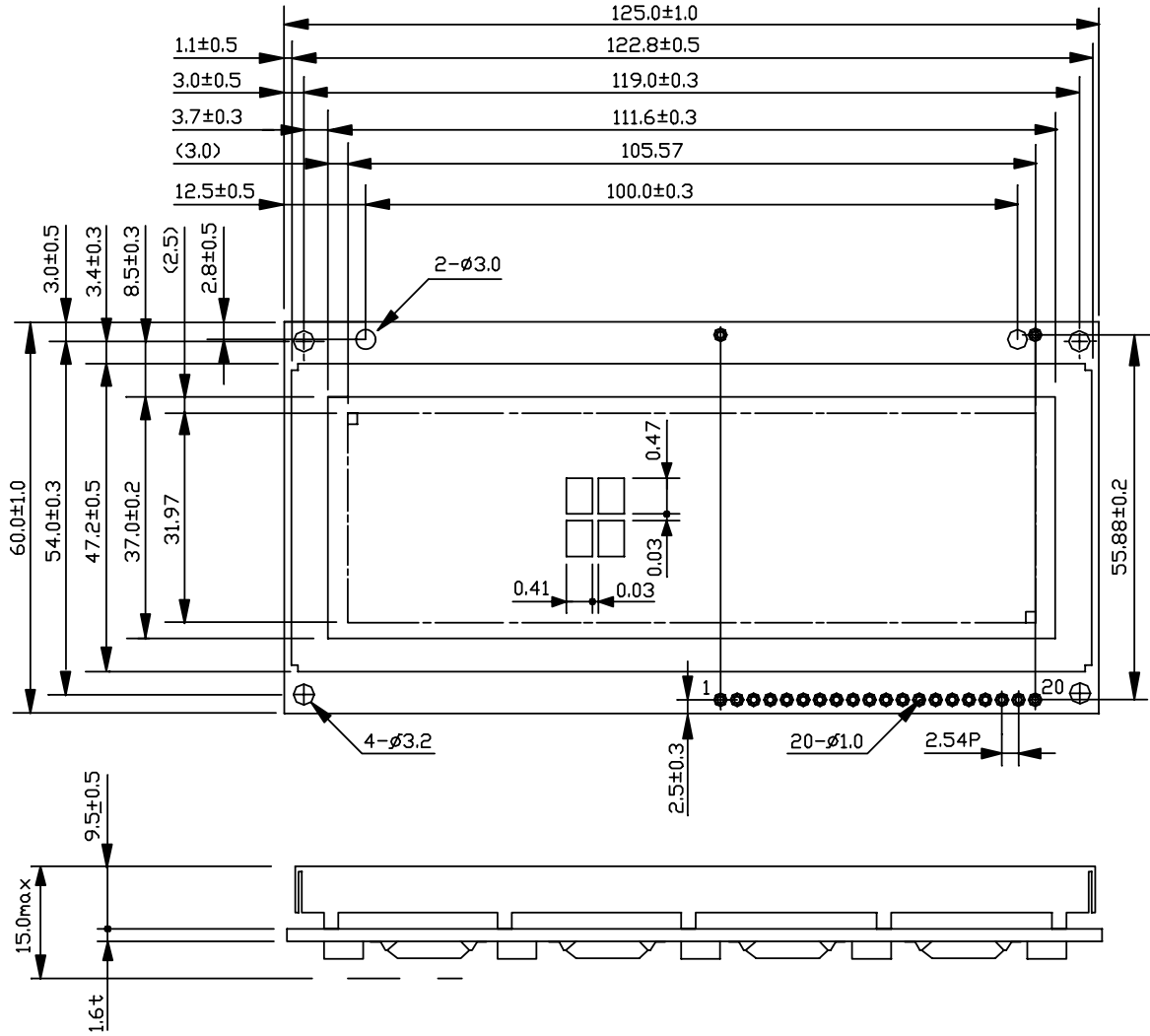
$T_a = 25^\circ\text{C}$      $V_{DD} = 5.0\text{V}$

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>NOTE</i>
VIEWING ANGEL	$\Phi 2-\Phi 1$	$K = 2.0$	30	40	-----	deg.	2
CONTRAST RATIO	K	$\Phi = 10^\circ$ $\nu = 0^\circ$	3.0	4.0	-----	-----	2
RESPONSE TIME	tr (rise)	$\Phi = 10^\circ$ $\nu = 0^\circ$	-----	200	350	ms	2
	tf (fall)	$\Phi = 10^\circ$ $\nu = 0^\circ$	-----	300	400	ms	2
BRIGHTNESS FOR LED BACKLIGHT	B	$\Phi = 0^\circ$ $\nu = 0^\circ$	5.0	-----	-----	cd/m <sup>2</sup>	2,3

NOTE (2): SEE CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR DEFINITION OF OPTICAL CHARACTERISTICS.

NOTE (3): UNDER NORMAL TEMPERATURE AND HUMIDITY IN A DARK ROOM.

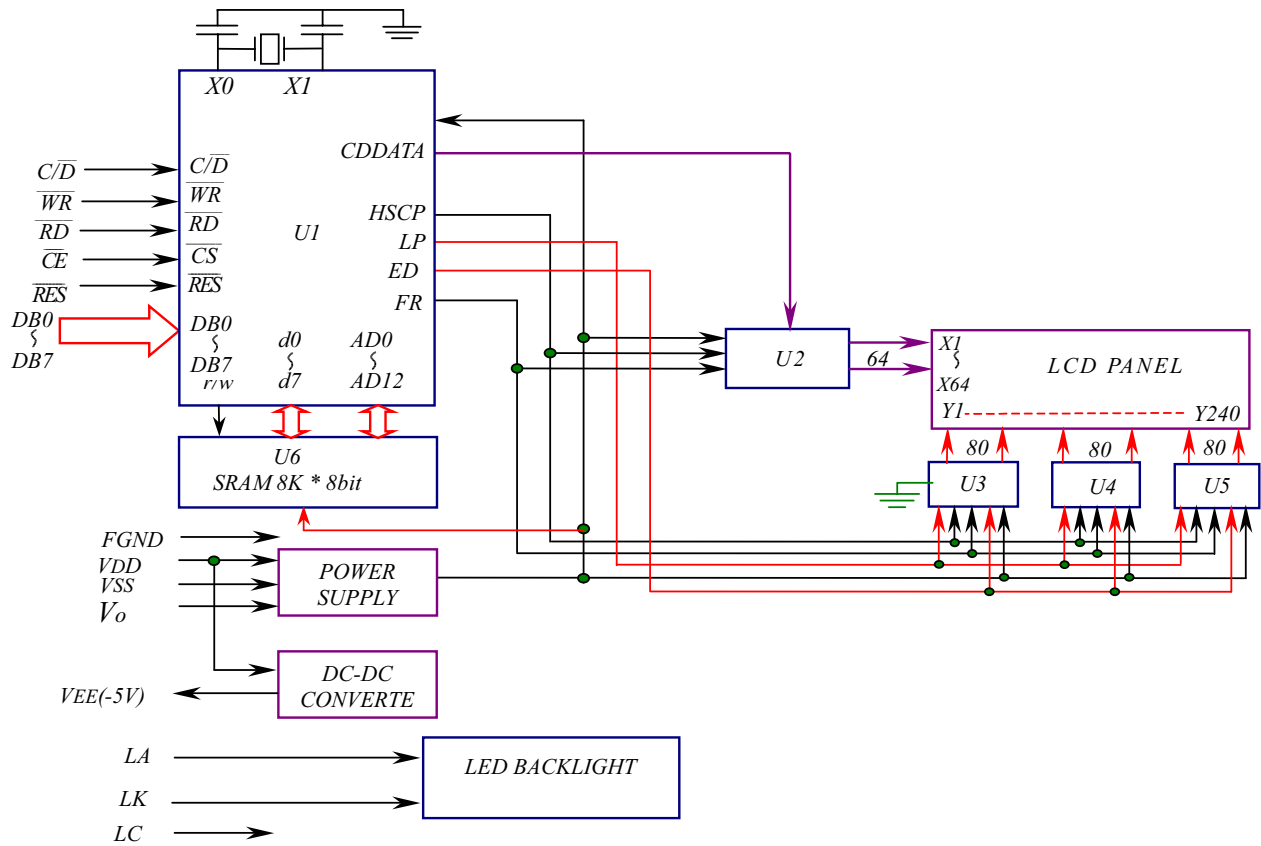
## 5. OUTLINE DIMENSION



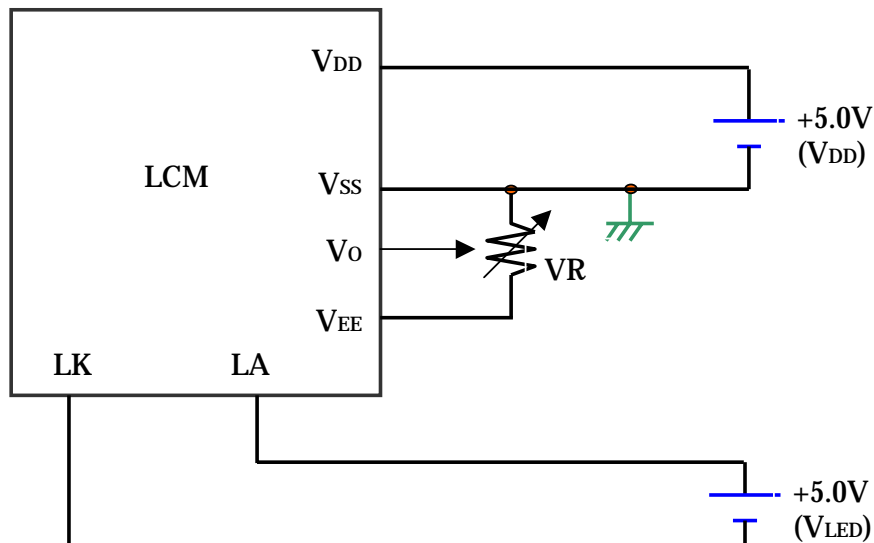
## 5.1 INTERFACE PIN CONNECTION

<i>PIN NO.</i>	<i>SYMBOL</i>	<i>FUNCTION</i>
1	V <sub>SS</sub>	POWER SUPPLY ( GND )
2	V <sub>DD</sub>	POWER SUPPLY ( +5V )
3	V <sub>O</sub>	OPERATING VOLTAGE FOR LCD DRIVING
4	C/ $\overline{D}$	$\overline{WR}$ ="L",C/ $\overline{D}$ ="H": COMMAND WRITE C/ $\overline{D}$ = "L": DATA WRITE $\overline{RD}$ ="L",C / $\overline{D}$ ="H" :STATUS READ C/ $\overline{D}$ = "L" : DATA READ
5	$\overline{RD}$	L: DATA READ ( LCD MODULE → MPU )
6	$\overline{WR}$	L: DATA WRITE ( LCD MODULE ← MPU )
7	DB0	DATA INPUT/OUTPUT (LSB)
8	DB1	DATA INPUT/OUTPUT
9	DB2	DATA INPUT/OUTPUT
10	DB3	DATA INPUT/OUTPUT
11	DB4	DATA INPUT/OUTPUT
12	DB5	DATA INPUT/OUTPUT
13	DB6	DATA INPUT/OUTPUT
14	DB7	DATA INPUT/OUTPUT (MSB)
15	$\overline{CE}$	L: CHIP ENABLE
16	$\overline{RES}$	L: RESET
17	V <sub>EE</sub>	POWER SUPPLY FOR LCD DRIVING OUTPUT
18	LC	H: LED BACKLIGHT KLIGHT ON
19	LK	POWER SUPPLY FOR LED BACKLIGHT (-)
20	LA	POWER SUPPLY FOR LED BACKLIGHT (+)

## 6. BLOCK DIAGRAM



## 7. POWER SUPPLY FOR LCM



$V_{DD}-V_0$ : LCD DRIVING VOLTAGE

VR: 200K $\Omega$