



# ***PALM TECHNOLOGY CO., LTD.***

***The LCD(M) Specialist***

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PART NO. : PMG1206B-SYL

FOR MESSRS. : \_\_\_\_\_

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ACCEPTED BY : \_\_\_\_\_ PROPOSED BY: \_\_\_\_\_

## RECORD OF REVISION

DATE	PAGE	SUMMARY
88/11/19	P6	The interface pin connection is amended.
88/11/19	P7	The block diagram is amended.

### **3. General specifications**

#### **3.1 General specifications**

PLEASE REFER TO:

“CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-61202)”.

#### **3.2 This individual specification is prior to general specifications**

### **4. Mechanical data**

- (1) NUMBER OF DOTS -----128 W \* 64 H DOTS
- (2) MODULE SIZE-----93.0 W \* 70.0 H \* 15.0 T (Max) mm
- (3) EFFECTIVE AREA -----71.0 W \* 39.0 H mm
- (4) ACTIVE AREA-----66.52 W \* 33.24 H mm
- (5) DOT SIZE-----0.48 W \* 0.48 H mm
- (6) DOT PITCH -----0.52 W \* 0.52 H mm
- (7) VIEWING DIRECTION-----6 O’CLOCK
- (8) LCD TYPE-----STN.YELLOW-GREEN.TRANSFLECTIVE.
- (9) LED COLOR -----YELLOW-GREEN

## 5. Absolute maximum ratings

### 5.1 Electrical absolute maximum 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.

### 5.2 Environmental absolute maximum 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	0°C	50°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>

## 6. Electrical characteristics

$T_a = 25^{\circ}\text{C}$   $V_{DD} = 5.060.25\text{ V}$

<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 NOTE (2)	$V_{IH}$	H LEVEL	$0.7V_{DD}$	-----	$V_{DD}$	V
	$V_{IL}$	L LEVEL	0	-----	$0.3V_{DD}$	V
OUTPUT VOLTAGE NOTE (1)	$V_{OH}$	$I_{OH} = -0.3\text{ mA}$	2.4	-----	-----	V
	$V_{OL}$	$I_{OL} = 3.0\text{ mA}$	-----	-----	0.4	V
POWER SUPPLY CURRENT, NOTE (3)	$I_{DD}$	$V_{DD}-V_{SS} = 5.0\text{V}$	-----	5.0	8.0	mA
LCD DISPLAY DUTY RATIO	DUTY	-----	-----	1/64	-----	-----
RECOMMENDED LCD DRIVING VOLTAGE, NOTE (4)	$V_{DD}-V_O$ $\Phi = 10^{\circ}$ $\theta = 0^{\circ}$	$T_A = 50^{\circ}\text{C}$	-----	8.1	-----	V
		$T_A = 25^{\circ}\text{C}$	-----	8.5	-----	V
		$T_A = 0^{\circ}\text{C}$	-----	8.9	-----	V
POWER SUPPLY CURRENT FOR LED	$I_{LED}$	$V_{LED} = 5.0\text{V}$	-----	200	300	mA

NOTE (1): APPLIED TO TERMINALS DB0~DB7

NOTE (2): APPLIED TO TERMINALS D/I, R/W, E, DB0~DB7, CS1, CS2,  $\overline{\text{RST}}$

NOTE (3): THE DISPLAY PATTERN IS ALL "ON", OR ALL "OFF"

NOTE (4): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT 60.5V BY EACH MODULE.

## 7. Optical characteristics

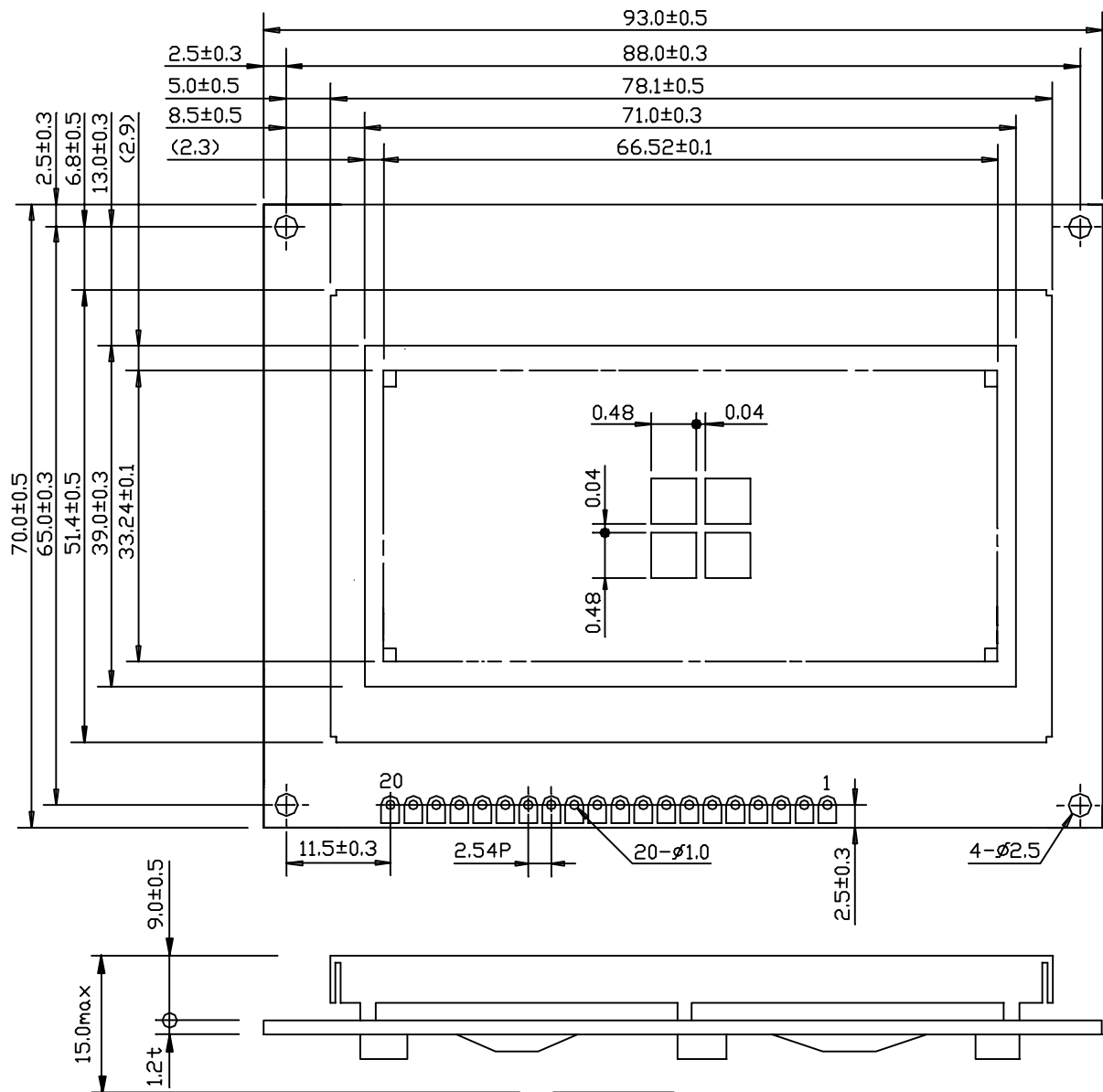
$T_a = 25^{\circ}\text{C}$   $V_{DD} = 5.0\text{V}$

<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 ANGLE	$\Phi 2-\Phi 1$	$K = 2.0$	30	40	-----	deg.	2
CONTRAST RATIO	K	$\Phi = 10^{\circ}$ $\theta = 0^{\circ}$	3.0	4.0	-----	-----	2
RESPONSE TIME	tr (rise)	$\Phi = 10^{\circ}$ $\theta = 0^{\circ}$	-----	200	350	Ms	2
	tf (fall)	$\Phi = 10^{\circ}$ $\theta = 0^{\circ}$	-----	300	400	Ms	2
BRIGHTNESS FOR LED BACKLIGHT	B	$\Phi = 0^{\circ}$ $\theta = 0^{\circ}$	5.0	-----	-----	$\text{cd/m}^2$	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.

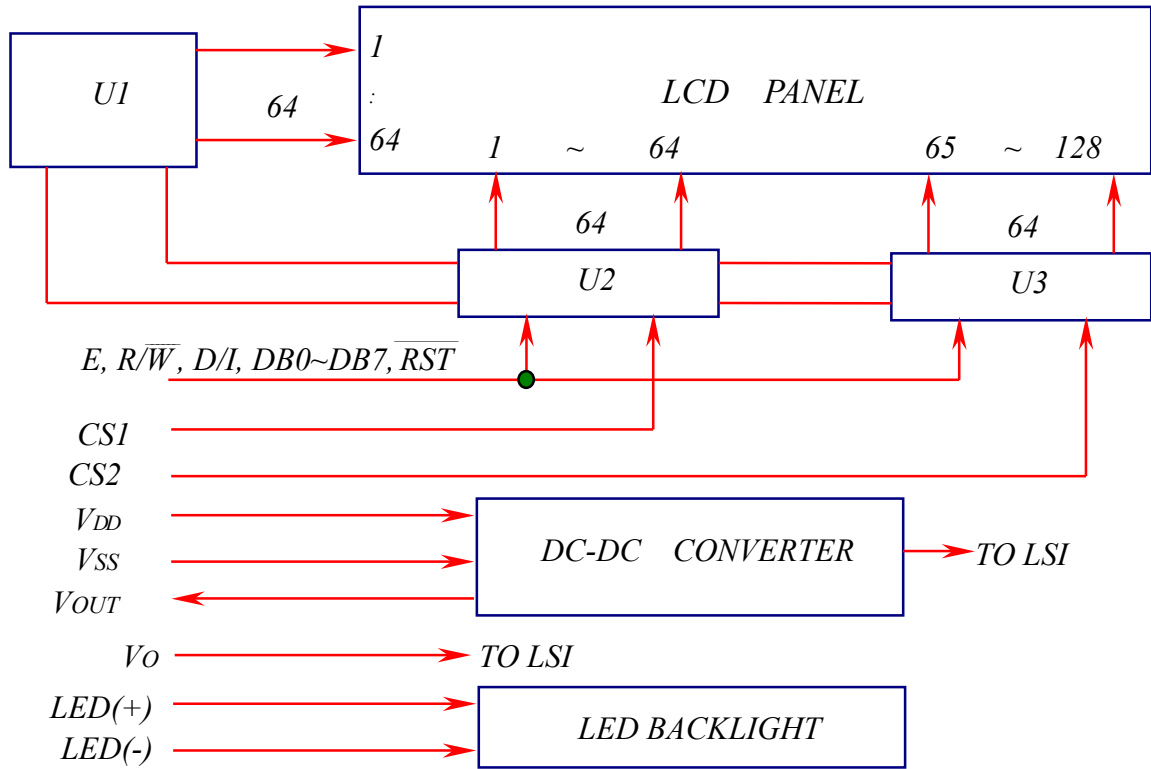
## 8. Dimensional outline



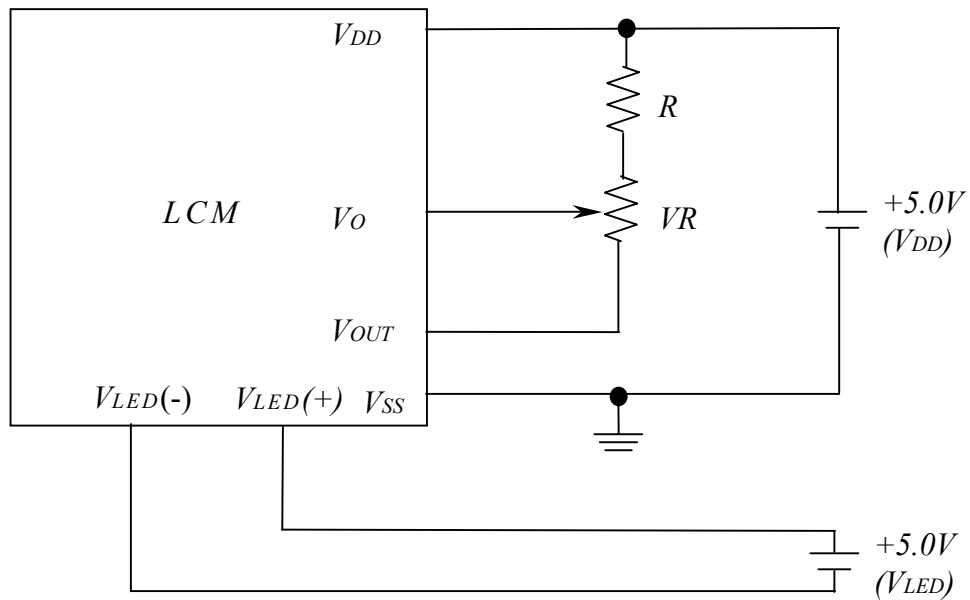
## 8.1 Interface

PIN NO.	SYMBOL	FUNCTION
1	V <sub>SS</sub>	GROUND
2	V <sub>DD</sub>	POWER SUPPLY FOR LCD LOGIC
3	V <sub>O</sub>	OPERATING VOLTAGE FOR LCD DRIVING
4	D/I	H: DATA INPUT L: INSTRUCTION CODE INPUT
5	$\overline{R/W}$	H: DATA READ (LCD MODULE → MPU) L: DATA WRITE (LCD MODULE ← MPU)
6	E	ENABLE SIGNAL
7	DB0	DATA INPUT / OUTPUT (LSB)
8	CB1	DATA INPUT / OUTPUT
9	CB2	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	CS1	H: CHIP SELECTION FOR IC1
16	CS2	H: CHIP SELECTION FOR IC2
17	$\overline{RST}$	L: RESET
18	V <sub>OUT</sub>	POWER SUPPLY FOR LCD DRIVING
19	LED (+)	POWER SUPPLY FOR LED BACKLIGHT
20	LED (-)	POWER SUPPLY FOR LED BACKLIGHT

## 9. Block diagram



## 10. Power supply for LCM



RECOMMENDED RESISTOR R:  $V_{DD}-V_o \geq 1.5V$

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

$V_R$ :  $10K\Omega \sim 20K\Omega$