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PART NO. : MG1206E4-SGL

FOR MESSRS. :

CONTENTS

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ACCEPTED BY : _____ PROPOSED BY : _____

RECORD OF REVISION

DATE	PAGE	SUMMARY

3. General specifications

3.1 General specifications

PLEASE REFER TO:

"CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-61210)".

3.2 This individual specification is prior to general specifications

4. Mechanical data

(1) NUMBER OF DOTS---------- 128 CH * 64 DOTS

(2) MODULE SIZE---------- 63.2 W * 54.0 H * 11.5 T (max) mm

(3) EFFECTIVE AREA---------- 54.0 W * 36.0 H mm

(4) ACTIVE AREA---------- 49.88 W * 31.32 H

(5) DOT SIZE ---------- 0.35 W * 0.45 H mm

(6) DOT PITCH ---------- 0.39 W *0.49 H mm

(9) VIEWING DIRECTION---------- 6 O' CLOCK

(10) LCD TYPE ---------- STN.GRAY.TRANSFLECTIVE.

(11) LED COLOR ---------- YELLOW-GREEN

5. Absolute maximum ratings

5.1 Electrical absolute maximum ratings

I T E M	SYMBOL	MIN.	MAX.	UNIT	COMMENT
POWER SUPPLY FOR LOGIC	V_{DD}-V_{SS}	0	6.0	V	
INPUT VOLTAGE	V_I	V_{SS}	V_{DD}	V	
STATIC ELECTRICITY			100	V	NOTE (1)
POWER SUPPLY FOR LED	V_{LED}		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 T E M	OPERATING		STORAGE		COMMENT
	MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	-20℃	70℃	-20℃	70℃	
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℃: 90% RH MAX.

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

NOTE (3): 1G = 9.8 m/S^2

6. Electrical characteristics

Ta = 25℃ VDD = 5.0 ±0.25 V

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Power supply voltage for circuit	VDD- VSS		4.75	5.0	5.25	V
Input voltage Note (2)	VIH	H LEVEL	2.0		VDD	V
	VIL	L LEVEL	0		0.8	V
Output voltage Note (1)	VOH	IOH = -0.3 mA	2.4			V
	VOL	IOL = 3.0 mA			0.4	V
Power supply Current, note (3)	IDD	VDD-Vss=5.0V		5.0	8.0	mA
LCD display Duty ratio	DUTY			1/64		
Recommended LCD driving voltage, note(4)	VDD-VO Φ=10 ° θ=0 °	Ta = 70℃		8.1		V
		Ta = 25℃		8.5		V
		Ta = -20℃		8.5		V
Power supply Current for led	ILED	VLED =5.0V		200	400	mA

NOTE (1): APPLIED TO TERMINALS DB0~DB7

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

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

NOTE (4): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT ±0.5V BY EACH MODULE.

7. Optical characteristics

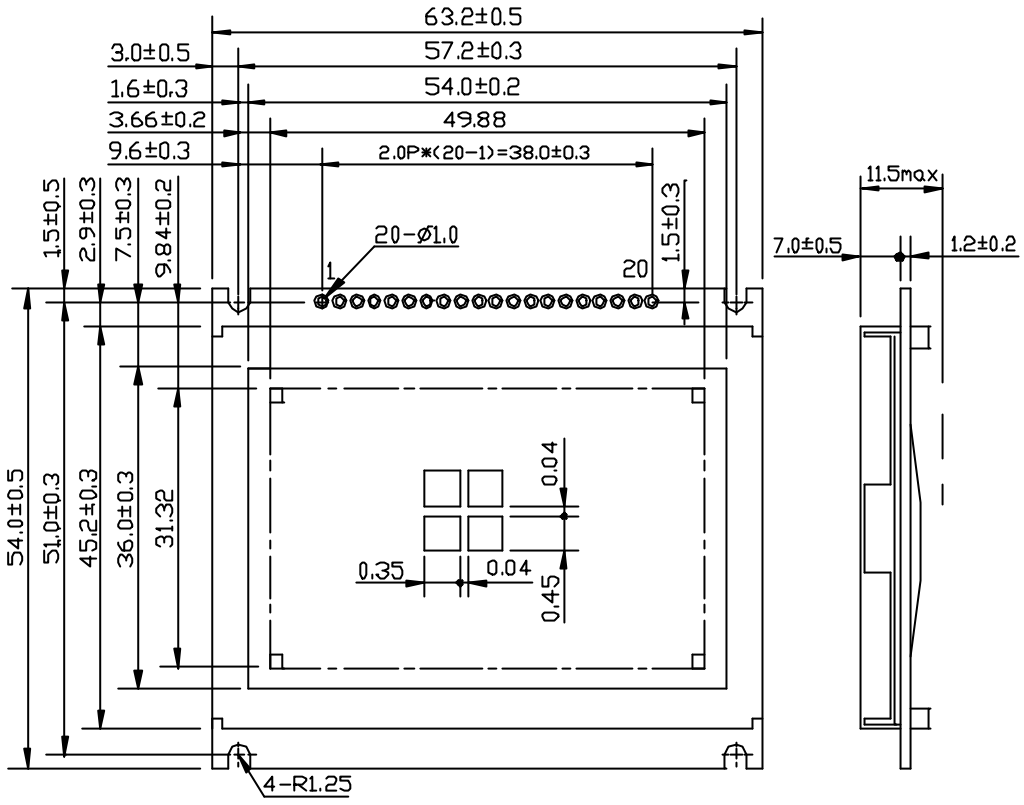
Ta = 25℃ VDD = 5.0V

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT.	NOTE
VIEWING ANGLE	Φ2-Φ1	K = 2.0	30	40		deg.	2
CONTRAST RATIO	K	Φ = 10 ° θ = 0 °	3.0	4.0			2
RESPONSE TIME	tr (rise)	Φ = 10 ° θ = 0 °		200	350	ms	2
	tf (fall)	Φ = 10 ° θ = 0 °		300	400	ms	2
BRIGHTNESS FOR LED BACKLIGHT	B	Φ = 0 ° θ = 0 °	5.0			cd/m^2	2,3

(* UNDER NORMAL TEMPERATURE AND HUMIDITY IN A DARK ROOM)

NOTE (1): SEE CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR DEFINITION OF OPTICAL CHARACTERISTICS.

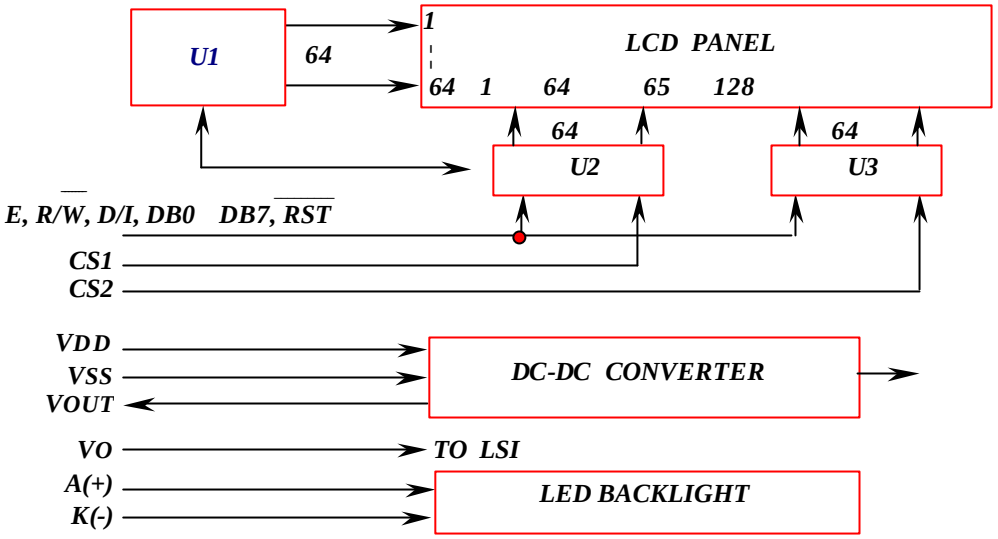
8. Outline dimension



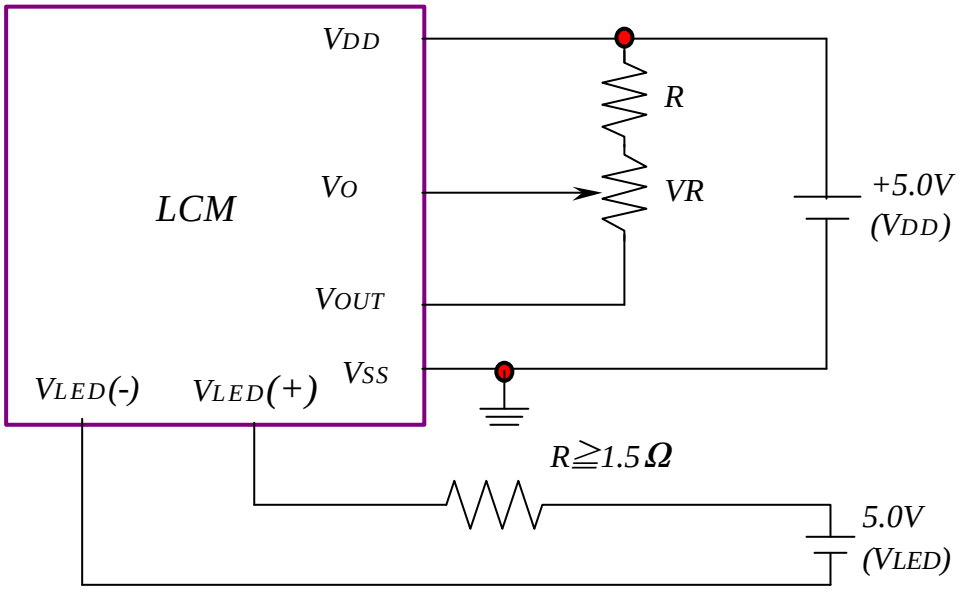
Interface

PIN NO.	SYMBOL	FUNCTION
1	V_{SS}	GROUND
2	V_{DD}	POWER SUPPLY FOR LOGIC
3	V_O	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	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	CS1	H: CHIP SELECTION FOR IC1
16	CS2	H: CHIP SELECTION FOR IC2
17	$\overline{RST}$	L: RESET
18	V_{OUT}	POWER SUPPLY FOR LCD DRIVING
19	A(+)	POWER SUPPLY FOR LED (+)
20	K(-)	POWER SUPPLY FOR LED (-)

9. Block diagram



10. Power supply for LCM



RECOMMENDED RESISTOR R: VDD – VO≧1.5V
VDD – VO: LCD DRIVING VOLTAGE
VR: 10KΩ~ 20KΩ