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PART NO.: MC1602VP-TGLU

FOR MESSRS.: _____

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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-10-12780)”.

3.2 This individual specification is prior to general specifications

4. Mechanical data

- (1) NUMBER OF CHARACTER-----16 CH * 2 LINE
- (2) MODULE SIZE-----81.3 W * 22.1 H * 19.0 T (max) mm
- (3) EFFECTIVE AREA -----63.0 W * 15.0 H mm
- (4) CHARACTER PATTERN-----5 * 7 DOTS + CURRSOR
- (5) CHARACTER SIZE -----2.96 W * 4.86 H mm
- (6) CHARACTER PITCH-----3.55 mm
- (7) DOTS SIZE-----0.66 W * 0.56 H mm
- (8) DOTS PITCH -----0.70 W * 0.60 H mm
- (9) VIEWING DIRECTION -----12 O’CLOCK
- (10) LCD TYPE-----TN.GRAY.TRANSFLECTIVE
- (11) 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 _{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 _{DD} -K(-)	-----	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/s²

6. Electrical characteristics

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

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>		<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>
INPUT VOLTAGE (H LEVEL)	V _{IH}	-----		2.2	-----	-----	V
INPUT VOLTAGE (L LEVEL)	V _{IL}	-----		-----	-----	0.6	V
OUTPUT VOLTAGE (H LEVEL)	V _{OH}	-I _{OH} = 0.2 mA		2.4	-----	-----	V
OUTPUT VOLTAGE (L LEVEL)	V _{OL}	I _{OH} = 1.2 mA		-----	-----	0.4	V
POWER SUPPLY CURRENT	I _{DD}	V _{DD} = 5.0 V		-----	1.0	1.5	mA
RECOMMENDED LCD DRIVING VOLTAGE	V _{DD} -V _O	DUTY =1/16 Φ= 25° θ=180°	Ta= 0°C	-----	4.6	-----	V
			Ta=25°C	-----	4.2	-----	V
			Ta=50°C	-----	3.8	-----	V
POWER SUPPLY CURRENT FOR LED	I _{LED}	V _{DD} -K(-)=5.0V		-----	120	150	mV

NOTE (1): RECOMMEND LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT ± 0.5 V BY EACH MODULE.

7. Optical characteristics

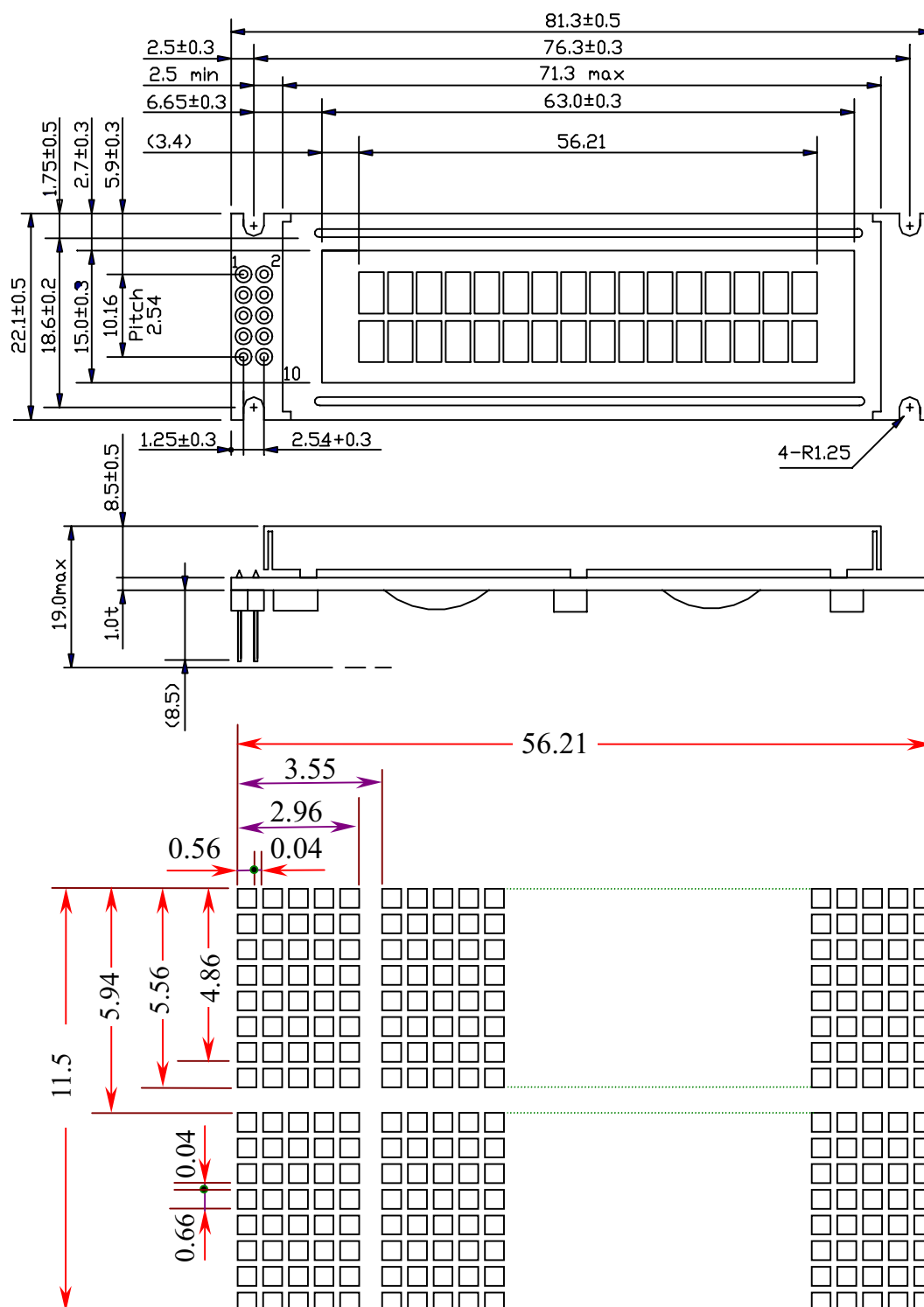
$T_a = 25^{\circ}\text{C}$ $V_{DD} = 5.0\text{V}$

<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	$\Phi 2-\Phi 1$	$K = 1.4$	20	30	-----	deg.	2
CONTRAST RATIO	K	$\Phi = 25^{\circ}$ $\theta = 180^{\circ}$	-----	3	-----	-----	2
RESPONSE TIME	tr (rise)	$\Phi = 25^{\circ}$ $\theta = 180^{\circ}$	-----	150	250	ms	2
	tf (fall)	$\Phi = 25^{\circ}$ $\theta = 180^{\circ}$	-----	200	300	ms	2
BRIGHTNESS FOR LED BACKLIGHT	B	$\Phi = 0^{\circ}$ $\theta = 0^{\circ}$	5.0	-----	-----	cd/m ²	2,3

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

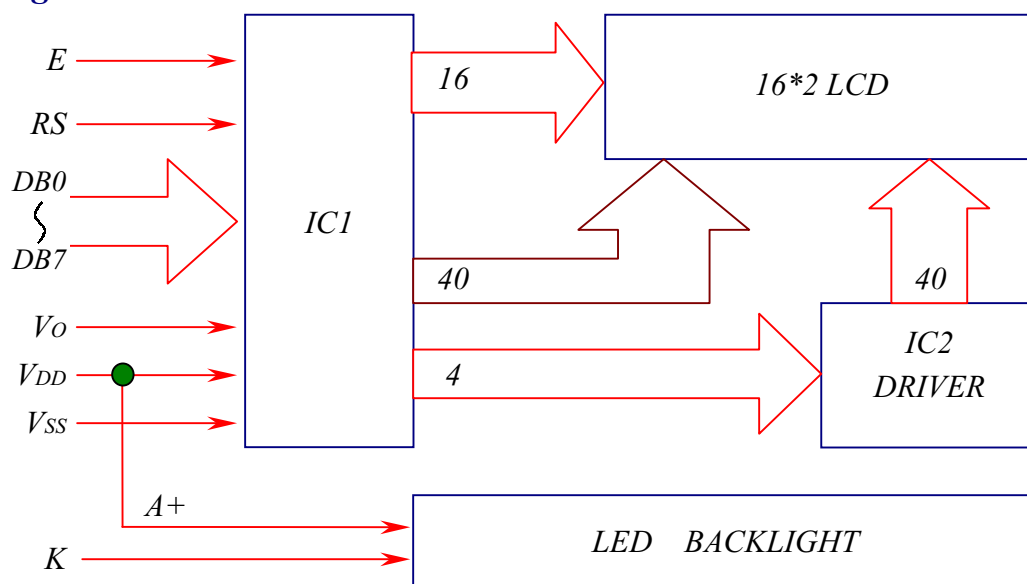
NOTE (3): UNDER NORMAL TEMPERATURE AND HUMIDITY IN A DARK ROOM

8. Outline dimension



PIN NO.	1	2	3	4	5
SYMBOL	DB7	DB6	DB5	DB4	E
PIN NO.	6	7	8	9	10
SYMBOL	RS	Vo	VSS	VDD	K(-)

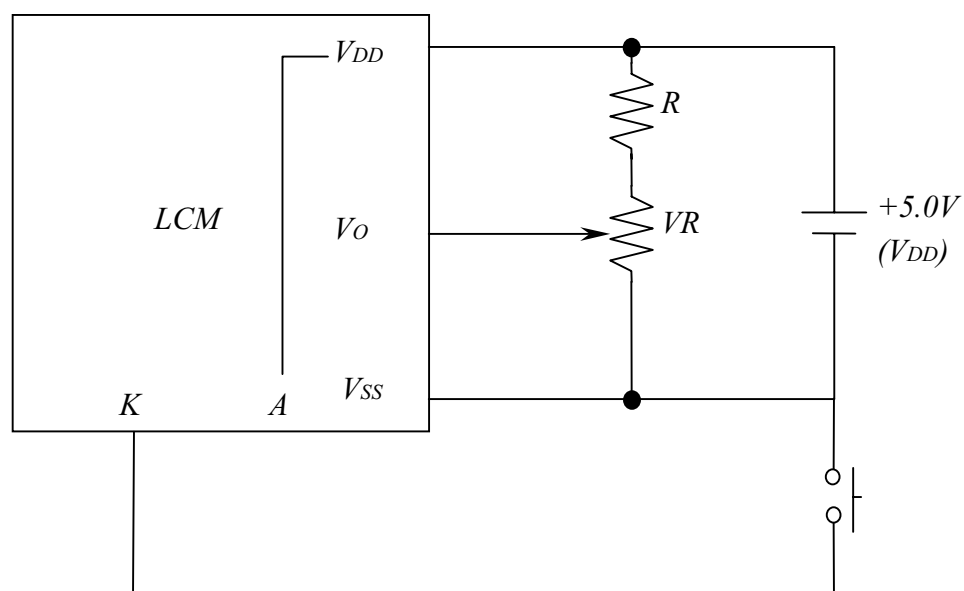
9. Block diagram



Display data address charts

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE 1	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
LINE 2	40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F

10. Power supply for LCM



RECOMMEND RESISTOR R : $V_{DD}-V_0 \geq 1.5V$

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

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