1. FEATURE：

ITEMS	MECHANICAL SPECIFICATION
Module Dimension	80.0 × 36.0 mm
Viewing Area	66.0 × 16.0 mm
Mounting Hole	75.0 × 31.0 mm
Character Size	2.96 × 5.56 mm
1. 5×8 dots with cursor	
2. Built-in controller (KS 0066 or Equivalent)	
3. +5V power supply	
4. 1/16 duty cycle	
5. N.V. optional for +3V power supply	

2. ELECTRONICAL CHARACTERISTICS：

ITEM	SYM	CONDITION		MIN	TYP	MAX	UNIT
Input Voltage	VDD	VDD=+5V		4.7	5.0	5.3	V
Supply Current	IDD	VDD=5V		—	1.2	1.5	mA
Recommended LC Driving Voltage for Normal Temp. Version Module	VDD-V0	-20℃		—	—	5.2	V
		0℃		—	—	4.2	
		25℃		—	3.8	—	
		50℃		3.5	—	—	
		70℃		3.2	—	—	
LED Forward Voltage	VF	25℃		—	4.2	4.6	V
LED Forward Current	IF	25℃	ARRAY	—	130	260	mA
			EDGE	—	20	40	
EL Power Supply Current	IEL	VEL=110VAC;400HZ		—	—	5.0	mA

3. ABSOLUTE MAXIMUM RATINGS：

ITEM	SYM	MIN	TYP	MAX	UNIT
Power Supply	VDD-VSS	-0.3	—	7.0	V
Input Voltage	VI	-0.3	—	VDD	V

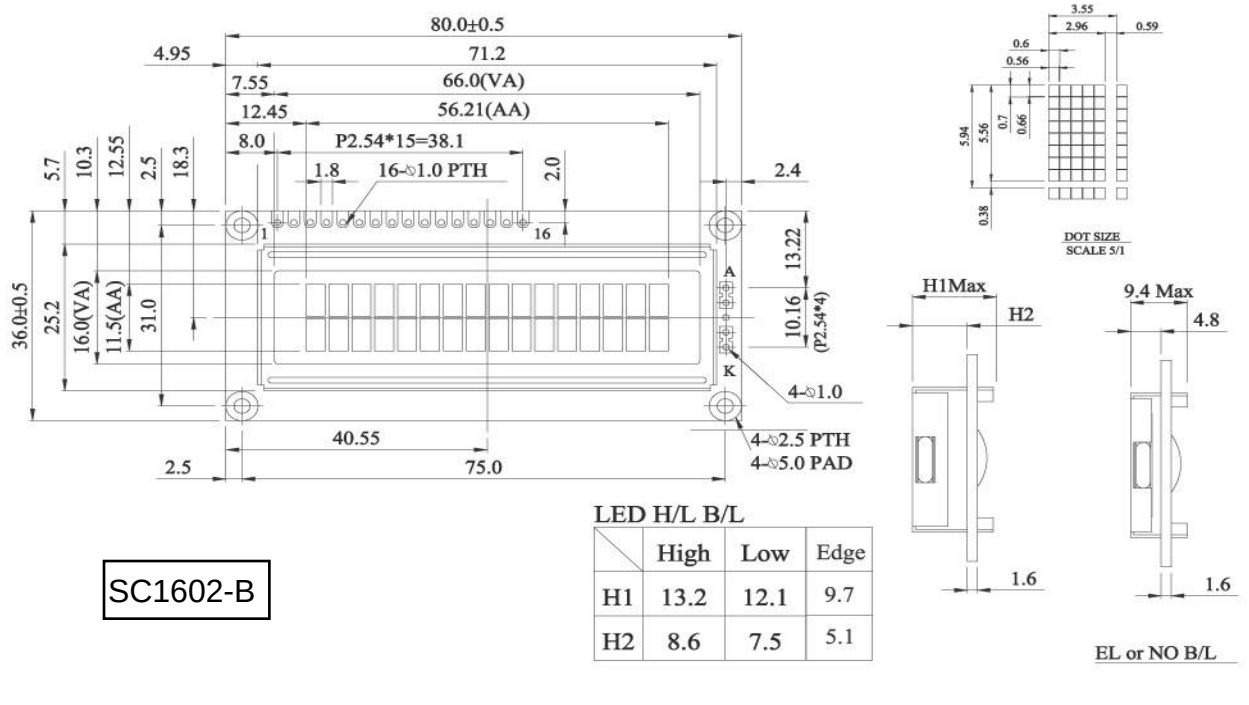
4. INTERFACE PIN CONNECTIONS：

NO	SYM	FUNCTION
1	VSS	GND
2	VDD	+3V OR +5V
3	VO	CONTRAST ADJUSTMENT
4	RS	H/L REGISTER SELECT SIGNAL
5	R/W	H/L READ / WRITE SIGNAL
6	E	H→L ENABLE SIGNAL
7	DB0	H/L DATA BUS LINE
8	DB1	H/L DATA BUS LINE
9	DB2	H/L DATA BUS LINE
10	DB3	H/L DATA BUS LINE
11	DB4	H/L DATA BUS LINE
12	DB5	H/L DATA BUS LINE
13	DB6	H/L DATA BUS LINE
14	DB7	H/L DATA BUS LINE
15	A/VEE	4.2V FOR LED (RA=0Ω)/NEGATIVE VOLTAGE OUTPUT
16	K	POWER SUPPLY FOR B/L (0V)

5. DISPLAY CHARACTER ADDRESS CODE：

	1	2	3	4	5	6	7	8	9	10	11	11	13	14	15	16
L1	00	01														0F
L2	40	41														4F

6. DIMENSIONAL DRAWING ：



LED H/L B/L

	High	Low	Edge
H1	13.2	12.1	9.7
H2	8.6	7.5	5.1

SC1602-B

Table 1 Character Code/Character Pattern Correspondence Chart

Upper 4 bits / Lower 4 bits	0000	0010	0011	0100	0101	0110	0111	1010	1011	1100	1101	1110	1111
××××0000	CG RAM (1)												
××××0001	(2)												
××××0010	(3)												
××××0011	(4)												
××××0100	(5)												
××××0101	(6)												
××××0110	(7)												
××××0111	(8)												
××××1000	(1)												
××××1001	(2)												
××××1010	(3)												
××××1011	(4)												
××××1100	(5)												
××××1101	(6)												
××××1110	(7)												
××××1111	(8)												

Note: The CG RAM is a character generator RAM that stores character patterns that may be freely rewritten by the user.

Table 2 Instruction Functions

Instruction	Code										Description	Execution time (when f_{OSC} = 250 kHz)
	RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0		
Display clear	0	0	0	0	0	0	0	0	0	1	Clears the whole display and then returns the cursor to the home position (location 0).	82 µs to 1.64 ms
Cursor home	0	0	0	0	0	0	0	0	1	*	Returns the cursor to the home position. Also restores a shifted display. The contents of DD RAM are not changed.	40 µs to 1.6 ms
Entry mode set	0	0	0	0	0	0	0	1	I/D	S	Sets the cursor advance position and whether the display shifts. These operations are performed when data is read or written.	40 µs
Display on/off control	0	0	0	0	0	0	1	D	C	B	Sets the display on/off state (D), the cursor on/off state (C), and the blinking state (B) of the character at the cursor position.	40 µs
Cursor/display shift	0	0	0	0	0	1	S/C	R/L	*	*	Performs cursor motion and display shift without changing the contents of DD RAM.	40 µs
Function set	0	0	0	0	1	DL	N	F	*	*	Sets the interface data length (DL), the number of display lines (N), and the character font (F).	40 µs
CG RAM address set	0	0	0	1	ACG						Sets the CG RAM address. The next data transmitted will be CG RAM data.	40 µs
DD RAM address set	0	0	1	ADD							Sets the DD RAM address. The next data transmitted will be DD RAM data.	40 µs
Busy flag/address readout	0	1	BF	AC							Reads out the busy flag (BF), which indicates the internal operation in progress state, and the contents of the address register.	1 µs
CG RAM/DD RAM data write	1	0	Write data								Writes to DD RAM or CG RAM.	40 µs
CG RAM/DD RAM data read	1	1	Read data								Reads data from DD RAM or CG RAM.	40 µs
	I/D = 1: Increment (+1) I/D = 0: Decrement (−1) S = 1: Display shift at the same time S/C = 1: Display shift S/C = 0: Cursor move R/L = 1: Right shift R/L = 0: Left shift DL = 1: 8 bits, DL = 0: 4 bits N = 1: 2 lines, N = 0: 1 line F = 1: 5 × 10 dots, F = 0: 5 × 7 dots BF = 1: Internal operation in progress BF = 0: Instructions accepted *: Invalid (don't care)											DD RAM: Display data RAM CG RAM: Character generator RAM ACG: A CG RAM address ADD: Corresponds to a DD RAM address AC: The address counter, which is used for both DD and CG RAMs.	The execution times will change if the internal oscillator frequency is changed. Example: If an f_{OSC} of 270 kHz is used, then a 40 µs time from this chart will become 40 µs × 250/270 = 37 µs.