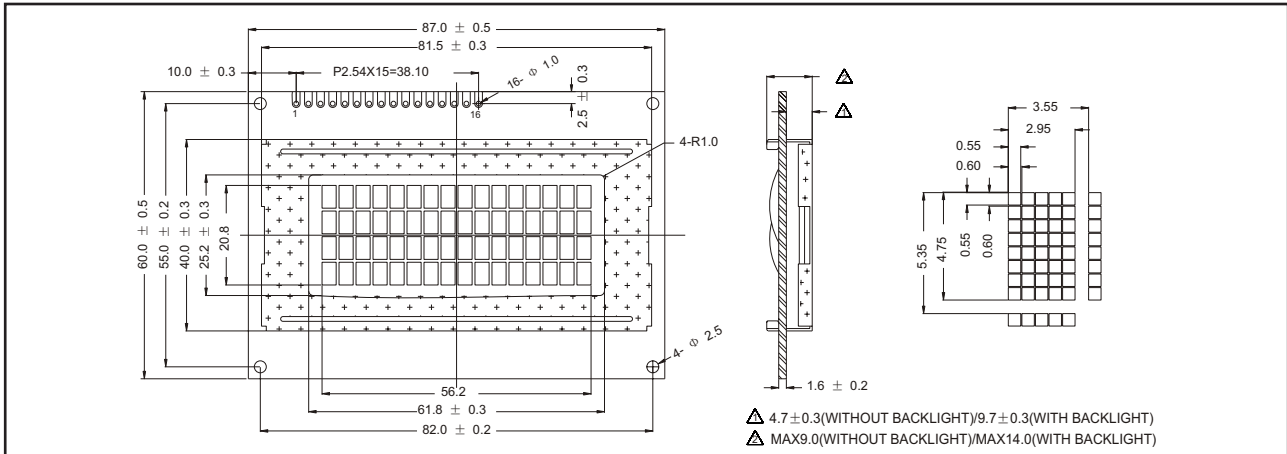


STANDARD CHARACTER MODULES

YMS 164-01

16 CHAR x 4 LINE, 1/16 DUTY, 1/5 BIAS

EXTERNAL DIMENSION AND DISPLAY PATTERN



MECHANICAL DATA

ITEM	SPECIFICATION	UNIT
Module Size (W x H x T)	87.0 x 60.0 x 9.1/14.0	mm
Viewing Area (W x H)	61.8 x 25.2	mm
Character Font (W x H)	5.0 x 7.0 with cursor	dots
Character Size (W x H)	2.95 x 4.75	mm
Character Pitch (W x H)	3.55 x 5.35	mm
Dot Size (W x H)	0.55 x 0.55	mm

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN.	MAX.	UNIT
Supply Voltage Logic	$V_{DD} - V_{SS}$	-0.3	7.0	V
Supply Voltage Drive	$V_{DD} - V_{EE}$	-0.3	13.5	V
Input Voltage	V_{IN}	-0.3	$V_{DD} + 0.3$	V
Operating Temperature	See page 8			
Storage Temperature				

PIN CONFIGURATION

PIN	SYMBOL	SIGNAL DESCRIPTION
1	V_{SS}	GND (0 V)
2	V_{DD}	Power Supply (+5.0V)
3	V_{EE}	Supply Voltage LCD Driver
4	RS	Register Select - LOW = Instruction, HIGH = DATA
5	R/W	Read / Write LOW = MPU to LCM, HIGH = LCM to MPU
6	E	Enable R/W = LOW: Data are talking over at falling edge R/W = HIGH: Data can be read at E = 1
7 to 14	DB ₀ to DB ₇	Data Bus - Software selectable 4 or 8 bit Mode
15	A	Anode of LED Unit
16	K	Cathode of LED Unit

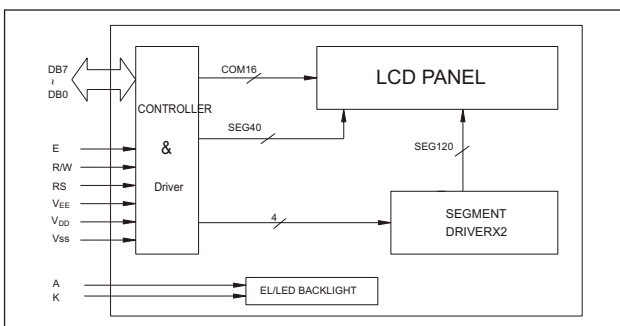
ELECTRICAL CHARACTERISTICS, $T_a = 25^\circ\text{C}$

ITEM	SYMBOL	CONDITION	SPEC. VALUE			UNIT
			MIN.	TYP.	MAX.	
Supply Voltage (Logic)	$V_{DD} - V_{SS}$		4.5	5.0	5.5	V
Supply Current (Logic)	I_{DD}	$V_{DD} = 5V$		0.8	2.0	mA
Input Voltage	HIGH	V_{IH}	2.2		V_{DD}	V
	LOW	V_{IL}	-0.3		0.6	V
Output Voltage	HIGH	V_{OH}	$I_{OH} = 0.2\text{mA}$	2.4		V
	LOW	V_{OL}	$I_{OL} = 1.2\text{mA}$		0.4	V
LCD Operating Voltage	$V_{DD} - V_{EE}$	$V_{DD} = 5V$ $T_a = +25^\circ\text{C}$	4.5	4.7	5.0	V
Supply Current LCD Drive	I_{EE}			1.0	1.5	mA

Note (1): Value is high reliability type.

Note (2): Electro-Optical Characteristics: See page 5.

BLOCK DIAGRAM



BACKLIGHTING CHARACTERISTICS, $T_a = 25^\circ\text{C}$, LED

ITEM	SYMBOL	CONDITION	SPEC. VALUE			UNIT
			MIN.	TYP.	MAX.	
Supply Voltage	V_{LED}			4.2	4.6	V
Power Consumption	P_{LED}	$I_F = 200\text{mA}$		840		mW
Luminous	I_v	$I_F = 200\text{mA}$		80		cd/m ²