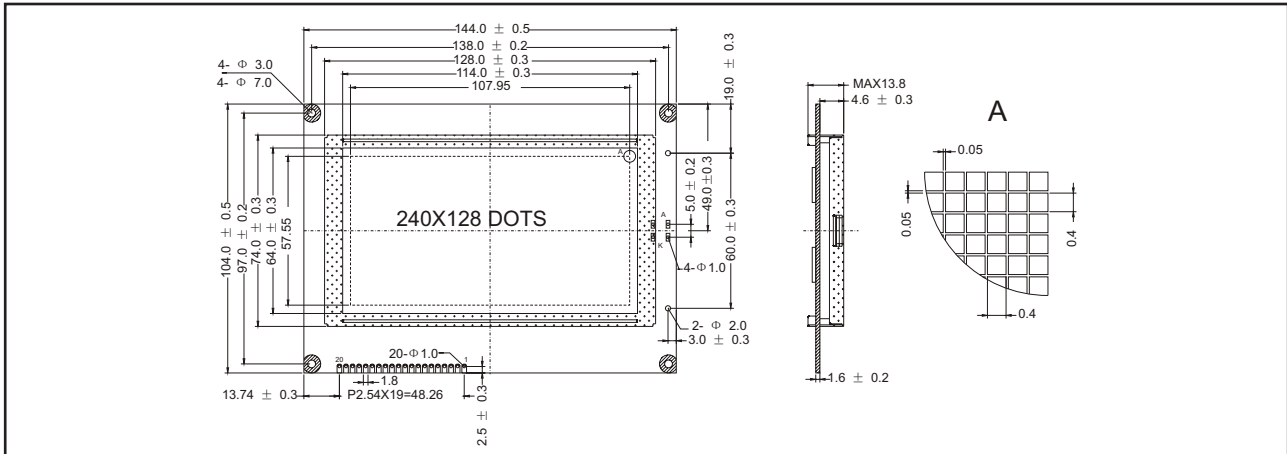


STANDARD GRAPHIC MODULES

YMS 240128-01

240 X 128 DOTS, 1/128 DUTY, 1/12 BIAS

EXTERNAL DIMENSION AND DISPLAY PATTERN



MECHANICAL DATA

ITEM	SPECIFICATION	UNIT
Module Size (W x H x T)	144.0 x 104.0 x 13.8	mm
Viewing Area (W x H)	114.0 x 64.0	mm
Number of Dots	240 x 128	dots
Dot Pitch (W x H)	0.45 x 0.45	mm
Dot Size (W x H)	0.40 x 0.40	mm

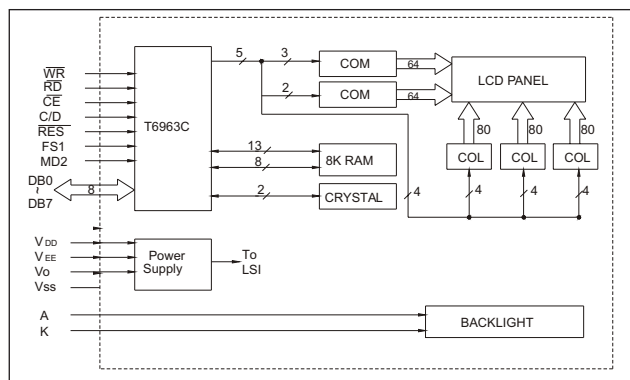
ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN.	MAX.	UNIT
Supply Voltage Logic	$V_{DD} (V_{DD} - V_{SS})$	-0.3	7.0	V
Supply Voltage Drive	$V_{DD} - V_{EE}$	-0.3	30.0	V
Input Voltage	V_{IN}	-0.3	$V_{DD} + 0.3$	V
Operating Temperature	See page 8			
Storage Temperature				

PIN CONFIGURATION

PIN	SYMBOL	LEVEL	SIGNAL DESCRIPTION
1	V_{SS}	0V	GND (0V)
2	V_{DD}	+5V	Supply Voltage for Logic and LCD
3	V_0		Operating Voltage for LCD (variable)
4	C/D	H/L	H: Instruction Code, L: DATA Code
5	/RD	L	Read Signal
6	/WR	L	Write Signal
7	DB ₀	H/L	Data Bit 0
8	DB ₁	H/L	Data Bit 1
9	DB ₂	H/L	Data Bit 2
10	DB ₃	H/L	Data Bit 3
11	DB ₄	H/L	Data Bit 4
12	DB ₅	H/L	Data Bit 5
13	DB ₆	H/L	Data Bit 6
14	DB ₇	H/L	Data Bit 7
15	/CE	L	Chip Enable Signal
16	/RES	H, H-L	Reset Signal
17	V_{EE}		Supply Voltage LCD Driver
18	MD2	H/L	Number of Columns Select Signal
19	FS1	H/L	Font Select Signal (H: 6x8 dots, L: 8x8 dots)
20	NC		No Connection
21	A		Anode of LED Unit
22	K		Cathode if LED Unit

BLOCK DIAGRAM



STANDARD GRAPHIC MODULES

YMS 240128-01

240 X 128 DOTS, 1/128 DUTY, 1/12 BIAS

ELECTRICAL CHARACTERISTICS, Ta = 25°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}	$V_{DD}=5V$		8.7	13.0	mA
Input Voltage	HIGH	V_{IH}	$V_{DD}-2.2$		V_{DD}	V
	LOW	V_{IL}	0		0.8	V
Output Voltage	HIGH	V_{OH}	$I_{OH}=3.0mA$	$V_{DD}-0.3$	V_{DD}	V
	LOW	V_{OL}	$I_{OL}=3.0mA$	0	0.3	V
LCD Operating Voltage	$V_{DD} - V_0$	$V_{DD}=5V$ $T_a=+25^\circ C$		16.6		V
Supply Current LCD Drive	I_0			5.47		mA

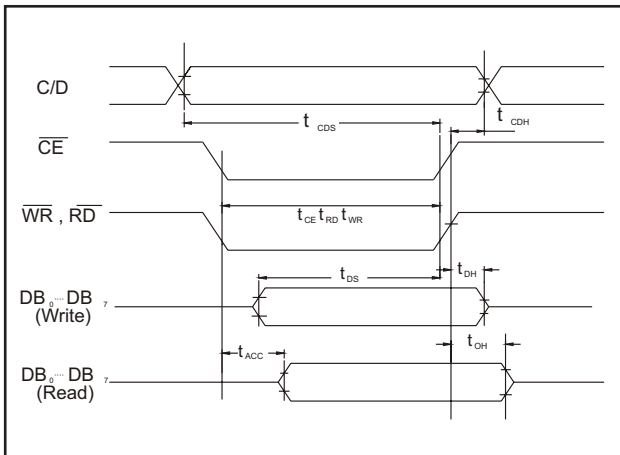
Note (1): Value is high reliability type.

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

BACKLIGHTING CHARACTERISTICS, Ta = 25°C, LED

ITEM	SYMBOL	CONDITION	SPEC. VALUE			UNIT
			MIN.	TYP.	MAX.	
Supply Voltage	V_{LED}		3.6	4.1	4.5	V
Power Consumption	P_{LED}	$I_F=720mA$		2950		mW
Luminous	I_v	$I_F=720mA$	133	190		cd/m ²

INTERFACE TIMING CHARACTERISTICS



PARAMETER	SYMBOL	MIN.	MAX.	UNIT
C/D Setup Time	t_{CDS}	100		ns
C/D Hold Time	t_{CDH}	10		ns
CE/RD/WR Pulse Width	$t_{CE} t_{RD} t_{WR}$	80		ns
Data Setup Time	t_{DS}	80		ns
Data Hold Time	t_{DH}	40		
Access Time	t_{ACC}		150	ns
Output Hold Time	t_{OH}	10	50	ns

Condition: $V_{DD}=+5.0V \pm 10\%$, $V_{SS}=0V$, $T_a=+25^\circ C$