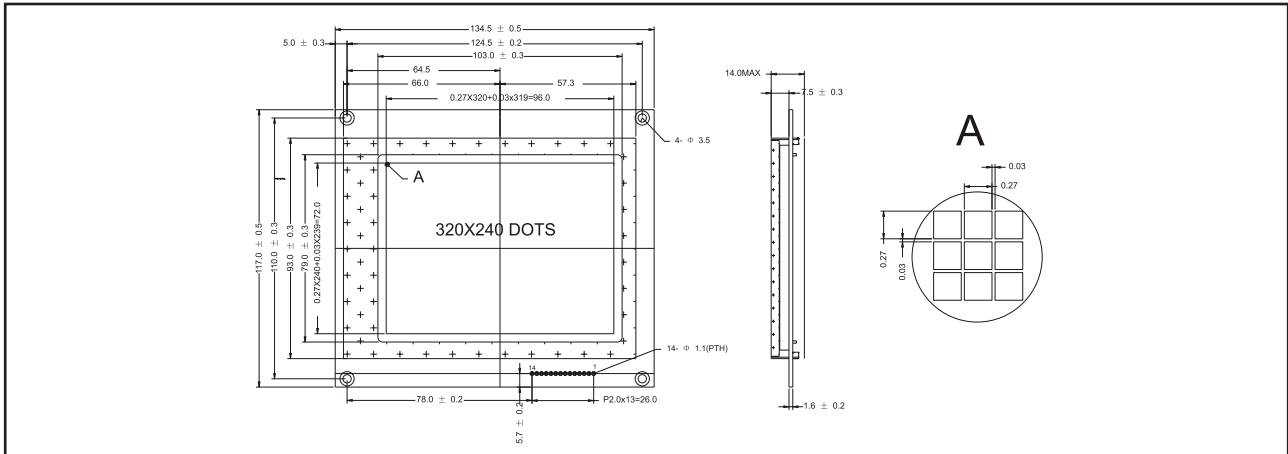


STANDARD GRAPHIC MODULES

YMS 320240-02

320 X 240 DOTS, 1/240 DUTY, 1/13 BIAS

EXTERNAL DIMENSION AND DISPLAY PATTERN



MECHANICAL DATA

ITEM	SPECIFICATION	UNIT
Module Size (W x H x T)	134.5 x 117.0 x 14.0	mm
Viewing Area (W x H)	103.0 x 79.0	mm
Number of Dots	320 x 240	dots
Dot Pitch (W x H)	0.3 x 0.3	mm
Dot Size (W x H)	0.27 x 0.27	mm

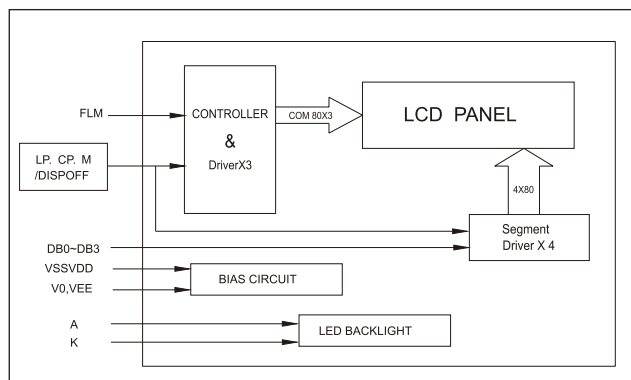
ABSOLUTE MAXIMUM RATINGS

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_L		Operating Voltage for LCD (variable)
2	V_{EE}		Supply Voltage for Logic and LCD
3	DB ₃	H/L	Data Bit 3
4	DB ₂	H/L	Data Bit 2
5	DB ₁	H/L	Data Bit 1
6	DB ₀	H/L	Data Bit 0
7	V_{SS}	0V	Ground
8	V_{DD}	+5V	Power Supply
9	CL ₂	H, H-L	Display Data Shift Clock
10	CL ₁	H, H-L	Display Data Latch Clock
11	FLM	H	First Line Marker
12	K		Cathode of LED Unit
13	A		Anode of LED Unit
14	NC		No Connection

BLOCK DIAGRAM



STANDARD GRAPHIC MODULES

YMS 320240-02

320 X 240 DOTS, 1/240 DUTY, 1/13 BIAS

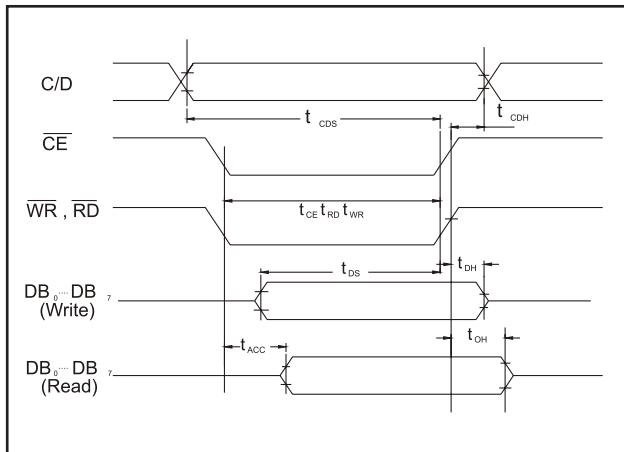
ELECTRICAL CHARACTERISTICS, Ta = 25°C

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	$V_{DD} - V_0$	$V_{DD} = 5V$ $T_a = +25^\circ C$		22.9		V
Supply Current LCD Drive	I_0			4.5		mA

Note (1): Value is high reliability type.

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

SWITCHING 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		ns
Access Time	t_{ACC}		150	ns
Output Hold Time	t_{OH}	10	50	ns

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