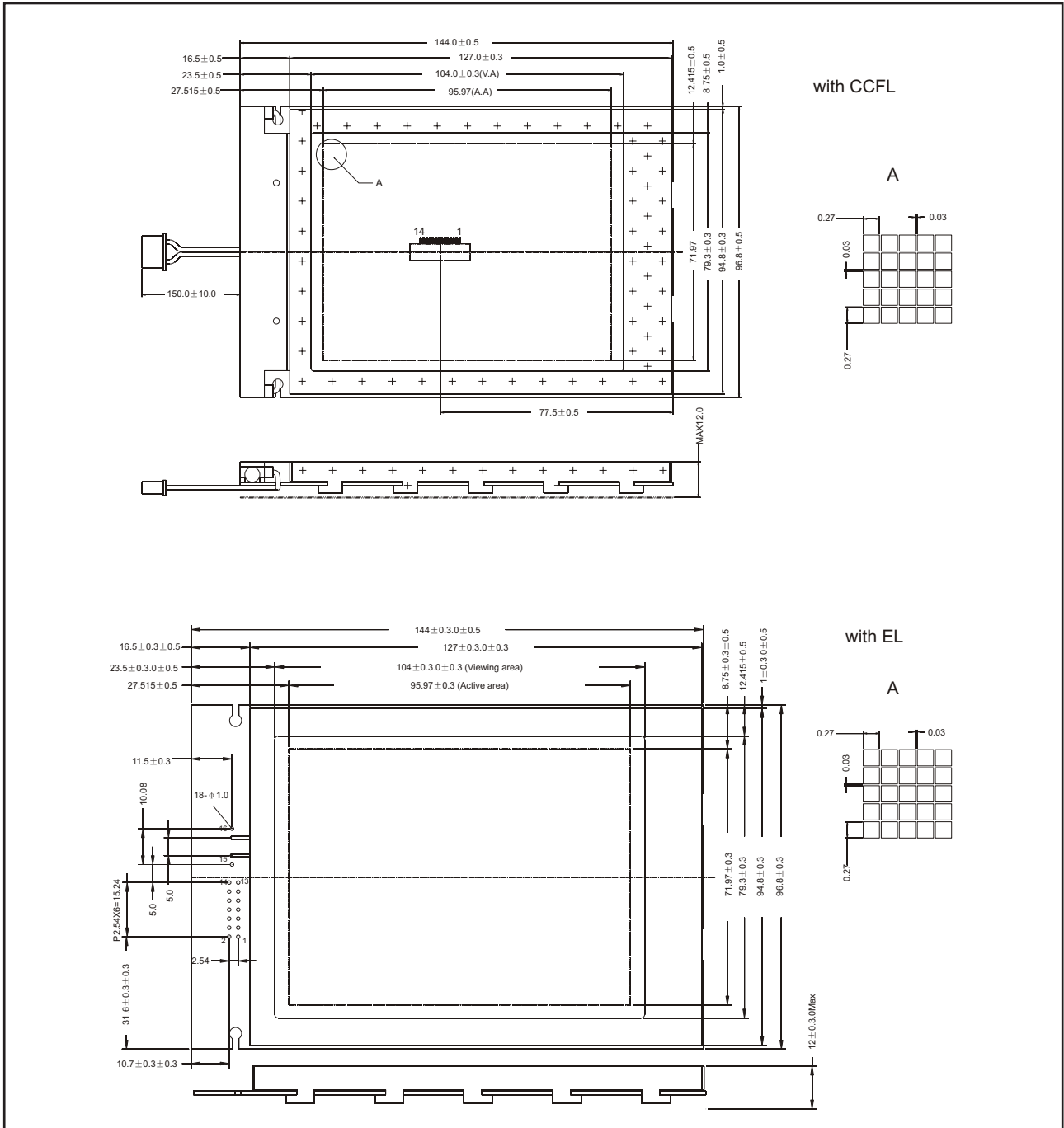


STANDARD GRAPHIC MODULES

YMS 320240-03

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

EXTERNAL DIMENSION AND DISPLAY PATTERN



MECHANICAL DATA

ITEM	SPECIFICATION	UNIT
Module Size (W x H x T)	144.0 x 96.8 x 12.0	mm
Viewing Area (W x H)	104.0 x 79.3	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				

STANDARD GRAPHIC MODULES

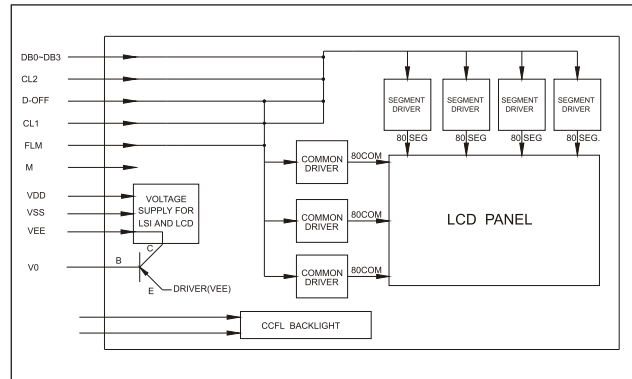
YMS 320240-03

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

PIN CONFIGURATION

PIN	SYMBOL	LEVEL	SIGNAL DESCRIPTION
1	FLM	H	First Line Marker
2	M	H/L	AC Driving Control Signal
3	CL ₁	H, H-L	Display Dta Latch Clock
4	CL ₂	H, H-L	Display Data Shift Clock
5	/DISPOFF	L	Display Off
6	DB ₀	H/L	Data Bit 0
7	DB ₁	H/L	Data Bit 1
8	DB ₂	H/L	Data Bit 2
9	DB ₃	H/L	Data Bit 3
10	V _{DD}	+5V	Power Supply
11	V _{SS}	0V	Ground (0 V)
12	V _{EE}		Supply Voltage for Logic and LCD
13	V ₀		Operating Voltage for LCD (variable)
14	FGND		Front Panel Ground

BLOCK DIAGRAM



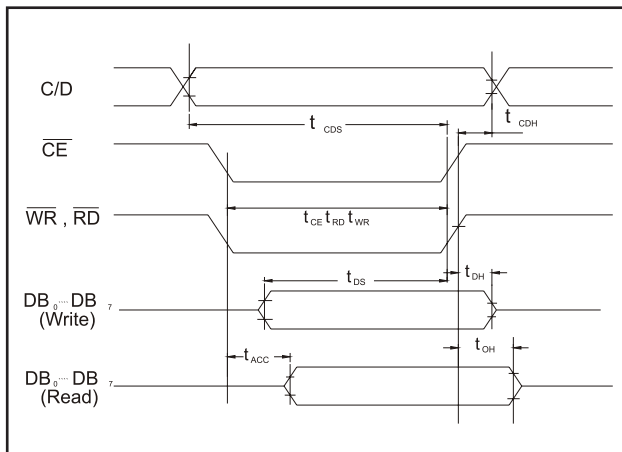
ELECTRICAL CHARACTERISTICS, Ta = 25°C

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 Ta = +25°C		22.0		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 ± 10%, V_{SS} = 0V, Ta = +25°C