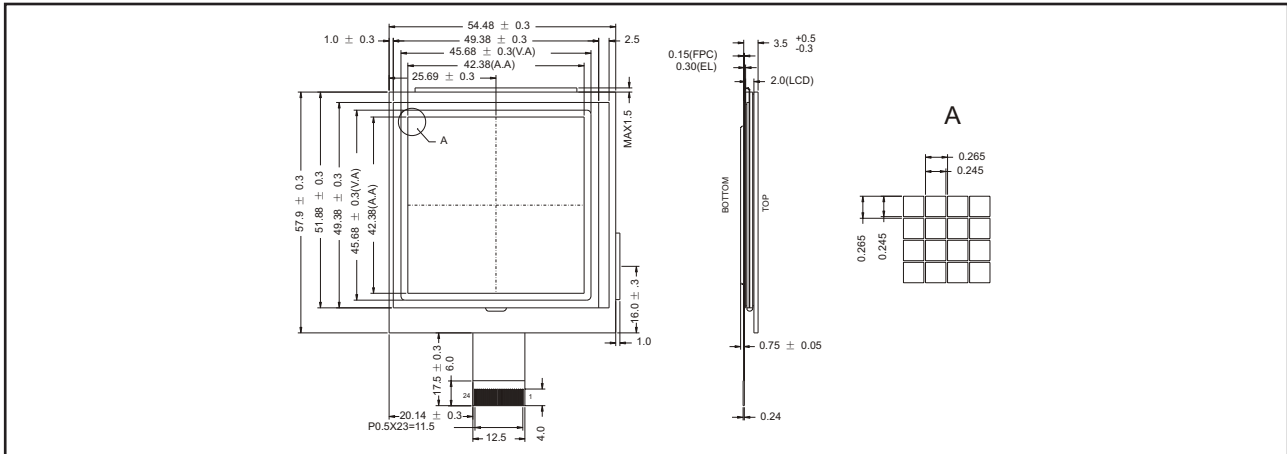


STANDARD COF MODULES

YMS 160160-01

160 X 160 DOTS, 1/160 DUTY, 1/13 BIAS

EXTERNAL DIMENSION AND DISPLAY PATTERN



MECHANICAL DATA

ITEM	SPECIFICATION	UNIT
Module Size (W x H x T)	54.48 x 57.9 x 3.5	mm
Viewing Area (W x H)	45.68 x 45.68	mm
Number of Dots	160 x 160	dots
Dot Pitch (W x H)	0.265 x 0.265	mm
Dot Size (W x H)	0.245 x 0.245	mm

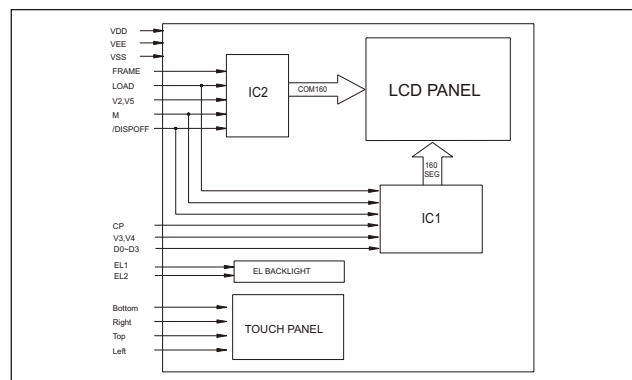
ABSOLUTE MAXIMUM RATINGS

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	SIGNAL DESCRIPTION
1	V_5	Bias Voltage Non-Select (Common Driver)
2	V_2	Bias Voltage Non-Select (Common Driver)
3	V_{EE}	Power Supply Voltage for LCD (+V)
4	V_{DD}	Power Supply for Logic
5	FRAME	Frame Start Signal (First Line Mark of Common Signal)
6	GND	Ground
7	LOAD	Latch Pulse of Display Data
8	V_{SS}	Power Supply (0V)
9	M	Switch Signal to Convert LCD Drive Wave From Into AC
10	/DISPOFF	H: Display On, L: Display Off
11	CP	Clock Pules for Segment Shift Register
12	V_4	Bais Voltage Non-Select (Segment Driver)
13	V_3	Bais Voltage Non-Select (Segment Driver)
14	DB_3	Display Data
15	DB_2	Display Data
16	DB_1	Display Data
17	DB_0	Display Data
18	NC	No Connection
19	EL ₁	Power Supply for the EL ₁
20	EL ₂	Power Supply for the EL ₂
21	BOTTOM	Touch Panel Pin
22	RIGHT	Touch Panel Pin
23	TOP	Touch Panel Pin
24	LEFT	Touch Panel Pin

BLOCK DIAGRAM



STANDARD COF MODULES

YMS 160160-01

160 X 160 DOTS, 1/160 DUTY, 1/13 BIAS

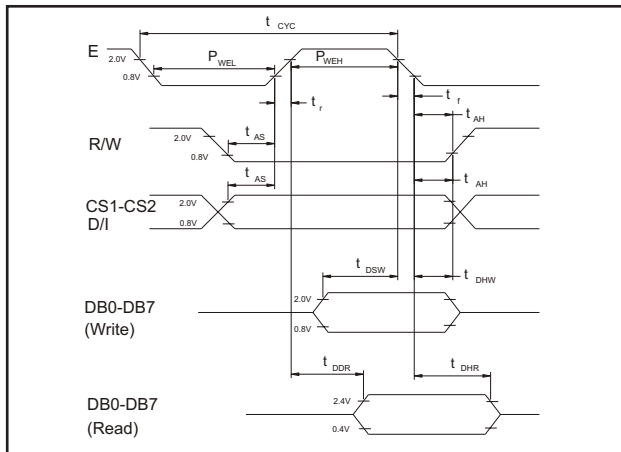
ELECTRICAL CHARACTERISTICS, Ta = 25°C

ITEM	SYMBOL	CONDITION	SPEC. VALUE			UNIT
			MIN.	TYP.	MAX.	
Supply Voltage (Logic)	V _{DD} - V _{SS}			18.6		V
Supply Current (Logic)	I _{DD}	V _{DD} = 5V		3.0	4.5	mA
Input Voltage	HIGH	V _{IH}		0.7 V _{DD}	V _{DD}	V
	LOW	V _{IL}		0	0.3 V _{DD}	V
Output Voltage	HIGH	V _{OH}	I _{OH} = 0.205mA	2.4		V
	LOW	V _{OL}	I _{OL} = 1.6mA		0.4	V
LCD Operating Voltage	V _{DD} - V _{EE}	V _{DD} = 5V Ta = +25°C		9.0		V
Supply Current LCD Drive	I _{EE}			0.8	1.0	mA

Note (1): Value is high reliability type.

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

INTERFACE TIMING CHARACTERISTICS



PARAMETER	SYMBOL	MIN.	MAX.	UNIT
E Cycle Time	t _{CYC}	1000		ns
E High Level Width	t _{WEH}	450		ns
E Low Level Width	t _{WEL}	450		ns
E Rise Time	t _r		25	ns
E Fall Time	t _f		25	ns
Address Setup Time	t _{AS}	140		ns
Address Hold Time	t _{AH}	10		ns
Data Setup Time	t _{DSW}	200		ns
Data Delay Time	t _{DDR}		320	
Data Delay Time - Write	t _{DHW}	10		ns
Data Hold Time - Read	t _{DHR}	20		ns

Condition: V_{DD} = +5.0V ±10%, V_{SS} = 0V, Ta = +25°C