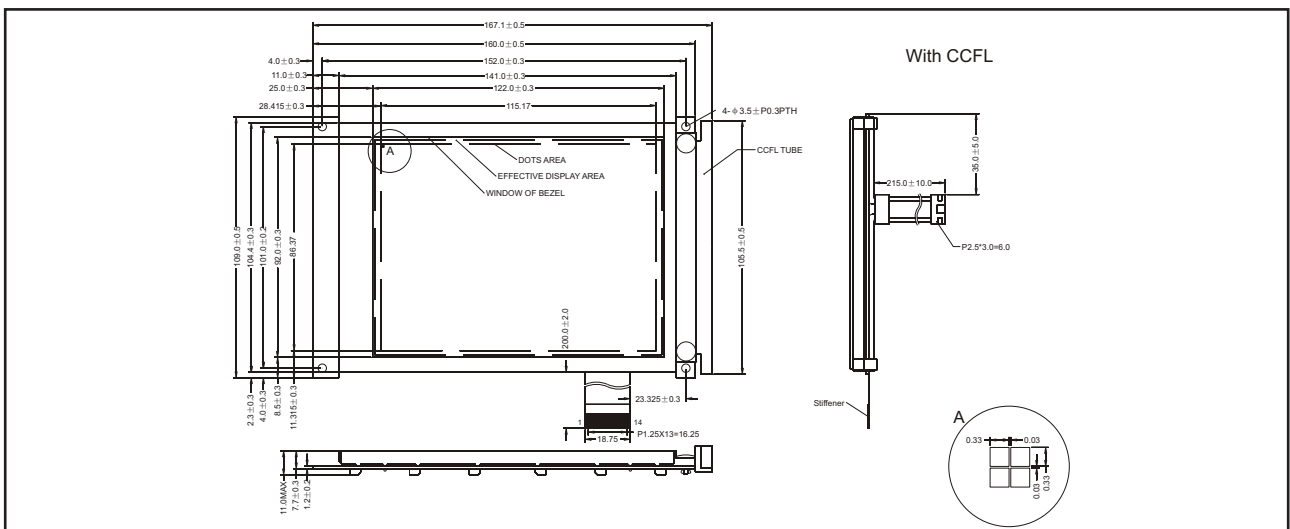
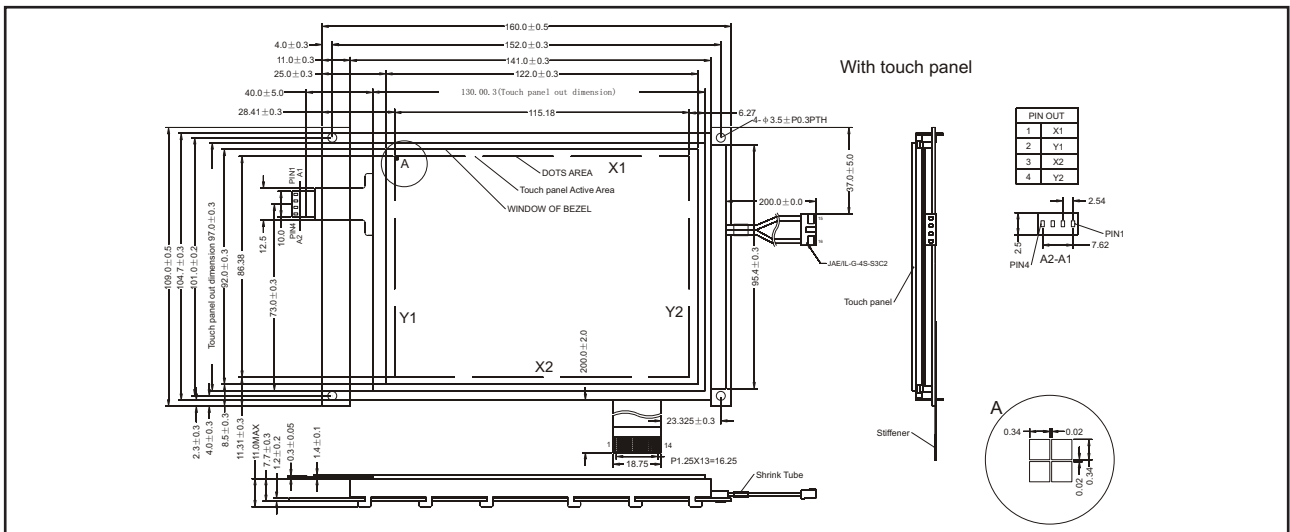
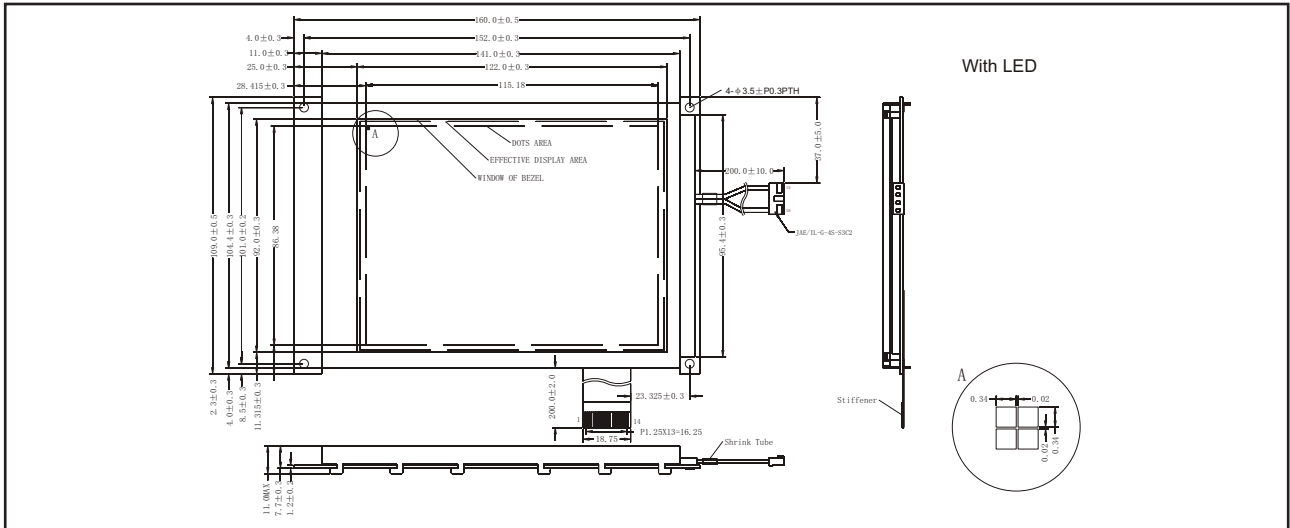


## STANDARD GRAPHIC MODULES

### YMS 320240-05

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

#### EXTERNAL DIMENSION AND DISPLAY PATTERN



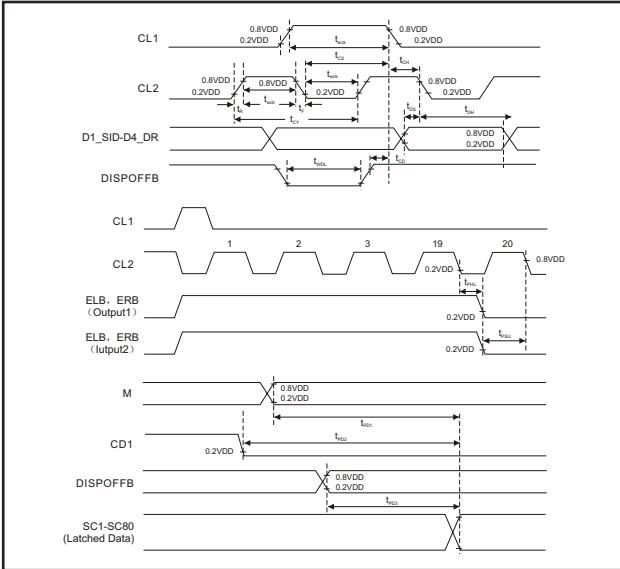


# STANDARD GRAPHIC MODULES

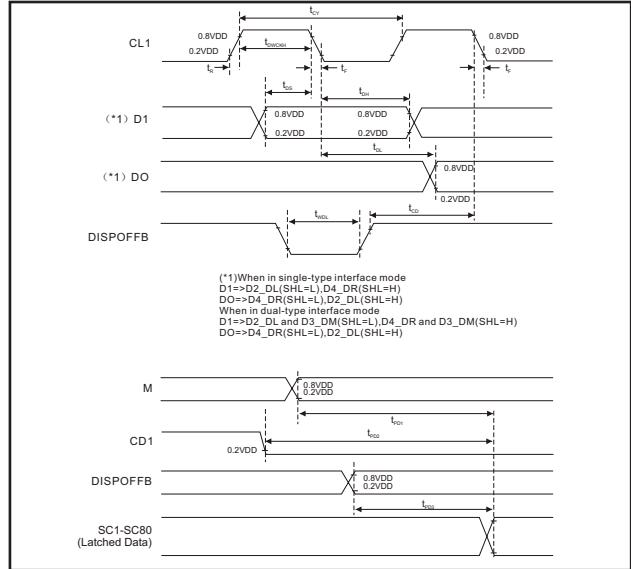
## YMS 320240-05

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

### SEGMENT DRIVER APPLICATION TIMING



### COMMON DRIVER APPLICATION TIMING



### AC CHARACTERISTICS: SEGMENT DRIVER APPLICATION, $V_{SS}=0V$ , $T_a=-30^{\circ}C$ to $+85^{\circ}C$

CHARACTERISTIC	SYMBOL	TEST CONDITION	$V_{DD}=5V \pm 10\% (1)$			$V_{DD}=3V \pm 10\% (2)$			UNIT
			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Clock Cycle Time	$t_{CY}$	Duty=50%	125			250			ns
Clock Pulse Width	$t_{WCK}$		45			95			ns
Clock Rise / Fall Time	$t_r/t_f$							30	ns
Data Setup Time	$t_{DS}$		30			65			ns
Data Hold Time	$t_{DH}$		30			65			ns
Clock Setup Time	$t_{CS}$		80			120			ns
Clock Hold Time	$t_{CH}$		80			120			ns
Propagation Delay Time	$t_{PHL}$	ELB Output			60			125	ns
		ERB Output			60			125	ns
ELB ERB Setup Time	$t_{PSU}$	ELB Input	30			65			ns
		ERB Input	30			65			ns
DISPOFFB Low Pulse Width	$t_{WDL}$		1.2			1.2			$\mu s$
DISPOFFB Clear Time	$t_{CD}$		100			100			ns
M-OUT Propagation Delay Time	$t_{PD1}$	$C_L=15pF$			1.0			1.2	$\mu s$
CLI-OUT Propagation Delay Time	$t_{PD2}$				1.0			1.2	$\mu s$
DISPOFFB-OUT Propagation Delay Time	$t_{PD3}$				1.0			1.2	$\mu s$

### AC CHARACTERISTICS: COMMON DRIVER APPLICATION, $V_{SS}=0V$ , $T_a=-30^{\circ}C$ to $+85^{\circ}C$

CHARACTERISTIC	SYMBOL	TEST CONDITION	$V_{DD}=5V \pm 10\% (1)$			$V_{DD}=3V \pm 10\% (2)$			UNIT
			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Clock Cycle Time	$t_{CY}$	Duty=50%	250			500			ns
Clock Pulse Width	$t_{WCK}$		45			95			ns
Clock Rise / Fall Time	$t_r/t_f$				50			50	ns
Data Setup Time	$t_{DS}$		30			65			ns
Data Hold Time	$t_{DH}$		30			65			ns
DISPOFFB Low Pulse Width	$t_{WDL}$		1.2			1.2			$\mu s$
DISPOFFB Clear Time	$t_{CD}$		100			100			ns
Output Delay Time	$t_{DL}$	$C_L=15pF$			200			250	ns
M-OUT Propagation Delay Time	$t_{PD1}$				1.0			1.2	$\mu s$
CLI-OUT Propagation Delay Time	$t_{PD2}$				1.0			1.2	$\mu s$
DISPOFFB-OUT Propagation Delay Time	$t_{PD3}$				1.0			1.2	$\mu s$