

XIAMEN PRECISE DISPLAY

SPECIFICATIONS FOR LIQUID CRYSTAL DISPLAY

PART NUMBER:

PGM12232E-NSW-BBW-01

DATE:

2008.11.25

1.0 MECHANICAL SPECS

1. Overall Module Size	98.0mm(W) x 50.0mm(H) x max 11.5mm(D) for LED backlight
2. Dot Size	0.55mm(W) x 0.6mm(H)
3. Dot Pitch	0.61mm(W) x 0.66mm(H)
4. Duty,Bias	1/32, 1/5
5. Controller IC	SBN1661G
6. LC Fluid Options	STN
7. Polarizer Options	Blue Negative and Transmissive
8. Viewing Angle	6:00 o'clock
9. Backlight Options	LED(WHITE)
10. Temperature Range Options	Operating:-20°C ~ 70°C; Storage:-30°C ~ 80°C

2.0 ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Min	Typ	Max	Unit
Operating temperature (Standard)	Top	0	-	50	°C
Storage temperature (Standard)	Tst	-20	-	70	°C
Operating temperature (Wide temperature)	Top	-20	-	70	°C
Storage temperature (Wide temperature)	Tst	-30	-	80	°C
Input voltage	Vin	Vss	-	Vdd	V
Supply voltage for logic	Vdd- Vss	-0.3	-	7.0	V
Supply voltage for LCD drive	Vdd- Vo	-	6.5	-	V

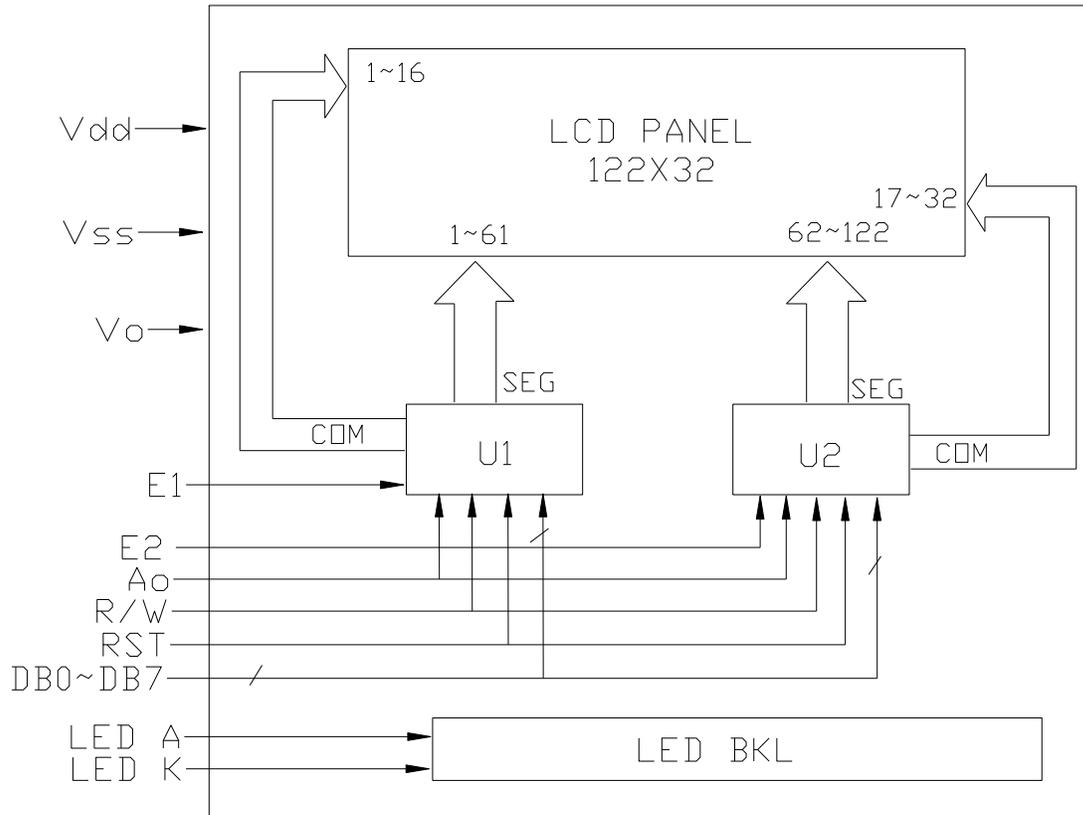
3.0 ELECTRICAL CHARACTERISTICS

Item	Symbol	Condition	Min	Typ	Max	Unit
Power Supply Voltage	Vdd	fosc=270kHz	4.5	5.0	5.5	V
Power Supply Current	Idd	Vdd=5.0V, fosc=270kHz	-	0.8	1.5	mA
Recommended LC Driving Voltage (Standard Temp)	Vdd - Vo	0°C	-	7.0	-	V
		25°C	-	6.5	-	
		50°C	-	6.0	-	
LED Power Supply Voltage	Vfled	R=40Ω	-	5.0	-	V
LED Power Supply Current	Ifled	R=40Ω	-	40	-	mA

4.0 OPTICAL CHARACTERISTICS (Ta=25°C, Vdd= 5.0V±0.25V, STN LC fluid)

Item	Symbol	Condition	Min	Typ	Max	Unit
Viewing angle (horizontal)	θ	Cr ≥ 2.0	-	85	-	deg
Viewing angle (vertical)	ϕ	Cr ≥ 2.0	-	35	-	deg
Contrast Ratio	Cr	$\phi=0^\circ, \theta=0^\circ$	-	3	-	
Response time (rise)	Tr	$\phi=0^\circ, \theta=0^\circ$	-	150	280	ms
Response time (fall)	Tf	$\phi=0^\circ, \theta=0^\circ$	-	80	150	ms

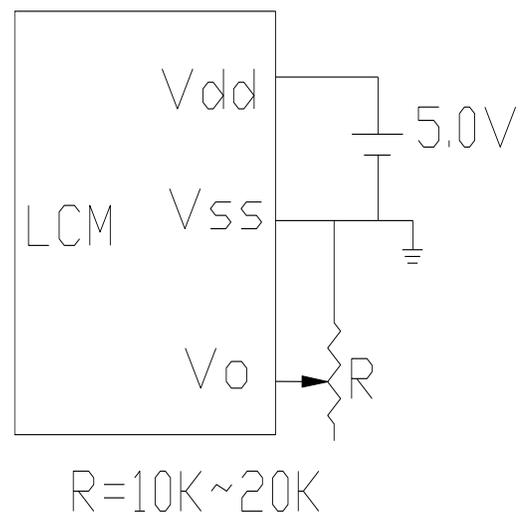
5.0 BLOCK DIAGRAM



6.0 PIN ASSIGNMENT

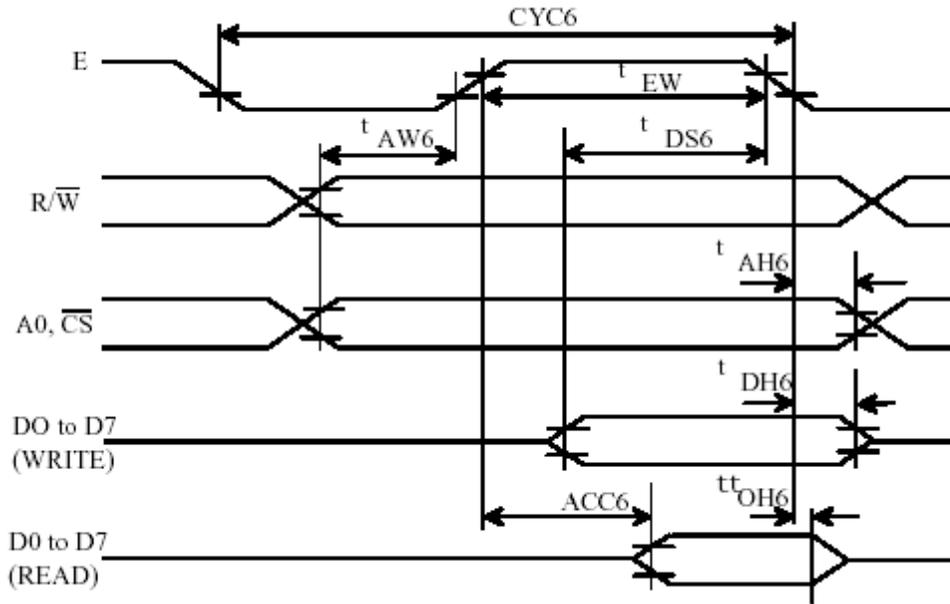
7.0 Power Supply

Pin No.	Symbol	Function
1	VSS	GND (0V)
2	VDD	SUPPLY VOLTAGE FOR LOGIC (+5.0v)
3	Vo	SUPPLY VOLTAGE FOR LCD
4	Ao	H: Data L: Instruction Code
5	R/W	H: Read L: Write
6	E/R	Chip selection for U1
7	E/L	Chip selection for U2
8	NC	
9	DB0	DB0
10	DB1	DB1
11	DB2	DB2
12	DB3	DB3
13	DB4	DB4
14	DB5	DB5
15	DB6	DB6
16	DB7	DB7
17	A	BKL+ 5.0V
18	K	BKL- GND

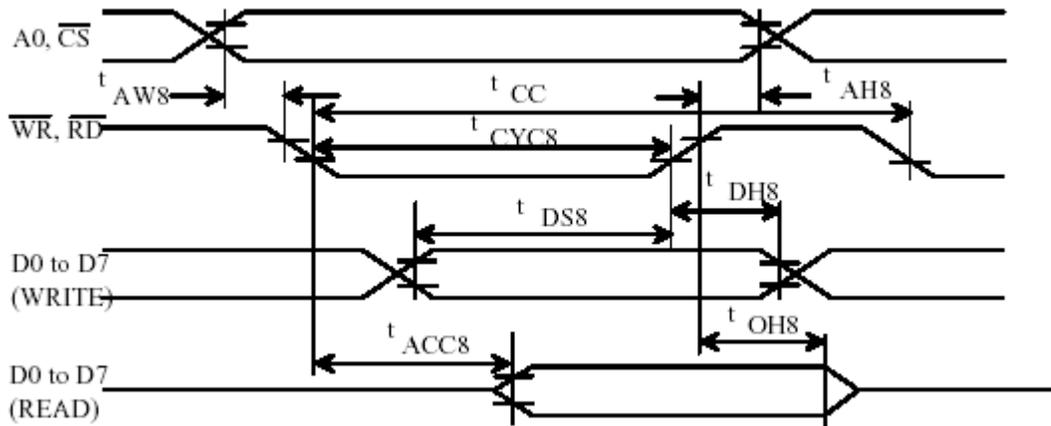


8.0 TIMING CHARACTERISTICS

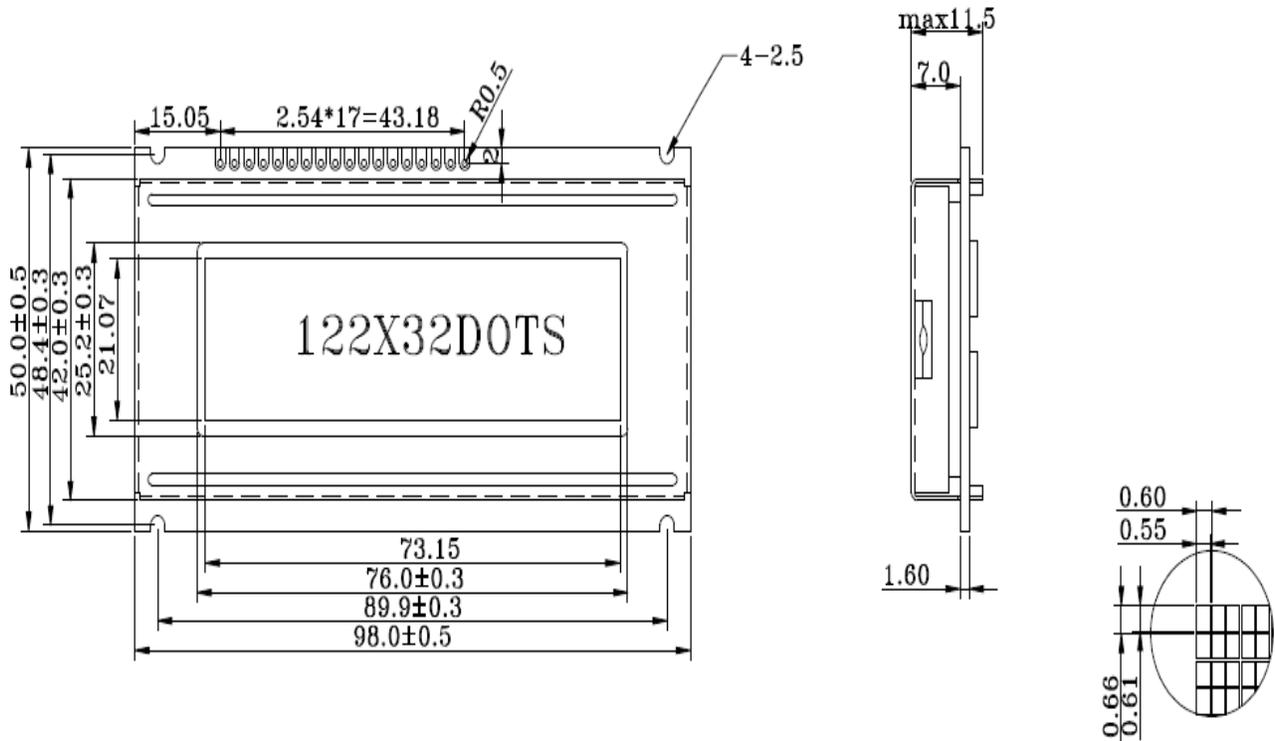
1)68 Family MPU



2)80 Family MPU

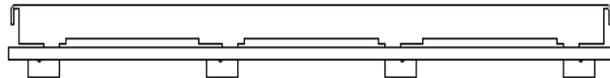


9.0 MECHANICAL DIAGRAM



FEATURES:

1. DISPLAY MODE: STN BLUE,NEGATIVE,TRANSMISSIVE
2. VIEW ANGLE: 6:00
3. OPERATING VOLTAGE: 5.0V
4. OPERATING TEMP: -20°C ~ +70°C
5. STORAGE TEMP: -30°C ~ +80°C
6. BACKLIGHT: LED (WHITE),Vbk=5.0V
7. DRIVER: SBN1661G OR EQUIVALENT

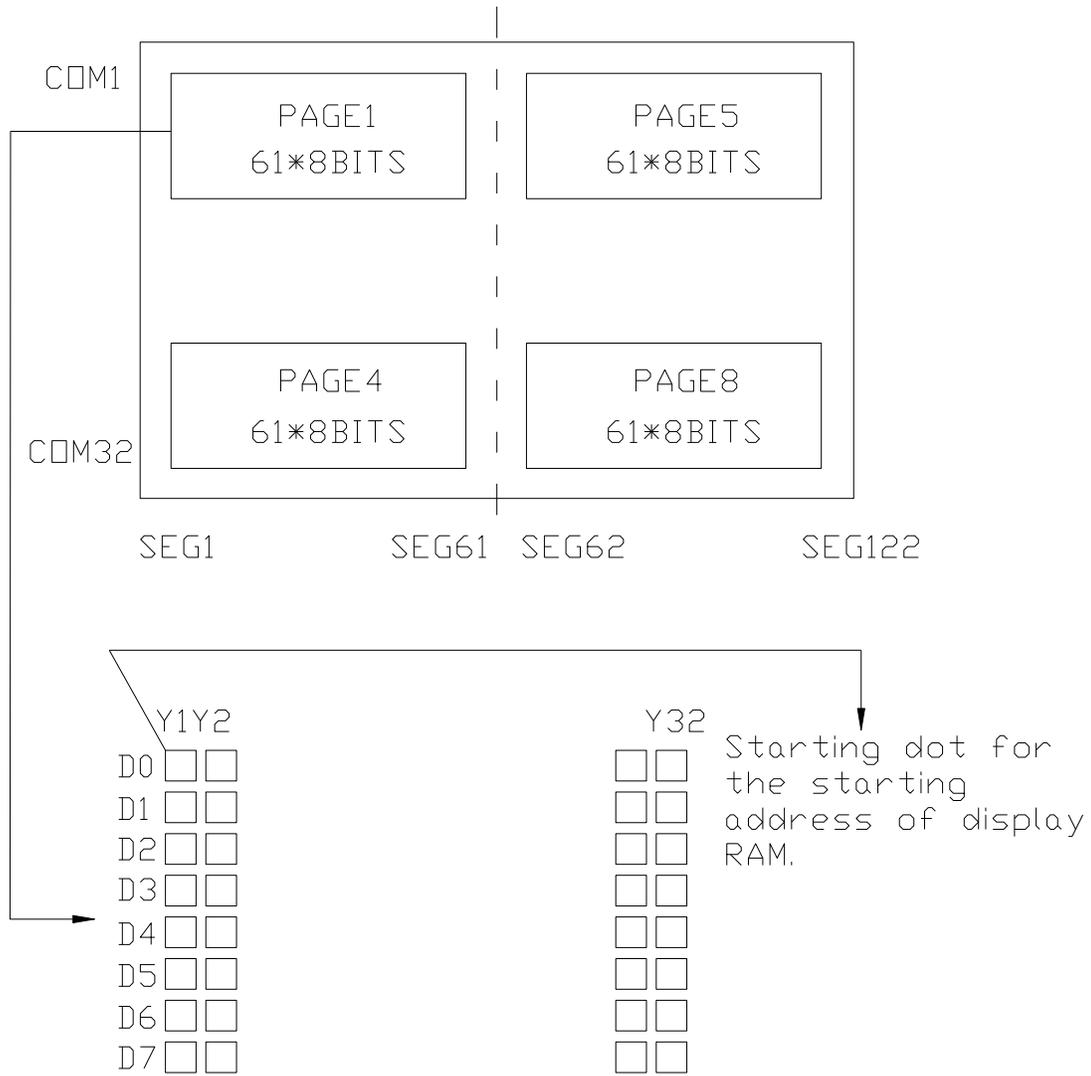


TOLERANCES UNLESS OTHERWISE SPECIFIED ±0.2

PIN	1	2	3	4	5	6	7	8	9
SIGNAL	VSS	VDD	VEE	AO	R/W	E1	E2	NC	DB0
PIN	10	11	12	13	14	15	16	17	18
SIGNAL	DB1	DB2	DB3	DB4	DB5	DB6	DB7	A	K

		厦门精显电子有限公司 XIAMEN PRECISE DISPLAY CO., LTD.		
		绘图: 刘永宝 审核: cry 批准: zhang	绘图编号: LCM12232E-NSW-BBW-01 客户编号: PGM12232E-NSW-BBW-01 图纸版号: V1.0	

10.0 RELATION BETWEEN DISPLAY PATTERN AND DRIVERS



11.0 DISPLAY INSTRUCTION TABLE

Command	Code											Function
	A0	RD	WR	D7	D6	D5	D4	D3	D2	D1	D0	
Display On/Off	0	1	0	1	0	1	0	1	1	1	0/1	Turns display on or off. 1 : ON, 0 : OFF
Display start line	0	1	0	1	1	0	Display start address (0 to 31)					Specifies RAM line corresponding to top line of display.
Set page address	0	1	0	1	0	1	1	1	0	Page (0 to 3)		Sets display RAM page in page address register.
Set column (segment) address	0	1	0	0	Column address (0 to 79)							Sets display RAM column address in column address register.
Read status	0	0	1	Busy	ADC	ON/OFF	Reset	0	0	0	0	Reads the following status : BUSY 1 : Busy 0 : Ready ADC 1 : CW output 0 : CCW output ON/OFF 1 : Display off 0 : Display on RESET 1 : Being reset 0 : Normal
Write display data	1	1	0	Write data								Writes data from data bus into display RAM.
Read display data	1	0	1	Read data								Reads data from display RAM onto data bus.
Select ADC	0	1	0	1	0	1	0	0	0	0	0/1	0 : CW output, 1 : CCW output
Static drive ON/OFF	0	1	0	1	0	1	0	0	1	0	0/1	Selects static driving operation. 1 : Static drive, 0 : Normal driving
Select duty	0	1	0	1	0	1	0	1	0	0	0/1	Selects LCD duty cycle 1 : 1/32, 0 : 1/16
Read-Modify-Write	0	1	0	1	1	1	0	0	0	0	0	Read-modify-write ON
End	0	1	0	1	1	1	0	1	1	1	0	Read-modify-write OFF
Reset	0	1	0	1	1	1	0	0	0	1	0	Software reset