



# SG1201A ( 12 CHARACTERS X 1 LINES )

液晶之友 电话: 020-33819057  
Http://www.lcdfriends.com

## FEATURES

- ◆ BUILT-IN CONTROLLER (HD66730 OR EQUIVALENT)
- ◆ +5 V POWER SUPPLY
- ◆ 1/16 DUTY CYCLE
- ◆ 8-BIT PARALLEL INTERFACE
- ◆ 4.2 V LED FORWARD VOLTAGE

## MECHANICAL DATA

| ITEM                    | DIMENSIONS                     | UNIT |
|-------------------------|--------------------------------|------|
| Module Size (W x H x T) | 80.0 x 36.0 x 8.8 ( 12.7 LED ) | mm   |
| Viewing Area ( W x H )  | 65.0 x 16.0                    | mm   |
| Active Area ( W x H )   | 62.79 x 7.64                   | mm   |
| Dot Size ( W x H )      | 0.40 x 0.60                    | mm   |
| Dot Pitch ( W x H )     | 0.43 x 0.64                    | mm   |

## INTERFACE PIN CONNECTIONS

| NO.  | SYMBOL  | LEVEL | FUNCTION             |
|------|---------|-------|----------------------|
| 1    | Vss     | 0V    | Power Supply Ground  |
| 2    | VDD     | 5V    | Power Supply Voltage |
| 3    | Vo      | -     | Contrast Adj.        |
| 4    | RS      | H/L   | Register Select      |
| 5    | R/W     | H     | Read/Write           |
| 6    | E       | H     | Enable Signal        |
| 7~14 | DB0~DB7 | H/L   | Data Bus Line        |
| 15   | A       | 4.2V  | LED Power (+)        |
| 16   | K       | 0V    | LED Power (-)        |

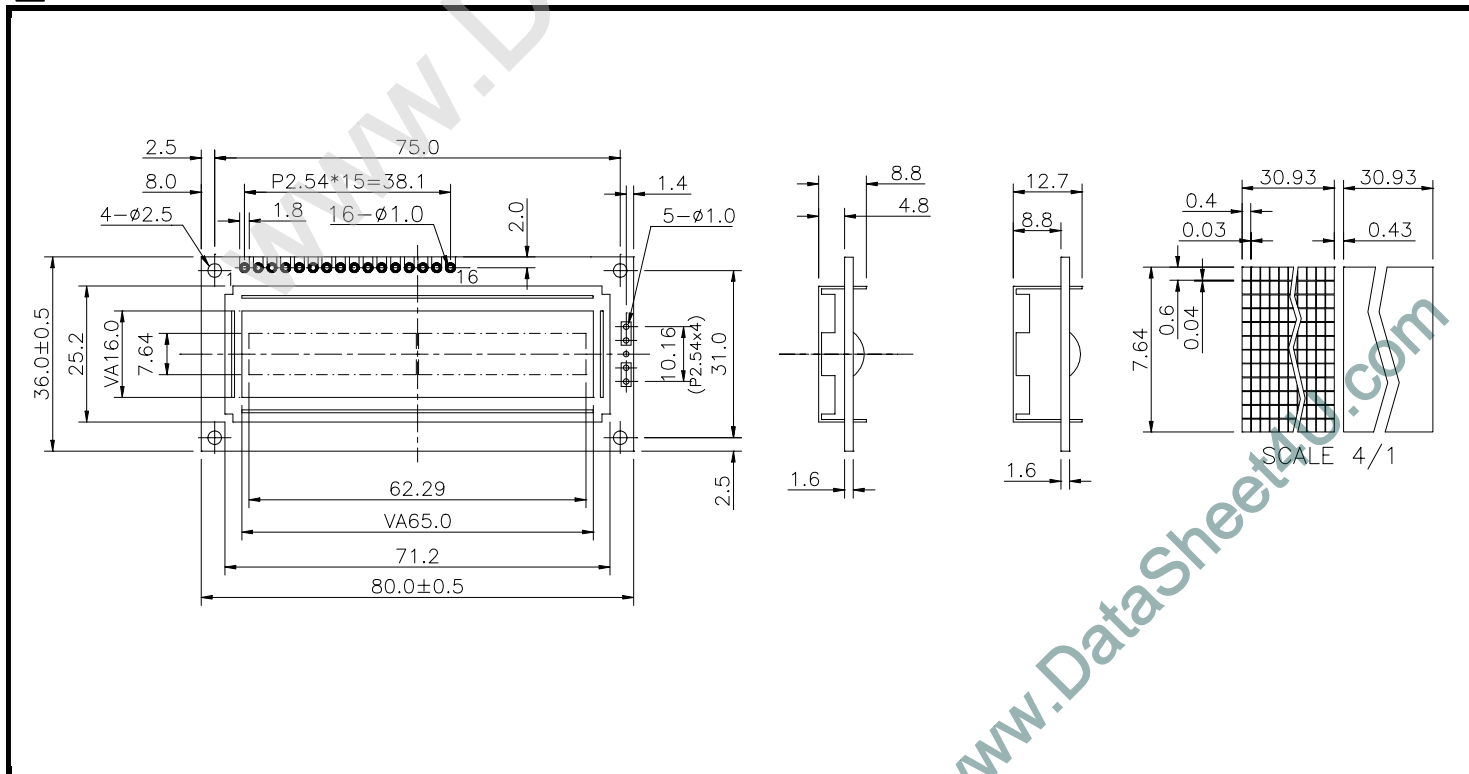
## ABSOLUTE MAXIMUM RATINGS

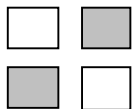
| ITEM                         | SYMBOL  | MIN. | TYP. | MAX. | UNIT |
|------------------------------|---------|------|------|------|------|
| Supply Voltage For Logic     | VDD-Vss | 0    | -    | 7    | V    |
| Supply Voltage For LCD Drive | VDD-Vo  | 0    | -    | 12   | V    |
| Input Voltage                | Vi      | Vss  | -    | VDD  | V    |

## ELECTRICAL CHARACTERISTICS

| ITEM                     |              | SYMBOL  | CONDITION      | MIN. | TYP. | MAX. | UNIT |
|--------------------------|--------------|---------|----------------|------|------|------|------|
| Supply Voltage For Logic |              | VDD-VSS | -              | 4.5  | 5    | 5.5  | V    |
| Supply Voltage For LCD   |              | VDD-Vo  | VDD=5V Ta=25°C | 4.4  | 4.8  | 5.2  | V    |
| Supply Current           |              | IDD     | VDD=5V         | -    | 2.5  | 4.5  | mA   |
| Input                    | "HIGH" Level | VIH     | -              | 2.2  | -    | VDD  | V    |
| Voltage                  | "LOW" Level  | VIL     | -              | -    | -    | 0.6  | V    |
| Output                   | "HIGH" Level | VOH     | -              | 2.4  | -    | -    | V    |
| Voltage                  | "LOW" Level  | VOL     | -              | -    | -    | 0.4  | V    |

## EXTERNAL DIMENSIONS





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## TIMING CHARACTERISTICS

| ITEM                  |              | SYMBOL           | MIN. | TYP. | MAX. | UNIT. |
|-----------------------|--------------|------------------|------|------|------|-------|
| E Cycle Time          |              | $t_{CYCE}$       | 1000 | -    | -    | ns    |
| Enable Pulse Width    | "High Level" | $P_{WEH}$        | 450  | -    | -    | ns    |
| Enable Rise/Fall Time |              | $t_{ER}, t_{EF}$ | -    | -    | 25   | ns    |
| Address Set-up Time   | RS,R/W to E  | $t_{AS}$         | 60   | -    | -    | ns    |
| Address Hold Time     |              | $t_{AH}$         | 20   | -    | -    | ns    |
| Data Sep-up Time      |              | $t_{DSW}$        | 140  | -    | -    | ns    |
| Data delay Time       |              | $t_{DDR}$        | -    | -    | 360  | ns    |
| Data Hold Time        | Write        | $t_H$            | 30   | -    | -    | ns    |
| Data Hold Time        | Read         | $t_{DHR}$        | 5    | -    | -    | ns    |

FIG.1 WRITE OPERATION

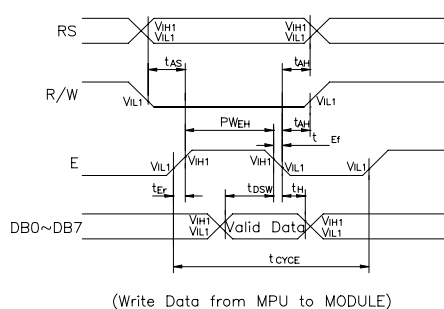
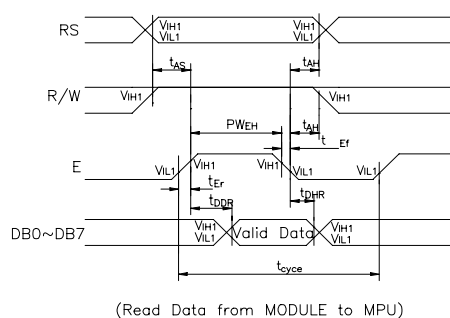


FIG.2 READ OPERATION



## BLOCK DIAGRAM

