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## S.001 MECHANICAL DATA

- | ITEM                    | DIMENSIONS                     | UNIT |
|-------------------------|--------------------------------|------|
| Module Size (W x H x T) | 66.0 x 26.0 x 8.5 ( 12.0 LED ) | mm   |
| Viewing Area ( W x H )  | 51.0 x 14.8                    | mm   |
| Active Area ( W x H )   | 47.32 x 12.12                  | mm   |
| Dot Size ( W x H )      | 0.33 x 0.34                    | mm   |
| Dot Pitch ( W x H )     | 0.37 x 0.38                    | mm   |

## ■ ABSOLUTE MAXIMUM RATINGS

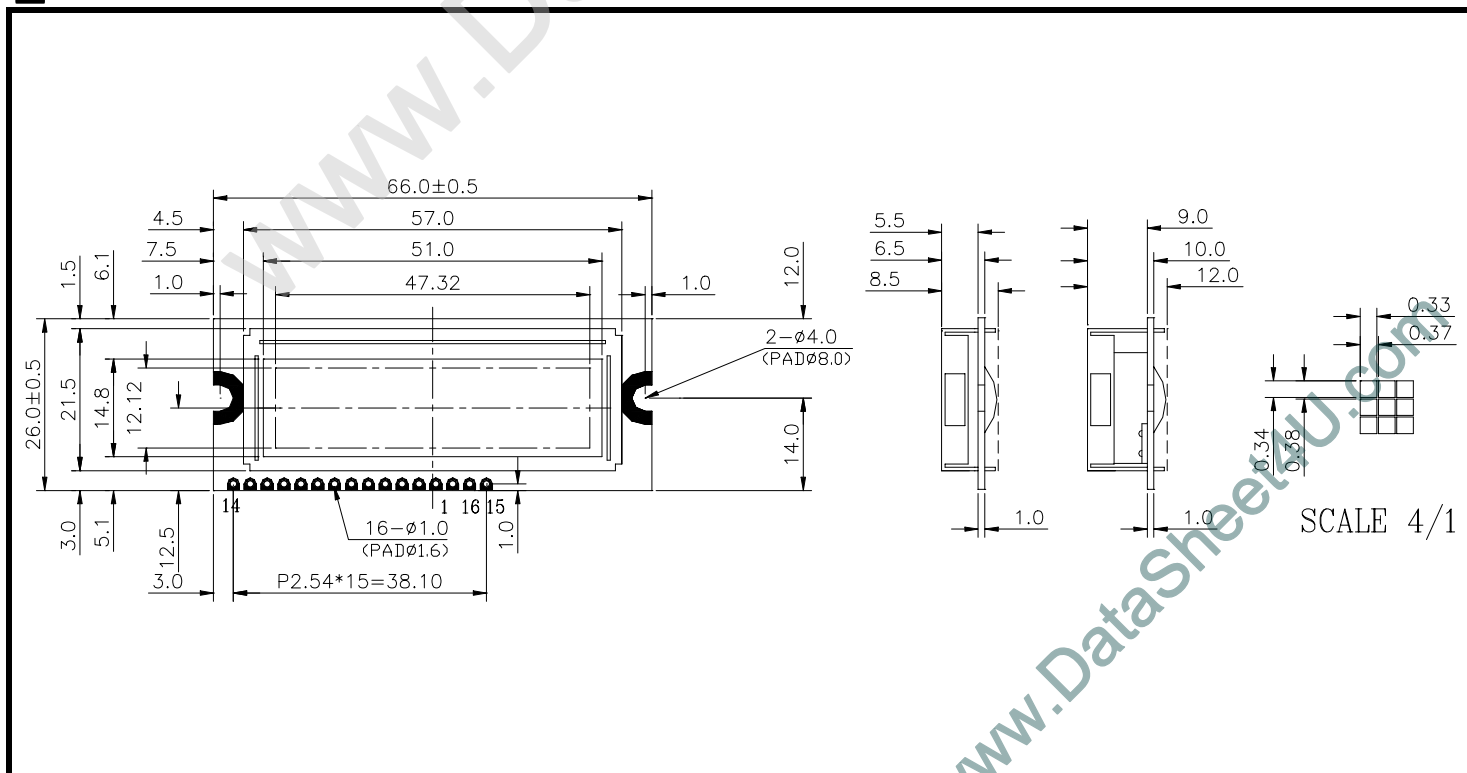
| NO.  | SYMBOL          | LEVEL | FUNCTION        |
|------|-----------------|-------|-----------------|
| 1    | V <sub>SS</sub> | 0V    | Supply Ground   |
| 2    | V <sub>DD</sub> | 5V    | Supply Voltage  |
| 3    | V <sub>O</sub>  | -     | Contrast Adj.   |
| 4    | RS              | H/L   | Register 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 (-)   |

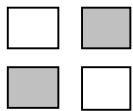
| ITEM                         | SYMBOL             | MIN. | TYP. | MAX. | UNIT |
|------------------------------|--------------------|------|------|------|------|
| Supply Voltage For Logic     | VDD-VSS            | 0    | -    | 7    | V    |
| Supply Voltage For LCD Drive | VDD-V <sub>0</sub> | 0    | -    | 12   | V    |
| Input Voltage                | V <sub>I</sub>     | VSS  | -    | VDD  | V    |

## ■ ELECTRICAL CHARACTERISTICS

| ITEM                     |              | SYMBOL              | CONDITION                   | MIN. | TYP. | MAX.            | UNIT |
|--------------------------|--------------|---------------------|-----------------------------|------|------|-----------------|------|
| Supply Voltage For Logic |              | V <sub>DD-VSS</sub> | -                           | 4.5  | 5    | 5.5             | V    |
| Supply Voltage For LCD   |              | V <sub>DD-Vo</sub>  | V <sub>DD</sub> =5V Ta=25°C | 4.4  | 4.8  | 5.2             | V    |
| Supply Current           |              | I <sub>DD</sub>     | V <sub>DD</sub> =5V         | -    | 2.5  | 4.5             | mA   |
| Input                    | "HIGH" Level | V <sub>IH</sub>     | -                           | 2.2  | -    | V <sub>DD</sub> | V    |
| Voltage                  | "LOW" Level  | V <sub>IL</sub>     | -                           | -    | -    | 0.6             | V    |
| Output                   | "HIGH" Level | V <sub>OH</sub>     | -                           | 2.4  | -    | -               | V    |
| Voltage                  | "LOW" Level  | V <sub>OL</sub>     | -                           | -    | -    | 0.4             | V    |

## EXTERNAL DIMENSIONS





# SG12832A ( 8 CHARACTERS X 2 LINES )

## TIMING CHARACTERISTICS

| ITEM                  |              | SYMBOL           | MIN. | TYP. | MAX. | UNIT. |
|-----------------------|--------------|------------------|------|------|------|-------|
| E Cycle Time          |              | $t_{CYCE}$       | 1200 | -    | -    | ns    |
| Enable Pulse Width    | "High Level" | $P_{WEH}$        | 140  | -    | -    | ns    |
| Enable Rise/Fall Time |              | $t_{ER}, t_{EF}$ | -    | -    | 25   | ns    |
| Address Set-up Time   | RS, R/W to E | $t_{AS}$         | 10   | -    | -    | ns    |
| Address Hold Time     |              | $t_{AH}$         | 20   | -    | -    | ns    |
| Data Sep-up Time      |              | $t_{DSW}$        | 40   | -    | -    | ns    |
| Data delay Time       |              | $t_{DDR}$        | -    | -    | 100  | ns    |
| Data Hold Time        | Write        | $t_H$            | 20   | -    | -    | ns    |
| Data Hold Time        | Read         | $t_{DHR}$        | 20   | -    | -    | ns    |

FIG.1 WRITE OPERATION

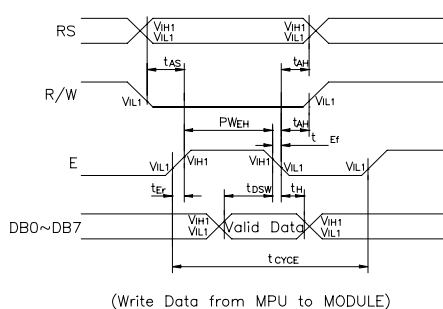
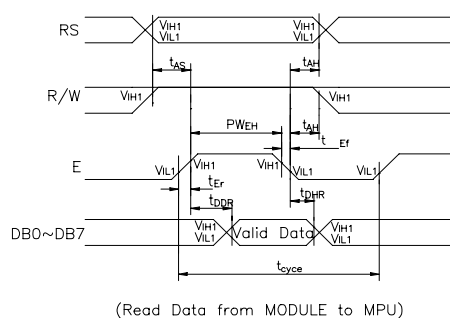


FIG.2 READ OPERATION



## BLOCK DIAGRAM

