



SG12832B (128 DOTS X 32 DOTS)

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FEATURES

- ◆ BUILT-IN CONTROLLER (HT1670 OR EQUIVALENT)
- ◆ +5 V POWER SUPPLY
- ◆ 1/32 DUTY CYCLE
- ◆ 8-BIT PARALLEL INTERFACE
- ◆ 4.2 V LED FORWARD VOLTAGE

MECHANICAL DATA

| ITEM | DIMENSIONS | UNIT |
|-------------------------|--------------------|------|
| Module Size (W x H x T) | 73.0 x 37.0 x 10.8 | mm |
| Viewing Area (W x H) | 63.0 x 17.7 | mm |
| Active Area (W x H) | 58.84 x 14.68 | mm |
| Dot Size (W x H) | 0.42 x 0.42 | mm |
| Dot Pitch (W x H) | 0.46 x 0.46 | mm |

INTERFACE PIN CONNECTIONS

| NO. | SYMBOL | LEVEL | FUNCTION |
|------|-----------------|-------|--|
| 1 | V _{SS} | 0V | Power Supply Ground |
| 2 | V _{DD} | 5V | Power Supply Voltage |
| 3 | LIGHT | 4.1V | LED Power Supply (+) |
| 4 | /CS | L | Chip Singal |
| 5 | /WR | L | Write Singal |
| 6 | /RD | L | Read Singal |
| 7-10 | DB0-DB3 | H/L | Data Bus Line |
| 11 | /CLOCK | L | Time base or watchdog timer overflow flag |
| 12 | BZ+ | - | 2kHz Or 4 kHz Tone Frequency Output Pair . |
| 13 | BZ- | - | 2kHz Or 4 kHz Tone Frequency Output Pair . |

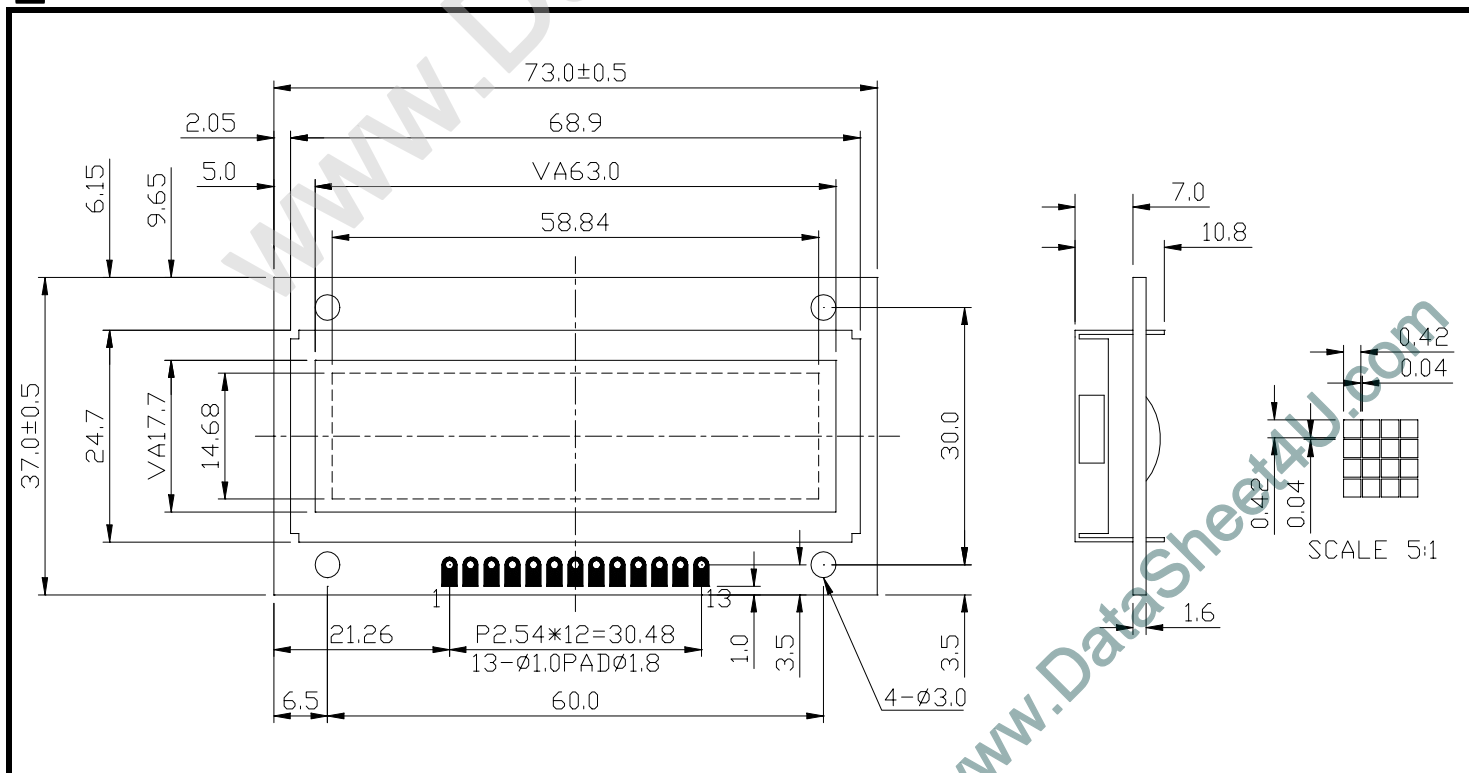
ABSOLUTE MAXIMUM RATINGS

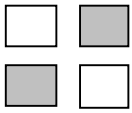
| ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|------------------------------|----------------------------------|-----------------|------|-----------------|------|
| Supply Voltage For Logic | V _{DD} -V _{SS} | 0 | - | 7 | V |
| Supply Voltage For LCD Drive | V _{DD} -V _o | 0 | - | 12 | V |
| Input Voltage | V _I | V _{SS} | - | V _{DD} | V |

ELECTRICAL CHARACTERISTICS

| ITEM | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT | |
|--------------------------|----------------------------------|-----------------------------|------|------|------|-----------------|---|
| Supply Voltage For Logic | V _{DD} -V _{SS} | - | 4.5 | 5 | 5.5 | V | |
| Supply Voltage For LCD | V _{DD} -V _o | V _{DD} =5V Ta=25°C | 4.4 | 4.8 | 5.2 | V | |
| Supply Current | I _{DD} | V _{DD} =5V | - | 3 | 4.5 | mA | |
| Input Voltage | "HIGH" Level | V _{IH} | - | 2.2 | - | V _{DD} | V |
| | "LOW" Level | V _{IL} | - | - | - | 0.6 | V |
| Output Voltage | "HIGH" Level | V _{OH} | - | 2.4 | - | V | V |
| | "LOW" Level | V _{OL} | - | - | - | 0.4 | V |

EXTERNAL DIMENSIONS

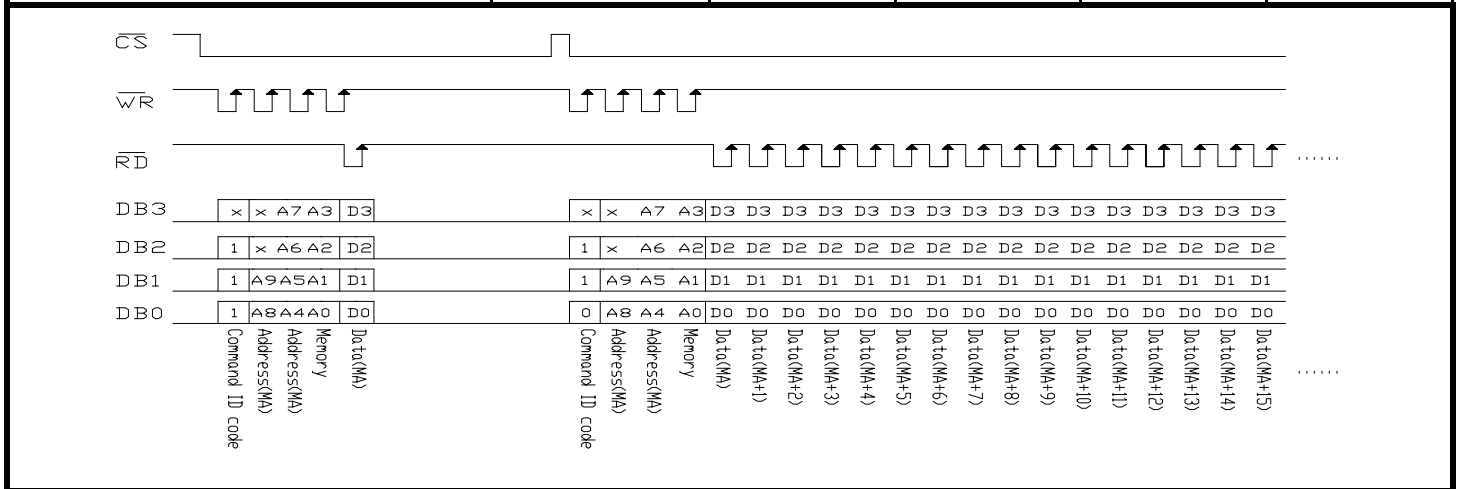




SG12832B (8 CHARACTERS X 2 LINES)

TIMING CHARACTERISTICS

| ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT. |
|--|---------|------|------|------|-------|
| 4-Bit Interface Reset Pulse Width | /CS | - | 250 | - | ns |
| /WR Input Pulse Width | Write | 1.67 | - | - | us |
| /RD Input Pulse Width | Read | 3.34 | - | - | us |
| Rise/Fall Time Serial Data Clock Width | tr , tf | - | 120 | - | ns |
| Setup Time for DATA to WR , RD Clock Width | tsu | - | 120 | - | ns |
| Hold Time for DATA to WR , RD Clock Width | th | - | 120 | - | ns |
| Setup Time for CS to WR , RD Clock Width | tsu1 | - | 100 | - | ns |
| Hold Time for CS to WR , RD Clock Width | th1 | - | 100 | - | ns |



BLOCK DIAGRAM

