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| MCCOG21605B6W-SPTLYI | 2 x 16 | 5mm Character Height | LCD Module |
|---|---|---|---|
| **Specification** | | | |
| Version: 1 | | Date: 19/10/2016 | |
| **Revision** | | | |
| | | | |

| Display Features | | | |
|---|---|---|---|
| Character Count | 2 x 16 | | |
| Appearance | Black on Yellow/Green | | |
| Logic Voltage | 5V | | |
| Interface | I2C | | |
| Font Set | English / Japanese | | |
| Display Mode | Transflective | | |
| Character Height | 3.79mm | | |
| LC Type | STN | | |
| Module Size | 51.20 x 20.70 x 6.30 mm | | |
| Operating Temperature | -20°C ~ +70°C | | |
| Construction | COG | Box Quantity | Weight / Display |
| LED Backlight | Yellow/Green | --- | --- |

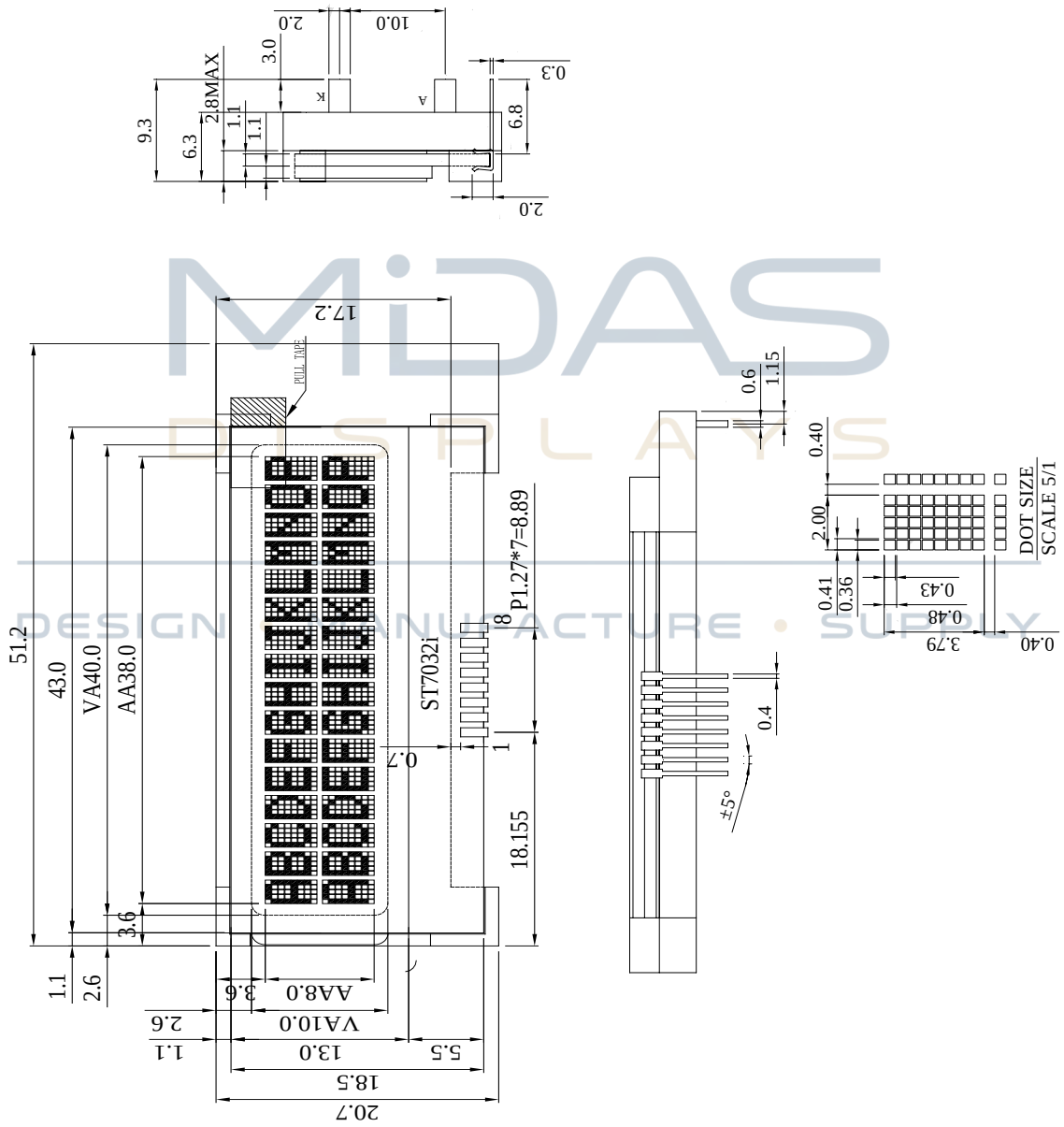
RoHS compliant

* - For full design functionality, please use this specification in conjunction with the ST7032I specification. (Provided Separately)

| Display Accessories | |
|---|---|
| **Part Number** | **Description** |
| MCCOG-I2C-I-8 | Fine pitch(1.27mm) COG I2C interface board. Compatible with both Arduino and UC32 controller boards. |
| | |
| | |

| Optional Variants | | |
|---|---|---|
| **Fonts** | **Appearances** | **Voltage** |
| | Black on White<br>White on Blue | |

| Mechanical Specifications | | | | | |
|---|---|---|---|---|---|
| Module Size | 51.20 x 20.70 x 6.30 ( With Backlight) | | | | W x H x D mm |
| Viewing Area | 40.00 x 10.00 | W x H mm | Hole-to-Hole | --- | W x H mm |
| Character Size | 2.00 x 3.79 | W x H mm | Character Pitch | 2.40 x 4.19 | W x H mm |
| Dot Size | 0.36 x 0.43 | W x H mm | Dot Pitch | 0.41 x 0.48 | W x H mm |




MIDAS DISPLAYS
DESIGN • MANUFACTURE • SUPPLY

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| | | | |

| Pin Layout | | | |
|---|---|---|---|
| PI | SYMBOL | DESCRIPTION | REMARKS |
| 1 | VOUT | DC/DC Voltage Converter | |
| 2 | CAP1N | Voltage booster Circuit (VDD-VSS) | |
| 3 | CAP1P | | |
| 4 | VDD | Power Supply | 5.0V |
| 5 | VSS | Ground | |
| 6 | SDA | Input Data | |
| 7 | SCL | Clock Input Data | |
| 8 | RST | Reset | |

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# Font Map

| Upper 4bit / Lower 4bit | LLLL | LLLH | LLHL | LLHH | LHLL | LHLH | LHHL | LHHH | HLLL | HLLH | HLHL | HLHH | HHLL | HHLH | HHHL | HHHH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LLLL | CG RAM (1) | | | | | | | | | | | | | | | |
| LLLH | (2) | | | | | | | | | | | | | | | |
| LLHL | (3) | | | | | | | | | | | | | | | |
| LLHH | (4) | | | | | | | | | | | | | | | |
| LHLL | (5) | | | | | | | | | | | | | | | |
| LHLH | (6) | | | | | | | | | | | | | | | |
| LHHL | (7) | | | | | | | | | | | | | | | |
| LHHH | (8) | | | | | | | | | | | | | | | |
| HLLL | (1) | | | | | | | | | | | | | | | |
| HLLH | (2) | | | | | | | | | | | | | | | |
| HLHL | (3) | | | | | | | | | | | | | | | |
| HLHH | (4) | | | | | | | | | | | | | | | |
| HHLL | (5) | | | | | | | | | | | | | | | |
| HHLH | (6) | | | | | | | | | | | | | | | |
| HHHL | (7) | | | | | | | | | | | | | | | |
| HHHH | (8) | | | | | | | | | | | | | | | |

DISPLAY ELECTRONICS

## Absolute Maximums Ratings

| Item | Symbol | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| Power Supply (Logic) | Vdd | -0.3 | --- | 6.0 | V |
| Power Supply (LCD) | V0 | 7.0 -Vss | --- | -0.3 +Vss | V |
| --- | --- | --- | --- | --- | --- |
| Operating Temperature | $T_{OP}$ | -20°C | --- | 70°C | °C |
| Storage temperature | $T_{ST}$ | -30°C | --- | 80°C | °C |

## Electronic Characteristics

| Item | Symbol | Condition | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|---|
| Input Voltage High | $V_{IH}$ | --- | 0.70 | --- | $V_{DD}$ | V |
| Input Voltage Low | $V_{IL}$ | --- | --- | --- | 0.20 | V |
| Output Voltage High | $V_{OH}$ | --- | 0.80 | --- | $V_{DD}$ | V |
| Output Voltage Low | $V_{OL}$ | --- | --- | --- | 0.20 | V |
| Supply Voltage Logic | $V_{DD} \sim V_{SS}$ | --- | 3.00 | 3.30 | 5.00 | V |
| Supply Voltage LCD | $V_{DD} \sim V_0$ | Ta=25°C | --- | 4.50 | --- | V |
| Supply Current | $I_{DD}$ | --- | --- | 0.17 | --- | mA |

## LCD Characteristics

For STN/FSTN LCD Panel Types

| Item | Symbol | Condition | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|---|
| Viewing Angle | Φ2 – Φ1 | CR ≥ 2 | 20 | | 40 | ψ=180° |
| | Θ | --- | -30 | | 30 | |
| Contrast Ratio | CR | --- | --- | 3 | --- | --- |
| Response Time (Rise) | TR | --- | --- | 250 | 400 | ms |
| Response Time (Fall) | TF | --- | --- | 100 | 250 | ms |

MIDAS DISPLAYS DESIGN • MANUFACTURE • SUPPLY

## LED Characteristics

| Item | Symbol | Condition | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|---|
| Supply Current | ILED | V=3.5V | 28.80 | 32 | 50 | mA |
| Supply Voltage | V | --- | 3.40 | 3.50 | 3.60 | V |
| Reverse Voltage | VR | --- | --- | --- | 5 | V |
| Luminance (Without LCD) | IV | ILED=32mA | 892 | 1116 | --- | $Cd/m^2$ |
| Wave Length | λp | ILED=32mA | 565 | --- | 575 | --- |
| LED Life Time | --- | ILED=32mA | --- | 50K | --- | Hour |

**Attention:** It is constant current, not constant voltage, which should be applied when driving the LED backlight, please ensure you adhere to this rule.