

|                      |        |                      |            |
|----------------------|--------|----------------------|------------|
| MC42005A6W-SPTLYS-V2 | 4 x 20 | 5mm Character Height | LCD Module |
| <b>Specification</b> |        |                      |            |
| Version: 1           |        | Date: 20/10/2016     |            |
| <b>Revision</b>      |        |                      |            |
|                      |        |                      |            |

| Display Features      |                          |  |                  |
|-----------------------|--------------------------|--|------------------|
| Character Count       | 4 x 20                   |  |                  |
| Appearance            | Black on Yellow/Green    |  |                  |
| Logic Voltage         | 5V                       |  |                  |
| Interface             | SPI                      |  |                  |
| Font Set              | English / Japanese       |  |                  |
| Display Mode          | Transflective            |  |                  |
| Character Height      | 4.75mm                   |  |                  |
| LC Type               | STN                      |  |                  |
| Module Size           | 98.00 x 60.00 x 13.60 mm |  |                  |
| Operating Temperature | -20°C ~ +70°C            |  |                  |
| Construction          | COB                      |  |                  |
| LED Backlight         | Yellow/Green             |  |                  |
|                       |                          | Box Quantity   | Weight / Display |
|                       |                          | ---  | ---              |

\* - For full design functionality, please use this specification in conjunction with the RW1063 specification. (Provided Separately)

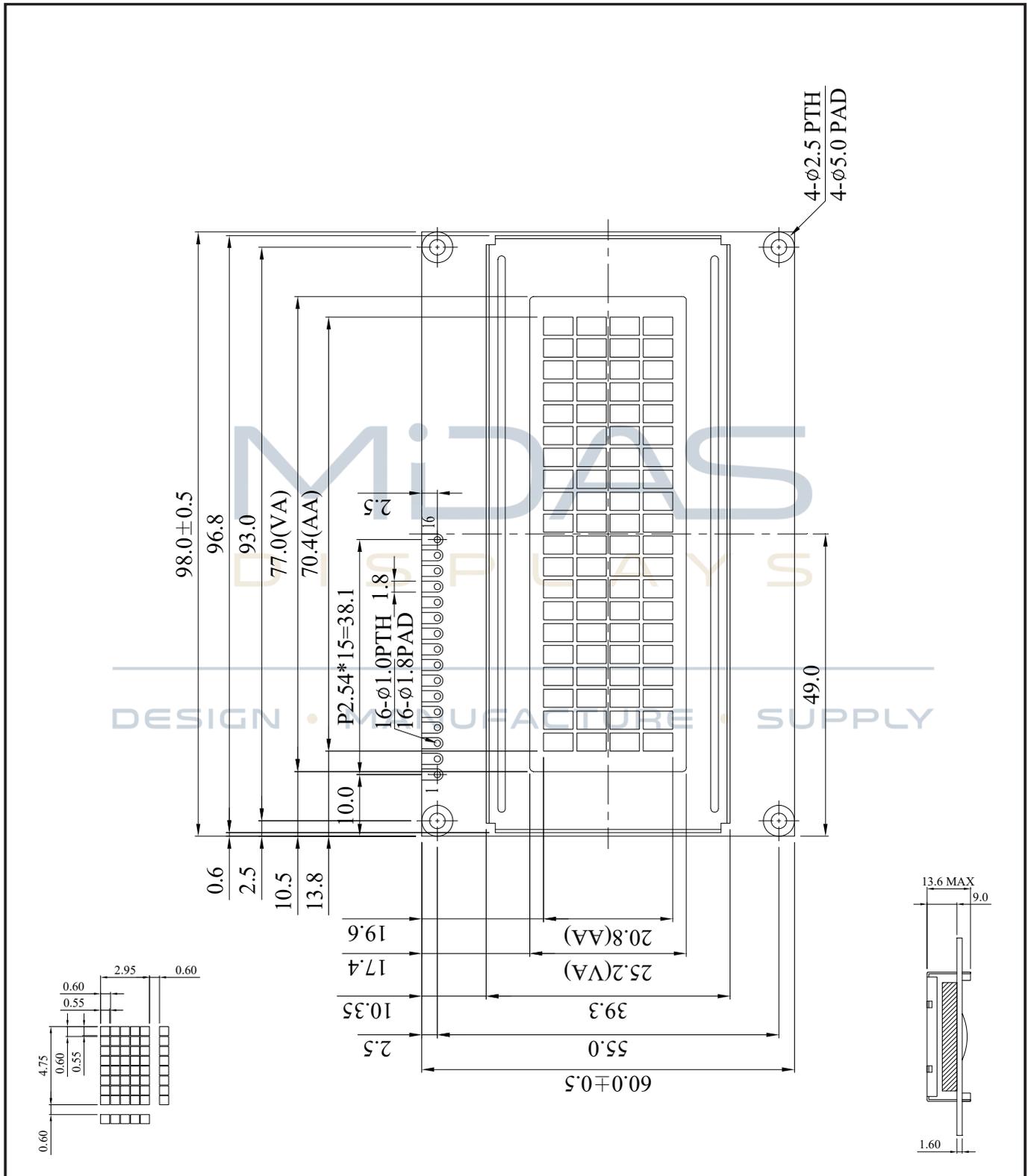
| Display Accessories      |  |
|--------------------------|--|
| Part Number              | Description  |
| MCCMDB-16SIL             | LCD Interconnect board, can be driven from either a PC or a single Board computer with a USB output. |
| MCCBL1A16SLIP-16DILS-150 | 16 Way, Single in-line to Dual In-line connector Cable.  |
| MCCBL1A16SLIP-16SILS-150 | 16 Way, Single in-line to Single In-line connector Cable.  |

| Optional Variants |                                 |         |
|-------------------|---------------------------------|---------|
| Fonts             | Appearances                     | Voltage |
|                   | Black on White<br>White on blue | 3V      |



## Mechanical Specifications

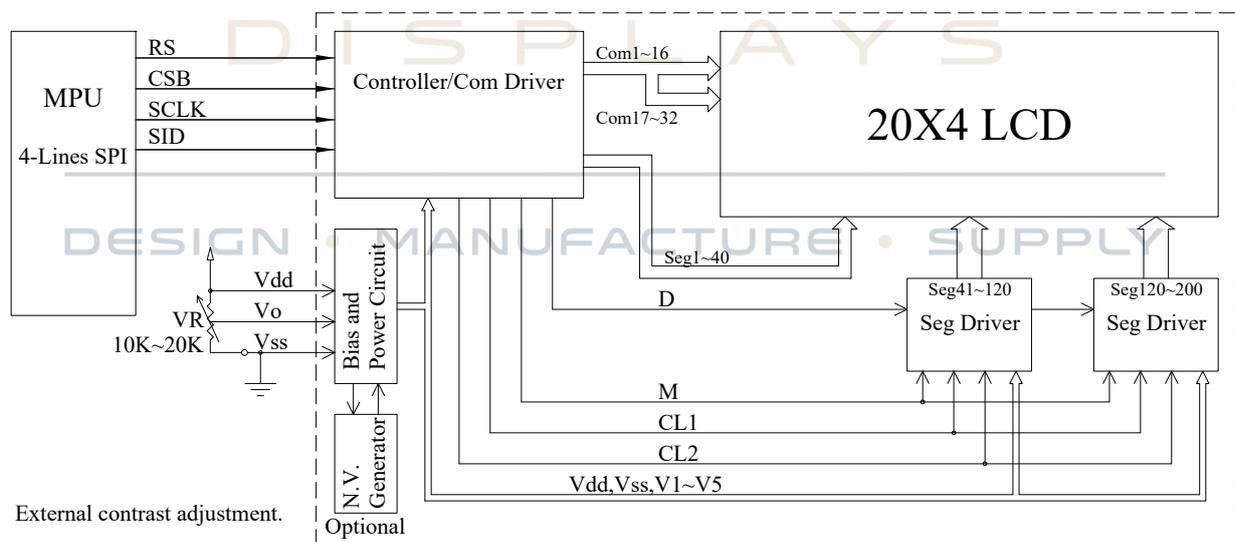
|                |   |          |                 |               |              |
|----------------|---|----------|-----------------|---------------|--------------|
| Module Size    | 98.00 x 60.00 x 13.60 ( With Backlight) |          |                 |               | W x H x D mm |
| Viewing Area   | 77.00 x 25.20                           | W x H mm | Hole-to-Hole    | 93.00 x 55.00 | W x H mm     |
| Character Size | 2.95 x 4.75                             | W x H mm | Character Pitch | 3.55 x 5.35   | W x H mm     |
| Dot Size       | 0.55 x 0.55                             | W x H mm | Dot Pitch       | 0.65 x 0.70   | W x H mm     |



|                      |        |                      |            |
|----------------------|--------|----------------------|------------|
| MC42005A6W-SPTLYS-V2 | 4 x 20 | 5mm Character Height | LCD Module |
| <b>Specification</b> |        |                      |            |
| Version: 1           |        | Date: 20/10/2016     |            |
| <b>Revision</b>      |        |                      |            |

# Pin Layout

| PI | SYMBOL | DESCRIPTION                      | REMARKS |
|----|--------|----------------------------------|---------|
| 1  | Vss    | GND                              |         |
| 2  | Vdd    | Power supply for LCM             | 5.0V    |
| 3  | V0     | Operating Voltage for LCD        |         |
| 4  | RS     | Register Selection Input         |         |
| 5  | NC     | No Connection                    |         |
| 6  | NC     | No Connection                    |         |
| 7  | NC     | No Connection                    |         |
| 8  | NC     | No Connection                    |         |
| 9  | NC     | No Connection                    |         |
| 10 | NC     | No Connection                    |         |
| 11 | NC     | No Connection                    |         |
| 12 | CSB    | Chip Select. Low=True High=False |         |
| 13 | SCLK   | Serial Clock Input               |         |
| 14 | SID    | Serial Data Input                |         |
| 15 | A      | Power Supply for BKL             |         |
| 16 | K      | Power Supply for BKL             |         |



| Character located | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| DDRAM address     | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 0A | 0B | 0C | 0D | 0E | 0F | 10 | 11 | 12 | 13 |
| DDRAM address     | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 4A | 4B | 4C | 4D | 4E | 4F | 50 | 51 | 52 | 53 |
| DDRAM address     | 14 | 15 | 16 | 17 | 18 | 19 | 1A | 1B | 1C | 1D | 1E | 1F | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| DDRAM address     | 54 | 55 | 56 | 57 | 58 | 59 | 5A | 5B | 5C | 5D | 5E | 5F | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 |

|                      |        |                      |            |
|----------------------|--------|----------------------|------------|
| MC42005A6W-SPTLYS-V2 | 4 x 20 | 5mm Character Height | LCD Module |
| <b>Specification</b> |        |                      |            |
| Version: 1           |        | Date: 20/10/2016     |            |
| <b>Revision</b>      |        |                      |            |
|                      |        |                      |            |



# Font Map

| Upper<br>4bit<br>Lower<br>4bit | LLLL             | LLLH | LLHL | LLHH | LHLL | LHLH | LHHL | LHHH | HLLL | HLLH | HLHL | HLHH | HHLL | HHLH | HHHL | HHHH |
|--------------------------------|------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| LLLL                           | CG<br>RAM<br>(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)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

|                      |        |                      |             |
|----------------------|--------|----------------------|-------------|
| MC42005A6W-SPTLYS-V2 | 4 x 20 | 5mm Character Height | LCD Module  |
| <b>Specification</b> |        |                      |             |
| Version: 1           |        | Date: 20/10/2016     |             |
| <b>Revision</b>      |        |                      |             |
|                      |        |                      | Page 4 of 5 |



### Absolute Maximum Ratings

| Item                  | Symbol | Condition | Min      | Typ | Max      | Unit |
|-----------------------|--------|-----------|----------|-----|----------|------|
| Power Supply ( LOGIC) | Vdd    | 25°C      | -0.3     | --- | 5.5      | V    |
| Power Supply (LCD)    | V0     | 25°C      | Vss -0.3 | --- | Vss +7.0 | V    |
| Input Voltage         | Vin    | 25°C      | -0.3     | --- | Vdd +0.3 | V    |
| Operating Temperature | Vopr   | ---       | -20      | --- | 70       | C    |
| Storage Temperature   | Vstg   | ---       | -30      | --- | 80       | C    |

### Electronic Characteristics

| Item                 | Symbol                            | Condition             | Minimum | Typical | Maximum         | Unit |
|----------------------|-----------------------------------|-----------------------|---------|---------|-----------------|------|
| Input Voltage High   | V <sub>IH</sub>                   | ---                   | 2.50    | ---     | V <sub>DD</sub> | V    |
| Input Voltage Low    | V <sub>IL</sub>                   | ---                   | -0.30   | ---     | 0.55            | V    |
| Output Voltage High  | V <sub>OH</sub>                   | ---                   | 3.90    | ---     | ---             | V    |
| Output Voltage Low   | V <sub>OL</sub>                   | ---                   | ---     | ---     | 0.40            | V    |
| Supply Voltage Logic | V <sub>DD</sub> - V <sub>SS</sub> | ---                   | 4.50    | 5.00    | 5.50            | V    |
| Supply Voltage LCD   | V <sub>DD</sub> - V <sub>0</sub>  | Ta=25°C               | 4.40    | 4.50    | 4.60            | V    |
| Supply Current       | I <sub>DD</sub>                   | V <sub>DD</sub> =5.0V | 1.00    | 1.20    | 1.50            | mA   |

### LCD Characteristics

| For STN/FSTN LCD Panel Types |         |           |     |     |     |        |
|------------------------------|---------|-----------|-----|-----|-----|--------|
| Item                         | Symbol  | Condition | Min | Typ | Max | Unit   |
| Viewing Angle                | Φ2 – Φ1 | CR ≥ 2    | 40° | --- | 20  | ψ=180° |
|                              | Θ       |           | 60° |     |     |        |
| Contrast Ratio               | K       | ---       | --- | 3   | --- | ---    |
| Response Time (Rise)         | TR      | ---       | --- | 150 | 200 | ms     |
| Response Time (Fall)         | TF      | ---       | --- | 150 | 200 | ms     |

### LED Characteristics

| Item                    | Symbol           | Condition               | Minimum | Typical | Maximum | Unit              |
|-------------------------|------------------|-------------------------|---------|---------|---------|-------------------|
| Supply Current          | I <sub>LED</sub> | V=4.2V                  | 252     | 280     | 336     | mA                |
| Supply Voltage          | V                | ---                     | 4.00    | 4.20    | 4.40    | V                 |
| Reverse Voltage         | VR               | ---                     | ---     | ---     | 8       | V                 |
| Luminance (Without LCD) | IV               | I <sub>LED</sub> =280mA | 200     | 250     | ---     | Cd/m <sup>2</sup> |
| Wave Length             | λP               | I <sub>LED</sub> =280mA | 568     | 570     | 574     | nm                |
| LED Life Time           | ---              | I <sub>LED</sub> =280mA | ---     | 100K    | ---     | 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.

|                      |        |                      |             |
|----------------------|--------|----------------------|-------------|
| MC42005A6W-SPTLYS-V2 | 4 x 20 | 5mm Character Height | LCD Module  |
| <b>Specification</b> |        |                      |             |
| Version: 1           |        | Date: 20/10/2016     |             |
| <b>Revision</b>      |        |                      |             |
|                      |        |                      | Page 5 of 5 |