


| | | | |
|---------------------|------------|----------------------|------------|
| MC42004A6W-SPTLY-V2 | 4 x 20 | 4mm Character Height | LCD Module |
| Specification | | | |
| Version: 1 | | Date: 08/07/2017 | |
| Revision | | | |
| 1 | 05/07/2017 | First Issue | |

| Display Features | |  | |
|-----------------------|--------------------------|--|------------------|
| Character Count | 4 x 20 | | |
| Appearance | Black on Yellow-Green | | |
| Logic Voltage | 5V | | |
| Interface | Parallel | | |
| Font Set | English / Japanese | | |
| Display Mode | Transflective | | |
| Character Height | 4.03mm | | |
| LC Type | Yellow-Green STN | | |
| Module Size | 77.00 x 47.00 x 14.50 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 ST7066U and ST7063C 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. |
| MDIB-CC1 | Interconnect board for standard pitch pinouts to fine pitch wires. Providing pinouts for 2.54 pinout. 1.27, 1, 0.845, 0.8, 0.7, 0.65, 0.62, 0.6, 0.5 & 0.3 pads. |

| Optional Variants | | |
|----------------------------------|---|------------|
| Fonts | Appearances | Voltage |
| English/Euro English/Cyrillic | White on Blue Black on White Black on RGB | 3V 3.3V |

FEATURES

| AVAILABLE OPTIONS | CHARACTERISTICS |
|----------------------------|--|
| DISPLAY FORMAT | 20 Characters by 4 Lines |
| POLARIZER OPTIONS | Positive Transflective |
| BACKLIGHT TYPE OPTIONS | Edge Type LED Backlight (Long life span version) |
| BACKLIGHT COLOR OPTIONS | Yellow-Green color |
| LCD PANEL OPTIONS | Yellow-Green STN |
| VIEWING ANGLE OPTIONS | 6:00 (Bottom) |
| TEMPERATURE RANGE OPTIONS | -20°C ~ 70°C, Single Supply Voltage |
| SUGGESTED DRIVING VOLTAGE | V _{lcm} = 5.0V V _{led} = 5.0V |
| SUGGESTED LED DRIVING MODE | PIN15: LED+, PIN16: LED- |
| CONTROLLER ▲1 | ST7066U+ ST7063C |
| FONT MAP CODE | E Version |
| DRIVING DUTY | 1/16 |
| DRIVING BIAS | 1/5 |

▲1 Please ask for datasheet of the mentioned controller from Midas Displays, or Midas Displays authorised distributors. You can find the related information including AC & DC characteristics, Write & Read Timing diagram, instruction table and descriptions, DDRAM & CGRAM, Rest Function and so on from the datasheet of controller.

▲You can ask for the example of software program (C language) from Midas Displays or Midas Displays authorised distributors

MECHANICAL SPECIFICATIONS

| | | | | | |
|----------------|---------------|----|-----------------|---------------|----|
| OVERALL SIZE | 77.0W x 47.0H | mm | THICKNESS | max 14.5 | mm |
| VIEWING AREA | 60.0W x 22.0H | mm | HOLE-HOLE | 70.0W x 40.0H | mm |
| CHARACTER SIZE | 2.30W x 4.03H | mm | CHARACTER PITCH | 0.48W x 0.48H | mm |
| DOT SIZE | 0.42W x 0.46H | mm | DOT PITCH | 0.05W x 0.05H | mm |

ABSOLUTE MAXIMUM RATINGS

| ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
|------------------------|------------------|-----------|-----------------------|-----|----------------------|------|
| POWER SUPPLY (LOGIC) | V _{dd} | 25°C | -0.3 | — | 7.0 | V |
| POWER SUPPLY (LCD) | V ₀ | 25°C | V _{dd} -13.5 | — | V _{dd} +0.3 | V |
| INPUT VOLTAGE | V _{in} | 25°C | -0.3 | — | V _{dd} +0.3 | V |
| OPERATING TEMPERATURE | V _{opr} | — | -20 | — | 70 | °C |
| STORAGE TEMPERATURE | V _{stg} | — | -30 | — | 80 | °C |

ELECTRONIC CHARACTERISTICS*

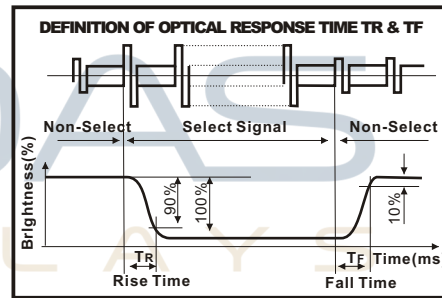
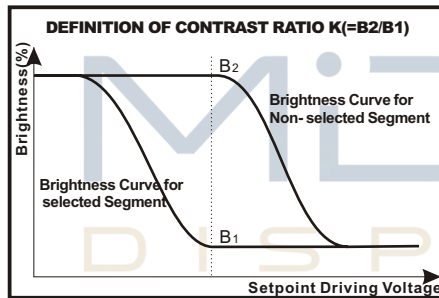
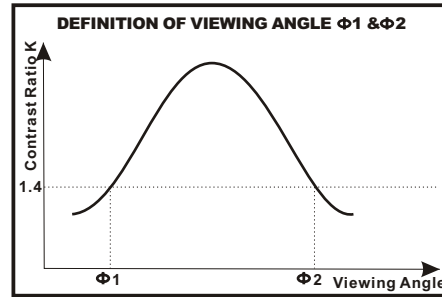
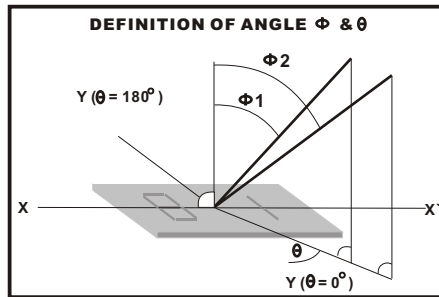
| ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
|-------------------------------|--|---------------------|------|------|------|------|
| INPUT VOLTAGE | V _{dd} | — | — | 5.0 | — | V |
| SUPPLY CURRENT | I _{dd} | V _{dd} =5V | — | 1.5 | — | mA |
| DRIVING VOLTAGE FOR LCD PANEL | V _{lcd} = (V _{dd} - V ₀) | -20°C | 4.30 | — | 4.65 | V |
| | | 0°C | 4.27 | — | 4.67 | |
| | | 25°C | 4.25 | 4.50 | 4.70 | |
| | | 50°C | 4.10 | — | 4.60 | |
| | | 70°C | 4.00 | — | 4.50 | |

* All data are recorded from TEST REPORT #FSYP027800123

LCD CHARACTERISTICS

FOR STN/FSTN TYPE LCD Panel^o(TA=25 °C, Vlcd=5.0V ± 0.5V)

| ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
|---------------------|-------------------|-----------|-----|-----|-----|------|
| VIEWING ANGLE | $\Phi 2 - \Phi 1$ | K=4 | 40 | — | — | deg |
| | θ | | 60 | | | |
| CONTRAST RATIO | K | — | 6 | — | — | — |
| RESPONSE TIME(RISE) | TR | — | — | 150 | 250 | ms |
| RESPONSE TIME(FALL) | TF | — | — | 150 | 250 | ms |



LED CHARACTERISTICS

| ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
|------------------------------|-------------|---------------|-----|-----|-----|-------------------|
| LED FORWARD VOLTAGE | Vf | 25°C | — | 3.0 | — | V |
| LED FORWARD CURRENT ▲2 | If | 25°C | — | 5 | — | mA |
| LED REVERSE CURRENT | Ir | 25°C Vr=5.0V | — | — | 10 | μA |
| LED PEAK WAVE LENGTH | λp | 25°C If = 5mA | 569 | — | 575 | nm |
| LED BRIGHTNESS (WITHOUT LCD) | Lv | 25°C If = 5mA | — | 93 | — | cd/m ² |
| LED BRIGHTNESS UNIFORMITY | Lvmin/Lvmax | 25°C If = 5mA | 70 | — | — | Ratio |
| LED LIFE TIME | — | 25°C If = 5mA | 20K | — | — | Hours |

▲2 请注意, 驱动背光考虑的是恒流而不是恒压. 所以, 这个数值非常重要!

YOUR ATTENTION: It is constant current (not constant voltage) that should be applied when driving LED backlight. Therefore, this data is very important!

* 当工作温度高于25°C时, Ifm, Ifp和Pd必须降低; 电流降低率是 -0.36*1mA/°C (直流驱动), 或-0.86*1A/°C (脉冲驱动), 功率降低率是-75*1mW/°C.

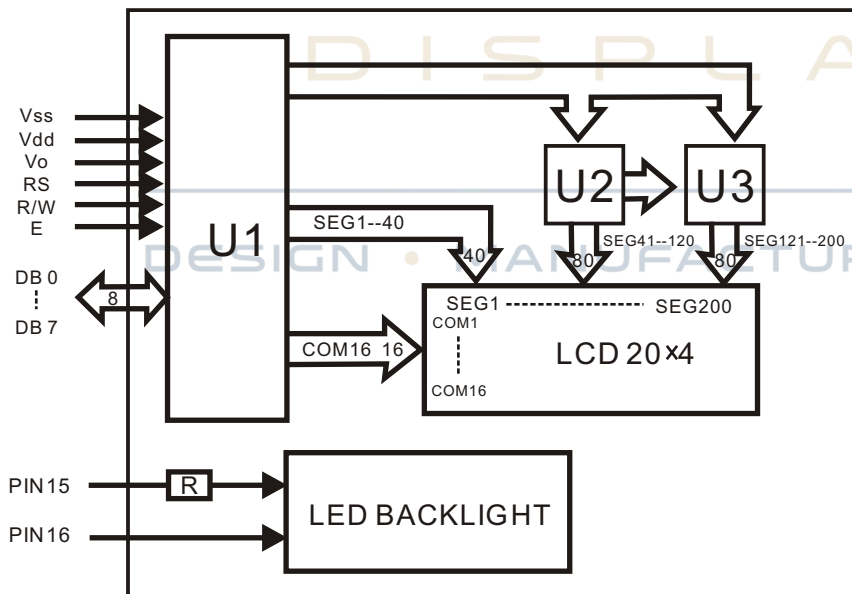
产品工作电流不能大于对应的工作条件温度Ifm或Ifpr的60%.

For operation above 25°C, The Ifm Ifp & Pd must be derated, the Current derating is -0.36*1mA/°C for DC drive and -0.86*1 mA/°C for Pulse drive, the power dissipation is -75*1 mW/°C The product working current must not be more than 60% of the Ifm or Ifp according to the working temperature.

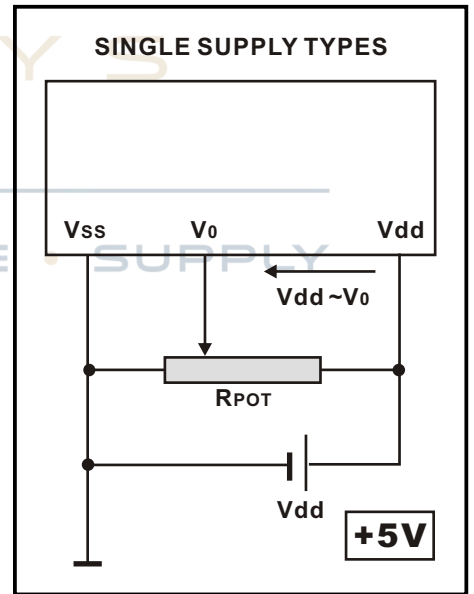
PIN ASSIGNMENT

| PIN | SYMBOL | DESCRIPTION | REMARKS |
|-----|--------|------------------------|---------|
| 1 | Vss | GND | |
| 2 | Vdd | Power supply for LCM | 5.0V |
| 3 | V0 | Contrast Adjust | |
| 4 | RS | Register Select Signal | |
| 5 | R/W | Data Read / Write | |
| 6 | E | Enable Signal | |
| 7 | DB0 | Data bus line | |
| 8 | DB1 | Data bus line | |
| 9 | DB2 | Data bus line | |
| 10 | DB3 | Data bus line | |
| 11 | DB4 | Data bus line | |
| 12 | DB5 | Data bus line | |
| 13 | DB6 | Data bus line | |
| 14 | DB7 | Data bus line | |
| 15 | LED+ | Power supply for BKL | 5.0V |
| 16 | LED- | Power supply for BKL | |

BLOCK DIAGRAM



POWER SUPPLY DIAGRAM



| 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) | | | | | | | | | | | | | | | | |

