

| | | | |
|----------------------|------------|-------------------------|------------|
| MC44005A6W-SPTLYI-V3 | 4 x 40 | 4.89mm Character Height | LCD Module |
| Specification | | | |
| Version: 1 | | Date: 22/03/2025 | |
| Revision | | | |
| 1 | 20/03/2025 | First Issue | |

| Display Features | | | |
|-----------------------|---------------------------|--------------|------------------|
| Character Count | 4 x 40 | | |
| Appearance | Black on Yellow/Green | | |
| Supply Voltage | 5V | | |
| Interface | I2C | | |
| Font Set | English / Japanese | | |
| Display Mode | Transflective | | |
| Character Height | 4.89mm | | |
| LC Type | STN | | |
| Module Size | 190.00 x 54.00 x 13.00 mm | Created By | Checked By |
| Operating Temperature | -20°C ~ +70°C | CL | WE |
| Construction | COB | Box Quantity | Weight / Display |
| LED Backlight | Yellow/Green | --- | |



RoHS
compliant

| Display Accessories | |
|---------------------|--|
| Part Number | Description |
| MCCMDB-16SILDIL | LCD Interconnect board, can be driven from either a PC or a single Board computer with a USB output. |
| 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 | CODE | No. |
|----------------------------|---|------|-----|
| DISPLAY FORMAT | 40 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 | Vlcm = 5.0V Vled = 5.0V | | |
| SUGGESTED LED DRIVING MODE | PIN17: LED+, PIN18:LED- | | |
| CONTROLLER | IIC controller | | |
| FONT MAP CODE | E Version | | |
| DRIVING DUTY | 1/16 | | |
| DRIVING BIAS | 1/5 | | |

MECHANICAL SPECIFICATIONS

| | | | | | |
|----------------|-----------------------|-----------|-----------------|-----------------------|-----------|
| OVERALL SIZE | 190.0W x 54.0H | mm | THICKNESS | max 13.0 | mm |
| VIEWING AREA | 147.0W x 29.5H | mm | HOLE-HOLE | 183.0W x 47.0H | mm |
| CHARACTER SIZE | 2.78W x 4.89H | mm | CHARACTER PITCH | 0.75W x 1.20H | mm |
| DOT SIZE | 0.50W x 0.55H | mm | DOT PITCH | 0.07W x 0.07H | mm |

ABSOLUTE MAXIMUM RATINGS

| ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
|------------------------|--------|-----------|------------------|-----|-----------------|-----------|
| POWER SUPPLY (LOGIC) | Vdd | 25°C | -0.3 | — | 7.0 | V |
| POWER SUPPLY (LCD) | V0 | 25°C | Vdd -13.5 | — | Vdd +0.3 | 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 *

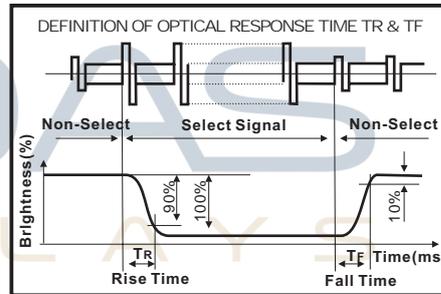
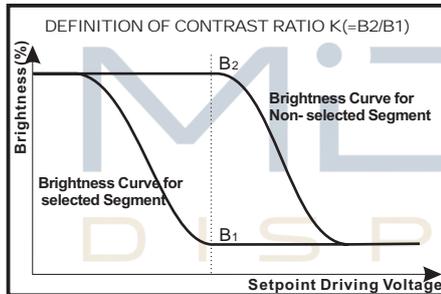
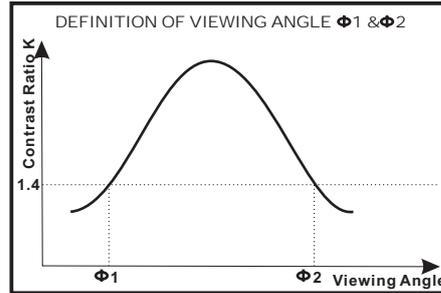
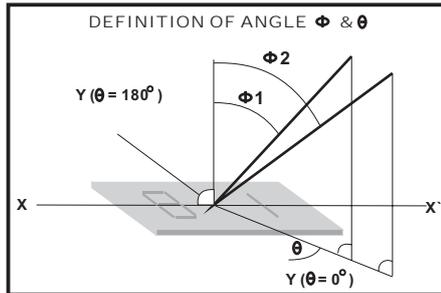
| | ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
|-------------|-------------------------------|-------------------|---------------|-------------|------------|-------------|-----------|
| | INPUT VOLTAGE | Vlcm = Vdd | — | — | 5.0 | — | V |
| | SUPPLY CURRENT | Idd | Vdd=5V | — | 1.5 | — | mA |
| | DRIVING VOLTAGE FOR LCD PANEL | Vlcd = (Vdd - V0) | -20°C | 3.90 | — | 4.30 | V |
| | | | 0°C | — | — | — | |
| | | | 25°C | 4.20 | — | 4.70 | |
| 50°C | | | — | — | — | | |
| | | | 70°C | 4.20 | — | 4.80 | |

* All data are recorded from TEST REPORT #FSYP027800112



LCD CHARACTERISTICS

| FOR STN/FSTN TYPE LCD Panel (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 If = 2*15mA | 2.6 | — | 3.0 | V |
| | LED FORWARD CURRENT | If | 25°C | — | 30 | — | mA |
| | LED REVERSE CURRENT | Ir | 25°C Vr=5.0V | — | — | 60 | μA |
| | LED PEAK WAVE LENGTH | λ_p | 25°C If = 2*15mA | 569 | — | 575 | nm |
| | LED BRIGHTNESS (WITHOUT LCD) | Lv | 25°C If = 2*15mA | — | 310 | — | cd/m² |
| | LED BRIGHTNESS UNIFORMITY | Lvmin/Lvmax | 25°C If = 2*15mA | 70 | — | — | Ratio |
| | LED LIFE TIME | — | 25°C If = 2*15mA | 20K | — | — | Hours |

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

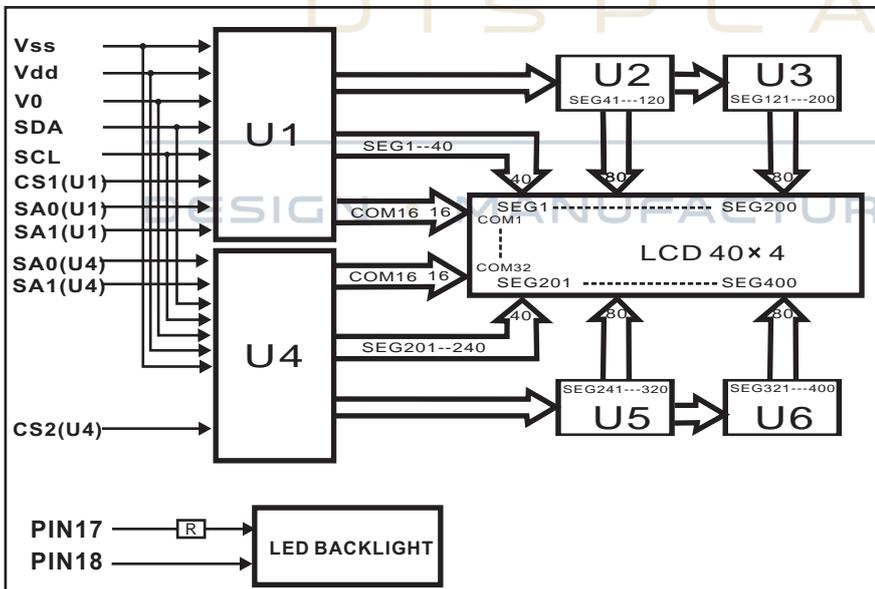
* For operation above 25 °C, The Ifm Ifp & Pd must be derated, the Current derating is -0.36*6mA/ °C for DC drive and -0.86*6 mA/ °C for Pulse drive, the power dissipation is -75*6 mW/ °C The product working current must not be more than 60% of the Ifm or Ifp according to the working temperature.



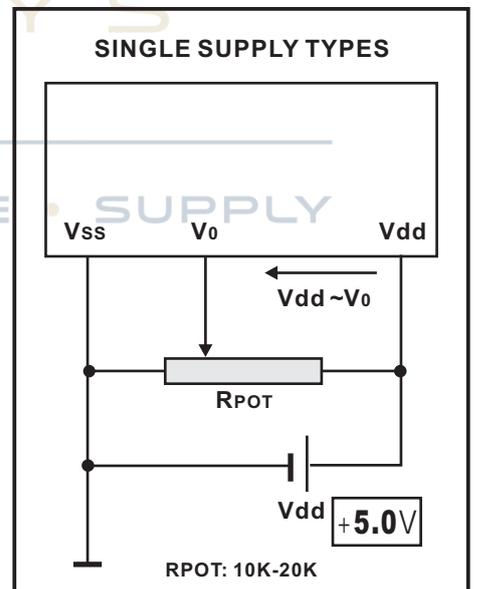
PIN ASSIGNMENT

| PIN | SYMBOL | DESCRIPTION | REMARKS |
|-----|---------|----------------------|---------|
| 1 | SCL | Serial clock input | |
| 2 | SDA | Serial input data | |
| 3 | CS1(U1) | Chip select | |
| 4 | NC | No connection | |
| 5 | SA1(U4) | Slave address | |
| 6 | SA0(U4) | Slave address | |
| 7 | SA1(U1) | Slave address | |
| 8 | SA0(U1) | Slave address | |
| 9 | NC | No connection | |
| 10 | NC | No connection | |
| 11 | NC | No connection | |
| 12 | V0 | Contrast Adjust | |
| 13 | Vss | GND | |
| 14 | Vdd | Power supply for LCM | 5.0V |
| 15 | CS2(U4) | Chip select | |
| 16 | NC | No connection | |
| 17 | LED+ | Power supply for BKL | 5.0V |
| 18 | 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) | | | | | | | | | | | | | | | |



