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| MC44005A6W-BNMLWI-V3 | 4 x 40 | 4.89 mm 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 | White on Blue |
| Supply Voltage | 5V |
| Interface | I2C |
| Font Set | English / Japanese |
| Display Mode | Transmissive |
| Character Height | 4.89 mm |
| LC Type | Blue STN |
| Module Size | 190.00 x 54.00 x 13.00 mm |
| Operating Temperature | -20°C ~ +70°C |
| Construction | COB |
| LED Backlight | White |

RoHS compliant

| Created By | Checked By |
|---|---|
| CL | WE |
| Box Quantity | Weight / Display |
| --- | --- |

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

**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<br>English/Cyrillic | Black on Yellow/ Green<br>Black on White<br>Black on RGB | 3V<br>3.3V |

## FEATURES

| AVAILABLE OPTIONS | CHARACTERISTICS | CODE | No. |
|---|---|---|---|
| DISPLAY FORMAT | **40 Characters by 4 Lines** | | |
| POLARIZER OPTIONS | **Negative Transmissive** | | |
| BACKLIGHT TYPE OPTIONS | **Edge Type LED Backlight (Long life span version)** | | |
| BACKLIGHT COLOR OPTIONS | **White color** | | |
| LCD PANEL OPTIONS | **Blue STN** | | |
| VIEWING ANGLE OPTIONS | **6:00 ( Bottom )** | | |
| TEMPERATURE RANGE OPTIONS | **-20℃ ~ 70℃, 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** | | |

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## 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℃ | **-0.3** | **—** | **7.0** | **V** |
| POWER SUPPLY (LCD) | V0 | 25℃ | **Vdd -13.5** | **—** | **Vdd +0.3** | **V** |
| INPUT VOLTAGE | Vin | 25℃ | **-0.3** | **—** | **Vdd +0.3** | **V** |
| OPERATING TEMPERATURE | Vopr | — | **-20** | **—** | **70** | **℃** |
| STORAGE TEMPERATURE | Vstg | — | **-30** | **—** | **80** | **℃** |

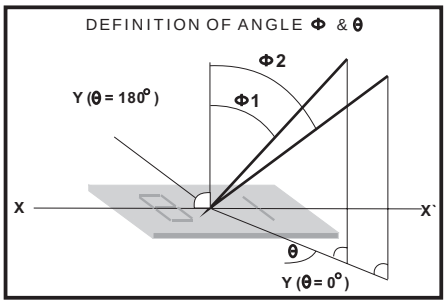
## ELECTRONIC CHARACTERISTICS*

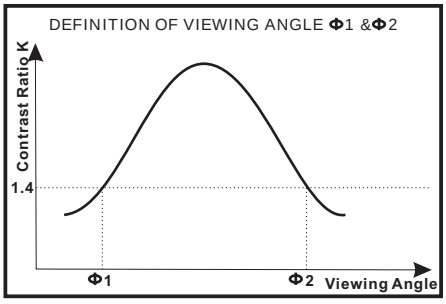
| | ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| | INPUT VOLTAGE | Vlcm = Vdd | **—** | **—** | **5.0** | **—** | **V** |
| | SUPPLY CURRENT | Idd | **Vdd=5V** | **—** | **1.5** | **—** | **mA** |
| | DRIVING VOLTAGE FOR LCD PANEL | Vlcd = (Vdd - V0) | **-20℃** | **4.15** | **—** | **4.45** | **V** |
| | | | **0℃** | **—** | **—** | **—** | |
| | | | **25℃** | **4.30** | **4.40** | **4.70** | |
| | | | **50℃** | **—** | **—** | **—** | |
| | | | **70℃** | **4.30** | **—** | **4.70** | |

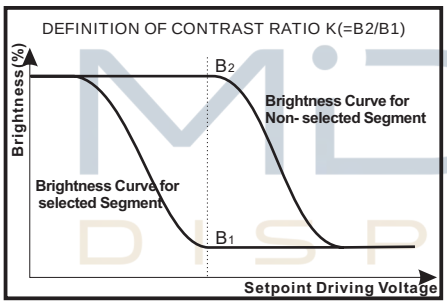
* All data are recorded from TEST REPORT #FSYP027800111

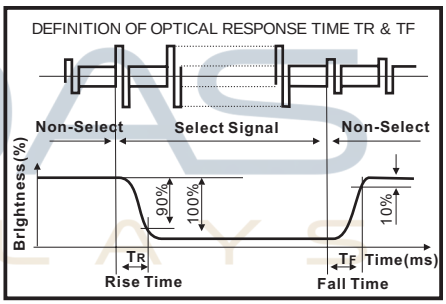
## LCD CHARACTERISTICS

| FOR STN/**FSTN** TYPE LCD **Panel** (TA=25°C, V**lcd**=5.0V ± 0.5V) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
| | VIEWING ANGLE | Φ2 − Φ1 | 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

| ICONS | ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| | LED FORWARD VOLTAGE | Vf | 25°C | 2.6 | — | 3.0 | V |
| | LED FORWARD CURRENT | If | 25°C | — | 50 | — | mA |
| | LED REVERSE CURRENT | Ir | 25°C Vr=5.0V | — | — | 100 | μA |
| | LED COLOR RANGE | X coordinate | 25°C If = 50mA | 0.26 | — | 0.30 | — |
| | | Y coordinate | | 0.27 | — | 0.31 | — |
| | LED BRIGHTNESS (WITHOUT LCD) | Lv | 25°C If = 50mA | — | 420 | — | $cd/m^2$ |
| | LED BRIGHTNESS UNIFORMITY | Lvmin/Lvmax | 25°C If = 50mA | 70 | — | — | Ratio |
| | LED LIFE TIME | — | 25°C If = 50mA | 20K | — | — | Hours |

▲2 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 Curent derating is -0.36*10mA/ C for DC drive and -0.86*10 mA/ C for Pulse drive, the power dissipation is -75*10 mW/ C The product working current must not be more than 60% of the Ifm ir Ifp according to the working temperature.

* Wrong storage condition will decrease the adhesive power of film and shell. Suggested Storage Condition: Temperature (25 C + 10 C) and Humidity (65%RH + 20%RH)

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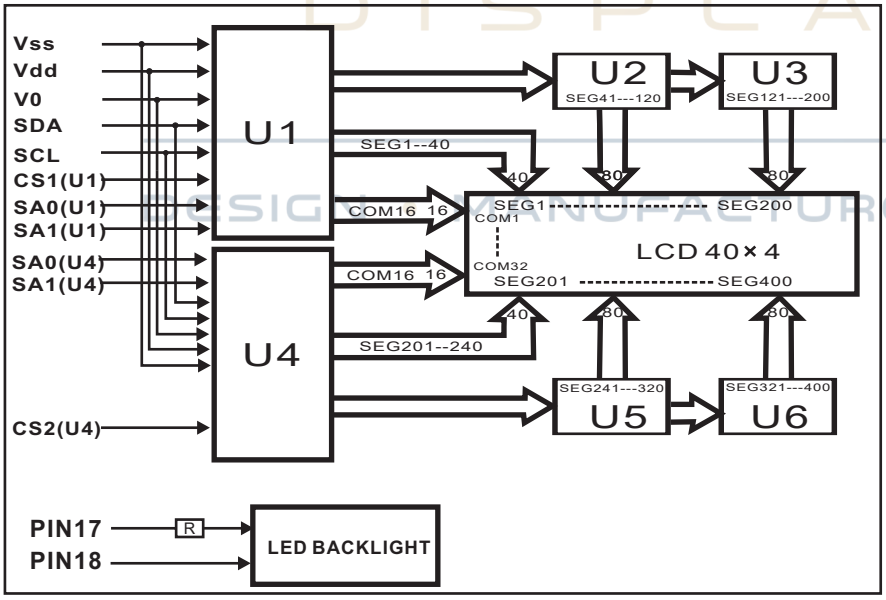
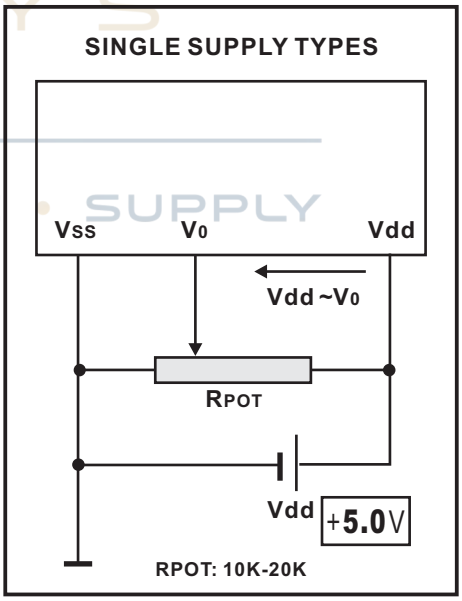
PIN ASSIGNMENT

| 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

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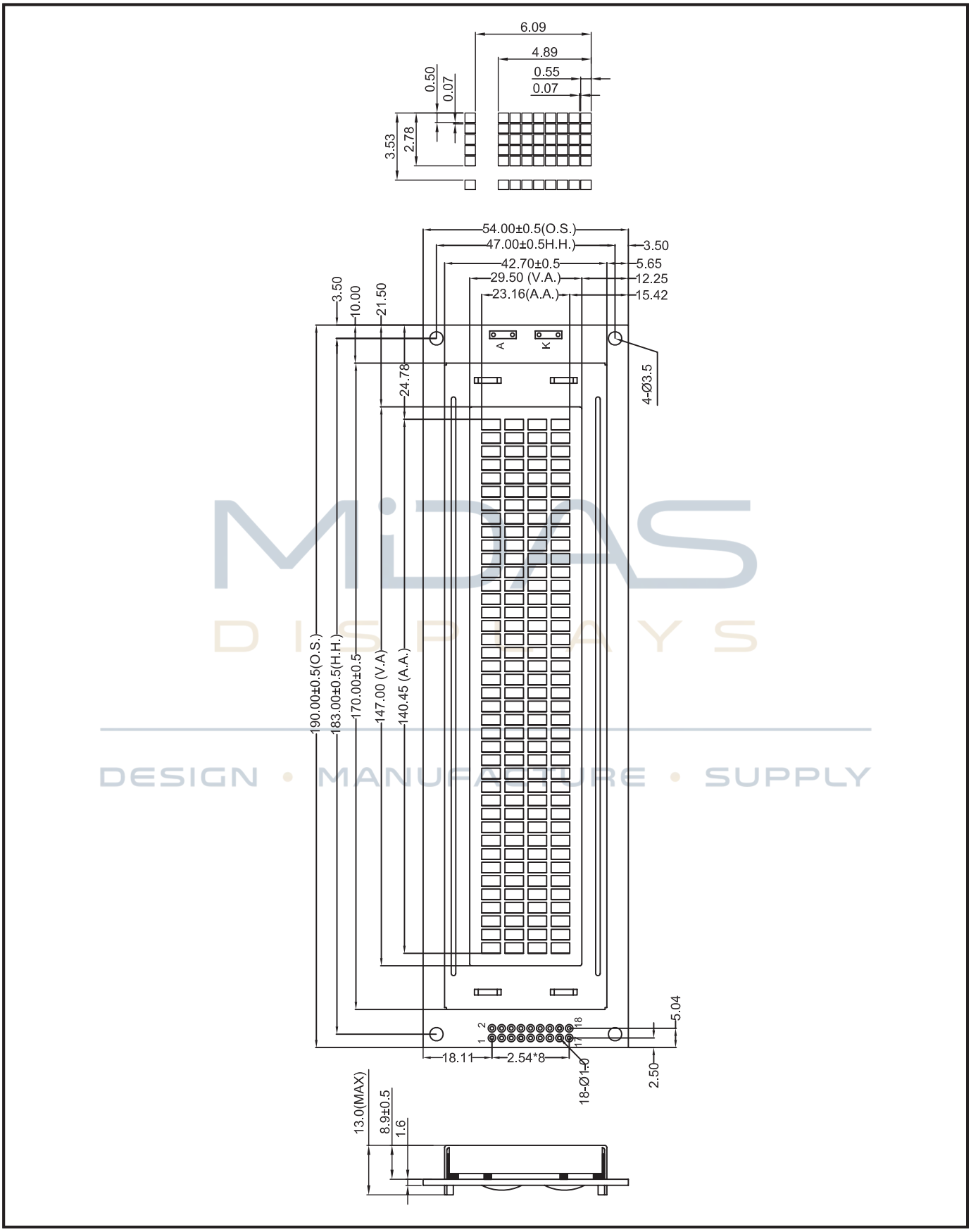
| Upper 4bit / Lower 4bit | LLLL | LLLH | LLHL | LLHH | LHLL | LHLH | LHHL | LHHH | HLLL | HLLH | HLHL | HLHH | HHLL | HHLH | HHHL | HHHH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LLLL | CG RAM (1) | | | | | | | | | | | | | | | |
| LLLH | (2) | | | | | | | | | | | | |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

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