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| MC22405A6W-FNMLW-V2 | 4 x 20 | 5mm Character Height | LCD Module |
|---|---|---|---|
| **Specification** | | | |
| Version: 1 | | Date: 03/09/2021 | |
| **Revision** | | | |
| 1 | 01/09/2021 | First Issue | |

| Display Features | | | |
|---|---|---|---|
| Character Count | 2 x 24 | | |
| Appearance | White on Black | | |
| Logic Voltage | 5V | | |
| Interface | Parallel | | |
| Font Set | English / Japanese | | |
| Display Mode | Transmissive | | |
| Character Height | 5.55mm | | |
| LC Type | FSTN | | |
| Module Size | 116.00 x 37.00 x 13.50 mm | | |
| Operating Temperature | -20°C ~ +70°C | | |
| Construction | COB | Box Quantity | Weight / Display |
| LED Backlight | White | --- | --- |

RoHS compliant

DESIGN • MANUFACTURE • SUPPLY

* - For full design functionality, please use this specification in conjunction with the ST7066U + 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. |
| | |

| Optional Variants | | |
|---|---|---|
| **Fonts** | **Appearances** | **Voltage** |
| English/Euro<br>English/Cyrillic | Black on Yellow/ Green<br>White on Blue<br>Black on White<br>Black on RGB | 3V<br>3.3V |

## FEATURES

| AVAILABLE OPTIONS | CHARACTERISTICS |
|---|---|
| DISPLAY FORMAT | **24 Characters by 2 Lines** |
| POLARIZER OPTIONS | **Super black technology** |
| BACKLIGHT TYPE OPTIONS | **Edge Type LED Backlight (Long life span version)** |
| BACKLIGHT COLOR OPTIONS | **White** |
| LCD PANEL OPTIONS | **FSTN** |
| 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 | **PIN15 LED+, PIN16 LED-** |
| CONTROLLER | **ST7066U+ST7063C** |
| FONT MAP CODE | **E Version** |
| DRIVING DUTY | **1/16** |
| DRIVING BIAS | **1/5** |

MIDAS DISPLAYS

## MECHANICAL SPECIFICATIONS

| | | | | | |
|---|---|---|---|---|---|
| **OVERALL SIZE** | **116.0W x 37.0H** | **mm** | **THICKNESS** | **max 13.5** | **mm** |
| **VIEWING AREA** | **83.0W x 18.6H** | **mm** | **HOLE-HOLE** | **108.0W x29.0H** | **mm** |
| **CHARACTER SIZE** | **2.70W x 5.55H** | **mm** | **CHARACTER PITCH** | **0.50W x 0.50H** | **mm** |
| **DOT SIZE** | **0.50W x 0.65H** | **mm** | **DOT PITCH** | **0.05W x 0.05H** | **mm** |

## ABSOLUTE MAXIMUM RATINGS

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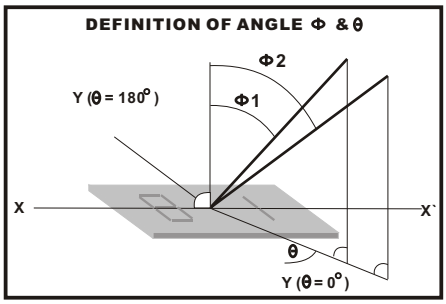
| ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| POWER SUPPLY ( LOGIC) | Vdd | 25°C | **-0.3** | — | **7.0** | **V** |
| POWER SUPPLY (LCD) | V0 | 25°C | **Vdd -13.5** | — | **Vdd +0.3** | **V** |
| INPUT VOLTAGE | Vin | 25°C | **-0.3** | — | **Vdd +0.3** | **V** |
| OPERATING TEMPERATURE | Vopr | — | **-20** | — | **70** | **°C** |
| STORAGE TEMPERATURE | Vstg | — | **-30** | — | **80** | **°C** |

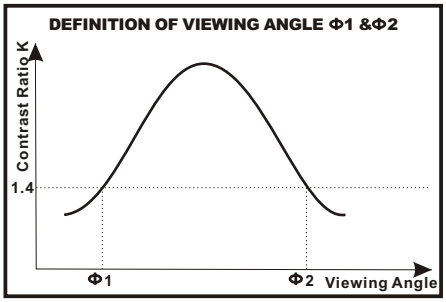
## ELECTRONIC CHARACTERISTICS*

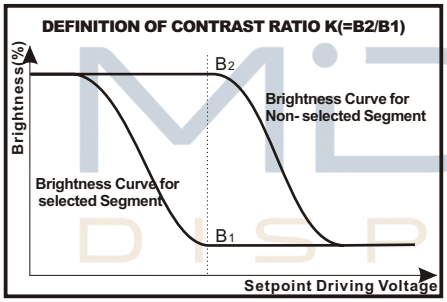
| | ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| | INPUT VOLTAGE | Vlcm = Vdd | — | — | **5.0** | — | **V** |
| | SUPPLY CURRENT | Idd | **Vdd=5.0V** | — | **1.5** | — | **mA** |
| | DRIVING VOLTAGE FOR LCD PANEL | Vlcd = (Vdd - V0) | **-20°C** | **4.40** | — | **4.85** | **V** |
| | | | **0°C** | **4.25** | — | **4.72** | |
| | | | **25°C** | **4.10** | **4.50** | **4.60** | |
| | | | **50°C** | **4.15** | — | **4.65** | |
| | | | **70°C** | **4.20** | — | **4.70** | |

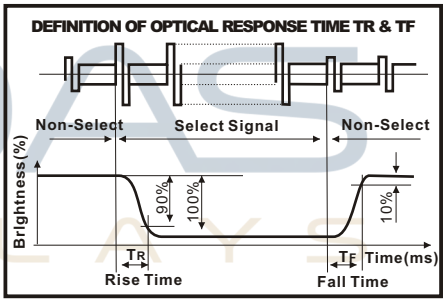
## LCD CHARACTERISTICS

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

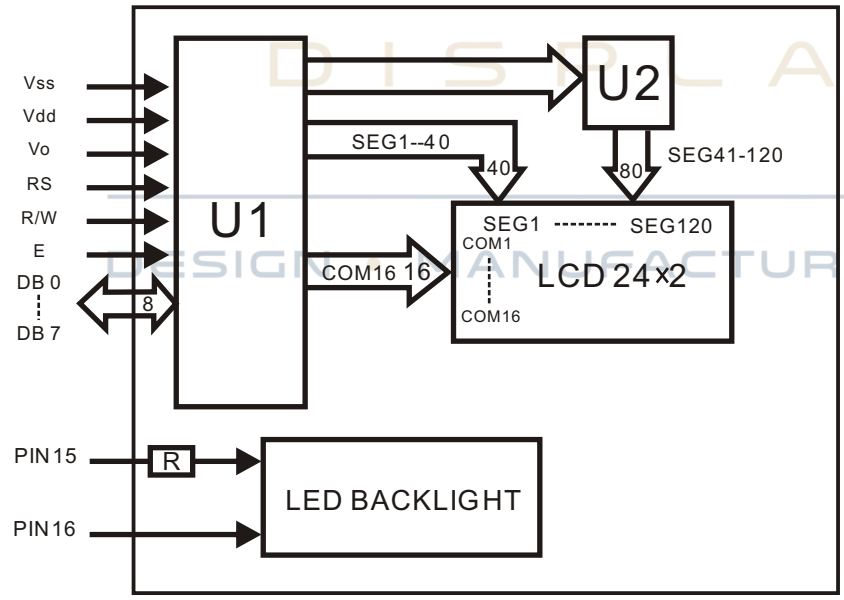
| | ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| | LED FORWARD VOLTAGE | Vf | 25°C | 2.6 | — | 3.0 | V |
| | LED FORWARD CURRENT | If | 25°C | — | 2*15 | — | mA |
| | LED REVERSE CURRENT | Ir | 25°C | — | — | 60 | μA |
| | LED COLOR RANGE | X coordinate | 25°C If = 2*15mA | 0.26 | — | 0.30 | — |
| | | Y coordinate | | 0.27 | — | 0.31 | — |
| | LED BRIGHTNESS (WITHOUT LCD) | Lv | 25°C If = 2*15mA | — | 553 | — | $cd/m^2$ |
| | LED BRIGHTNESS UNIFORMITY | Lvmin/Lvmax | 25°C If = 2*15mA | 70 | — | — | Ratio |
| | LED LIFE TIME | — | 25°C If = 2*15mA | 20K | — | — | Hours |

MIDAS DISPLAYS
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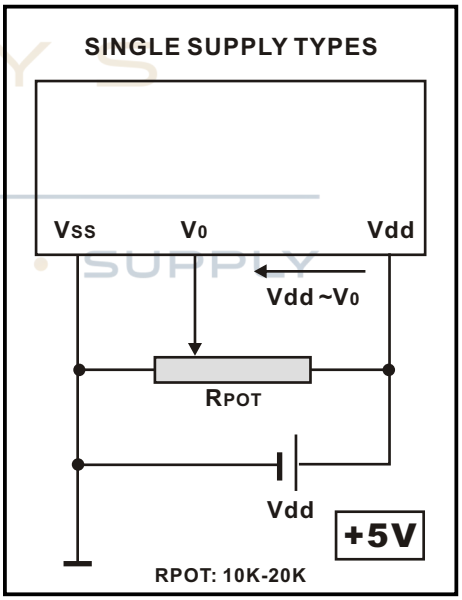
## PIN ASSIGNMENT

| 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

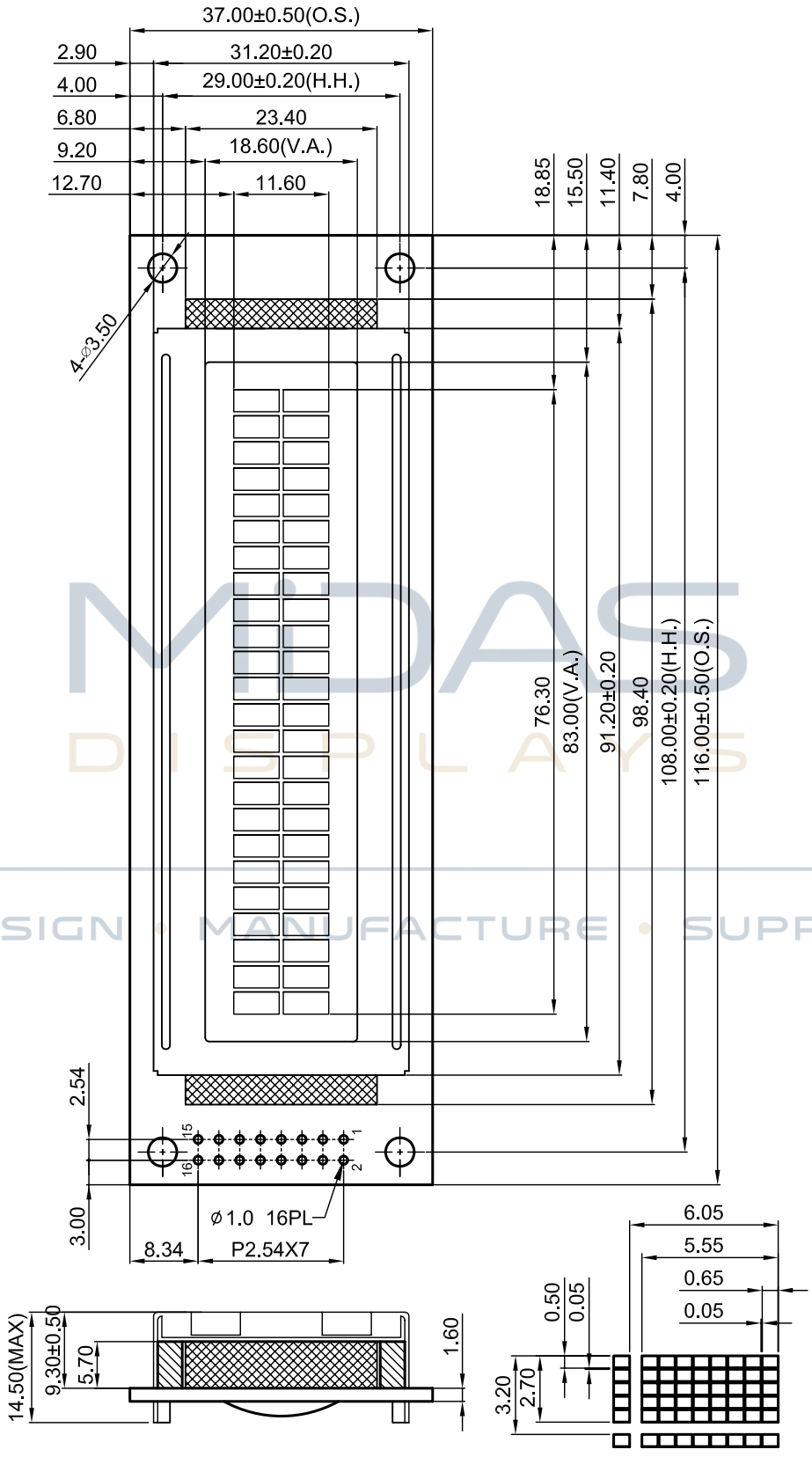



## POWER SUPPLY DIAGRAM




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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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