


| | | |
|----------------------|------------------|-------------|
| MC240128A6W-FPTLW-V2 | 240 x 128 | LCD Module |
| Specification | | |
| Version: 1 | Date: 21/10/2016 | |
| Revision | | |
| 1 | 19/10/2016 | First Issue |

| Display Features | | | |
|-----------------------|---------------------------|--|------------------|
| Resolution | 240 x 128 |  | |
| Appearance | Black on White | | |
| Logic Voltage | 5V | | |
| Interface | Parallel | | |
| Font Set | N/A | | |
| Display Mode | Transflective | | |
| LC Type | FSTN | | |
| Module Size | 144.00 x 104.00 x 13.00mm | | |
| Operating Temperature | -20°C ~ +70°C | | |
| Construction | COB | | |
| LED Backlight | White | Box Quantity | Weight / Display |
| | | ... | ... |

| Display Accessories | |
|-----------------------------|--|
| Part Number | Description |
| MCCMDB-16DIL | LCD Interconnect board, can be driven from either a PC or a single board computer with a USB output. |
| MCCBL1A16DIL P -DILS-150 | 16 Way, Dual in-line to Dual in-line connector cable. |
| | |

| Optional Variants | |
|--|---------|
| Appearances | Voltage |
| Black on Yellow/Green White on Blue | |
| | |



FEATURES

| AVAILABLE OPTIONS | CHARACTERISTICS |
|----------------------------|--|
| DISPLAY FORMAT | 240 Characters by 128 Lines |
| POLARIZER OPTIONS | Positive Transflective |
| BACKLIGHT TYPE OPTIONS | Edge Type LED Backlight (Long life span version) |
| BACKLIGHT COLOR OPTIONS | White color |
| LCD PANEL OPTIONS | FSTN |
| 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 | PIN19: LED+, PIN20: LED- |
| CONTROLLER ▲1 | RA6963(RA10)+NT7086 |
| FONT MAP CODE | NO FONT SET |
| DRIVING DUTY | 1/128 |
| DRIVING BIAS | 1/12 |

▲1 Please ask for datasheet of the mentioned controller from Midas or Midas's authorized 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.

▲1 You can ask for the example of software program (C language) from Midas or Midas's authorized distributors.

MECHANICAL SPECIFICATIONS

| | | | | | |
|----------------|-----------------|----|-----------------|----------------|----|
| OVERALL SIZE | 144.0W x 104.0H | mm | THICKNESS | max 13.0 | mm |
| VIEWING AREA | 114.0W x 64.0H | mm | HOLE-HOLE | 138.0W x 97.0H | mm |
| CHARACTER SIZE | — | mm | CHARACTER PITCH | — | mm |
| DOT SIZE | 0.40W x 0.40H | mm | DOT PITCH | 0.05W x 0.05H | mm |

ABSOLUTE MAXIMUM RATINGS

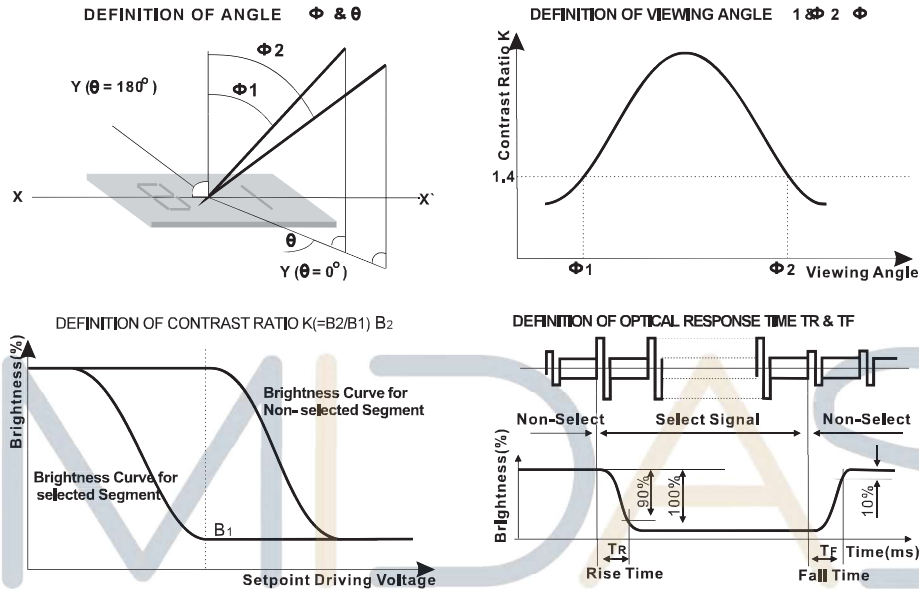
| ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT |
|-----------------------|------------------|-----------|---------------------|-----|----------------------|------|
| POWER SUPPLY (LOGIC) | V _{dd} | 25°C | -0.3 | — | 7.0 | V |
| POWER SUPPLY (LCD) | V ₀ | 25°C | V _{dd} -30 | — | V _{dd} +0.3 | 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 _{lcm} = V _{dd} | +5.0 | 4.7 | 5.0 | 5.5 | V |
| SUPPLY CURRENT | I _{dd} | V _{dd} =5V | — | 29.0 | — | mA |
| DRIVING VOLTAGE FOR LCD PANEL | V _{lcd} = (V _{dd} - V ₀) | -20°C | 17.7 | — | 18.0 | V |
| | | 0°C | — | — | — | |
| | | 25°C | 17.0 | 17.5 | 17.7 | |
| | | 50°C | — | — | — | |
| | | 70°C | 16.3 | — | 16.5 | |

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 = 75mA | 2.6 | — | 3.0 | V |
| LED FORWARD CURRENT ▲2 | If | 25°C | — | 75 | — | mA |
| LED REVERSE CURRENT | Ir | 25°C Vr=5.0V | — | — | 140 | μA |
| LED COLOR RANGE | X coordinate | 25°C If = 75mA | 0.26 | — | 0.30 | — |
| | Y coordinate | | 0.27 | — | 0.31 | — |
| LED BRIGHTNESS (WITHOUT LCD) | Lv | 25°C If = 75mA | — | 420 | — | cd/m ² |
| LED BRIGHTNESS UNIFORMITY | Lvmin/Lvmax | 25°C If = 75mA | 70 | — | — | Ratio |
| LED LIFE TIME | — | 25°C If = 75mA | 20K | — | — | Hours |

▲2 Please notice that it is constant current (not constant voltage) that should be applied when driving LED backlight. Therefore, this data is very important!

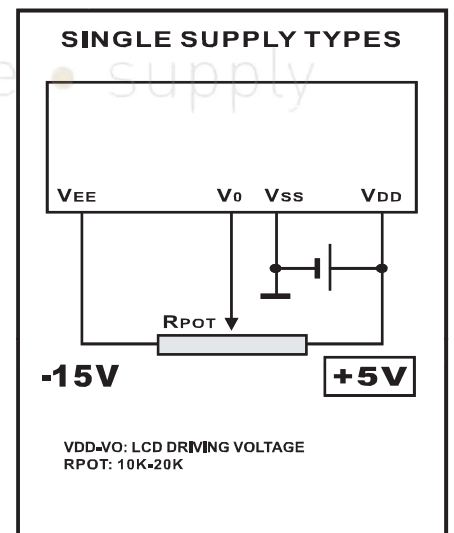
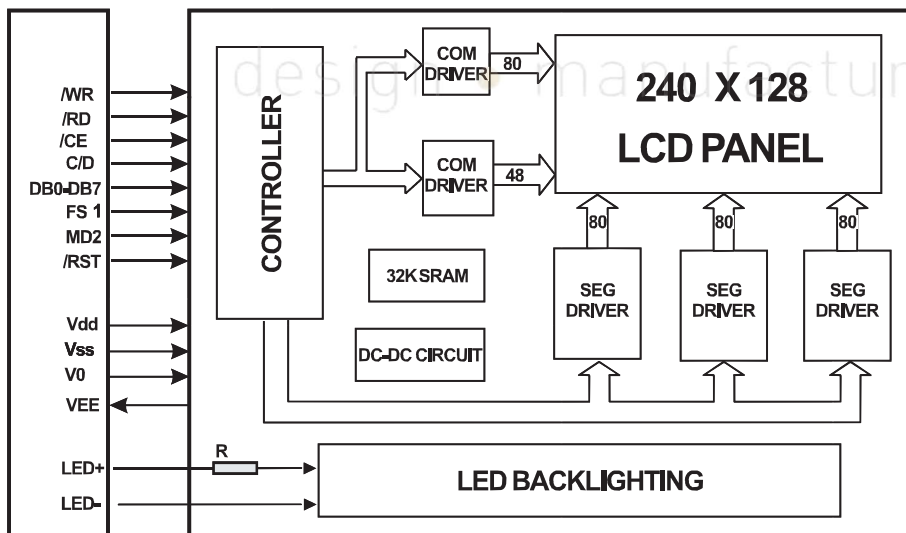
* For operation above 25 C, The Ifm Ifp & Pd must be derated, the Current derating is $-0.36 \times 14 \text{ mA} / \text{C}$ for DC drive and $-0.86 \times 14 \text{ mA} / \text{C}$ for Pulse drive, the power dissipation is $-75 \times 14 \text{ mW} / \text{C}$ The product working current must not be more than 60% of the Ifm or Ifp according to the working temperature.



| PIN | SYMBOL | DESCRIPTION | REMARKS |
|-----|------------------|-------------------------|---------|
| 1 | Vee | Negative voltage output | -15.0V |
| 2 | Vss | Power supply for LCM | |
| 3 | Vdd | Power supply for LCM | 5.0V |
| 4 | V0 | Contrast Adjust | |
| 5 | \overline{WR} | Data Write | |
| 6 | \overline{RD} | Data Read | |
| 7 | \overline{CE} | Chip Enable | |
| 8 | C/D | Command/Data Select | |
| 9 | \overline{RST} | Reset Signal | |
| 10 | DB0 | Data bus line | |
| 11 | DB1 | Data bus line | |
| 12 | DB2 | Data bus line | |
| 13 | DB3 | Data bus line | |
| 14 | DB4 | Data bus line | |
| 15 | DB5 | Data bus line | |
| 16 | DB6 | Data bus line | |
| 17 | DB7 | Data bus line | |
| 18 | FS | Font Selection | |
| 19 | LED+ | Power supply for BKL | 5.0V |
| 20 | LED- | Power supply for BKL | |

BLOCK DIAGRAM

POWER SUPPLY DIAGRAM



ROM Code 0101

| MSB \ LSB | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |

design • manufacture • supply



