

| MCOT256064A1A | MCOT256064A1A-RM 256 x 64 |     | Red                                | OLED Module |  |
|---------------|---------------------------|-----|------------------------------------|-------------|--|
|               |                           |     | Specification                      |             |  |
| Versio        | n: 3                      |     | Date: 03/10/2017                   |             |  |
|               |                           |     | Revision                           |             |  |
| 1             | 19/11/2015                |     | First Revision.                    |             |  |
| 2             | 01/06/2015                |     | Modify Static Electricity Test.    |             |  |
| 3             | 29/09/2                   | 016 | Modify Reliability test condition. |             |  |
|               |                           |     |                                    |             |  |
|               |                           |     |                                    |             |  |
|               |                           |     |                                    |             |  |
|               |                           |     |                                    |             |  |

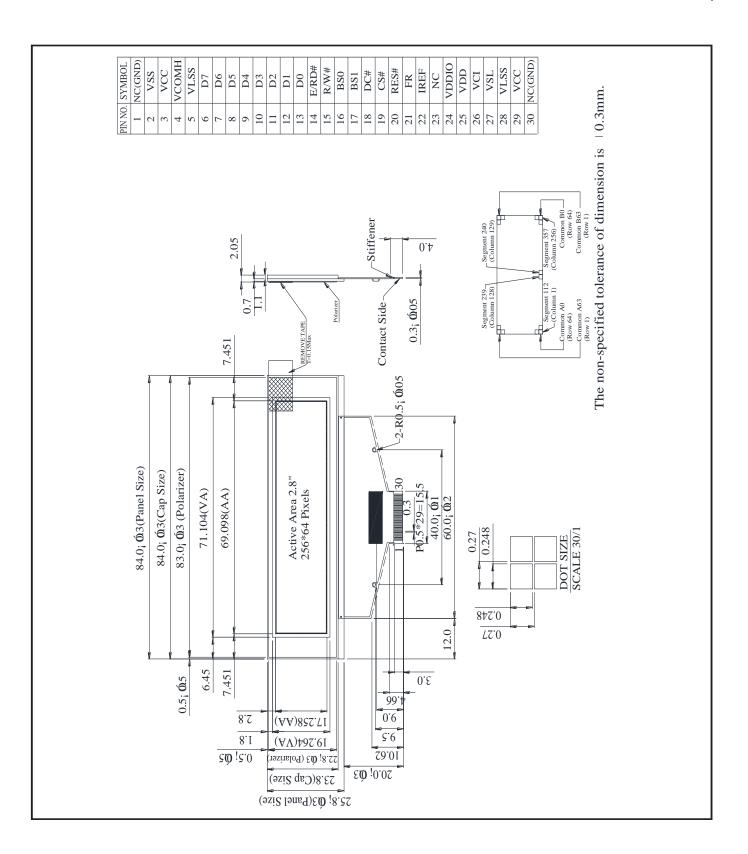
| Display               |                      |              |                  |  |
|-----------------------|----------------------|--------------|------------------|--|
| Resolution            | 256 x 64             |              |                  |  |
| Appearance            | Red on Black         |              |                  |  |
| Logic Voltage         | 5V                   |              | RoHS             |  |
| Interface             | Parallel / Serial    | compliant    |                  |  |
| Module Size           | 84.00 x 25.80 x 2.05 |              | •                |  |
| Operating Temperature | -40°C ~ +70°C        | Box Quantity | Weight / Display |  |
| Construction          | TAB                  |              |                  |  |

\* - For full design functionality, please use this specification in conjunction with the SSD1322 specification.(Provided Separately)

| Display Accessories |   |  |  |  |  |
|---------------------|---|--|--|--|--|
| Part Number         | Description   |  |  |  |  |
| MPBV4-Iss2          | Interface board compatible with any<br>display that requires a direct solder<br>connection to 0.7, 0.8, 0.845 or 1 mm.<br>Supports any driver board that can be<br>wired to a 2mm pitch 44-way DIL. |  |  |  |  |
|                     |   |  |  |  |  |
|                     |   |  |  |  |  |

| Optional Variants                                  |         |  |  |  |  |
|--|---------|--|--|--|--|
| Appearance   | Voltage |  |  |  |  |
| Yellow on Black<br>Green on Black<br>Blue on Black |         |  |  |  |  |
|  |         |  |  |  |  |

| Mechanical Specifications                                       |                 |          |              |             |          |  |  |
|---|-----------------|----------|--------------|-------------|----------|--|--|
| Module Size84.00 x 25.80 x 2.05 (Without Backlight)W x H x D mm |                 |          |              |             |          |  |  |
| Active Area   | 69.098 x 17.258 | W x H mm | Hole-to-Hole |             | W x H mm |  |  |
| Dot Size  | 0.248 x 0.248   | W x H mm | Dot Pitch    | 0.27 x 0.27 | W x H mm |  |  |



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|                  |          |                  |             |

| Pin layout |        |  |         |  |  |  |  |
|------------|--------|--|---------|--|--|--|--|
| Pin        | Symbol | Description  | Remarks |  |  |  |  |
| 1          | NC     | No Connection. Must connect to external Ground.  |         |  |  |  |  |
|            |        | Ground of Logic Circuit.   |         |  |  |  |  |
| 2          | VSS    | Ground pin, also acts as a reference for logic pins. Must  |         |  |  |  |  |
|            |        | connect to external ground.  |         |  |  |  |  |
| 2          | NCC    | Power Supply for OLED Panel.   |         |  |  |  |  |
| 3          | VCC    | Most positive voltage supply pin of the chip. They must be connected to external source.                                   |         |  |  |  |  |
|            |        | Voltage Output High Level for COM Signal.  |         |  |  |  |  |
| Λ          |        | Input pin for the voltage output high level for COM signals. A   |         |  |  |  |  |
| 4          | VCOMH  | tantalum capacitor should be connected between this pin and  |         |  |  |  |  |
|            |        | VSS.   |         |  |  |  |  |
| ~          | V/I CO | Ground of Analogue Circuit.  |         |  |  |  |  |
| 5          | VLSS   | These are the analogue ground pins. They should be connected to VSS externally.  |         |  |  |  |  |
|            |        | Host Data Input / Output Bus.  |         |  |  |  |  |
|            |        | 8-bit bi-directional data bus pins to be connected to the  |         |  |  |  |  |
| 6 40       |        | microprocessor's data bus. When serial mode is selected, D1  |         |  |  |  |  |
| 6~13       | D7~D0  | will be the serial data input SDIN and D0 will be the serial   |         |  |  |  |  |
|            |        | clock input SCLK. Unused pins must be connected to VSS   |         |  |  |  |  |
|            |        | except for D2 in serial mode   |         |  |  |  |  |
|            |        | Read / Write Enable or Read.   |         |  |  |  |  |
|            |        | MCU interface input. When interfacing to a 6800  |         |  |  |  |  |
|            |        | microprocessor, this pin will be used as the Enable (E) signal. Read/write operation is initiated when this pin is         |         |  |  |  |  |
|            |        | pulled high and the CS# is pulled low.   |         |  |  |  |  |
| 14         | E/RD#  | When connecting to an 8080 microprocessor, this pin  |         |  |  |  |  |
|            |        | receives the Read (RD#) signal. Data read operation is   |         |  |  |  |  |
|            |        | initiated when this pin is pulled low and CS# is pulled low.   |         |  |  |  |  |
|            |        | When serial mode is selected, this pin must be connected to  |         |  |  |  |  |
|            |        | VSS.   |         |  |  |  |  |
|            |        | Read / Write Select or Write.  |         |  |  |  |  |
|            |        | MCU interface input. When interfacing to a 6800 series   |         |  |  |  |  |
|            |        | microprocessor, this pin will be used as Read/Write (R/W#) selection input. Pull this pin to "High" for read mode and pull |         |  |  |  |  |
| 15         | R/W#   | it to "Low" for write mode.  |         |  |  |  |  |
| 10         | 10,000 | When 8080 interface mode is selected, this pin will be the   |         |  |  |  |  |
|            |        | Write (WR#) input. Data write operation is initiated when this   |         |  |  |  |  |
|            |        | pin is pulled low and the CS# is pulled low. When serial   |         |  |  |  |  |
|            |        | mode is selected, this pin must be connected to VSS.   |         |  |  |  |  |
| 16         | BS0    | Communicating Protocol Select.   |         |  |  |  |  |
|            |        | MCU interface selection input. See below table:  |         |  |  |  |  |
|            |        | 3-Wire SPI: BS0=1 BS1=0<br>4-Wire SPI: BS0=0 BS1=0   |         |  |  |  |  |
| 17         | BS1    | 6800 Parallel: BS0=1 BS1=1   |         |  |  |  |  |
|            |        | 8080 Parallel: BS0=0 BS1=1   |         |  |  |  |  |
|            | 1      | Data / Command Control.  |         |  |  |  |  |
| 40         |        | When the pin is pulled high, the input at D7~D0 is treated as  |         |  |  |  |  |
| 18         | D/C#   | display data. When the pin is pulled low, the input at D7~D0   |         |  |  |  |  |
|            |        | will be transferred to the command register.   |         |  |  |  |  |
|            |        | Chip Select.   |         |  |  |  |  |
| 19         | CS#    | Chip Select Input. The chip is enabled for MCU   |         |  |  |  |  |
|            |        | communication only when CS# is pulled low.   |         |  |  |  |  |
| 20         | RES#   | Power Reset for Controller and Driver.   |         |  |  |  |  |
| 20         | RE3#   | Reset signal input. When the pin is low, initialization of the chip is executed.   |         |  |  |  |  |
| 0.1        |        |  |         |  |  |  |  |
| 21         | FR     | Frame Frequency Triggering Signal.   |         |  |  |  |  |

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|                  |          |                  |             |  |  |  |
|                  |          |                  |             |  |  |  |

|    |       | This pin will send out a signal that could be used to identify<br>the driver status. Nothing should be connected to this pin. It<br>should be left open individually.   |  |
|----|-------|---|--|
| 22 | IREF  | <b>Current Reference for Brightness Adjustment.</b><br>Segment current reference pin. A resistor should be<br>connected between this pin and VSS. Set the current lower<br>than 10uA.   |  |
| 23 | NC    | No Connection. Reserved for compatible and flexible design.   |  |
| 24 | VDDIO | Power Supply for I/O Pin<br>Power supply pin of I/O buffer. It should be connected to<br>VDD or external source. All I/O signal should have VIH<br>reference to VDDIO. When I/O signal pins (BS0~BS1,<br>D0~D7, control signals) pull high, they should be<br>connected to VDDIO. |  |
| 25 | VDD   | <b>Power Supply for Core Logic Circuit.</b><br>Voltage supply pin. It can be supplied externally (within the range of 2.4~2.6V) or regulated internally from VCI. A capacitor should be connected between this pin & VSS under all circumstances.                                 |  |
| 26 | VCI   | Power Supply for Operation.<br>This is a voltage supply pin. It must be connected to external<br>source & always be equal to or higher than VDD & VDDIO.  |  |
| 27 | VSL   | Voltage Output Low Level for SEG Signal.<br>This is segment voltage reference pin.<br>When external VSL is not used, this pin should be left open.<br>When external VSL is used, this pin should connect with<br>resistor and diode to ground.                                    |  |
| 28 | VLSS  | <b>Ground of Analogue Circuit.</b><br>These are the analogue ground pins. They should be connected to VSS externally.   |  |
| 29 | VCC   | <b>Power Supply for OLED Panel.</b><br>Most positive voltage supply pin of the chip. They must be<br>connected to external source.  |  |
| 30 | NC    | No Connection. Must connect to external Ground.   |  |

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|                  |          | Revision         |             |
|                  |          |                  |             |
|                  |          |                  |             |

| Absolute Maximum Ratings               |       |      |      |  |       |    |  |  |  |
|--|-------|------|------|--|-------|----|--|--|--|
| Item Symbol Condition Min Typ Max Unit |       |      |      |  |       |    |  |  |  |
| Power Supply (Logic)                   | VDD   | 25°C | -0.5 |  | 2.75  | V  |  |  |  |
| Power Supply (Display)                 | VCC   | 25°C | -0.5 |  | 20.00 | V  |  |  |  |
| Supply Operation Voltage               | VCI   |      | -0.3 |  | 4.00  | V  |  |  |  |
| Supply Voltage for I/O Pins            | VDDIO |      | -0.5 |  | VCI   | V  |  |  |  |
| Operating Temperature                  | TOP   |      | -40  |  | 70    | °C |  |  |  |
| Storage Temperature                    | TSTG  |      | -40  |  | 80    | °C |  |  |  |

|                                       | Electronic Characteristics |              |           |         |           |      |  |  |  |  |
|---------------------------------------|----------------------------|--------------|-----------|---------|-----------|------|--|--|--|--|
| Item                                  | Symbol                     | Condition    | Minimum   | Typical | Maximum   | Unit |  |  |  |  |
| Input High Voltage                    | VIH                        |              | 0.8xVDDIO |         | VDDIO     | V    |  |  |  |  |
| Input Low Voltage                     | VIL                        |              | 0         |         | 0.2xVDDIO | V    |  |  |  |  |
| Output High Voltage                   | VOH                        |              | 0.9xVDDIO |         | VDDIO     | V    |  |  |  |  |
| Output Low Voltage                    | VOL                        |              | 0         |         | 0.1xVDDIO | V    |  |  |  |  |
| Power Supply for I/O Pins             | VDDIO                      |              | 1.65      | 3.00    | VCI       |      |  |  |  |  |
| Low Voltage Power Supply              | VCI                        |              | 2.40      | 3.00    | 3.50      |      |  |  |  |  |
| Supply Voltage for Logic              | VDD                        |              | 2.40      | 2.50    | 2.60      | V    |  |  |  |  |
| Supply Voltage for Display            | VCC                        |              | 14.00     | 14.50   | 15.00     | V    |  |  |  |  |
| CIEx(Red)                             |                            | x,y(CIE1931) | 0.63      | 0.67    | 0.71      |      |  |  |  |  |
| CIEy(Red)                             |                            | x,y(CIE1931) | 0.29      | 0.33    | 0.37      |      |  |  |  |  |
| 50% Check Board<br>Operating Current. | IDD                        | VCC=14.5V    | 23.00     | 25.00   | 32.00     | mA   |  |  |  |  |

| OLED Characteristics                     |        |           |         |         |         |      |  |  |
|--|--------|-----------|---------|---------|---------|------|--|--|
| ltem                                     | Symbol | Condition | Minimum | Typical | Maximum | Unit |  |  |
| Viewing Angle                            | θ(V)   | 160       |         |         |         | Deg  |  |  |
|  | (H)φ   |           | 160     |         |         | Deg  |  |  |
| Contrast Ratio                           | CR     | Dark      | 2000:1  |         |         |      |  |  |
| Response Time                            | T Rise |           |         | 10      |         | μs   |  |  |
|  | T Fall |           |         | 10      |         | μs   |  |  |
| Display with 50% check board brightness. |        |           | 60      | 80      |         | Nits |  |  |

| OLED Life Time      |  |              |        |  |  |  |  |
|---------------------|--|--------------|--------|--|--|--|--|
| Item Conditions     |  | Typical      | Remark |  |  |  |  |
| Operating Life Time | Ta=25°C. Initial checkboard brightness,. | 50,000 Hours |        |  |  |  |  |

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|                  |          |                  |             |  |  |  |  |  |
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