


| | | | |
|----------------------|------------|------------------|------------|
| MCT039C12CW480128LML | 480 x 128 | RGB Interface | TFT Module |
| Specification | | | |
| Version: 1 | | Date: 02/02/2018 | |
| Revision | | | |
| 1 | 24/01/2018 | First issue | |

| Display Features | | | |
|-----------------------|-----------------------|---|-----|
| Display Size | 3.9" |  | |
| Resolution | 480 x 128 | | |
| VGA Size | N/A | | |
| Orientation | Landscape | | |
| Appearance | RGB | | |
| Logic Voltage | 3.3V | | |
| Interface | RGB | | |
| Brightness | 400 cd/m ² | | |
| Touchscreen | CTP | | |
| Module Size | 105.50 x 37.00 x 5.13 | | |
| Operating Temperature | -20°C ~ +70°C | | |
| Pinout | 40 - Way FFC | | |
| | | | |
| | | --- | --- |

| Display Accessories | |
|---------------------|---|
| Part Number | Description |
| MPBV6 | 40 Way FFC to cable and wires. Driven by any driver board that can be wired to a 1mm pitch SHDR-40V-S-B receptacle. |
| LEDV3 | Constant current LED back light driver. |
| VBWV8 | TFT driver GUI creator. Can be driven from any microcontroller board or PC/SBC with an RS232 port. |
| MCIB-11 | HDMI to RGB 40-way TFT. Can be used in conjunction with single board computers, i.e. Raspberry Pi |

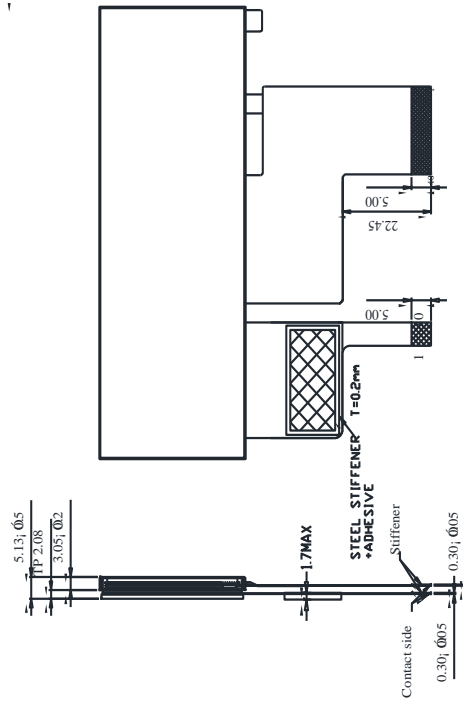
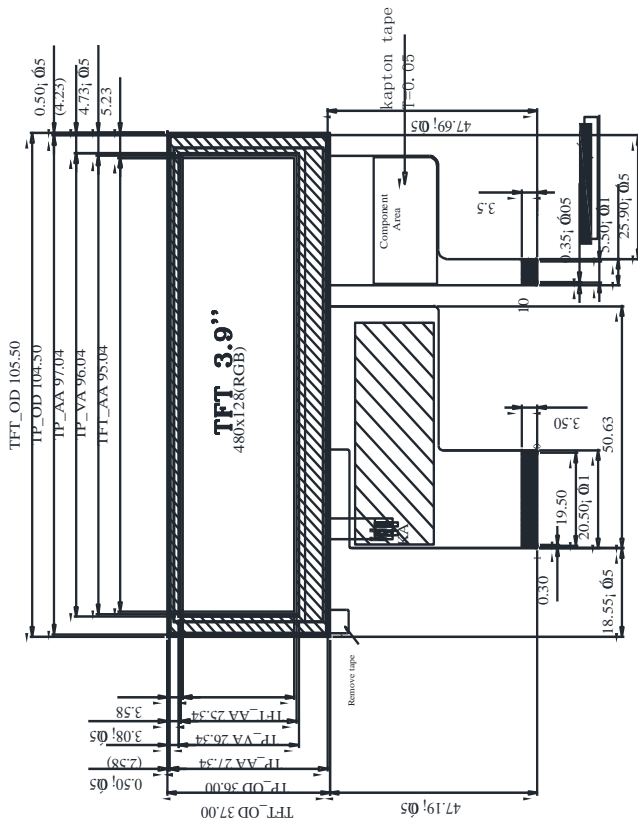
| Optional Variants | | |
|-----------------------------------|-------------|---------|
| Variants | Appearances | Voltage |
| No Touch Resistive Touch Panel | | |

Mechanical Specifications

| | | | | | |
|-------------|---|----------|--------------|---------------|--------------|
| Module Size | 105.50 x 37.00 x 5.13 (With Backlight) | | | | W x H x D mm |
| Active Area | 95.04 x 25.34 | W x H mm | Hole-to-Hole | --- | --- |
| Dot Size | --- | --- | Dot Pitch | 0.066 x 0.198 | W x H mm |

| PIN NO | SYMBOL | PIN NO | SYMBOL |
|--------|--------|--------|--------|
| 1 | VLED- | 21 | B0 |
| 2 | VLED+ | 22 | B1 |
| 3 | GND | 23 | B2 |
| 4 | VCC | 24 | B3 |
| 5 | R0 | 25 | B4 |
| 6 | R1 | 26 | B5 |
| 7 | R2 | 27 | B6 |
| 8 | R3 | 28 | B7 |
| 9 | R4 | 29 | GND |
| 10 | R5 | 30 | DCLK |
| 11 | R6 | 31 | DISP |
| 12 | R7 | 32 | HSYNC |
| 13 | G0 | 33 | VSYNC |
| 14 | G1 | 34 | NC |
| 15 | G2 | 35 | NC |
| 16 | G3 | 36 | GND |
| 17 | G4 | 37 | NC |
| 18 | G5 | 38 | NC |
| 19 | G6 | 39 | NC |
| 20 | G7 | 40 | NC |

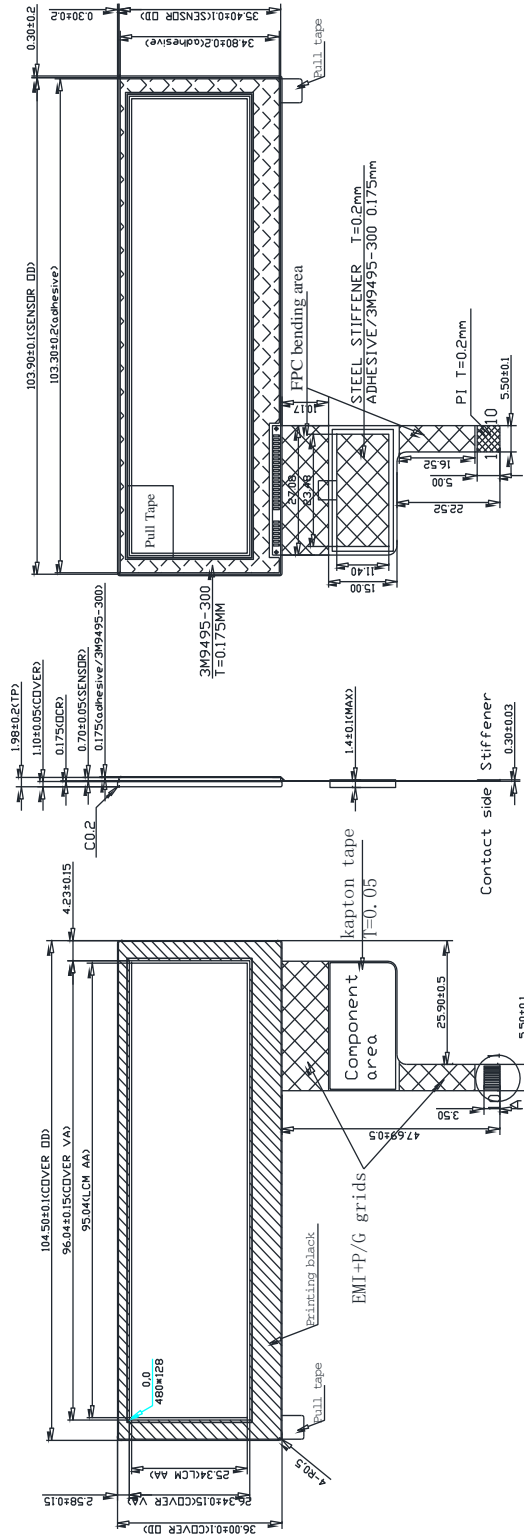
| PIN NO | SYMBOL |
|--------|--------|
| 1 | VSS |
| 2 | VDDT |
| 3 | SCL |
| 4 | NC |
| 5 | SDA |
| 6 | NC |
| 7 | /RST |
| 8 | NC |
| 9 | /INT |
| 10 | VSS |



The non-specified tolerance of dimension is ± 0.3 mm .

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Capacitive Touch Panel

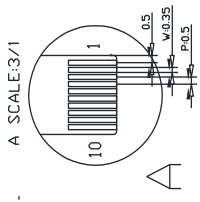


Back view

Side view

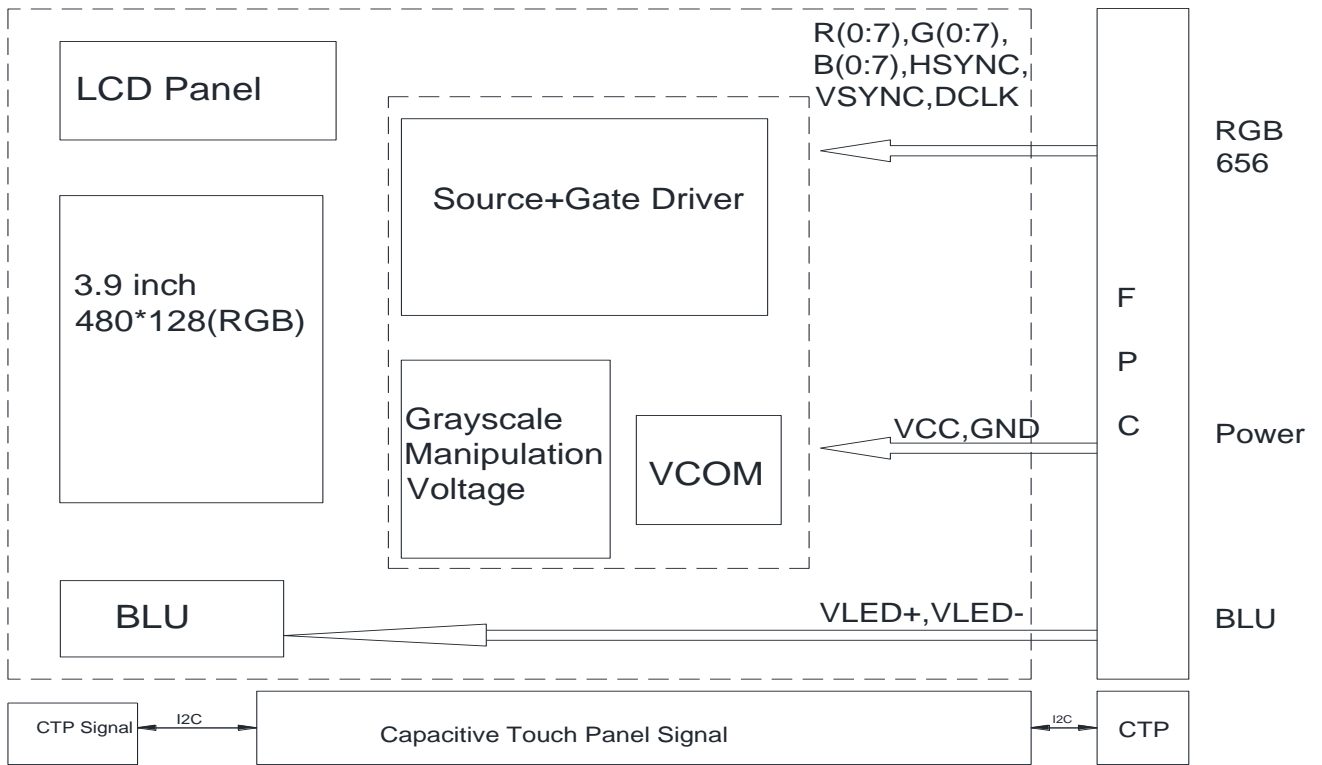
Front view

| PIN NO. | Definition |
|---------|------------|
| 1 | VSS |
| 2 | VDDT |
| 3 | SCL |
| 4 | NC |
| 5 | SDA |
| 6 | NC |
| 7 | RST |
| 8 | NC |
| 9 | INT |
| 10 | VSS |



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Block Diagram



| | | | |
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| Pin Layout | | | |
|-------------------|---------------|-----------------------------------|---------------|
| Pin | Symbol | Description | Remark |
| 1 | VLED- | Backlight LED Cathode | |
| 2 | VLED+ | Backlight LED Anode. | |
| 3 | GND | System Ground | |
| 4 | VCC | Power supply for logic operation | |
| 5~12 | R0~R7 | Data bus | |
| 13~20 | G0~G7 | Data bus | |
| 21~28 | B0~B7 | Data bus | |
| 29 | GND | System Ground | |
| 30 | DCLK | Pixel clock signal | |
| 31 | DISP | Display on/off control | |
| 32 | HSYNC | Horizontal Sync signal | |
| 33 | VSYNC | Vertical Sync signal | |
| 34 | NC | No connection (Option DE) | |
| 35 | NC | No connection | |
| 36 | GND | System Ground | |
| 37 | NC | No connection (Option XR for RTP) | |
| 38 | NC | No connection (Option YD for RTP) | |
| 39 | NC | No connection (Option XL for RTP) | |
| 40 | NC | No connection (Option YU for RTP) | |

| CTP Pin layout | | | |
|-----------------------|---------------|-----------------------------------|---------------|
| Pin | Symbol | Description | Remark |
| 1 | VSS | Ground for analogue circuit. | |
| 2 | VDDT | Power Supply: +3.0V | |
| 3 | SCL | I2C Clock Input. | |
| 4 | NC | No Connect. | |
| 5 | SDA | I2C Data input and output. | |
| 6 | NC | No Connection. | |
| 7 | /RST | External Reset, LOW is active. | |
| 8 | /WAKE | External Interrupt from the host. | |
| 9 | /INT | External Interrupt to the host. | |
| 10 | VSS | Ground for analogue circuit. | |

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Timing Characteristics

| Item | Symbol | Min | Typ | Max | Unit | |
|---------------|----------------|--------|------|-----|------|------|
| CLK frequency | Fclk | - | 9.05 | - | MHz | |
| DCLK Period | Tclk | - | 111 | - | ns | |
| HSYNC | Period Time | Th | 510 | 524 | 862 | DCLK |
| | Display Period | Thdisp | - | 480 | - | DCLK |
| | Back Porch | Thbp | 6 | 16 | 127 | DCLK |
| | Front Porch | Thfp | 24 | 28 | 255- | DCLK |
| | Pulse Width | Thw | 11 | 16 | 127 | DCLK |
| VSYNC | Period Time | Tv | 280 | 288 | 526 | H |
| | Display Period | Tvdisp | - | 272 | - | H |
| | Back Porch | Tvbp | 4 | 8 | 127 | H |
| | Front Porch | Tvfp | 4 | 8 | 127 | H |
| | Pulse Width | Tvw | 1 | 3 | 20 | H |

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| Absolute Maximum Ratings | | | | | | |
|--------------------------|--------|-----------|-----|-----|-----|------|
| Item | Symbol | Condition | Min | Typ | Max | Unit |
| Operating Temperature | TOP | --- | -20 | --- | 70 | °C |
| Storage Temperature | TST | --- | -30 | --- | 80 | °C |

| Electronic Characteristics | | | | | | |
|----------------------------|--------|-----------|---------|---------|---------|------|
| Item | Symbol | Condition | Minimum | Typical | Maximum | Unit |
| Power Voltage | VCC | --- | 3.00 | 3.30 | 3.60 | V |
| Driver Current | ICC | --- | --- | 15 | 25 | mA |
| Touch Logic Voltage | VDDT | --- | 2.80 | --- | 3.30 | V |

| TFT Characteristics | | | | | | | |
|---------------------|--------|-----------------------------|---------|---------|---------|------|-----|
| Item | Symbol | Condition | Minimum | Typical | Maximum | Unit | |
| Viewing Angle | Hor. | ΘR | CR≥10 | --- | 65° | --- | Deg |
| | | ΘL | | --- | 65° | --- | Deg |
| | Ver. | ΦT | | --- | 65° | --- | Deg |
| | | ΦB | | --- | 50° | --- | Deg |
| Contrast Ratio | CR | At optimised viewing angle. | --- | 500 | --- | --- | |
| Response Time | T Rise | θ=0° Φ=0° | --- | 10 | --- | .ms | |
| | T Fall | | --- | 15 | --- | .ms | |

| LED Characteristics | | | | | | |
|---------------------|--------|-----------|-------|-------|-------|-------------------|
| Item | Symbol | Condition | Min | Typ | Max | Unit |
| LED Forward Voltage | VLED+ | --- | 14.00 | 15.00 | 17.00 | V |
| LED Forward Current | ILED | --- | --- | 40.00 | --- | mA |
| LED Colour Range | Wx | --- | 0.269 | 0.319 | 0.369 | --- |
| | Wy | --- | 0.273 | 0.323 | 0.373 | --- |
| LED Brightness | --- | --- | 300 | 400 | --- | cd/m ² |
| LED Life Time | --- | --- | --- | 50k | --- | Hours |

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