Microfire LLC Mod-ISO Datasheet

Release Information

Release History

Release	Date	Description
1.1.0	8/13/2021	Added additional reflow procedures and information regarding I²C pullup resistors.
1.0.0	5/11/2021	Initial

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About the Mod-ISO Module

An easy solution to create regulated and isolated power for I²C buses.

- Power Isolation
    - 3.3 isolated and regulated power output
    - 3.0 to 5.5 volts power input
- Signal Isolation
    - 3.3 to 5-volt logic level
    - I²C compatible

Mechanical Specification

The Mod-ISO module is a single-sided 25x15 mm 0.8 mm thick PCB with dual castellated/through-hole pins around the east and west edges. It is designed to be usable as a surface mount module as well as in Dual Inline Package (DIP) type format, with the 12 pins on a 2.54mm pitch grid with 0.8mm holes.

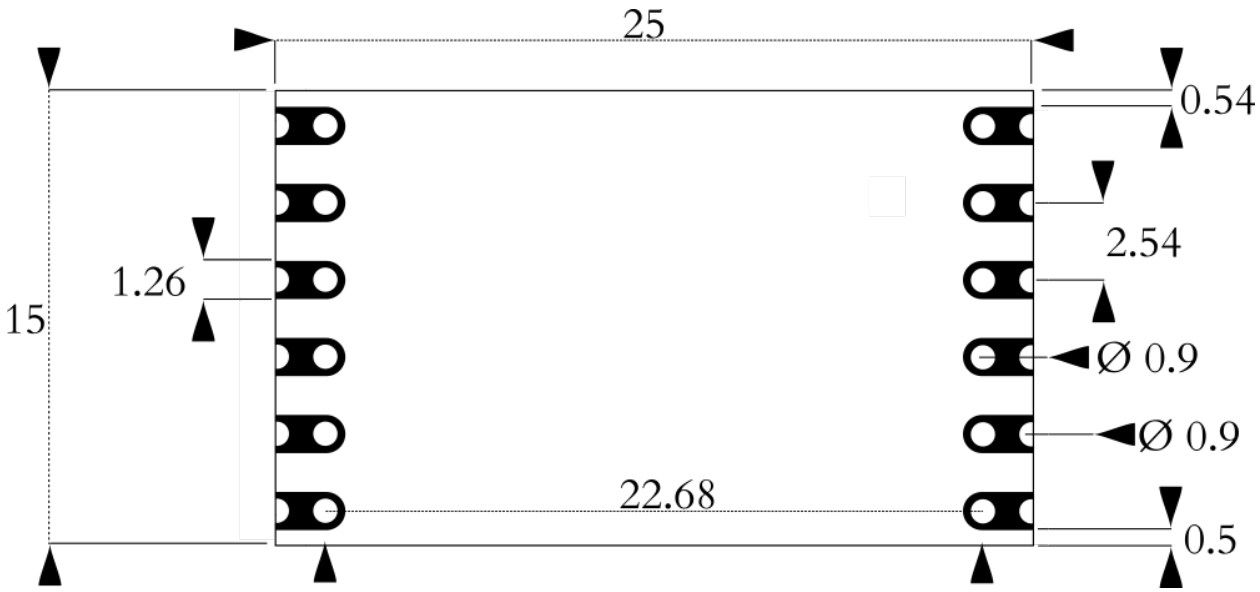


Figure 1. Physical dimensions of the module.

Pinout

The pinout of the module has been designed to provide as many interface options as possible.

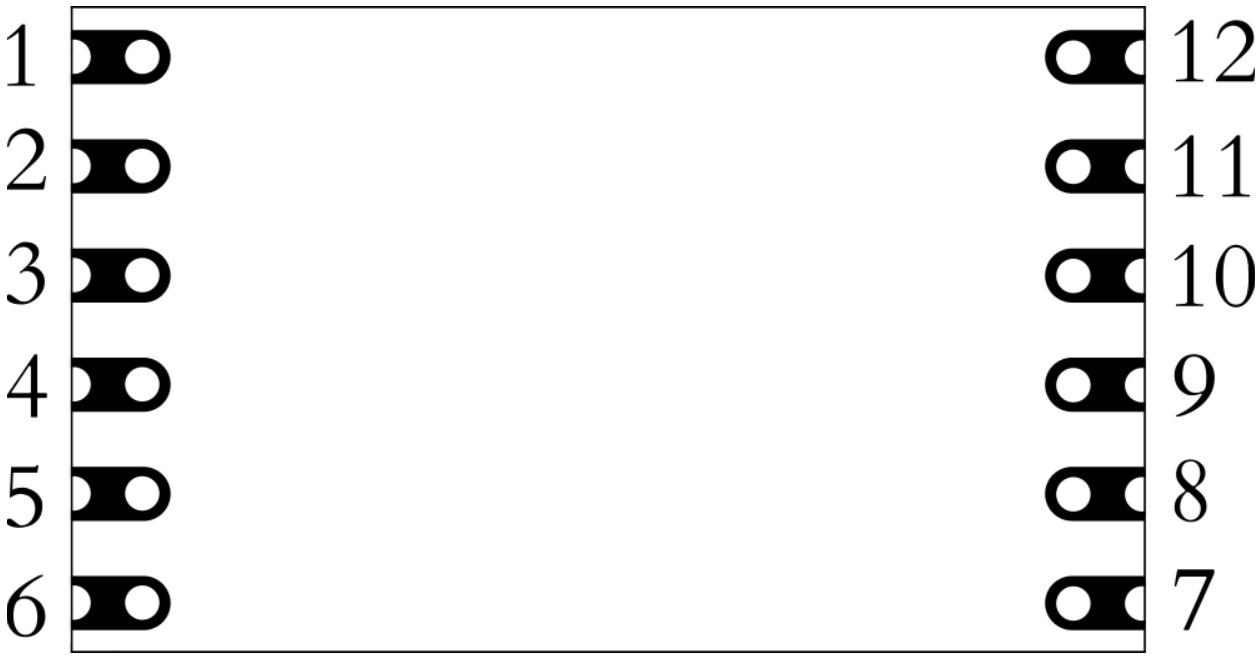
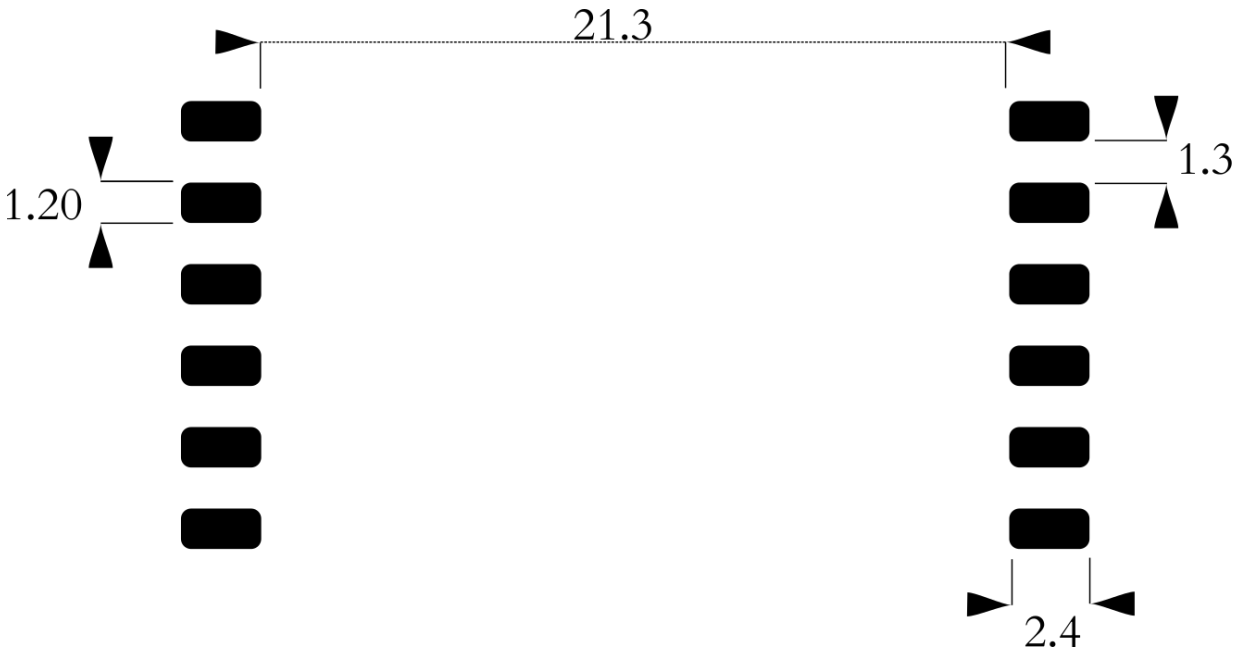


Figure 2. Pinout of the module.

Pin 1: GND Supply side ground
Pin 2: VIN Supply side voltage input, between 3.15 and 5.25 volts.
Pin 3: Non-isolated I²C SDA. Data line for I2C interface
Pin 4: Non-isolated I²C SCL. Clock line for I2C interface
Pin 5: EN. Enable pin.
Pin 6: Not used.
Pin 7: Not used.
Pin 8: Not used.
Pin 9: Isolated I²C SCL. Clock line for I2C interface
Pin 10: Isolated I²C SDA. Data line for I2C interface.
Pin 11: Isolated 3.3-volt output
Pin 12: Isolated Ground.

Surface Mounting

The following figure shows the recommended footprint for mounting the module through reflow processes. It provides for a Class 1 connection (*IPC-A-610G § 8.3.4 Castellated Terminations*).



It is recommended that the stencil be 8 mils in thickness to ensure enough solder paste can flow into the castellations.

The module is assembled with Chip Quik SMD291SNL50T3 (Sn96.5/Ag3.0/Cu0.5) solder paste, a lead-free paste with a 249-degree Celsius peak reflow temperature. Reflowing the module multiple times can cause malfunction, to avoid the issue, if it is possible, use a lower melting-point temperature solder paste.

Operating Conditions

Temperature:

- **Absolute**:
  - **Maximum**: 105 C
  - **Minimum**: -40 C

Voltage:

- **Absolute Maximum**: 5.5 volts
- **Absolute Minimum**: 3.0 volts

Electrical Specification

This module incorporates an Analog Devices ADM3260. Refer to their datasheet for detailed information.

Isolated Power

Output power varies based on input power:

- 5.0 volts: 100 mW
- 3.3 volts: 66 mW

Signal Isolation

The module provides isolation suitable for use in I2C buses.

Design Incorporation

Adding the module is a straightforward process.

Power

A suitable power supply must be supplied between 3.0 and 5.5 volts.

Ground

A low-impedance connection is needed.

ENable

The ENable **Pin 5** must be pulled low to activate the module. Pulling it high will deactivate the module to conserve power.

I²C Pullup Resistors

Pullup resistors are required on the non-isolated side (Pin 3 and Pin 4) sized appropriately for the bus speed, devices on the bus, etc. Pullup resistors are not required on the isolated side.

Unused Pins

Any unused pins should be left unconnected to any other trace or net.

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Mod-EC
Mod-pH
Mod-ORP
Mod-ISO

Development Boards
Isolated Qwiic Dev Board
Mod-EVAL
Mod-EVAL_ISO

Probes
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Industrial EC Probe
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Lab pH Probe
Lab EC Probe
Lab ORP Probe

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