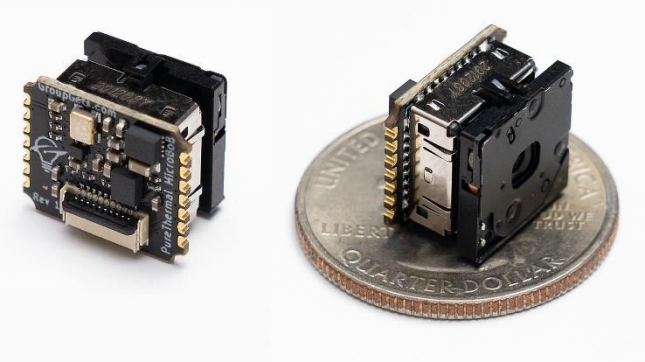
PURETHERMAL Micro Breakout Board

TELEDYNE FLIR Lepton® I/O Module

May 2023 - Datasheet Revision 2

The **PureThermal Micro Breakout Board** is an ultra-compact module designed for easy interfacing with FLIR's Lepton thermal imaging sensors. It can be soldered onto a PCB using the castellated breakout or connect it via a 10-pin flat flexible cable (FFC) or flexible printed circuit (FPC) to communicate with the Lepton via I^2C and VoSPI. This module takes care of the Lepton voltage supplies and 25MHz master clock, simplifying the integration process for designers.



Sample Lepton 3.5 thermal images showing a finished 3D printed object imaged with different colorization settings.

FEATURES

- Open-source reference code is on the GroupGets GitHub for getting started.
- Compatible with all current 2.x, 3.x, and FS Lepton cores.
- Super compact 12.2x14mm form-factor that can be embedded into other modules.
- Castellated edges for integrating the module with a PCB.
- KiCAD footprint and symbol for easy integration into new designs.
- 10-pin FPC/FFC connector – 0.020" (0.5mm) pitch, top and bottom contacts.

SPECIFICATIONS

Input Voltage Range (VIN)	3.3-5VDC
Operating Voltage (Logic level)	3V
Lepton Core Support	Lepton 2.x, 3.x, FS
Thermal Video Output	SPI
Command Control Interface (CCI)	I^2C with 16-bit registers
Part Number	GG-PT-M-BOB
RoHS Compliant	Yes

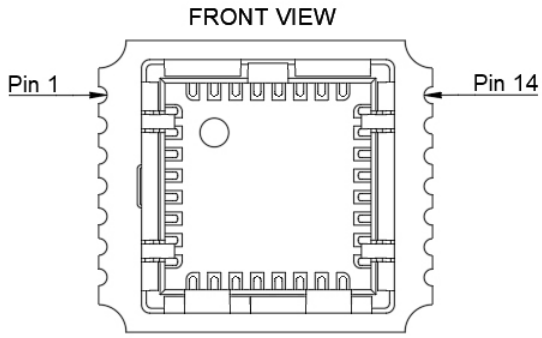
APPLICATIONS

- Thermal imaging in confined spaces
- Non-contact temperature measurements
- Electrical inspection and diagnostics
- Moisture or leak detection
- Integration with IoT devices
- Night vision imaging
- Gesture recognition
- Fire detection and prevention
- Light weight drone thermal imaging
- Motion sensing

Pinout

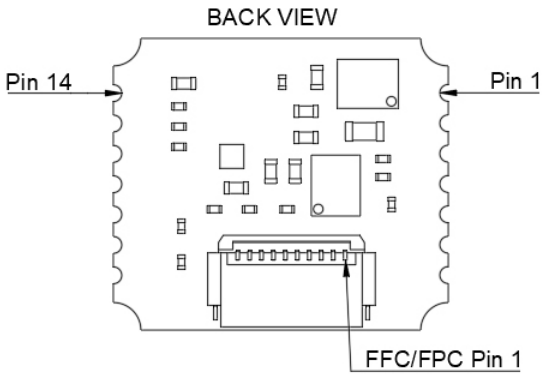
Breakout Pins

Pin #	Function
1	GND
2	SPI_CS
3	SPI_CLK
4	SPI_MISO
5	SPI_MOSI
6	VIN
7	VSYNC
8	GND
9	EN
10	I^2C_SCL
11	I^2C_SDA
12	CLK_STBY
13	PW_DWN_L
14	RESET_L



FFC/FPC Pins

Pin #	Function
1	GND
2	EN
3	VSYNC
4	VIN
5	SPI_MOSI
6	SPI_MISO
7	SPI_CLK
8	SPI_CS
9	I^2C_SDA
10	I^2C_SCL

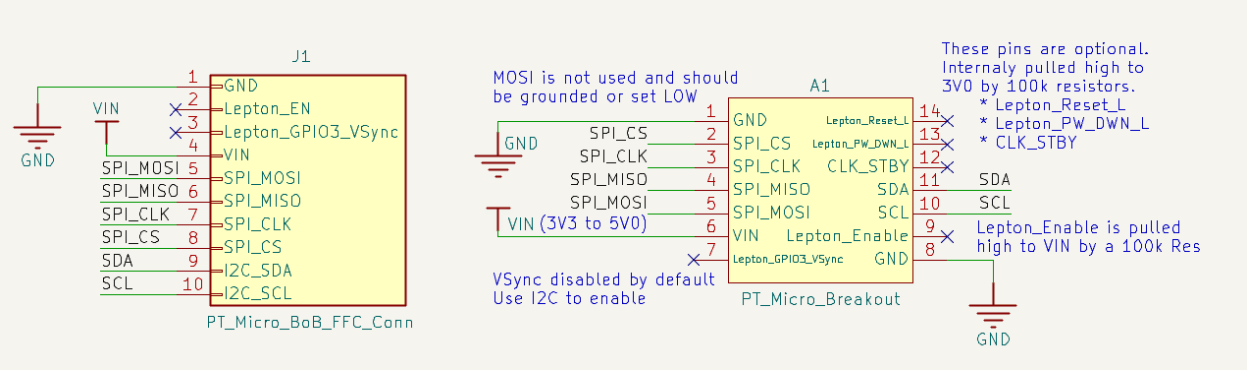


Hardware Design Integration

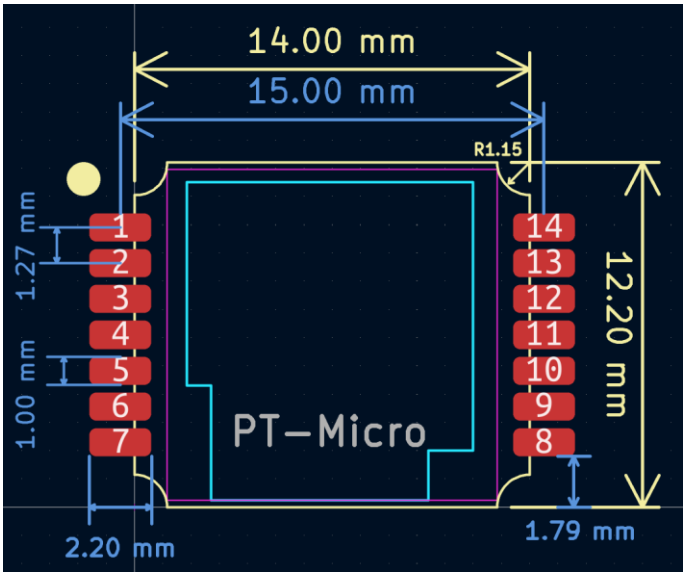
KiCAD schematic symbols and footprints are available at GitHub.com/GroupGets in the LeptonModule repository.

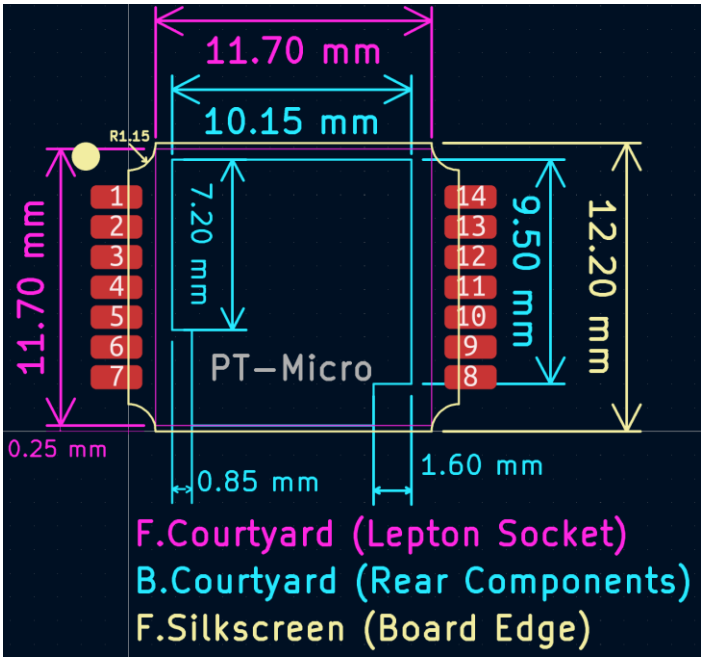
Schematic Example

The following example shows the schematic symbols for the use with castellated edge breakout (A1) and the FFC connector (J1) with the basic implementation.



Recommended PCB Landing Pattern

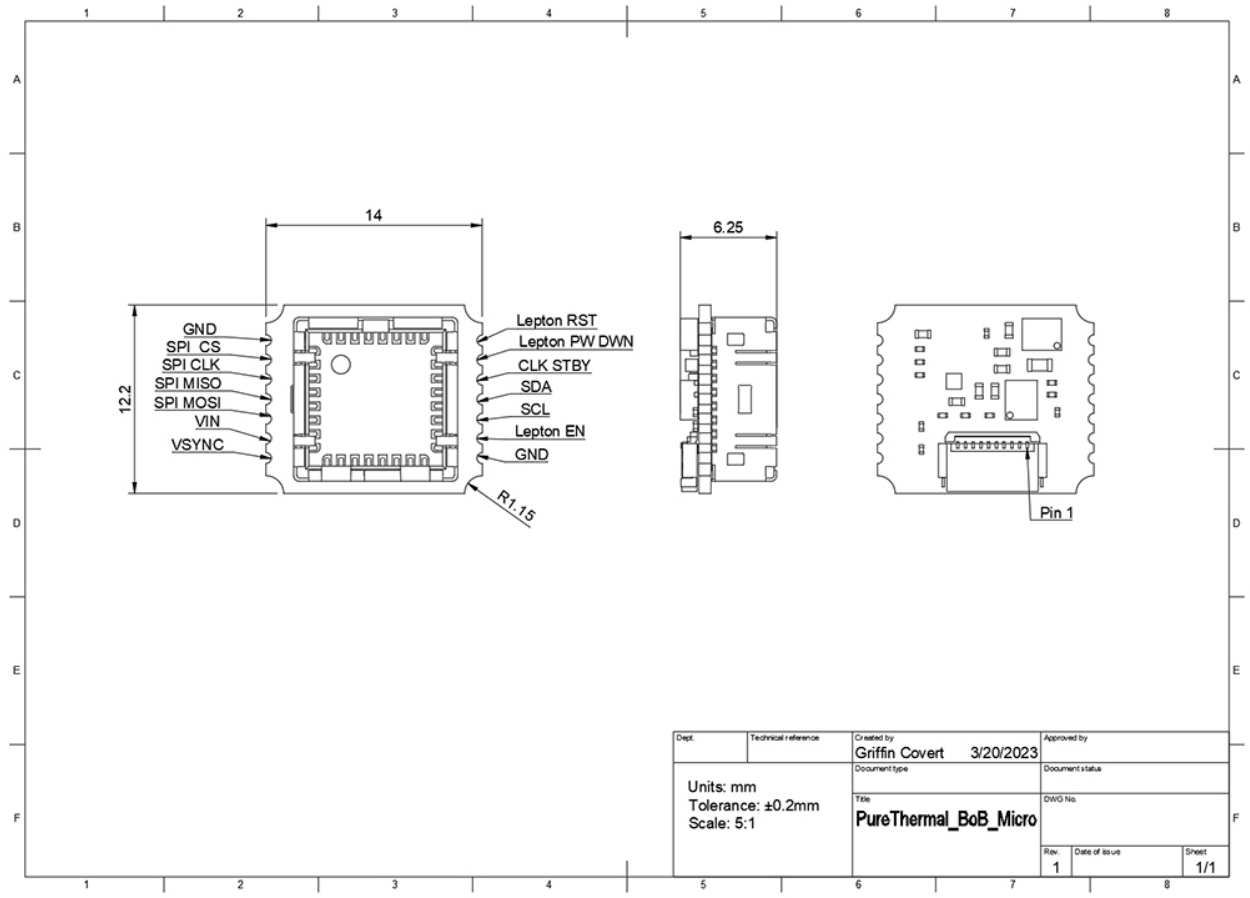




The .kicad_mod footprint and .kicad_sym symbol files are available for download on the GitHub repository.

For software design integration, see the official FLIR documentation.

Dimensions



https://groupgets-files.s3.amazonaws.com/PT%20Micro%20Breakout%20Board/PTMBoB_Dimensions.pdf

Datasheet Revision History

Revision 2 – May 2023

- Added Hardware Design Integration section.
- Minor grammatical corrections, clarifications, and aesthetic changes.

Revision 1 – March 2023

- Datasheet created.