**PURE** ENGINEERING LLC

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FLIR LEPTON® THERMAL CAMERA BREAKOUT v1.4

FEATURES

- **Input Voltage: 3 V to 5.5 V**
- **Space-Saving, (25 mm × 24 mm)**
- **Works with the FLIR Lepton® modules: 50 degree shuttered, 50 degree, and 25 degree**
- **Access to SPI and I2C of the camera module**
- **Provides 25 MHz reference clock**
- **Power Efficient 1.2V core voltage**
- **Dual Low Noise LDO for 2.8V voltage**
- **32-pin Molex Camera Socket for Lepton® Module**
- **100 mil header, Pin out compatible with Arduino® headers**
- **PCB size and mounting holes same as standard Raspberry Camera**
- **Additional low profile .5mm FPC connector for embedded applications**

APPLICATIONS

- **Thermal Imaging**
- **Motion Sensor**
- **Night Vision**
- **Gesture Recognition**
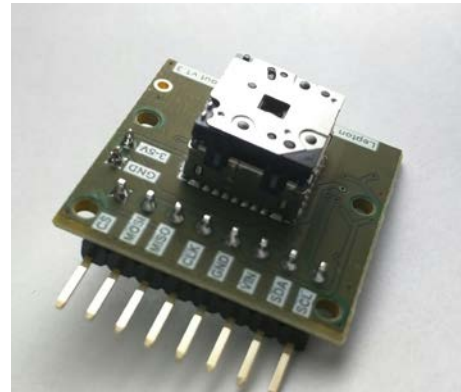
DESCRIPTION

The FLIR Lepton® Thermal Camera Breakout is an easy to interface to evaluation board to quickly evaluate the FLIR Lepton® Camera module. It is compatible with a number of low cost ARM based evaluation boards such as the NUCLEO-F401RE. In addition it is easy to wire to any nonstandard pin outs as well such as the raspberry PI.

TYPICAL APPLICATION

PRODUCTION DATA information is current as of publication date.

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These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam or bag during storage or handling to prevent electrostatic damage to the MOS gates.
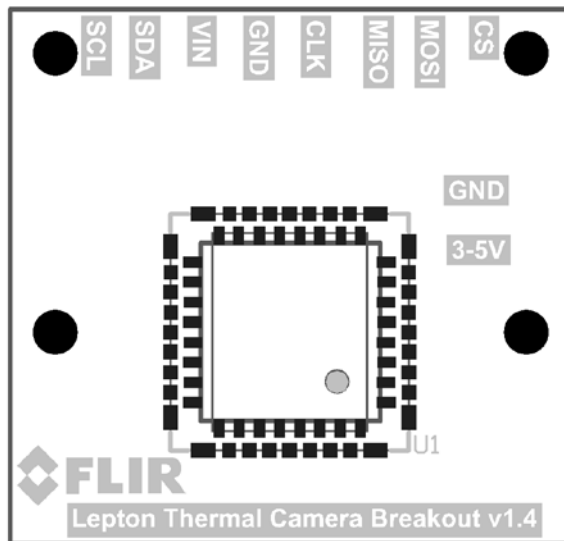
ORDERING INFORMATION

For the most current package and ordering information see the website at www.pureengineering.com.

ABSOLUTE MAXIMUM RATINGS

			UNIT
V_I	Input Voltage	Continuous	5.5 V
T_A	Operating temperature range	Over V_I range	0°C to 55°C

TERMINAL FUNCTIONS

TERMINAL		DESCRIPTION
NAME	**NO.**	
SCL	8	Camera Control Interface Clock, I2C
SDA	7	Camera Control Interface Data, I2C
VIN	6	3-5V Supply input
GND	5	Common Ground
SPI CLK	4	Video Over SPI Slave Clock
SPI MISO	3	Video Over SPI Slave Data Out
SPI MOSI	2	Video Over SPI Slave Data In
SPI CS	1	Video Over SPI Slave Chip Select, active low

APPLICATION INFORMATION

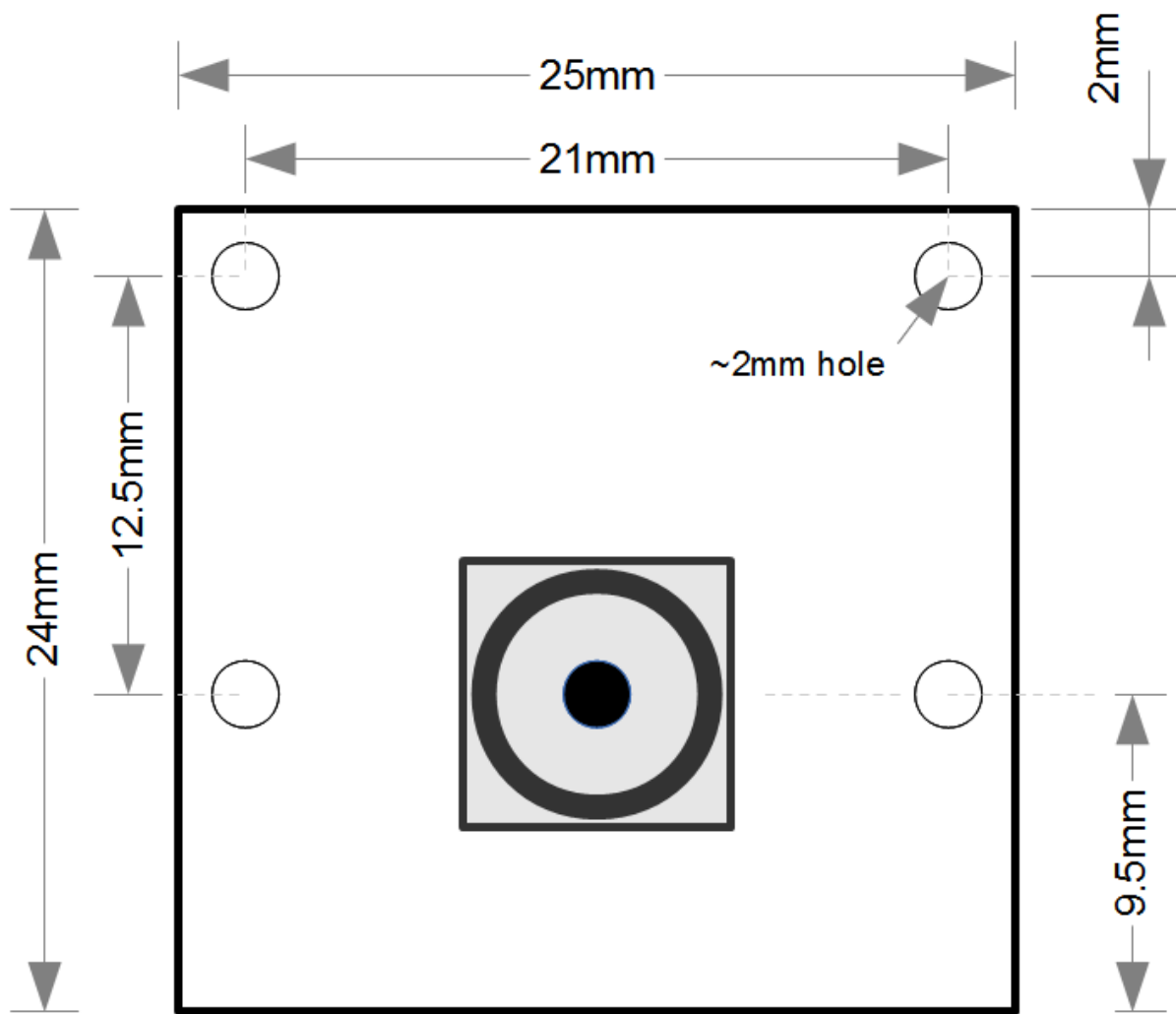### Operating Features and System Considerations for the Lepton ® Thermal Camera Breakout

Getting Started

Basic Example code has been posted to the Pure Engineering github site at the following URL: https://github.com/PureEngineering/LeptonModule. Please Note that these are examples to get one started and not for use in final designs. Familiarity of programming and compiling are highly recommended.
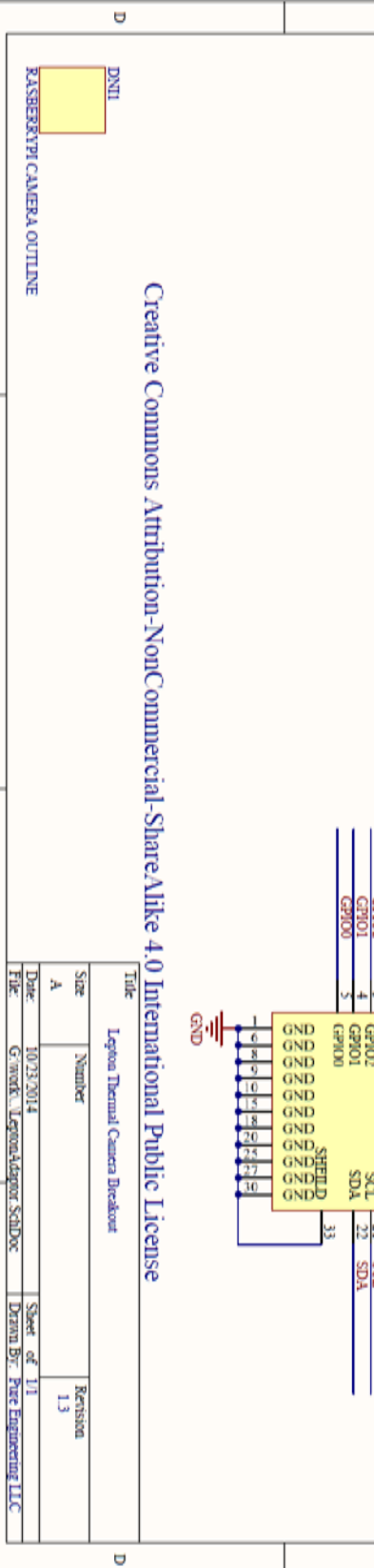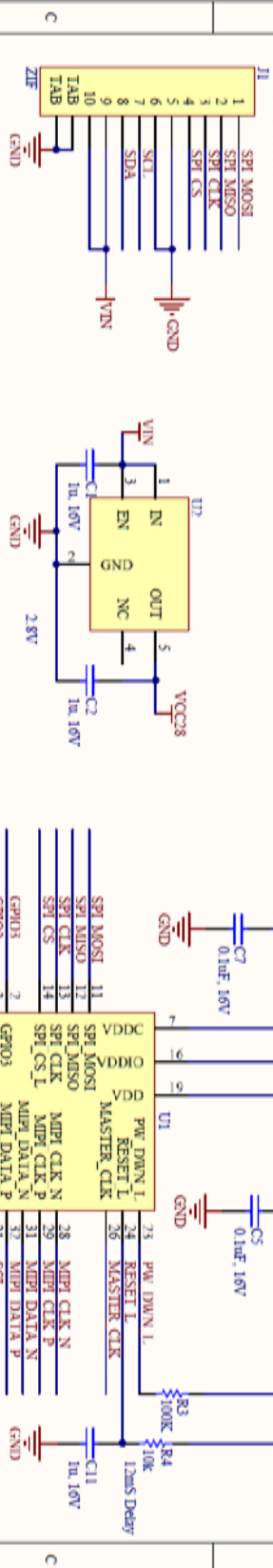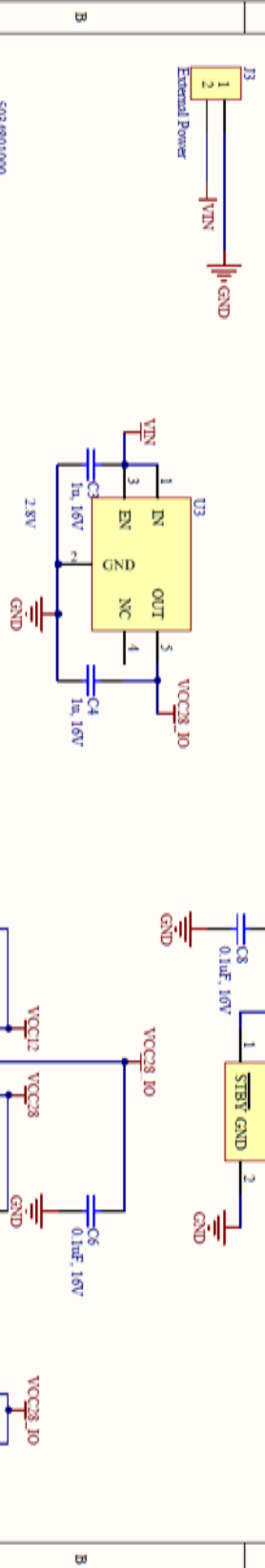
Support

For support that extends beyond this datasheet please consult the following google groups site at the following URL: https://groups.google.com/d/forum/flir-lepton Please search for your question before posting as your question may already be answered.

Additional Information

All additional information about the breakout board, SDK's, Lepton® Datasheet, and Purchase Information will be maintained at the Following URL: http://www.pureengineering.com/projects/lepton

25mm

21mm

2mm

~2mm hole

12.5mm

24mm

9.5mm
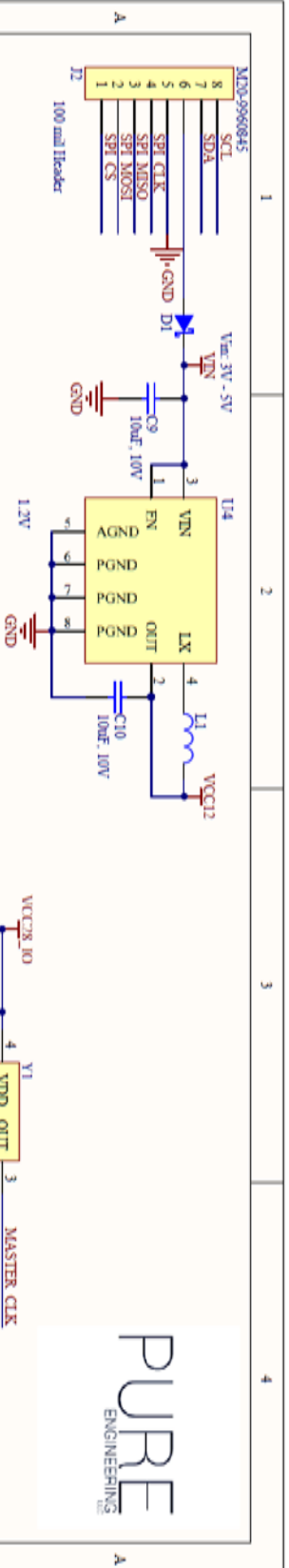
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J1 S034001000

ZIF
TAB
TAB
10
9
8 SDA
7 SCL
6
5 SPI_CS
4 SPI_CLK
3 SPI_MISO
2 SPI_MOSI
1

GND · VIN · GND

J2 100 mil Header · MDO-996004S

| 8 SCL |
| 7 SDA |
| 6 |
| 5 SPI_CLK |
| 4 SPI_MISO |
| 3 SPI_MOSI |
| 2 SPI_CS |
| 1 |

J3 External Power
| 1 |
| 2 |
VIN · GND

Vin: 3V - 5V · VIN · D1 · GND · C9 10uF, 10V

U4
3 EN	VIN 1
5 AGND	
6 PGND	
7 PGND	LX 4
8 PGND	OUT 2
GND · 1.2V · C10 10uF, 10V · L1 · VCC12

U3
1 IN	VIN 3
3 EN	
2 GND	OUT 5
	NC 4
VIN · C3 1u, 16V · 2.8V · GND · C4 1u, 16V · VCC28_IO

U2
1 IN	VIN 3
3 EN	
2 GND	OUT 5
	NC 4
C1 1u, 16V · GND · 2.8V · C2 1u, 16V · VCC28

GND · C7 0.1uF, 16V · VCC12
GND · C8 0.1uF, 16V · VCC28_IO

Y1
| 4 VDD | OUT 1 |
| 3 STBY | GND 2 |
GND · MASTER_CLK

U1
11 SPI_MOSI	VDDC 7
12 SPI_MISO	
13 SPI_CLK	VDDIO 16
14 SPI_CS	
	VDD 19
6 GND	PW_DWN_L 25
8 GND	RESET_L 24
9 GND	MASTER_CLK 26
10 GND	MIPI_CLK_N 38
15 GND	MIPI_CLK_P 39
18 GND	MIPI_DATA_N 31
20 GND	MIPI_DATA_P 30
23 GND	SCL 37
27 GND	SDA 22
36 GND	
SHIELD 33	
GPIO3 2 · GPIO2 3 · GPIO1 4 · GPIO0 5

VCC28 · VCC28_IO · GND · C5 0.1uF, 16V · GND · C6 0.1uF, 16V · GND

PW_DWN_L · RESET_L · VCC28_IO
R3 100K · R4 10k · 1.2mS Delay
GND · C11 1u, 16V

GPIO3 · GPIO2 · GPIO1 · GPIO0
SPI_MOSI · SPI_MISO · SPI_CLK · SPI_CS