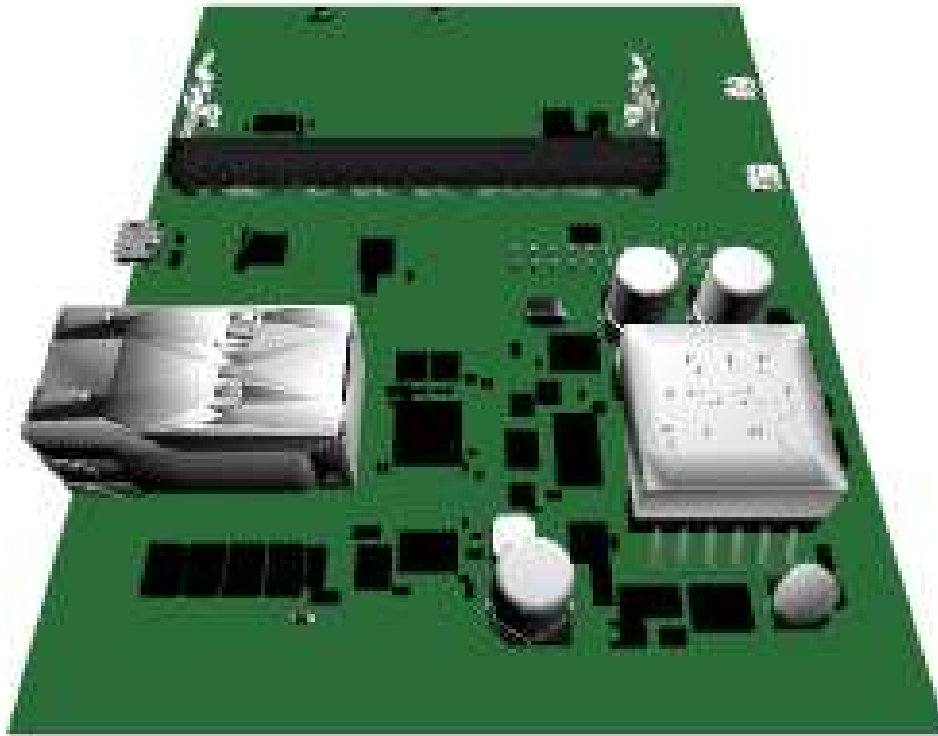


# RPi Compute LoRa Gateway PoE



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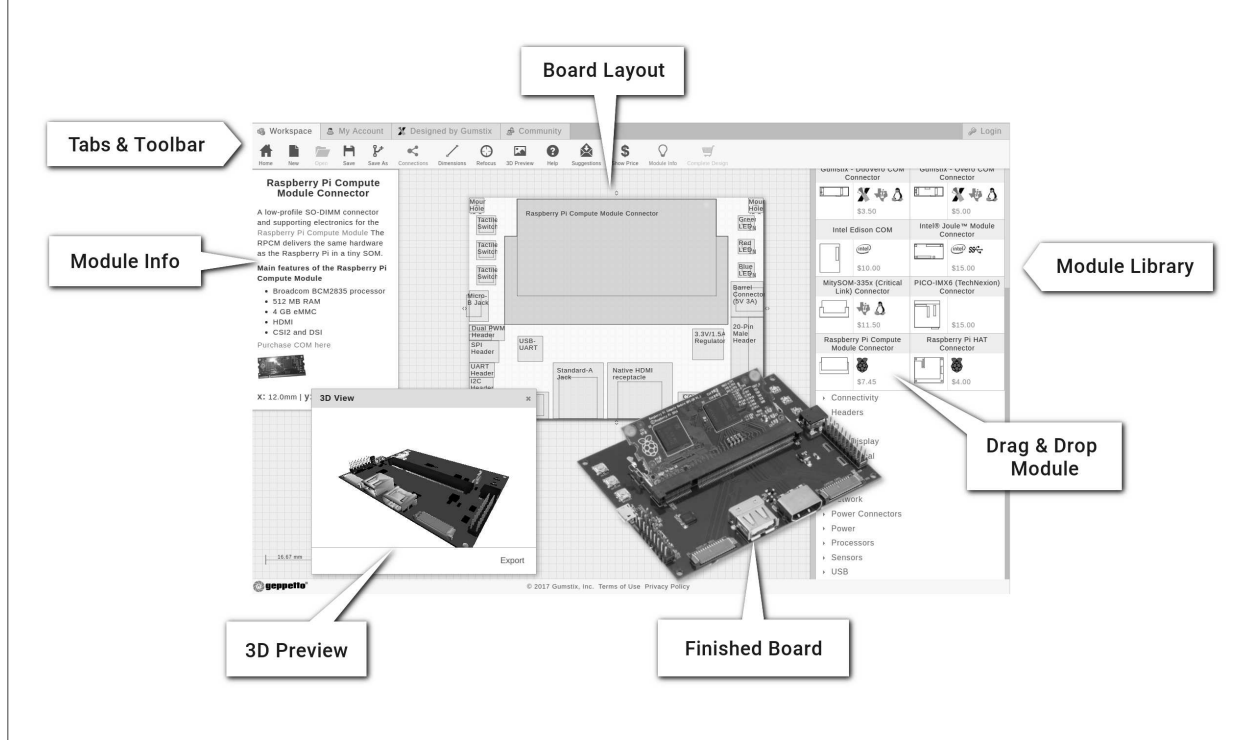


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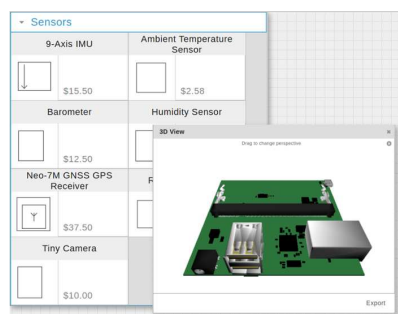
## Board Description

Raspberry Pi Compute Module based LoRa gateway using the RisingHF RHF0M301 LoRa Gateway and Concentrator Module. The board is powered using Power over Ethernet (POE), facilitating easy deployment by combining power and network connectivity into a single connection.

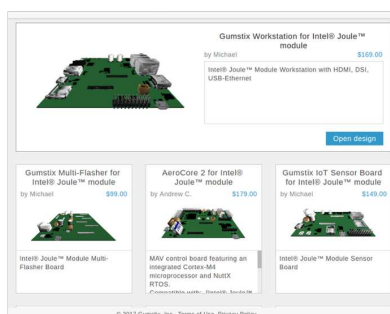
## Board Dimensions

9.35cm x 12cm

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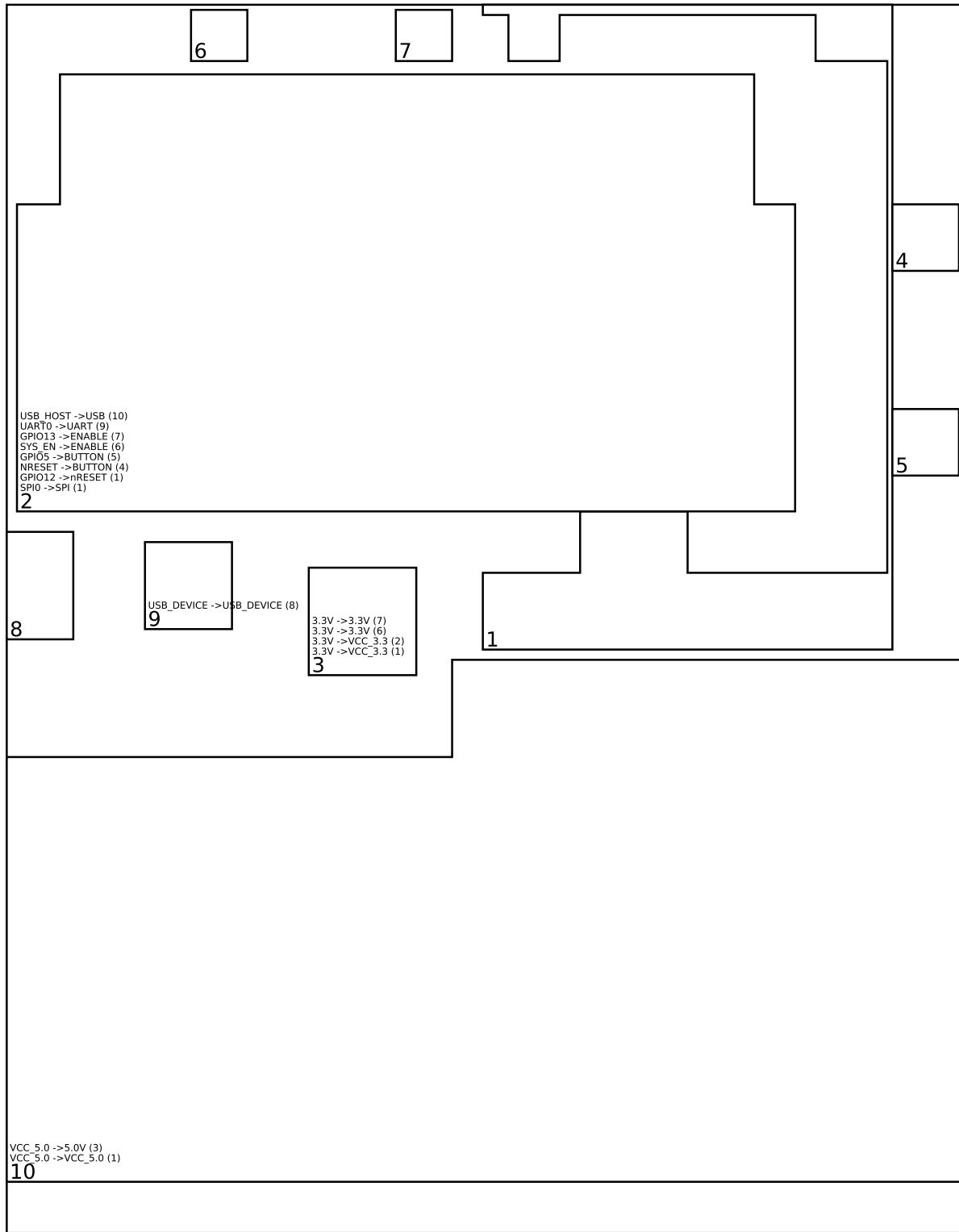
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# Contents

<b>1</b>	<b>Modules on Board</b>	<b>1</b>
1.1	Network . . . . .	2
1.1.1	LoRa Gateway and Concentrator Module (v1) (1) . . . . .	2
1.1.2	Gigabit with PoE via USB (v2) (10) . . . . .	2
1.2	COM Connectors . . . . .	2
1.2.1	Raspberry Pi Compute Module Connector (v15) (2) . . . . .	2
1.3	Power . . . . .	3
1.3.1	3.3V/1.5A Regulator (v11) (3) . . . . .	3
1.4	IO . . . . .	3
1.4.1	Tactile Switch (v16) (4) . . . . .	3
1.4.2	Tactile Switch (v16) (5) . . . . .	3
1.4.3	Top-side LED (v4) (6) . . . . .	4
1.4.4	Top-side LED (v4) (7) . . . . .	4
1.5	USB . . . . .	4
1.5.1	Micro-B Jack (v10) (8) . . . . .	4
1.6	Connectivity . . . . .	4
1.6.1	USB-UART (v16) (9) . . . . .	4
<b>2</b>	<b>Module Connections Graph</b>	<b>5</b>
<b>3</b>	<b>Module Power Graph</b>	<b>6</b>

# 1 Modules on Board



## 1.1 Network

### 1.1.1 LoRa Gateway and Concentrator Module (v1) (1)

LoRa Gateway

### 1.1.2 Gigabit with PoE via USB (v2) (10)

This module provides a gigabit ethernet interface using the USB 3.0 bus Raspberry Pi Compute Module Connector (2). This Power over Ethernet module provides 5V to the following modules:

- LoRa Gateway and Concentrator Module (1)
- 3.3V/1.5A Regulator (3)

## 1.2 COM Connectors

### 1.2.1 Raspberry Pi Compute Module Connector (v15) (2)

The **Raspberry Pi Compute Module (RPCM)** connector is a SODIMM socket powering the RPCM and providing the module's function to Geppetto designs. The RPCM COM connector is pin-compatible with 3 variants of the module: RPCM1, RPCM3 and RPCM3L.

Module features:

	RPCM1	RPCM3	RPCM3L
SoC	BCM2835	BCM2837	BCM2837
CPU Clock	700MHz	1.0GHz	1.0GHz
Cores	1x32-bit	4x64-bit	4x64-bit
DDR2 RAM	512 MB	1.0 GB	1.0 GB
eMMC	4 GB	4 GB	N/A

More technical details for the RPCM modules can be found at:

<https://www.raspberrypi.org/documentation/hardware/computemodule/datasheet.md>

It requires:

- VCC\_3.3 from 3.3V/1.5A Regulator (3)

The Geppetto Pi Compute connector provides the following outputs:

- SPI0 to LoRa Gateway and Concentrator Module (1)
- VLOGIC to:
  - LoRa Gateway and Concentrator Module (1)
  - Tactile Switch (4)
  - Tactile Switch (5)
  - USB-UART (9)

- GPIO12 to LoRa Gateway and Concentrator Module (1)
- NRESET to Tactile Switch (4)
- GPIO5 to Tactile Switch (5)
- SYS\_EN to Top-side LED (6)
- GPIO13 to Top-side LED (7)
- UART0 to USB-UART (9)
- USB\_HOST to Gigabit with PoE via USB (10)

## 1.3 Power

### 1.3.1 3.3V/1.5A Regulator (v11) (3)

This DC to DC step down regulator provides a 3.3V DC output at 1.5A needed by certain components on this board. It is capable of accepting an input voltage between 3.1 to 16V DC and output is controlled by the TI TPS6211 buck regulator. It receives 5.0V from Gigabit with PoE via USB (10).

The dataheet for the TPS6211 regulator is available at:

<http://www.ti.com/lit/ds/symlink/tps62110.pdf>

This regulator provides 3.3V to:

- LoRa Gateway and Concentrator Module (1)
- Raspberry Pi Compute Module Connector (2)
- Top-side LED (6)
- Top-side LED (7)

## 1.4 IO

### 1.4.1 Tactile Switch (v16) (4)

This 4.9 sq. mm pull-down touch switch provides a user input for the signal NRESET on Raspberry Pi Compute Module Connector (2).

### 1.4.2 Tactile Switch (v16) (5)

This 4.9 sq. mm pull-down touch switch provides a user input for the signal GPIO5 on Raspberry Pi Compute Module Connector (2).

### 1.4.3 Top-side LED (v4) (6)

The top-side LED module contains a 1608 standard size LED of a user-selected color, mounted on the top side of a Geppetto board.

The LED is active-high on SYS\_EN from Raspberry Pi Compute Module Connector (2).

### 1.4.4 Top-side LED (v4) (7)

The top-side LED module contains a 1608 standard size LED of a user-selected color, mounted on the top side of a Geppetto board.

The LED is active-high on GPIO13 from Raspberry Pi Compute Module Connector (2).

## 1.5 USB

### 1.5.1 Micro-B Jack (v10) (8)

The USB micro-B port module allows your design to connect as a USB device to a USB host.

This module is connected to USB\_DEVICE on USB-UART (9).

This module does not supply power.

## 1.6 Connectivity

### 1.6.1 USB-UART (v16) (9)

Also known as an FTDI, this USB to UART converter allows a USB connection to the board to behave as a virtual RS232 serial connection. It offers direct and complete access to the system from a development machine by way of the FTDI FT232RQ USB – UART IC.

Technical documentation for the FT232RQ is available at:

[http://www.ftdichip.com/Support/Documents/DataSheets/ICs/DS\\_FT232R.pdf](http://www.ftdichip.com/Support/Documents/DataSheets/ICs/DS_FT232R.pdf)

This USB to UART converter connects a host machine from Micro-B Jack (8) to UART0 on Raspberry Pi Compute Module Connector (2).



## 2 Module Connections Graph

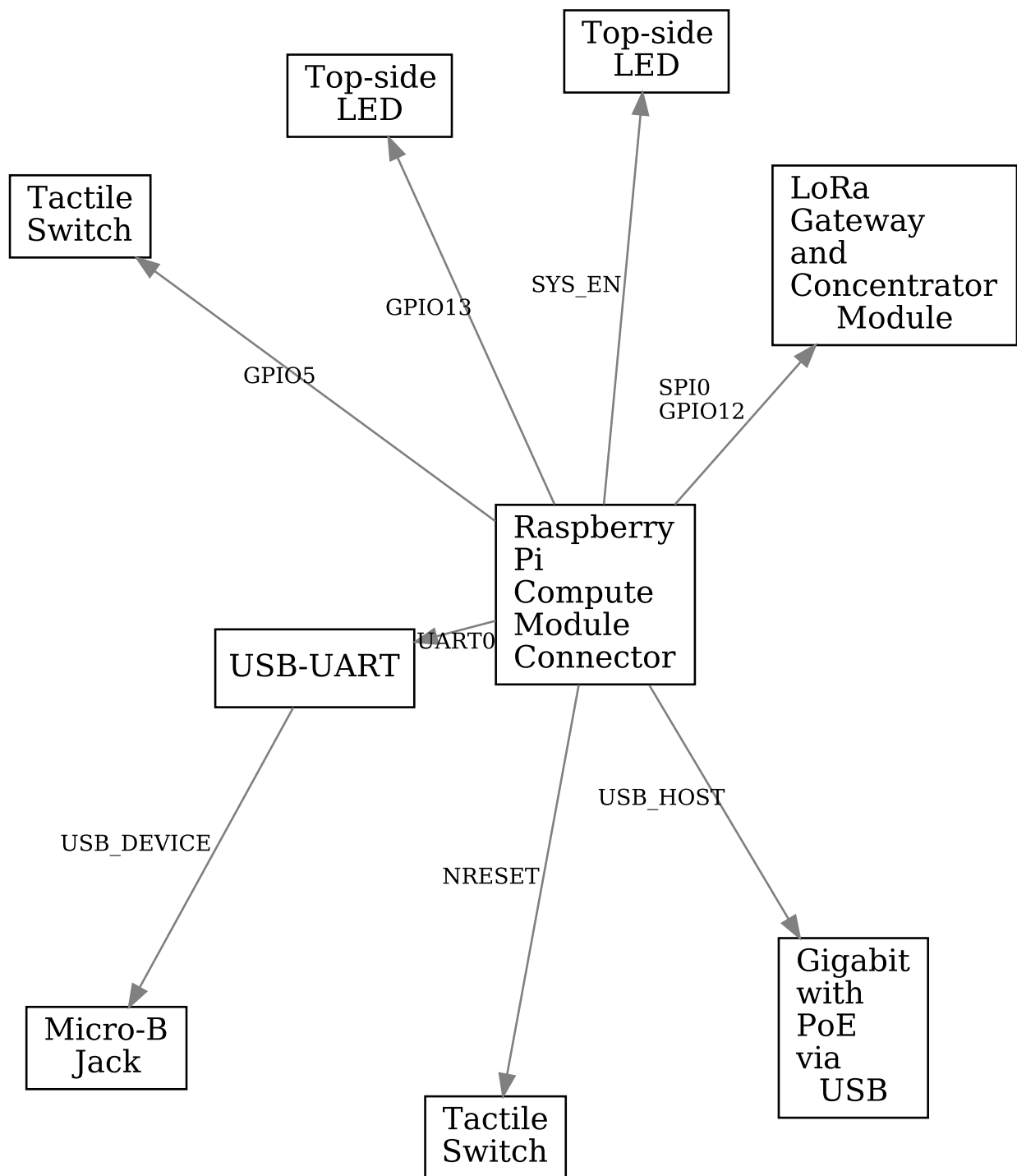
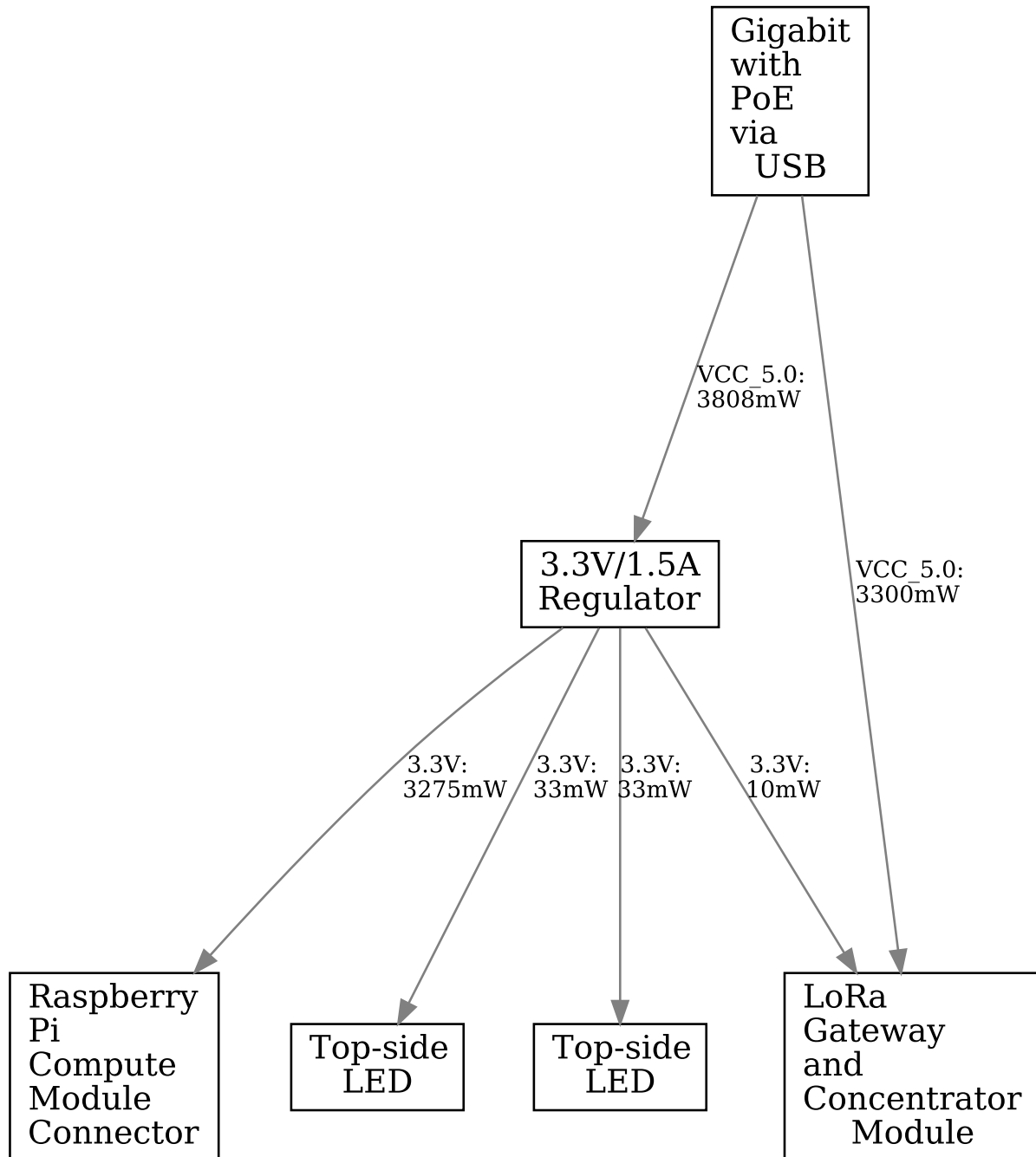


Figure 1: excludes power modules

### 3 Module Power Graph





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