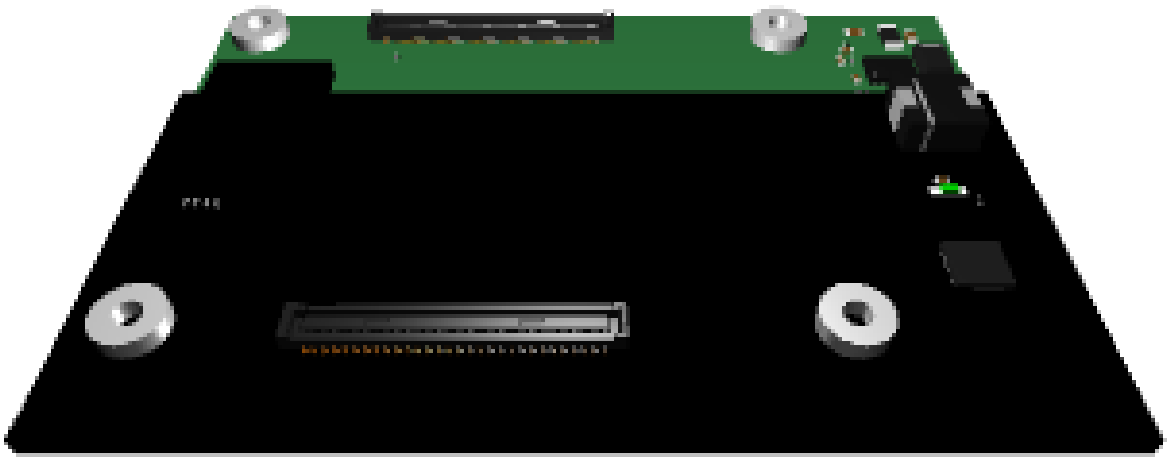
Raspberry Pi CM4 to CM3 with Coral



This board was designed and built by Geppetto

Free automated documentation anytime.
Design for free @ https://geppetto.gumstix.com/

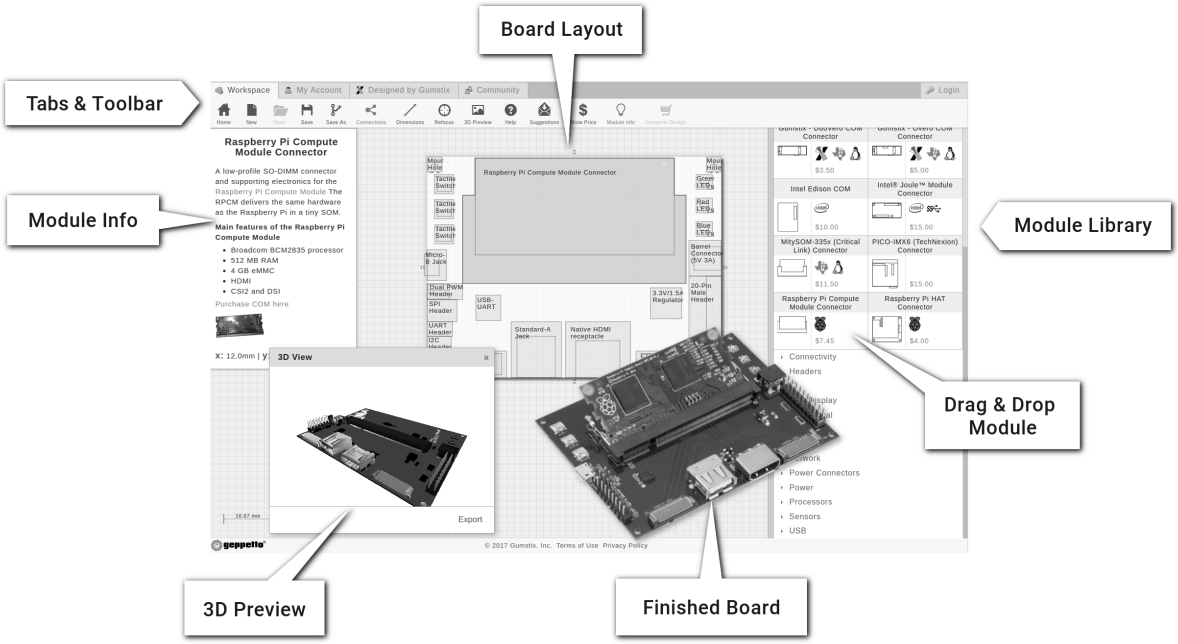
No Minimum Order **Automated Supply Chain** **Reduce Cost and Errors**

geppetto by gumstix

Thanks for using Geppetto to design this board!

One Stop Design-to-Order

Simply place displays, sensors, processors, and Geppetto connects it all.
No routing needed.



Board Description

Uses Raspberry Pi CM4 Connector as its COM/processor.

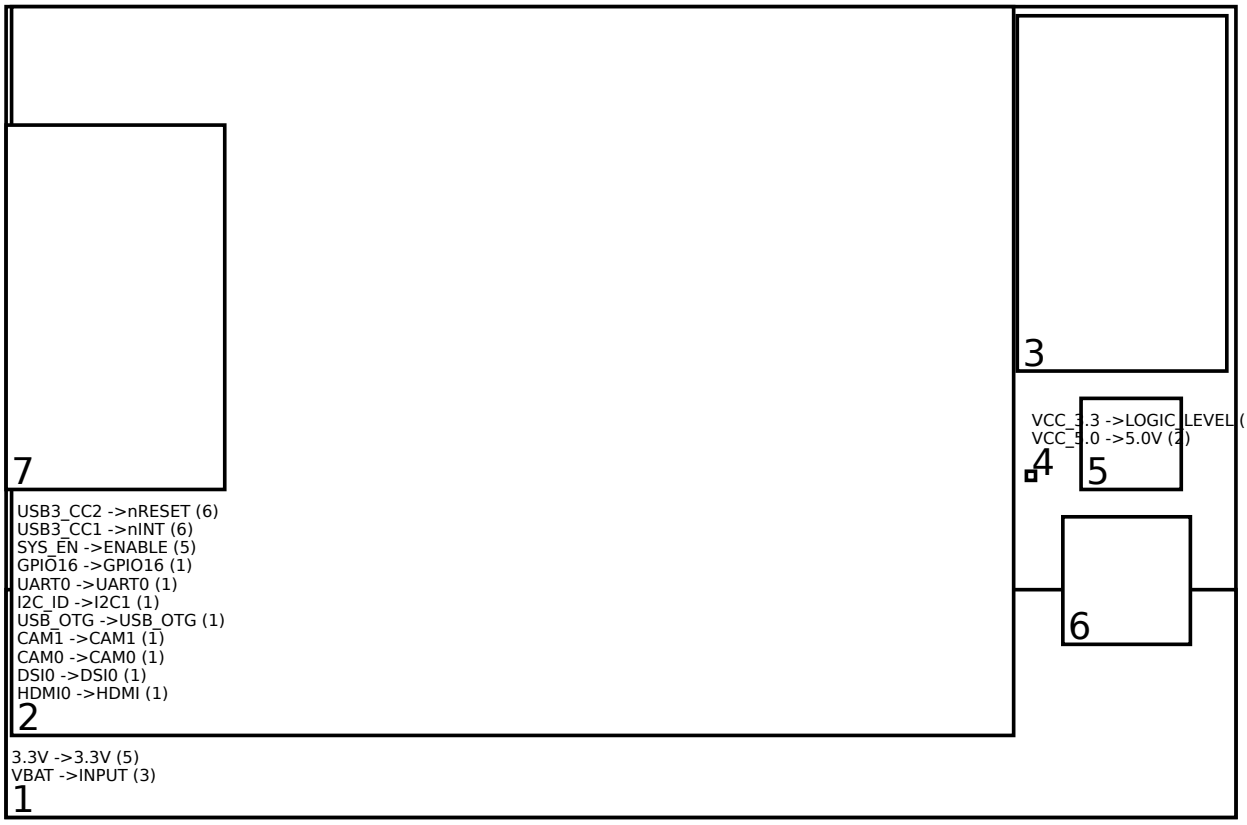
Functional modules include:
Raspberry Pi CM Builder
Google Coral

Board Dimensions

6.75cm x 4.45cm

Contents

1 Modules on Board



1.1 Builders

1.1.1 Raspberry Pi CM Builder (v3) (1)

This is the Raspberry Pi Compute Module with sodimm connector pin for breaking out signals from a processor.

The RPI Compute Module Builder receives:

- HDMI from Raspberry Pi CM4 Connector (2)
- DSI0 from Raspberry Pi CM4 Connector (2)
- CAM0 from Raspberry Pi CM4 Connector (2)
- CAM1 from Raspberry Pi CM4 Connector (2)
- USB_OTG from Raspberry Pi CM4 Connector (2)
- I2C1 from Raspberry Pi CM4 Connector (2)
- UART0 from Raspberry Pi CM4 Connector (2)
- GPIO16 from Raspberry Pi CM4 Connector (2)

The RPI Compute Module Builder provides the following outputs:

- VBAT to 5.0V Boost Converter (3)
- 3.3V to Top-side LED (5)

1.2 COM Connectors

1.2.1 Raspberry Pi CM4 Connector (v4) (2)

The **R**aspberry **P**i **C**ompute **M**odule 4 (RPCM4) module contains two connectors to interface with the RPCM4 device. The RPCM4 COM connector is ONLY compatible with the RPCM4.

Technical details for the RPCM modules can be found at:

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

It requires:

- 5.0V from Dummy Power Provider (4)

The Geppetto Pi Compute 4 connector provides the following outputs:

- HDMI0 to Raspberry Pi CM Builder (1)
- DSI0 to Raspberry Pi CM Builder (1)
- CAM0 to Raspberry Pi CM Builder (1)
- CAM1 to Raspberry Pi CM Builder (1)
- USB_OTG to Raspberry Pi CM Builder (1)
- I2C_ID to Raspberry Pi CM Builder (1)
- UART0 to Raspberry Pi CM Builder (1)
- GPIO16 to Raspberry Pi CM Builder (1)
- SYS_EN to Top-side LED (5)
- USB3_CC1 to GPIO Expander over I2C (6)
- USB3_CC2 to GPIO Expander over I2C (6)

1.3 Power

1.3.1 5.0V Boost Converter (v4) (3)

This DC to DC buck-boost converter provides a 5.0V DC output at 2A needed by certain components on this board. It is capable of accepting an input voltage between 1.5V to 5V DC and output is controlled by the Linear Technology LTC3533 buck-boost regulator.

It recieves INPUT from Raspberry Pi CM Builder (1).

The datasheet for the LTC3533 converter is available at:

`http://www.analog.com/media/en/technical-documentation/data-sheets/3533fc.pdf`

No modules are connected to this converter.

1.3.2 Dummy Power Provider (v5) (4)

This module does nothing except as a means to satisfy power requirements in Geppetto web. THIS DOES NOT ACTUALLY PROVIDE POWER.

1.4 Lights and Switches

1.4.1 Top-side LED (v12) (5)

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 CM4 Connector (2).

1.5 Converters

1.5.1 GPIO Expander over I2C (v6) (6)

The TCA6146A is a 16 channel GPIO expander using an I2C interface. The TCA6146A requires the following inputs:

- nINT from Raspberry Pi CM4 Connector (2)
- nRESET from Raspberry Pi CM4 Connector (2)
- LOGIC_LEVEL from Dummy Power Provider (4)

1.6 Sensors

1.6.1 Google Coral G313-06329-00 Accelerator (v2) (7)

The Google Coral Accelerator Module is a multi-chip module (MCM) that includes the Edge TPU and its own power control. The Edge TPU is a small ASIC designed by Google that accelerates Tensor Flow Lite models using little power: it's capable of performing 4 trillion operations per second (4 TOPS), using 2 watts of powerthat's 2 TOPS per watt. For example, it can execute state-of-the-art mobile vision models such as MobileNet v2 at almost 400 frames per second, in a power efficient manner. This on-device ML processing reduces latency, increases data privacy, and removes the need for a constant internet connection. The module provides either of the host interface i.e. PCIe Gen2 x 1 or USB2.0.

The datasheet for the G313-06329-00 module is available at:

`https://coral.ai/static/files/Coral-Accelerator-Module-datasheet.pdf`

This module is not connected.

2 Module Connections Graph

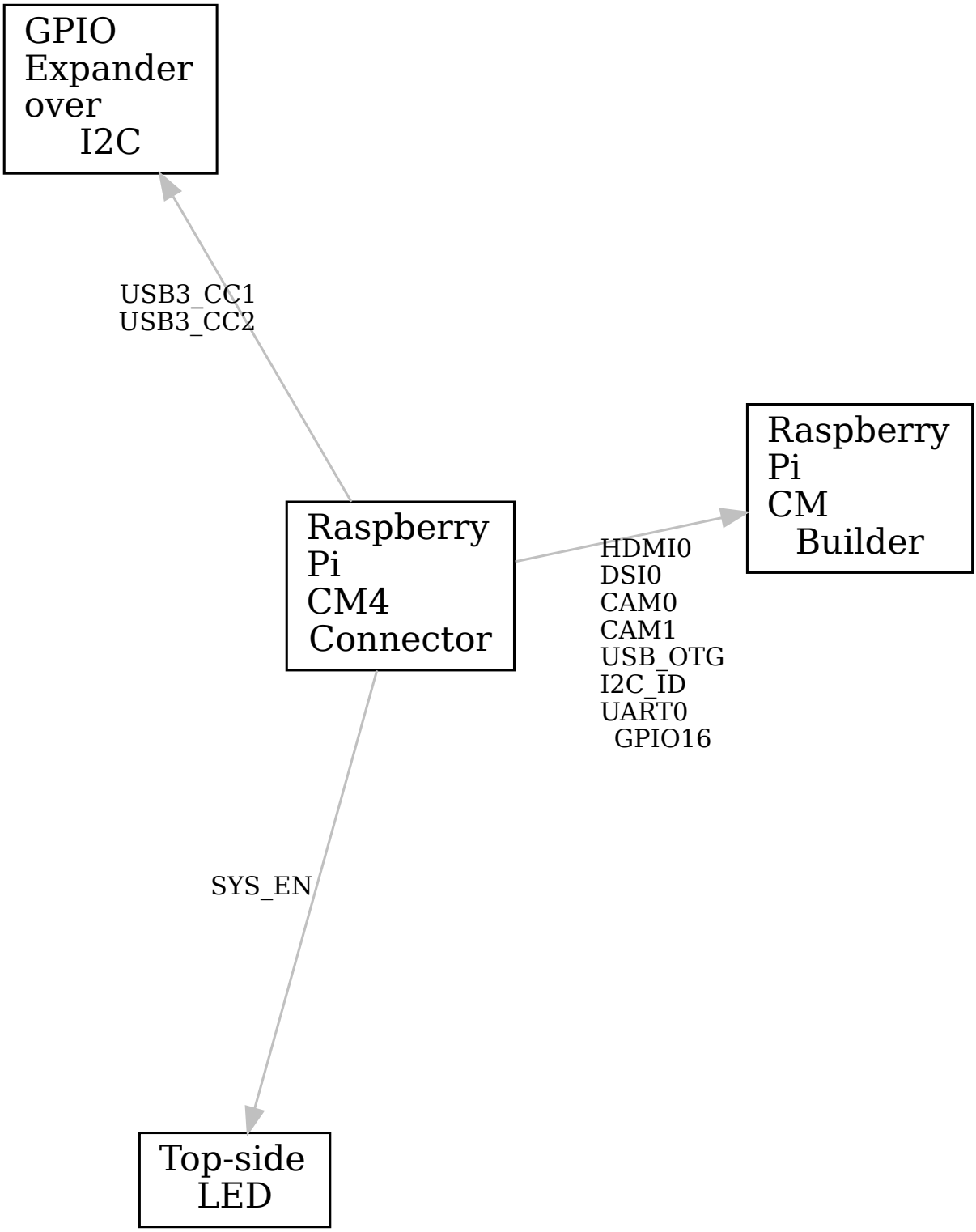


Figure 1: excludes power modules

3 Module Power Graph