Gumstix Jetson Nano/Xavier NX FastFlash
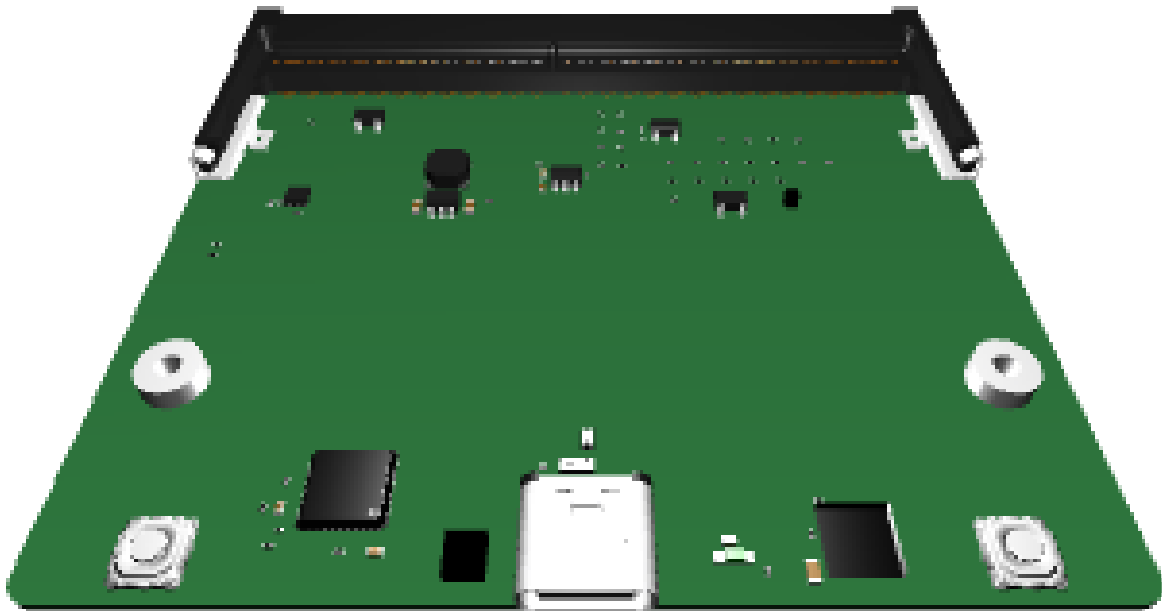

This board was designed and built by Geppetto

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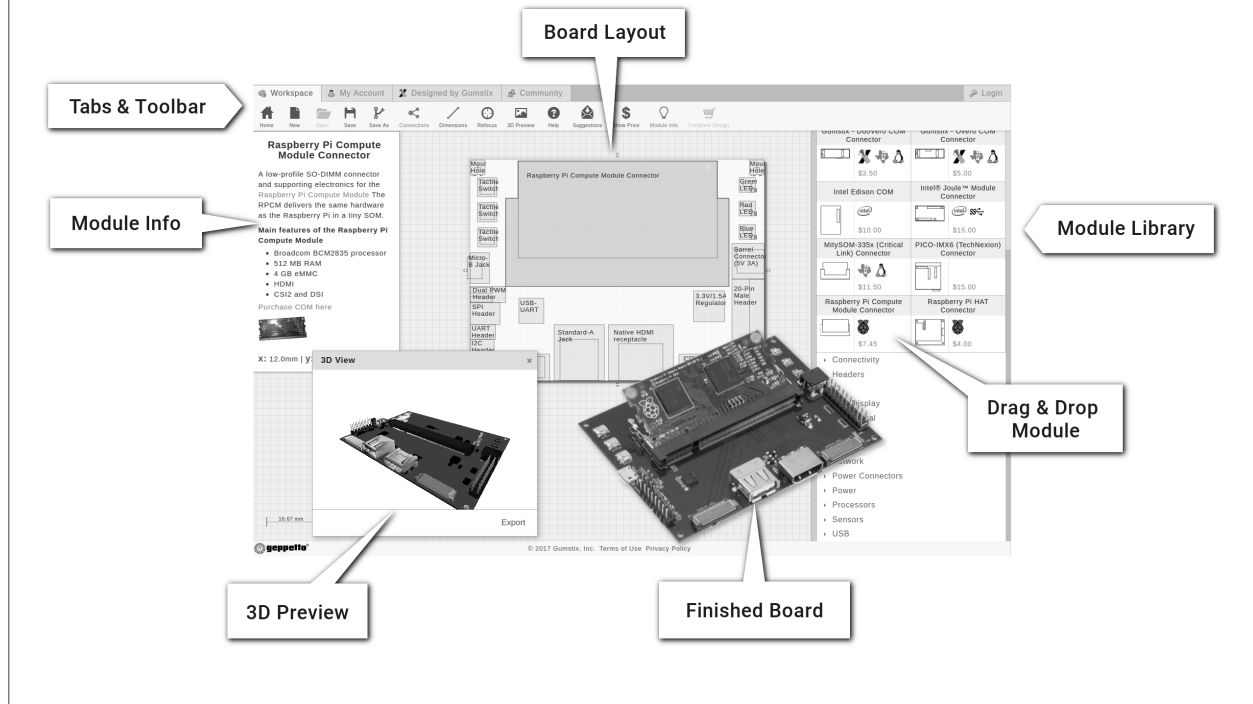

No Minimum Order   Automated Supply Chain   Reduce Cost and Errors

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 Layout

Tabs & Toolbar

Module Info

Module Library

Drag & Drop Module

3D Preview

Finished Board

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Board Description

Uses NVIDIA Jetson Nano or Xavier NX COM Connector as its COM/processor.

Functional modules include:
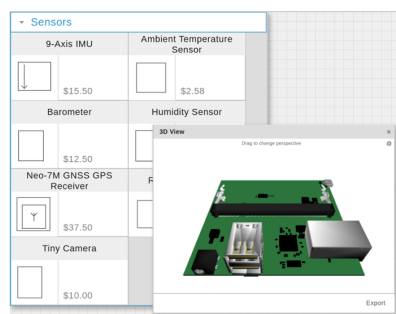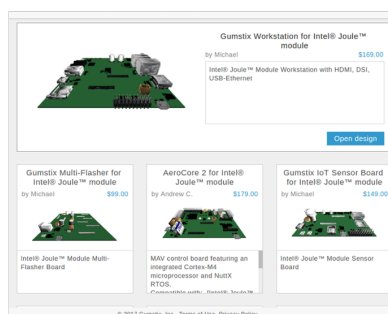USB-C Jack
USB-UART
3-Port USB Client Hub

Board Dimensions

7.5cm x 6.6cm

Geppetto Makes Hardware Easy

**Custom Library and
3D Design Preview**

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Contents

1   Modules on Board

```
nRESET ->BUTTON (4)
nRESET ->BUTTON (3)
SYS_EN ->ENABLE (7)
USB2_0 ->USB1 (5)
UART2 ->UART (2)
1
```

4

5   USB ->USB (8)

3.3V -> 3.3V (7) 5.0V (6)
3.3V -> 3.3V (5) 5.0V (5)
5.0V ->5.0V (1)
6   8

7

2   USB_DEVICE ->USB2 (5)

3

1.1   COM Connectors

1.1.1   NVIDIA Jetson Nano COM Connector (v11) (1)

The NVIDIA Jetson Nano brings Artificial Intelligence to devices at the edge. Bringing this powerful system to smaller devices allows for advanced robotics, intelligent cameras and complex data analysis, all without needing a connection to the internet.

Check out the full capabilities at https://developer.nvidia.com/embedded-computing

The NVIDIA$^{\circledR}$ Jetson^{TM} module connector receives:

- 5.0V from USB Type-C PD (5V) (8)

The NVIDIA$^{\circledR}$ Jetson^{TM} module connector provides the following outputs:

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- UART2 to USB-UART (2)

- USB2_0 to 3-Port USB Client Hub (5)

- SYS_EN to Top-side LED (7)

- nRESET to:
    - Tactile Switch (3)
    - Tactile Switch (4)

1.2   Converters

1.2.1   USB-UART (v21) (2)

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
```

This USB to UART converter connects a host machine from 3-Port USB Client Hub (5) to UART2 on NVIDIA Jetson Nano COM Connector (1).

1.3   Lights and Switches

1.3.1   Tactile Switch (v22) (3)

This 4.9 sq. mm pull-down touch switch provides a user input for the signal nRESET on NVIDIA Jetson Nano COM Connector (1).

1.3.2   Tactile Switch (v22) (4)

This 4.9 sq. mm pull-down touch switch provides a user input for the signal nRESET on NVIDIA Jetson Nano COM Connector (1).

1.3.3   Top-side LED (v12) (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 SYS_EN from NVIDIA Jetson Nano COM Connector (1).

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1.4   USB

1.4.1   3-Port USB Client Hub (v6) (5)

The 3-port USB client hub module offers three interfaces for on-board USB client devices to a single USB device port using the Microchip USB2513 USB 2.0 Hi-speed Hub Controller.

The datasheet for the USB2513 IC is available at:

    http://ww1.microchip.com/downloads/en/DeviceDoc/00001692C.pdf

The USB client hub links: USB on USB Type-C PD (5V) (8);
to the following USB device ports:

- USB2_0 on NVIDIA Jetson Nano COM Connector (1)

- USB_DEVICE on USB-UART (2)

1.4.2   USB Type-C PD (5V) (v1) (8)

A USB Type-C port allows your design to connect as a USB 2.0 and provides up to 3A @ 5.0V.

This port is connected to USB on 3-Port USB Client Hub (5).

1.5   Power

1.5.1   3.3V/0.15A LDO (v7) (6)

This efficient and precise low-voltage low-dropout DC regulator is optimized for ultra-low noise applications. The module's Micrel MIC5255-3.3YM5-TR provides power to noise-sensitive modules that require a 3.3V input.

The datasheet for the Micrel MIC5255-3.3YM5-TR is available at:

    http://media.digikey.com/pdf/Data%20Sheets/Microchip%20PDFs/MIC5255.pdf

This LDO regulator recieves 5.0V from USB Type-C PD (5V) (8) and provides 3.3V DC to:

- 3-Port USB Client Hub (5)

- Top-side LED (7)

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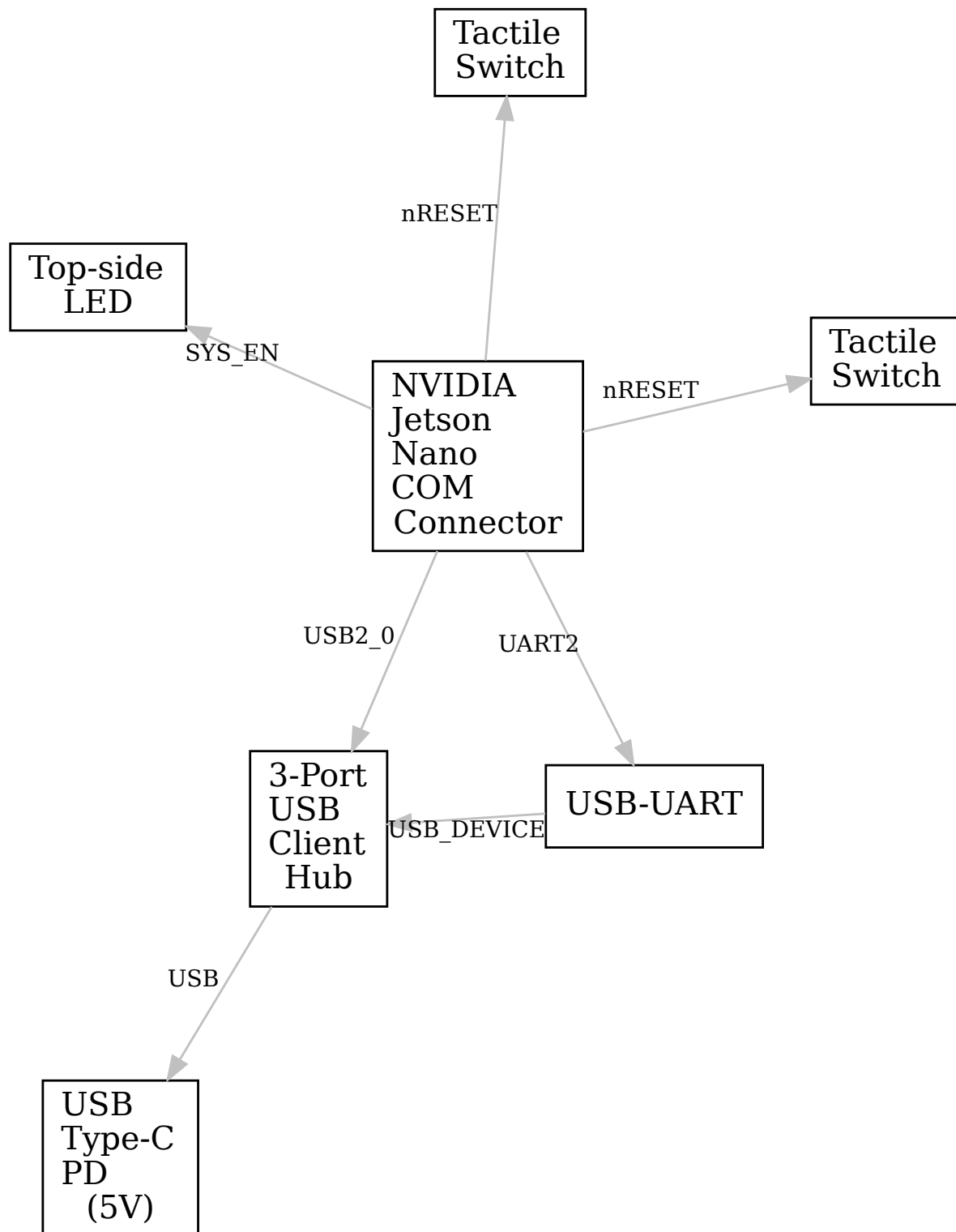No engineering required.
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2   Module Connections Graph

Figure 1: excludes power modules

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3   Module Power Graph

```
                              ┌──────────┐
                              │  USB     │
                              │  Type-C  │
                              │  PD      │
                              │  (5V)    │
                              └──────────┘
```

5.0V:
10000mW

5.0V:
550mW

5.0V:
1mW

```
┌──────────────┐          ┌────────────────┐
│  NVIDIA      │          │  3.3V/0.15A    │
│  Jetson      │          │  LDO           │
│  Nano        │          └────────────────┘
│  COM         │
│  Connector   │
└──────────────┘
```

3.3V:
33mW

3.3V:
330mW

```
        ┌──────────┐          ┌──────────┐
        │ Top-side │          │ 3-Port   │
        │ LED      │          │ USB      │
        └──────────┘          │ Client   │
                              │ Hub      │
                              └──────────┘
```

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