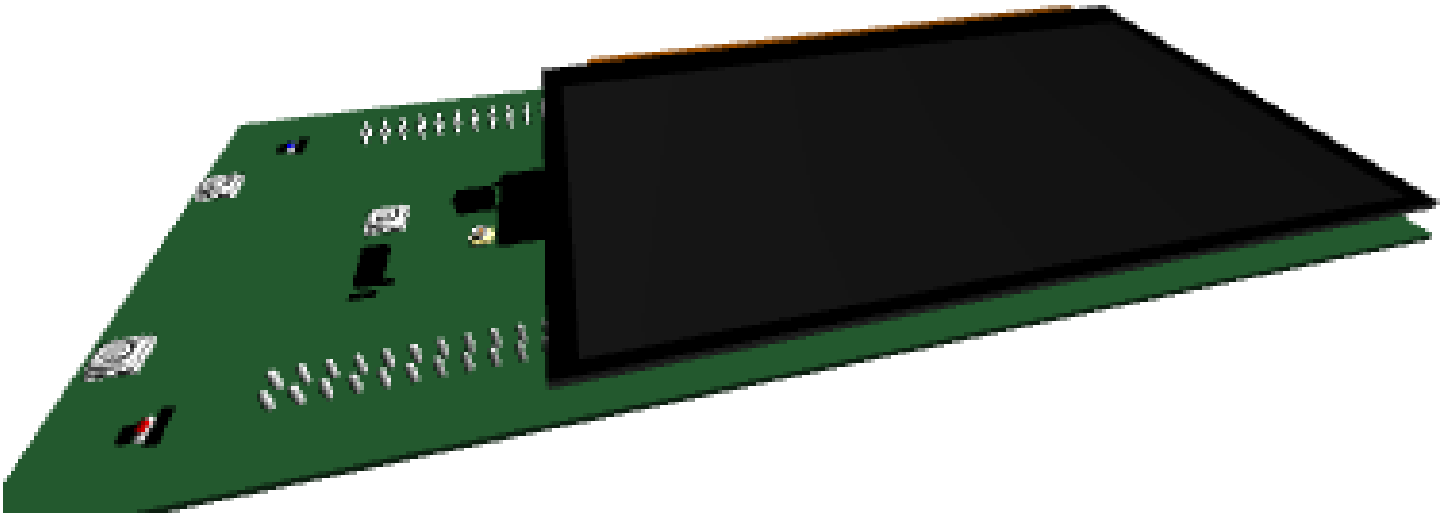
# BBB Astro Cape



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## Board Description

A touch screen-ready BeagleBone Black cape with WiFi and Bluetooth.

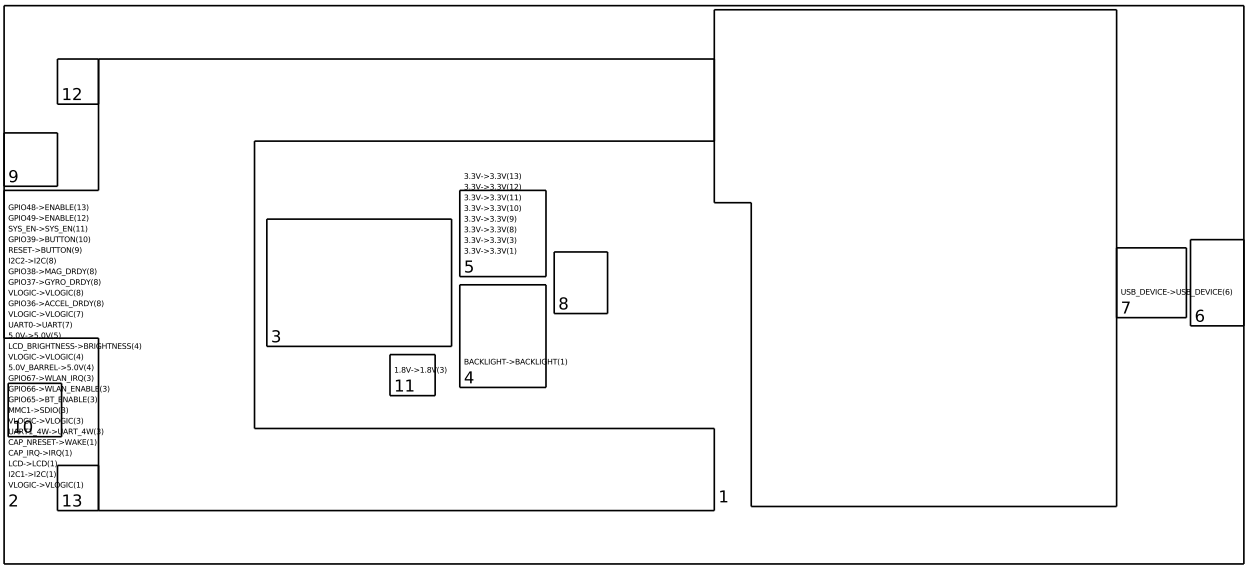
## Board Dimensions

15.1cm x 6.8cm

# Contents



# 1 Modules on Board




## 1.1 LCD Display

### 1.1.1 4.3” Top-Side Connector For Newhaven Capacitive Multi-Touch Screen (v16) (1)

This flat flexible cable / flat printed circuit (FFC&FPC) connector accepts the ribbon cable connector from a 4.3” NewHaven capacitive touch screen for touch input to and video from BeagleBone Black COM Connector (2) These displays support a resolution of 480 x 272, and must be purchased separately from this design.

This module displays video output from BeagleBone Black COM Connector (2).

## 1.2 COM Connectors

### 1.2.1 BeagleBone Black COM Connector (v16) (2)

BeagleBone Black is an ARM-based maker board powered by the TI AM335x processor with 256MB RAM.

The Beaglebone Black COM connector uses the “cape” pinout to interface with the BeagleBone Black, providing power and signal transmission for custom Geppetto expansion boards.

Provides:

- RESET to Tactile Switch (9)
- MMC1 to TI WiLink8 (3)
- CAP_IRQ to 4.3” Top-Side Connector For Newhaven Capacitive Multi-Touch Screen (1)
- GPIO65 to TI WiLink8 (3)
- GPIO67 to TI WiLink8 (3)

- GPIO66 to TI WiLink8 (3)
- GPIO49 to Blue LED (12)
- GPIO48 to Red LED (13)
- 5.0V_BARREL to Backlight Controller (4)
- I2C1 to 4.3” Top-Side Connector For Newhaven Capacitive Multi-Touch Screen (1)
- UART0 to USB-UART (7)
- 5.0V to 3.3V/1.5A Regulator (5)
- UART1_4W to TI WiLink8 (3)
- SYS_EN to 1.8V/0.6A Regulator (11)
- GPIO38 to 9-Axis IMU (8)
- GPIO39 to Tactile Switch (10)
- VLOGIC to:
  - 4.3” Top-Side Connector For Newhaven Capacitive Multi-Touch Screen (1)
  - TI WiLink8 (3)
  - Backlight Controller (4)
  - USB-UART (7)
  - 9-Axis IMU (8)
- GPIO36 to 9-Axis IMU (8)
- GPIO37 to 9-Axis IMU (8)
- I2C2 to 9-Axis IMU (8)
- LCD_BRIGHTNESS to Backlight Controller (4)
- LCD to 4.3” Top-Side Connector For Newhaven Capacitive Multi-Touch Screen (1)
- CAP_NRESET to 4.3” Top-Side Connector For Newhaven Capacitive Multi-Touch Screen (1)

## 1.3 Network

### 1.3.1 TI WiLink8 (v14) (3)

The TI Wilink8 module includes BT4.1 and 802.11(a/b/g/n) signals on one antenna.

The module connects to the following buses:

- SDIO from BeagleBone Black COM Connector (2) for 802.11 traffic.
- 4-wire UART from BeagleBone Black COM Connector (2) for BT traffic.
- WiFi Enable from BeagleBone Black COM Connector (2).
- WiFi IRQ from BeagleBone Black COM Connector (2).
- BT Enable from BeagleBone Black COM Connector (2).

To function, the clock on the SDIO bus from BeagleBone Black COM Connector (2) must be run at 32.768kHz which is provided by a dedicated crystal.

## 1.4 Power

### 1.4.1 Backlight Controller (v4) (4)

The backlight controller regulates the intensity of illumination on LCD touch displays

Converts LCD_BRIGHTNESS from BeagleBone Black COM Connector (2) to BACKLIGHT on 4.3" Top-Side Connector For Newhaven Capacitive Multi-Touch Screen (1)

### 1.4.2 3.3V/1.5A Regulator (v9) (5)

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. Currently, its input is 5V from BeagleBone Black COM Connector (2).

This regulator provides 3.3V to:

- 4.3" Top-Side Connector For Newhaven Capacitive Multi-Touch Screen (1)
- TI WiLink8 (3)
- 9-Axis IMU (8)
- Tactile Switch (9)
- Tactile Switch (10)
- 1.8V/0.6A Regulator (11)
- Blue LED (12)
- Red LED (13)

### 1.4.3 1.8V/0.6A Regulator (v6) (11)

This DC-DC regulator has an integrated inductor and tiny footprint. It provides power to modules that need a 1.8V input.

- 3.3V from 3.3V/1.5A Regulator (5)
- SYS_EN from BeagleBone Black COM Connector (2)

The following modules receive 1.8V DC from this regulator:

- TI WiLink8 (3)

## 1.5 USB

### 1.5.1 Micro-B Jack (v8) (6)

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

This module is connected to USB_DEVICE on USB-UART (7).

## 1.6 Connectivity

### 1.6.1 USB-UART (v14) (7)

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.

This USB to UART converter connects a host machine from Micro-B Jack (6) to UART0 on BeagleBone Black COM Connector (2).

## 1.7 Sensors

### 1.7.1 9-Axis IMU (v16) (8)

This module provides 3-axis acceleration, 3-axis rotational rates and 3-axis magnetic field information. It is connected via a SPI bus. Data-ready pins are provided.

Its I2C bus is connected to I2C2 on BeagleBone Black COM Connector (2)

It has the following data ready signals:

- ACCEL_DRDY to GPIO36 on BeagleBone Black COM Connector (2)
- GYRO_DRDY to GPIO37 on BeagleBone Black COM Connector (2)
- MAG_DRDY to GPIO38 on BeagleBone Black COM Connector (2)

## 1.8 IO

### 1.8.1 Tactile Switch (v9) (9)

This 4.9 sq. mm light touch switch provides a user input for the signal RESET on BeagleBone Black COM Connector (2).

### 1.8.2 Tactile Switch (v9) (10)

This 4.9 sq. mm light touch switch provides a user input for the signal GPIO39 on BeagleBone Black COM Connector (2).

### 1.8.3 Blue LED (v14) (12)

This 1608 standard size blue LED provides an indicator for the signal GPIO49 on BeagleBone Black COM Connector (2).

### 1.8.4 Red LED (v11) (13)

This 1608 standard size red LED provides an indicator for the signal GPIO48 on BeagleBone Black COM Connector (2).

## 2 Module Connections Graph

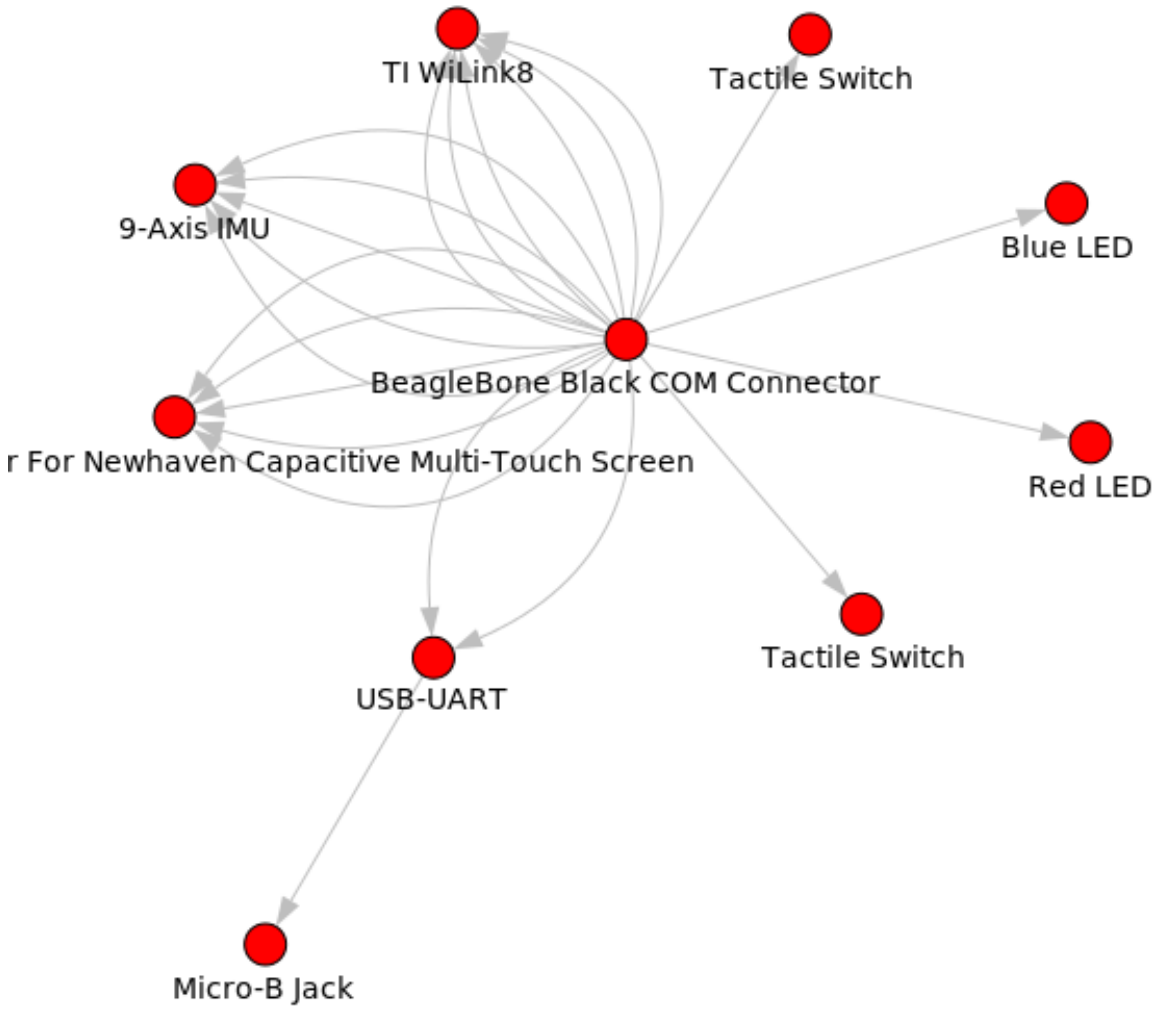
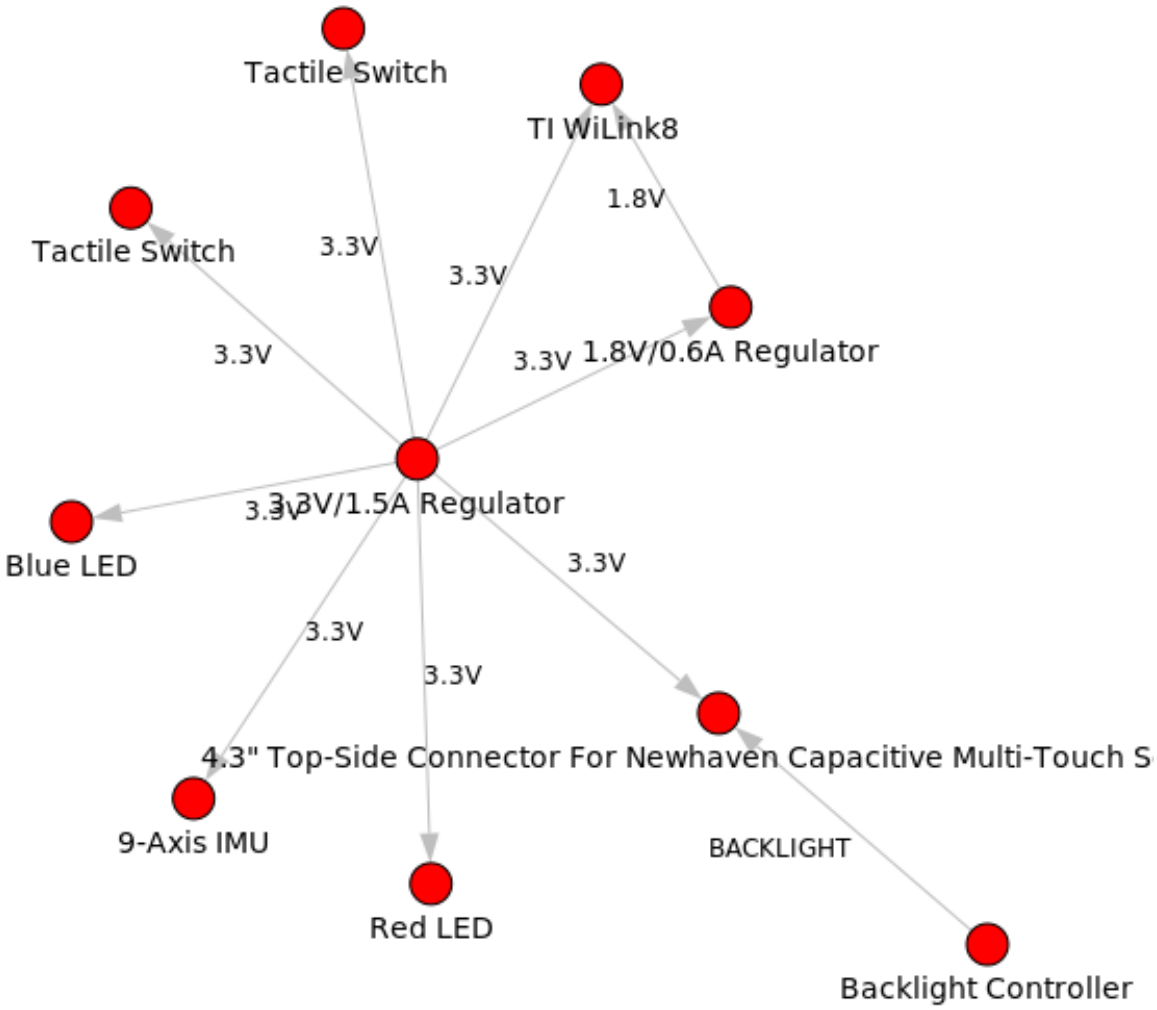



Figure 1: excludes power modules

# 3 Module Power Graph



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- Поставка более 17-ти миллионов наименований электронных компонентов;
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- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

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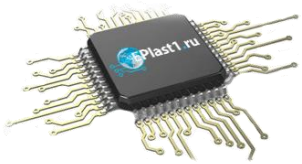
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.

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