Datasheet

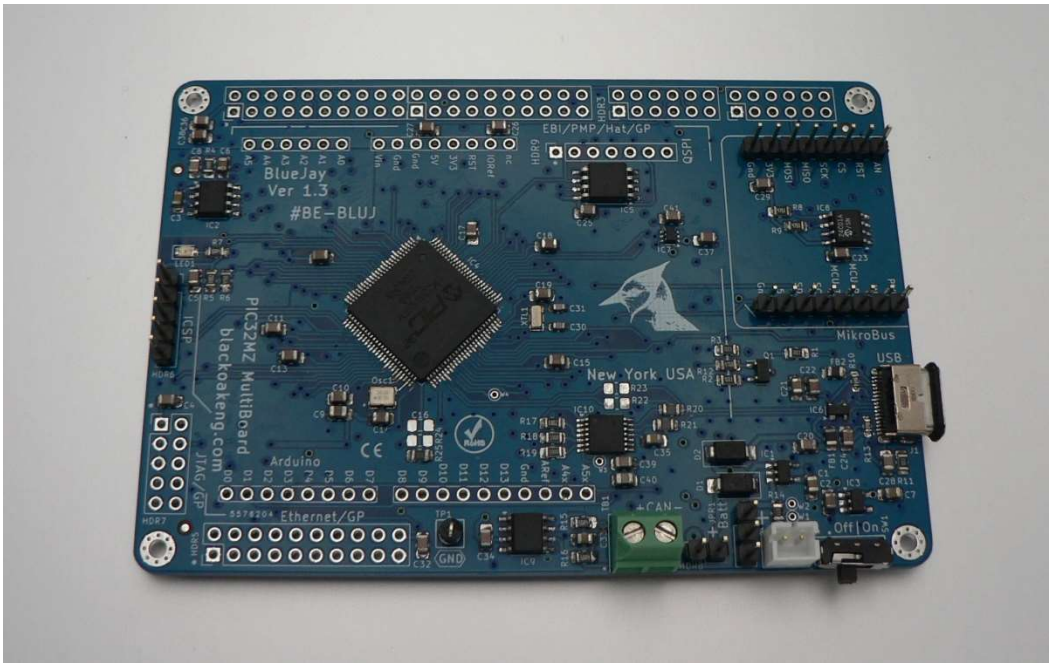
Black Oak Engineering

New York · USA · blackoakeng.com · (347) 467-0912

BlueJay PIC32MZ MultiBoard

Version 1.3

Part number `BE-BLUJ`



Description. The Black Oak Engineering (BOE) BlueJay PIC32MZ MultiBoard (#BE-BLUJ) goes beyond a typical eval or demo board. It is a Single Board Computer (SBC) designed to take on many jobs. It also makes a good training tool. It is like a Swiss Army Knife that fits on your pocket (in an ESD bag!). It is compact, but still large enough to be useful. It is based on the popular and widely available Microchip PIC32MZ 32 bit processor. It has a wide operating temperature range of -40 to +85 °C (-40 to +185 °F). It lends itself well to the development of systems for data acquisition, user interface, AI/ML/Edge, IOT, automation, and OEM integration.

A Board Support Package (BSP) and a complete set of various tested drivers are available at our GitHub. BOE releases source code and other collateral under an attached MIT license.

BlueJay supports these dedicated standard interface formats:

- Arduino Uno R3 'Shield'. Note, this includes many Shields for other Arduinos.
- MikroBus 'Click'. A popular small format from MikroElektronika.
- Ethernet. Note, BOE manufacturers a 'Wing' daughterboard with PHY.
- Raspberry Pi 'Hat'.
- EBI / PMP High speed 16-bit parallel buses. Used, e.g., for displays & data acquisition.
- These breakouts may also be used for General Purpose IO.
- Hundreds of commercially available daughter boards may be used.
- BlueJay is often used as a 'bridge' between various protocols and boards.

BlueJay may be operated from a standard lithium polymer battery, which BlueJay charges from its power source (USB-C or a header connection).

Basic PIC32 specifications

- PIC32MZ2048EFM100, 200 MHz.
- 2 MB Flash, 512 KB SRAM, MIPS32® M-Class.
- EBI/EMI, Ethernet, I^2C, PMP, SPI, SQI, USART, USB OTG.
- Easily programmable with Microchip's free MPLAB XC development environment.

Standard features

- 3.9 × 2.7 inches (10 × 6.8 cm).
- 4× 2-56 (or M2) mounting holes.
- Serial QSPI Flash 64Mb standard.
- USB Device, USB-C connector. CDC mode serial communications.
- Real Time Clock.
- FPU. Crypto engine.
- Arduino Uno R3 Shield breakout footprint.
- MikroBus Click breakout footprint.
- Raspberry Pi 'Hat' breakout footprint
- EBI / PMP High speed 16-bit parallel buses.
- Ethernet 10/100 Base-T MAC MII/RMII.
- CAN 2.0B with balanced transmission line node and DMA.
- All IO broken out on 100 mil (2.54 mm) headers. Any standard header pins or sockets may be added.
- Precision voltage reference for ADC.
- Dedicated analog low noise inputs.
- Low power design.
- All peripherals have dedicated power switch.
- IIC (TWI).
- SEEPROM.
- SPI channel(s).
- JTAG & ICSP.
- Transient protection.
- Temperature stable oscillator.
- Diagnostic LED.
- On/Off switch.
- Supports Harmony framework.

Power

- +5V power in via USB or external connector.
- Low power, sleep states firmware controlled.
- Battery, if included, has self-check and current monitoring.

BOE is continuously improving. We also strive to keep one step ahead of procurement shortfalls. We will deliver to you the latest hardware version possible. In some cases specifications will change.

Options

- Lithium Polymer battery. Part number `BE-BLP1`
  - 3.7 V, 700 mA-hr.
  - Standard JST 2 mm connector on wire leads.
  - Battery is charge managed as long as an external 5 Vdc source is present.
  - Note, lithium batteries may not generally be transported via passenger aircraft.

Environmental

- Temperature. -40 to +85 °C (-40 to +185 °F), excluding battery option.
- Humidity / water exposure. The PCBA does not include a protective enclosure. Nor is it conformally coated. Condensing humidity and water exposure must be completely avoided.

Approvals & Compliance

- RoHS.
- REACH.
- California Prop 65.

Value Added Design. Want to use the BlueJay in a new project or OEM application, but need a little assistance? Not a problem. BOE contracts regularly with end users for value added design.

Warranty Policy. Any instrument ordered from BOE may be returned for full refund, less shipping costs, within 30 days of delivery, provided that the instrument has not, in the opinion of BOE been damaged or misused. An RMA number is required in all cases. See our *Standard Terms & Conditions - Instruments* for more details.

BOE reserves the right to make changes to these specifications as it deems necessary. All technical information contained herein is as accurate as possible; however BOE shall not be held responsible for any errors or for product use, nor for any infringements upon the rights of others which may result from its use. BOE products are not to be used in life support or safety critical applications.

All BOE products are designed and manufactured in the USA.