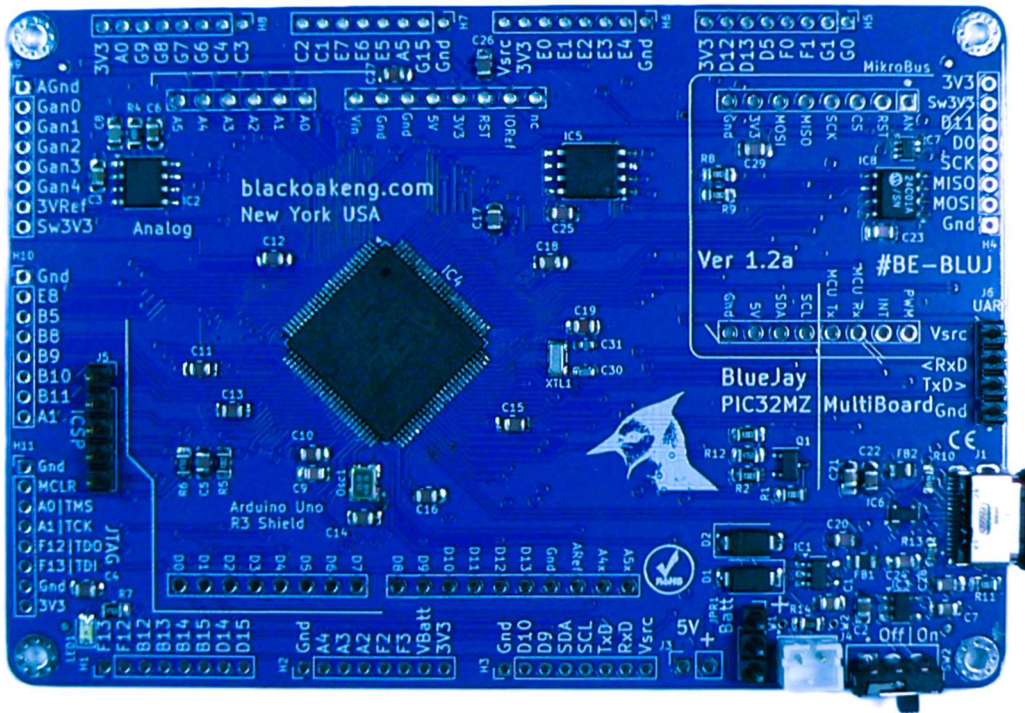New York · USA · blackoakeng.com · (347) 467-0912

BlueJay PIC32MZ MultiBoard

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 for easy access by human hands. 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 is available at our [GitHub](). BOE releases source code and other collateral under an attached MIT license.

BlueJay supports the standard Arduino Uno R3 Shield format, as well as MikroBus Click format, as well as BOE Wing format. Hundreds of commercially available daughter boards may be used. It is also easy to design a custom Wing board for special purposes. Any or all of the headers may be used.

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^{2}C, 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.
- Real Time Clock.
- FPU. Crypto engine.
- RS232 UART2 TTL breakout .
- Arduino Uno R3 Shield breakout footprint.
- MikroBus Click breakout footprint.
- All IO broken out on 2 mm headers. 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.
- Two 16 bit high-speed parallel buses (EBI & PMP) supported.
- Ethernet 10/100 Base-T support on BlueJay Wing daughterboard.
- 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.