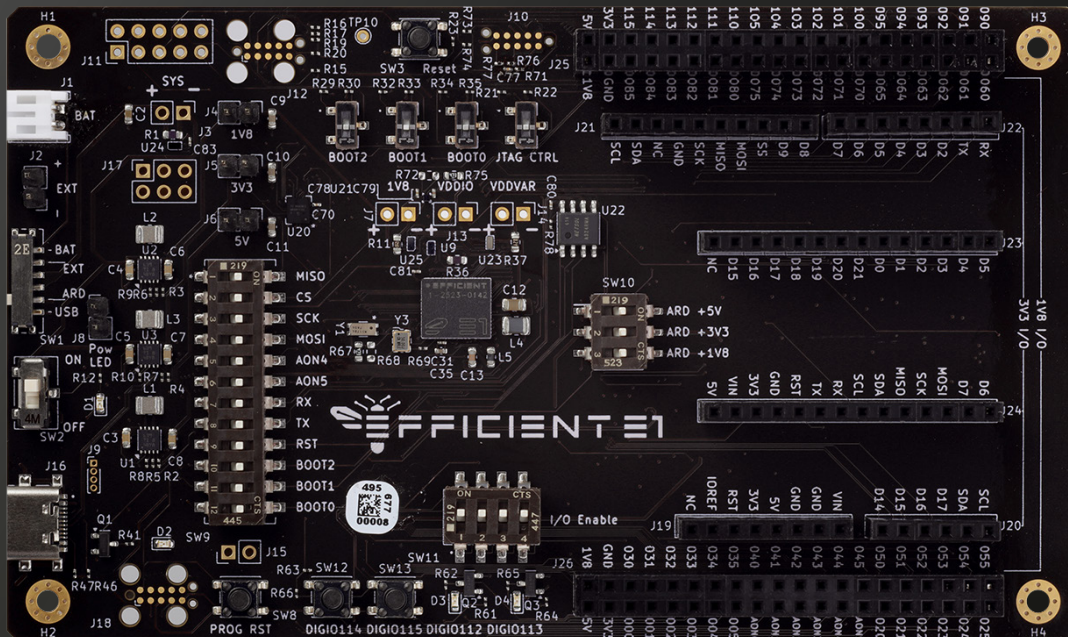


Electron E1 Evaluation Kit (EVK)

Product Brief

Description

The Electron E1 Evaluation Kit (EVK) provides a complete, ready-to-use platform for evaluating Efficient's ultra-low-power Electron E1 processor. Built to demonstrate real-world performance, the E1 EVK enables rapid software bring-up, power characterization, and system integration. With built-in instrumentation, Arduino-compatible expansion, and full toolchain support, developers can quickly explore how Efficient's Fabric architecture delivers industry-leading energy efficiency for embedded AI and edge workloads.



Features ↘



Out-of-the-Box Experience

- Pre-programmed demo showcasing low-power operation and serial interfaces
- Plug-and-play setup via USB—just power on to start measuring energy and performance
- Onboard programmer with configurable UART bridge and pin connections for performance profiling



Flexible Development Interface

- 72 GPIO pins exposed for general-purpose use
- Compatible with Arduino UNO and MKR-footprint shields via onboard level shifters (3.3V/5V)
- Built-in switches for disconnecting subsystems and minimizing leakage
- USB-based programmer supports fast flashing and debugging



Comprehensive Power Instrumentation

- Integrated current sensors measure total system and chip-level power (SYS, 1V8, VDDIO, VDDVAR)
- Real-time energy data streamed over USB in CSV format for easy profiling
- Switches and jumpers to isolate the E1 processor for high-accuracy energy measurement



Configurable Power Sources

- Multiple input options: USB, battery, external supply, or Arduino VIN
- Onboard DC/DC converters provide 1.8V, 3.3V, and 5.0V rails for flexible power domains
- Low-voltage operation (1.8–5.5V) ideal for energy-constrained environments

Hardware Components



E1 Processor

Efficient's next-generation ultra-low-power computing core

Housekeeping MCU

Manages resets, boot modes, and power-state transitions

Current Sensors

Real-time measurement across key power domains

Switches and Jumpers

Enable modular testing and isolation of subsystems

Arduino-Compatible Headers

Expand functionality with industry-standard shields

Debug Interface

Exposed JTAG interface for advanced development and debugging

Power Profiling & Low-Power Configuration



To achieve precise energy characterization, the EVK allows complete control over power domains:

Disconnect programmer, Arduino domains, and I/O via dedicated switches

Disable unused peripherals to measure only E1 core consumption

Firmware support for HP/LP mode transitions and ultra-deep sleep control

These capabilities let engineers replicate real-world deployment scenarios and quantify system-level efficiency gains from Efficient's Fabric architecture.

Applications



Energy-efficient edge AI and ML inference

Battery-powered IoT and sensor systems

Low-duty-cycle industrial monitoring

Rapid prototyping of ultra-low-power computing systems

Included in the Kit



Electron E1 Evaluation Board

Preloaded demo firmware

Quickstart documentation and SDK access

USB cable

