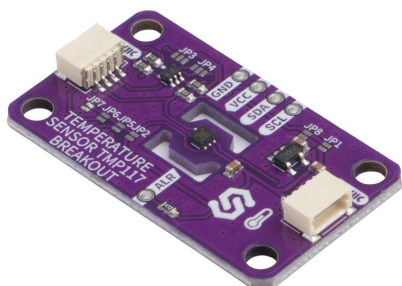# TMP117 TEMPERATURE SENSOR

| **Weight** | 3.1 g |



## DESCRIPTION

Achieve precise temperature measurement accuracy with the TMP117 Temperature Sensor Breakout, delivering ±0.1°C precision across the critical 0°C to +85°C range with no calibration required. This digital thermometer features 16-bit resolution (0.0078°C per LSB) and NIST traceability, making it the choice for precision applications including environmental monitoring, HVAC control, and scientific instrumentation. Unlike basic temperature sensors that sacrifice accuracy for cost, the TMP117 maintains precision while remaining accessible to makers through Arduino and MicroPython library support.

Engineered for versatility and integration flexibility, this breakout features dual power supply compatibility (3.3V and 5V) with onboard SE5218 voltage regulation and bi-directional NMOS level shifting for safe interfacing with any microcontroller. The dual Qwiic/STEMMA QT connectors enable sensor daisy-chaining, while configurable I2C address selection via jumpers allows multiple sensors on the same bus. Advanced features include programmable ALERT pin functionality, multiple operating modes (continuous, shutdown, one-shot), and programmable averaging (1-64 samples) for noise reduction.

This breakout transforms the powerful TMP117 into a plug-and-play solution with documentation, quick-start guides, and PCB design featuring decoupling and signal integrity optimization. The 38x22mm breadboard-compatible form factor with 4 LEGO-compatible mounting holes ensures versatile integration options, while the complete open-source hardware design enables customization for both hobbyist and professional applications requiring the highest temperature measurement accuracy available.
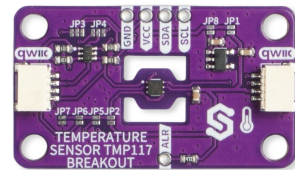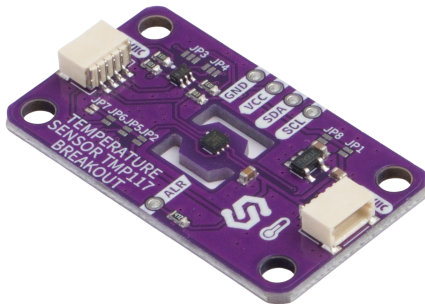
## FEATURES

- High-Precision Sensing: ±0.1°C accuracy from 0°C to +85°C, NIST traceable.
- 16-Bit Resolution: Provides detailed temperature readings with 0.0078°C per LSB.

- Dual Voltage Support: Compatible with 3.3V and 5V on header pins.
- Ultra-Low Power Consumption: 135µA active, 1.25µA standby, and 150-250nA shutdown modes.
- Flexible I2C Interface: Supports up to 400kHz with configurable addresses.
- Programmable Alert Pin: Provides temperature limit interrupts and data-ready signals.
- Advanced Averaging: Reduces noise with 1, 8, 32, or 64 sample averaging.
- Qwiic & Breadboard Ready: Dual Qwiic connectors and 0.1" headers for easy integration.
- Open-Source Design: Full access to schematics, KiCad files, and bill of materials.
- Comprehensive Libraries: Supported by both Arduino and MicroPython for rapid development environments.

## USEFUL LINKS

## OTHER IMAGES

**Weight**                          3.1 g