

# ICP-10111 Barometric Pressure Sensor

Complete Technical Specifications and Hardware Documentation

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# 1 Hardware Documentation

## 1.1 Overview

The ICP-10111 Barometric Pressure Sensor module is a compact embedded sensor with integrated environmental monitoring capabilities, designed for IoT applications and precise atmospheric measurements.

## 1.2 Features

- **ICP-10111 Pressure Sensor** (High precision)
- **BME688 Environmental Sensor** (Temperature, humidity, gas)
- **Low power consumption** modes
- **I2C/QWIIC connectivity**
- **Compact form factor** with castellated holes

# 2 Hardware

## 2.1 Technical Specifications

### 2.1.1 Sensor Specifications

Parameter	Value	Unit	Notes
Pressure Range	300-1250	hPa	Absolute pressure
Pressure Accuracy	±0.4	hPa	At 25°C
Temperature Range	-40 to +85	°C	Operating range
Humidity Range	0-100	%RH	Relative humidity
Interface	I2C	-	QWIIC compatible

### 2.1.2 Power Specifications

Parameter	Min	Typ	Max	Unit	Conditions
Supply Voltage	3.0	3.3	5.0	V	Normal Operation
Active Current	-	1.2	2.0	mA	Continuous measurement
Sleep Current	-	0.1	0.5	µA	Standby mode
Regulator Output	-	1.8	-	V	Internal LDO

## Pinout Diagram

Figure 1: Pinout Diagram

## Dimensions

Figure 2: Dimensions

### 2.2 Pinout

Pin Label	Function	Notes
VCC	Power Supply	3.3V or 5V
GND	Ground	Common ground for all components
SDA	I2C Data	Serial data line
SCL	I2C Clock	Serial clock line

### 2.3 Dimensions

### 2.4 Topology

Ref.	Description
IC1	ICP-10111 Barometric Pressure Sensor
IC2	BME688 Environmental Sensor
L1	Power On LED
U1	ME6206A18XG 1.8V Regulator
JP1	2.54 mm Castellated Holes
J1	QWIIC Connector (JST 1 mm pitch) for I2C

### 2.5 Communication Interfaces

#### 2.5.1 I2C Interface

- **Address:** 0x63 (ICP-10111), 0x77 (BME688)
- **Speed:** Standard (100 kHz), Fast (400 kHz)
- **Features:** QWIIC compatible connector
- **Pull-up Resistors:** 4.7k integrated

#### 2.5.2 Digital Interface Specifications

- **Logic Levels:** 3.3V CMOS compatible
- **Input High:** 2.0V minimum

## Topology

Figure 3: Topology

- **Input Low:** 0.8V maximum
- **Output Drive:** 4mA typical

## 2.6 Physical Characteristics

### 2.6.1 Package Information

Parameter	Value	Unit
Package Type	Custom PCB	-
Dimensions	25.4 x 15.24 x 3.2	mm
Mounting	Castellated holes	2.54mm pitch
Weight	2.1	g

### 2.6.2 Environmental Specifications

Parameter	Min	Max	Unit	Conditions
Operating Temperature	-40	+85	°C	Full accuracy
Storage Temperature	-55	+125	°C	-
Humidity	0	100	%RH	Non-condensing
Pressure Range	300	1250	hPa	Absolute pressure

## 2.7 Software Support

### 2.7.1 Development Environment

- **Arduino IDE:** Full library support
- **ESP-IDF:** Native driver integration
- **PlatformIO:** Cross-platform support
- **CircuitPython:** Python library available

### 2.7.2 Key Libraries

- ICP-10111 pressure sensor driver
- BME688 environmental sensor library
- I2C communication protocols
- Data filtering and calibration

## 2.8 Applications

The ICP-10111 module is ideal for:

### 1. Weather Monitoring

- Atmospheric pressure measurement
- Altitude determination
- Weather prediction systems

### 2. IoT Environmental Sensing

- Smart building automation
- Agricultural monitoring
- Air quality assessment

### 3. Portable Devices

- Fitness trackers
- Outdoor navigation devices
- Drone altitude control

## 2.9 Safety and Compliance

### 2.9.1 Certifications

- **RoHS:** Compliant with EU directive
- **REACH:** Compliant with EU regulation
- **CE:** Electromagnetic compatibility

### 2.9.2 Safety Features

- **ESD Protection:** 42kV HBM on all pins
- **Reverse Polarity Protection:** Integrated
- **Thermal Protection:** Operating range monitoring

## 2.10 References

- [ICP-10111 Datasheet](#)
- [BME688 Datasheet](#)
- [ME6206 Regulator Datasheet](#)



## Circuit Schematic

Figure 4: Circuit Schematic

### 2.11 Ordering Information

Part Number	Description	Package	MOQ
ICP10111-001	Standard Module	Individual	1
ICP10111-DEV	Development Kit	Kit Box	1
ICP10111-BULK	Bulk Order	Tray	100

### 2.12 Revision History

Version	Date	Changes
1.0	2025-07-18	Initial release

### 2.13 Schematics

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*For technical support and additional information, visit our website or contact our engineering team.*