



Key Features

- 24-bit high-precision digital barometric conversion
- LGA8 package: 6.8mm (L) × 6.2mm (W) × 3.3mm (H)
- Pressure absolute accuracy: ±0.5 kPa
- Pressure resolution: 1 Pa (depth resolution < 1 cm)
- Temperature absolute accuracy: ±2 °C (0–50 °C)
- Communication: I²C master mode
- Ultra-low power: 3.5 µA @ 1 Hz sampling
- Operating temperature: –40 °C to +125 °C
- Halogen-free / RoHS compliant

Product Overview

The WF5808 is a digital barometric pressure sensor integrating a MEMS pressure sensing element with a dedicated signal-conditioning ASIC in a waterproof package. Its low supply voltage, ultra-low power consumption, and superior waterproof/anti-corrosion performance make it ideal for smart watches and other waterproof devices. The compact LGA8 package (6.2 × 6.8 × 3.3 mm) minimises the footprint of end products.

Product Advantages

- High accuracy across 0 to +50 °C
- Compact form factor — only 3.3 mm tall
- Excellent cost-performance ratio
- Outstanding waterproof performance

Typical Applications

- Corrosion-resistant pressure gauges
- Sports / activity watches
- Underwater equipment

Electrical Characteristics

Test conditions: $V_{DD} = 3.3\text{ V}$, $T = 25\text{ °C}$, unless otherwise noted.

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|------------------------|---------|---------------|-----|------|-----|------|
| Operating Temp. Range | T_A | General | –40 | 25 | +85 | °C |
| | | High Accuracy | 0 | — | 50 | °C |
| Supply Voltage | V_DD | — | 2.8 | — | 3.6 | V |
| IO Supply Voltage | V_DDIO | — | 2.8 | — | 3.6 | V |
| Avg. Operating Current | I_DD,LP | @ 1 Hz | — | 3.4 | — | µA |
| Peak Operating Current | I_DDT | — | — | 1 | 2 | mA |
| Standby Current | I_DD,SL | @ 25 °C | — | 0.1 | 0.3 | µA |
| Temp. Resolution | Res | — | — | 0.01 | — | °C |
| Temp. Absolute Error | A_T | @ 25 °C | — | ±1 | — | °C |
| | | 0...+65 °C | — | ±2 | — | °C |

Absolute Maximum Ratings

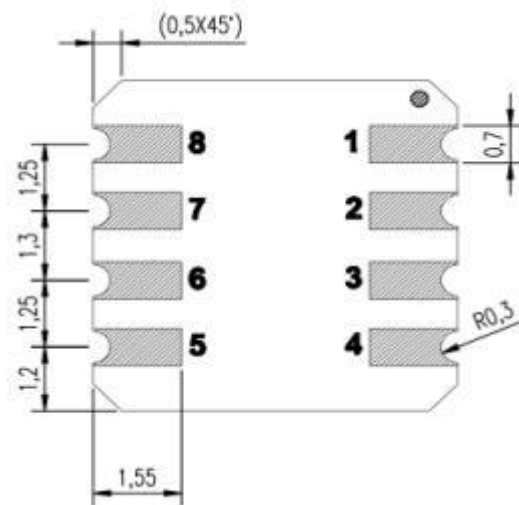
| Parameter | Symbol | Condition | Min | Max | Unit |
|----------------|--------|-----------|------|------|------|
| Supply Voltage | V_DD | — | –0.3 | +3.6 | V |

| | | | | | |
|----------------------|--------|----------|------|-----------|----|
| IO Operating Voltage | V_DDIO | All pins | -0.3 | V_DD +0.3 | V |
| Storage Temperature | T_STOR | — | -45 | +85 | °C |
| ESD Protection | ESD | HBM | — | ±2 | kV |

I²C Electrical Characteristics

| Symbol | Parameter | Min | Max | Unit |
|---------|----------------------------------|-----|-----|------|
| f_SCL | SCL clock frequency | — | 100 | kHz |
| t_LOW | SCL low-level time | 1.3 | — | μs |
| t_HIGH | SCL high-level time | 0.6 | — | μs |
| t_SUDAT | SDA setup time | 0.1 | — | μs |
| t_HDDAT | SDA hold time | 0.0 | — | μs |
| t_SUSTA | Repeated start setup time | 0.6 | — | μs |
| t_HDSTA | START hold time | 0 | 6 | μs |
| t_SUSTO | STOP setup time | 0.6 | — | μs |
| t_BUF | Bus free time between STOP/START | 1.3 | — | μs |

Pin Definition



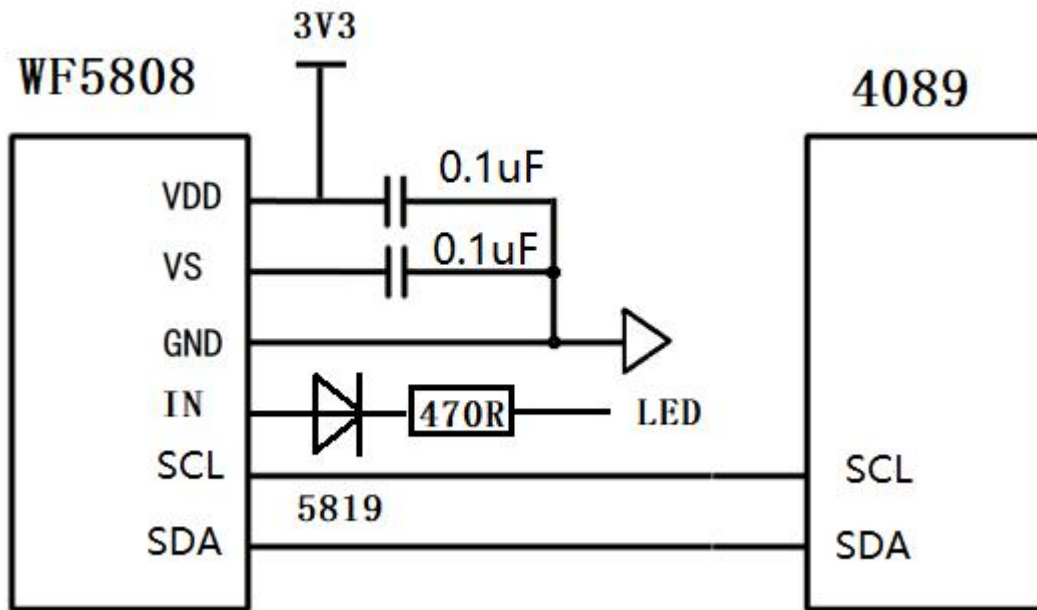
Pin Definition

| Pin | Name | Function |
|-----|------|---------------------------------|
| 1 | CLK | I ² C Clock |
| 2 | GND | Ground |
| 3 | IN | LED switch detection |
| 4 | NC | Not connected (leave floating) |
| 5 | VDD | Power supply (+) |
| 6 | VS | Connect 0.1 μF capacitor to GND |
| 7 | SDA | I ² C Data |
| 8 | OUT | Not connected (leave floating) |

Typical Application Circuit

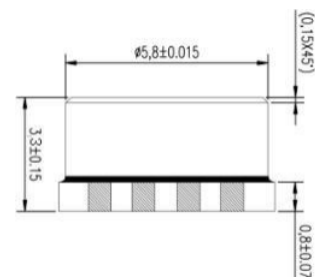
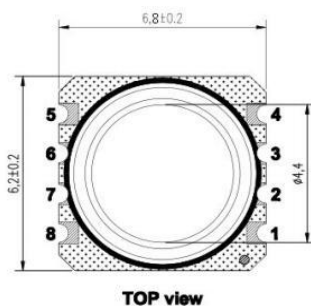
The WF5808 connects to a host MCU (e.g. 4089) via I²C (SCL / SDA). Bypass capacitors of 0.1 μF should be placed close to the VDD and VS pins. An LED indicator may be driven through the IN pin via a series Schottky diode (5819) and a 470 Ω current-limiting resistor.

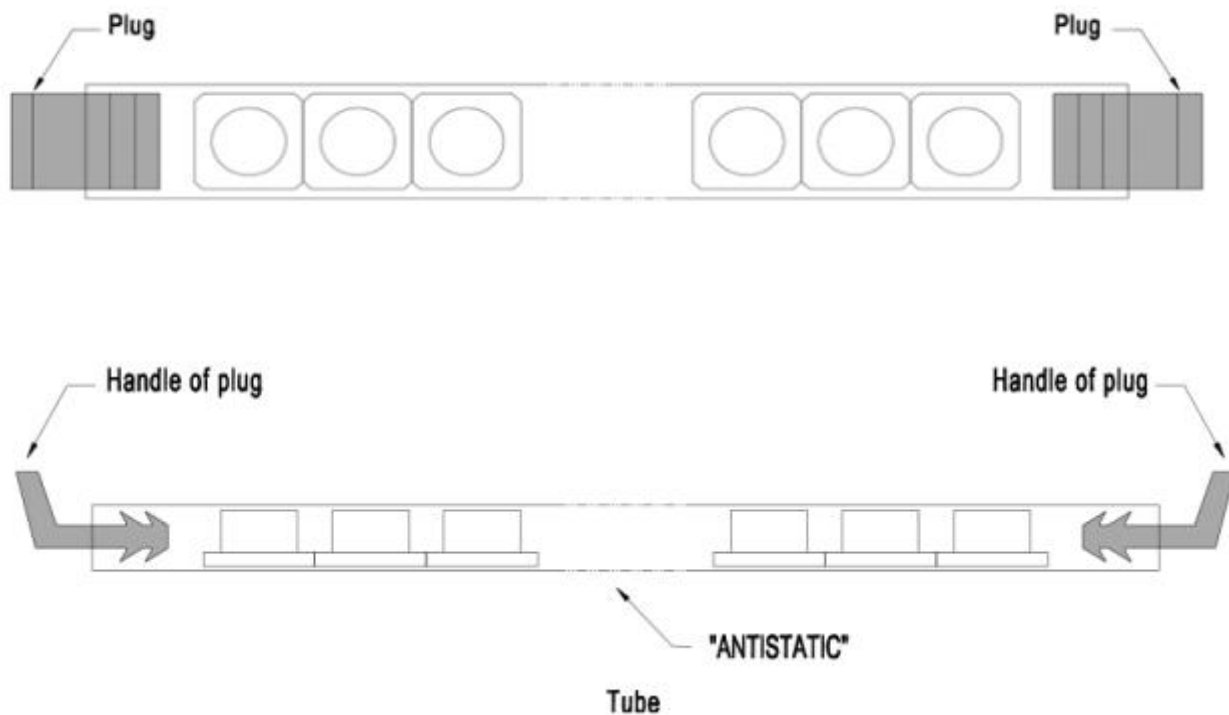
| Net | WF5808 Pin | External Components | MCU Pin |
|-----|-------------|---------------------------------|------------|
| 3V3 | VDD (Pin 5) | 100 nF cap to GND | 3.3 V rail |
| 3V3 | VS (Pin 6) | 100 nF cap to GND | — |
| GND | GND (Pin 2) | — | GND |
| SCL | CLK (Pin 1) | Pull-up to 3.3 V (typical) | SCL |
| SDA | SDA (Pin 7) | Pull-up to 3.3 V (typical) | SDA |
| LED | IN (Pin 3) | Schottky diode + 470 Ω resistor | — |



Package Information

| Attribute | Value |
|---------------------------|--|
| Package Type | LGA8 |
| Dimensions (L x W x H) | 6.8 × 6.2 × 3.3 mm (tolerance ±0.2 / ±0.15 mm) |
| Total Height | 3.3 ± 0.15 mm |
| Pad Height | 0.8 ± 0.07 mm |
| Sensing Aperture Diameter | ∅ 5.8 ± 0.015 mm |
| Packaging | Tube packaging — 50 units / tube (antistatic tube) |





Reflow Soldering Recommendations (Lead-Free)

| Stage | Guideline (Lead-Free) |
|---|-----------------------------------|
| Ramp-up rate ($T_{sMax} \rightarrow T_P$) | $\leq 3 \text{ }^\circ\text{C/s}$ |
| Preheat minimum temperature (T_{sMin}) | 150 $^\circ\text{C}$ |
| Preheat maximum temperature (T_{sMax}) | 200 $^\circ\text{C}$ |
| Preheat time (T_{sMin} to T_{sMax}) | 60 s – 180 s |
| Reflow minimum temperature (T_L) | 217 $^\circ\text{C}$ |
| Time above T_L | 60 s – 150 s |
| Peak reflow temperature (T_P) | 260 $^\circ\text{C}$ |
| Time at peak temperature (t_P) | 20 s – 40 s |
| Cooling rate | $\leq 4 \text{ }^\circ\text{C/s}$ |
| Total time from 25 $^\circ\text{C}$ to peak | ≤ 8 minutes |