

## Dual full-scale, 1260 hPa and 4060 hPa, absolute digital output barometer with Qvar detection in a water-resistant package



**CCLGA**  
2.8 x 2.8 x 1.95 mm

### Product status link

[ILPS28QSW](#)

### Product summary

<b>Order code</b>	ILPS28QSWTR
<b>Temperature range</b>	-40 to +105 °C
<b>Package</b>	CCLGA-7L
<b>Packing</b>	Tape and reel

### Product resources

[TN0018](#) (Design and soldering)

### Product labels



## Features

- Dual full-scale absolute pressure sensor in a water-resistant package
  - Mode 1: 260 ~ 1260 hPa
  - Mode 2: 260 ~ 4060 hPa
- Embedded analog hub for processing analog input data
- Embedded Qvar for detecting electric charge variation
- Current consumption down to 1.7  $\mu$ A
- Absolute pressure accuracy: 0.5 hPa
- Low pressure sensor noise: 0.32 Pa
- Embedded temperature compensation
- Extended temperature range from -40 to +105 °C
- 24-bit pressure data output
- ODR from 1 Hz to 200 Hz
- I<sup>2</sup>C or MIPI I3C<sup>SM</sup> interface
- Embedded FIFO
- Supply voltage: 1.7 to 3.6 V
- Easily sealed package with O-ring
- **ECOPACK** lead-free compliant

## Applications

- Industrial applications
- [Gas and water metering](#)
- Weather station equipment
- Altimeters and barometers for outdoor devices
- Smart filters
- Ventilators and CPAP equipment
- Man-down detection

## Description

The **ILPS28QSW** is an ultra-compact piezoresistive absolute pressure sensor which functions as a digital output barometer, supporting dual full-scale up to user-selectable 4060 hPa.

The device comprises a sensing element and an IC interface which communicates over the I<sup>2</sup>C or MIPI I3C<sup>SM</sup> interface from the sensing element to the application. The ILPS28QSW provides lower power consumption, achieving lower pressure noise than its predecessor.

The ILPS28QSW embeds an analog hub sensing functionality which is able to connect an analog input and convert it to a digital signal for embedded processing. In addition, an embedded Qvar (electric charge variation detection) channel can be enabled for sensing in applications such as water leakage detection, tap, double tap, long press, and L/R - R/L swipe.

The ILPS28QSW is available in a ceramic LGA package with metal lid. It is guaranteed to operate over a temperature range extending from -40 °C to +105 °C. The package is holed to allow external pressure to reach the sensing element. Gel inside the IC protects the electrical components from water and the metal cap is, optionally, connected to ground or left floating electrically in the application PCB layout. The connection of the metal cap is determined according to the customer's target application.

# 1 Block diagrams

Figure 1. Device architecture block diagram

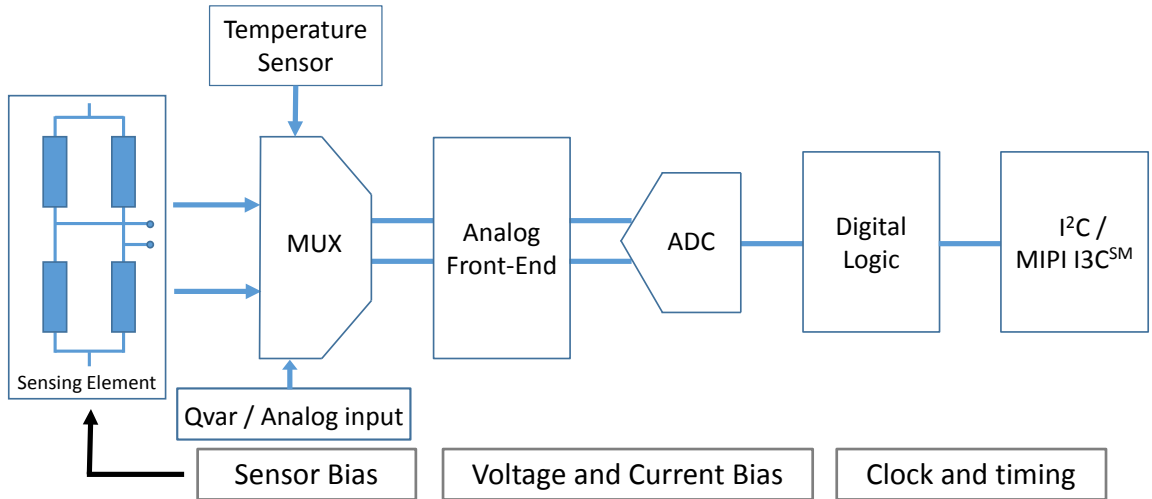
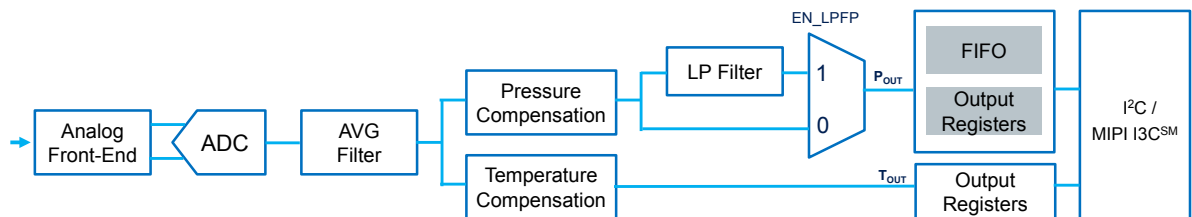


Figure 2. Digital logic



## 2 Pin description

Figure 3. Pin connections (bottom view)

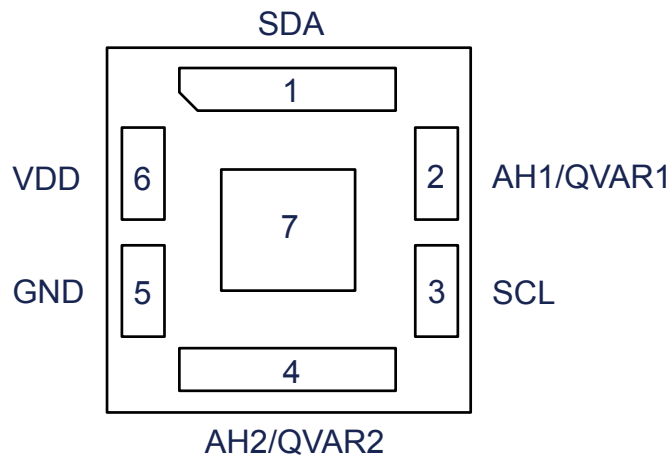


Table 1. Pin description

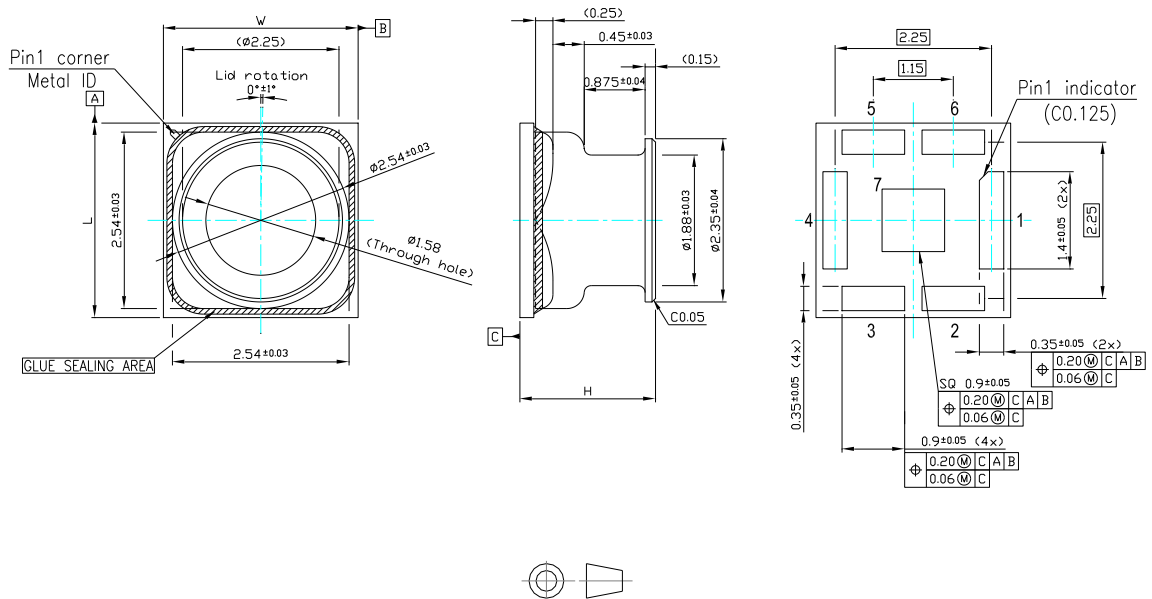
Pin number	Name	Function
1	SDA	I <sup>2</sup> C / MIPI I3C <sup>SM</sup> serial data (SDA)
2	AH1/QVAR1	Connect to GND if analog input / Qvar sensing is not needed.
3	SCL	I <sup>2</sup> C / MIPI I3C <sup>SM</sup> serial clock (SCL)
4	AH2/QVAR2	Connect to GND if analog input / Qvar sensing is not needed.
5	GND	0 V supply
6	VDD	Power supply
7	PAD2LID	Pad connection to metal lid

### 3 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK is an ST trademark.

#### 3.1 CCLGA-7L package information

Figure 4. CCLGA-7L (2.8 x 2.8 x 1.95 mm typ.) package outline and mechanical dimensions



Dimensions are in millimeter unless otherwise specified  
General Tolerance is +/- 0.10mm unless otherwise specified

#### OUTER DIMENSIONS

ITEM	DIMENSION [mm]	TOLERANCE [mm]
Length [L]	2.8	±0.15
Width [W]	2.8	±0.15
Height [H]	2.1 MAX	/

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## Revision history

**Table 2. Document revision history**

Date	Version	Changes
03-Mar-2022	1	Initial release

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