



LPS27DEWO

Accurate pressure sensing for
altitude tracking and underwater
depth measurement

Pressure sensing does not stop at the waterline

AIR

Altitude and vertical-position monitoring

Atmospheric range demands accuracy and low noise.

1260 hPa

full-scale mode for air

WATER

Depth monitoring in wet environments

A higher full scale is needed to increase the measurable depth.

6060 hPa

full-scale mode for depth

DESIGN

Sealing, robustness and integration

Mechanical complexity can slow product development & higher cost.

1 sensor

to simplify the architecture

Focus application domains



Sport watches

Altitude, activity, and
water-depth monitoring

Water depth IoT

Connected measurement
in wet environments



Sport cameras

Underwater depth
monitoring

Smart rings

Vertical-position data for
activity insights



LPS27DEWO key design benefits



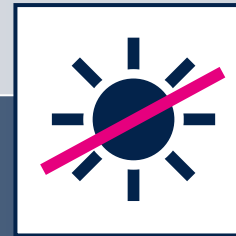
One device, two applications

Selectable full-scale modes for altitude monitoring and water-depth sensing.



New non-transparent potting gel

Improved light immunity and a simpler, more robust final design.



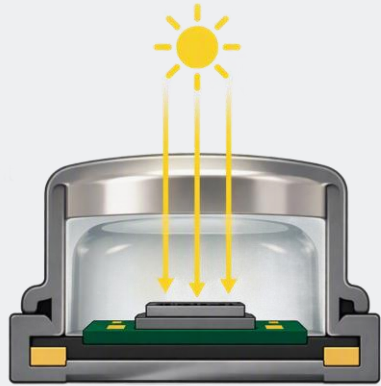
Cylindrical package built for pressure

Compact metal lid package with sealing-friendly integration and up to 12.5 bar robustness.



Black potting gel: a robust, light-immune solution

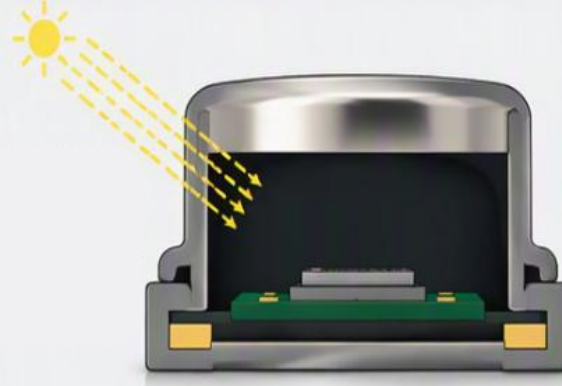
Transparent potting gel



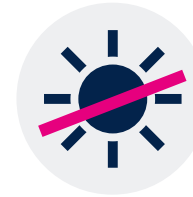
Transparent gel can allow light to reach the sensing element, **potentially impacting measurements** in wearable applications.



Black potting gel



Black potting gel ensures **immunity to lightning impact** and enables a simple and robust mechanical design.



No light impact

Immunity to ambient lighting conditions



Simple mechanical design

Easy integration into wearable devices



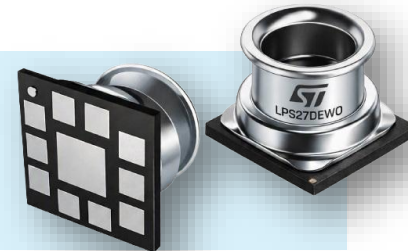
Robust & reliable

Designed for demanding environments

The result

Reliable pressure sensing even in the brightest conditions

Black potting gel helps deliver consistent performance and a simpler design, ideal for next-generation wearable applications

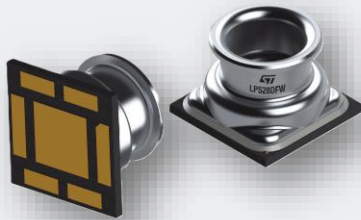


Extended full scale up to 6060 hPa for deeper diving applications

LPS28DFW
(Previous generation)

4060 hPa

~30 meters



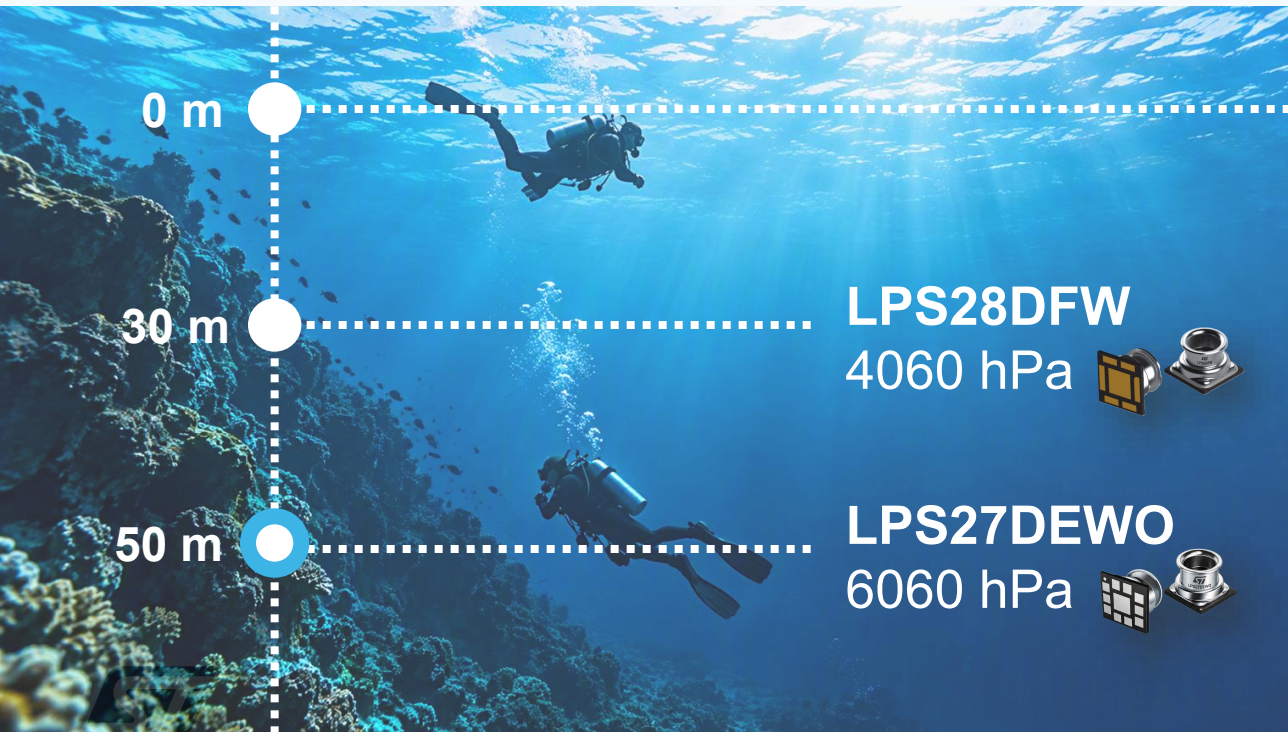
LPS27DEWO
(New)

6060 hPa

~50 meters



Approx. 30 m to 50 m
extended depth measurement
range



Supports real diving scenarios

Up to 50 meters (6060 hPa) to cover depths relevant for technical diving



Improve safety

Critical for assessing decompression needs with extended stops



Enables new use cases

More flexibility for wearables and water-depth monitoring devices



LPS27DEWO: from altitude to underwater depth

Dual full-scale, water-resistant pressure sensing for wearables and connected devices



FS (2 in 1): Mode 1: 260 ~ 1260 hPa
Mode 2: 260 ~ 6060 hPa

Digital interface: I²C / SPI / I3CSM
(1.2V VDDIO support)

Overpressure robustness:
12.5Bar (115-meter water depth condition)

Soldering drift: ± 1 hPa (Peak)
Long term drift: ± 1 hPa/year

Absolute pressure accuracy:
 ± 1 hPa @ Mode 1 / 0.5% @ Mode 2

Relative pressure accuracy:
0.015hPa @ Mode 1 / 1.5hPa @ Mode 2

RMS Noise:
0.32Pa @ Mode 1 / 0.6Pa @ Mode 2

Low power consumption:
1.7uA @ AVG=4 & 9.4uA @ AVG=128

Key applications:

- Wearable watch
- Sport camera
- Water depth monitoring IoT
- E-cig
- Gas metering

Package: LGA 2.7 x 2.7 x 1.7 10L

LPS27DEWO

Higher robustness & smaller package vs. competitors

Features	LPS27DEWO	Competitor A	Competitor B	Competitor C
Package	2.7 x2.7 x1.7 Black potting gel	3.25 x 3.25 x 1.96 Transparent gel	2.7 x2.7 x1.7 Black potting gel	2.7x2.7x1.87(Max) Transparent gel
Full scale	~1260hPa / ~ 6060hPa	~1250hPa	~ 6000hPa	~ 5000hPa
Pressure accuracy	± 1hPa @ 1260hPa ± 0.5% @ 6060hPa	0.85hPa	1hPa @ 1100hPa 40hPa @ 6000hPa	Max ± 1hPa @1100hPa Max ± 30hPa @5000hPa
Pressure noise	0.56Pa [UHP] @ 32.2uA 0.86Pa [HP] @ 9.4uA 1.5Pa [LP] @ 3.7uA 3.8Pa [ULP] @ 1.7uA	0.78Pa [ULP]	10PaRMS (low power) 4PaRMS (high performance)	1Pa [UHP] 1.2Pa [HP] 1.5Pa [LP] 1.9Pa [ULP]
Power consumption	1.7uA [ULP] @ 3.8Pa 3.7uA [LP] @ 1.5Pa 9.4uA [HP] @ 0.86Pa 32.2uA [UHP] @ 0.56Pa	1.3uA [ULP] 75uA [UHP]	2.8uA (low power)	3.5uA [ULP] 4.8uA [LP] 6uA [HP] 7.5uA [UHP]
Overpressure	Up to 12.5Bar	No info	10Bar	10Bar
VDDIO	1.2V for digital interface	1.2V	1.75V	1.8V
Soldering drift	1hPa (Peak)	0.35hPa	1hPa	No info

From evaluation to integration

1

DISCOVER

LPS27DEWO
pressure sensor



Understand ranges, interfaces, accuracy and operating modes.

2

EVALUATE

STEVAL-MKI256A
evaluation board

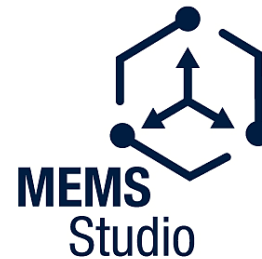


Bring the sensor into an accessible hardware setup.

3

DEVELOP

MEMS Studio

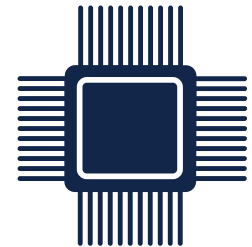


Configure, monitor and explore sensor behavior.

4

INTEGRATE

I²C, SPI or MIPI I3C®



Connect to the target MCU and application architecture.

Our technology starts with You



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