

# PRESSURE AND ACCELERATION SENSOR DIE



SW412

PRODUCT BRIEF

## KEY FEATURES

- Absolute pressure sensor die
- On-chip accelerometer
- High reliability and low drift over lifetime
- High media compatibility
- Backside media access
- Wide temperature operating range
- High static acceleration and shock capability (2000g)
- Single side bond pad access



## DESCRIPTION

The SW412 is an uncompensated piezoresistive pressure and acceleration sensor die. It is bulk micromachined and designed for affordable and reliable measurements in a broad range of industrial application and designs.

SW412 has excellent media compatibility due to the patented triple stack sensor design with buried backside piezoresistive elements. With the backside media access, the piezo resistors will not come in contact with the measurement media. The design improves stability and sensor lifetime compared to many traditional sensor designs.

The design and performance of SW412 makes it ideal for high accuracy measurements, also in harsh environments. The long term stability is outstanding and has been proven in applications during a period of more than 10 years.

The sensor die can be connected to passive compensation and or signal conditioning as required for a given application.

All sensor die products are 100% electrically tested and visually inspected.

SW412 is delivered as bare dies in waffle packs, as single wafers, or in wafer lots.

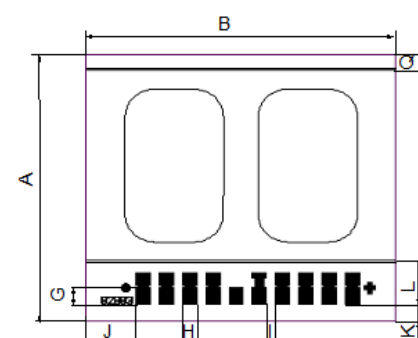
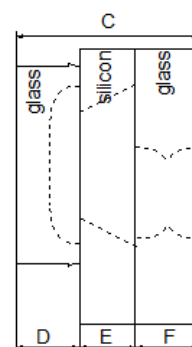
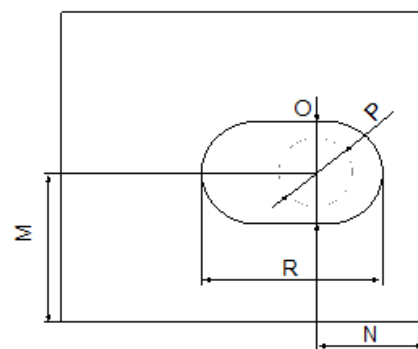
## GENERAL CONDITIONS

Parameter	Min	Typ	Max	Comments
Operating supply voltage		5.0V		
Operating temperature	-40°C		125°C	
Operating pressure	0kPa		1300kPa	Absolute pressure
Overload pressure	1400kPa			
Operating acceleration	0g		115g	
Overload acceleration	2000g			
Diagnostic resistor, accelerometer		4.8kΩ		
Resonance frequency, accelerometer		6.2kHz		
Breakdown voltage		14V		At I=5.0μA
Leakage current		0.2nA		At Vdd=4.0V

## MECHANICAL DIMENSIONS

All dimensions in μm.

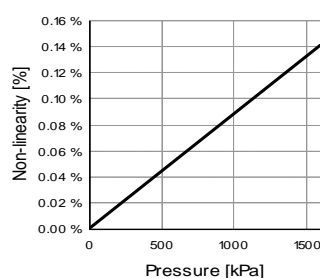
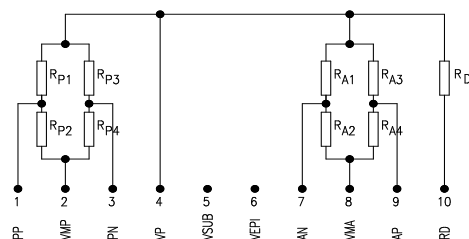
DIM	TYP
A	2315
B	2550
C	1450
D	525
E	400
F	525
G	150
H	120
I	80
J	380
K	90
L	400
M	1090
N	745
O	800
P	500
Q	90
R	1330



## FUNCTIONAL CHARACTERISTICS (@25°C,5V)

Parameter	Typ	Typ	Unit
<b>Bridge resistor</b>	<b>Pressure</b>	<b>Acceleration</b>	
Bridge resistance	3.6	8.0	kΩ
Temp.coeff.bridge resistor (1 <sup>st</sup> order)	1.5	1.1	10 <sup>-3</sup> /°C
Temp.coeff.bridge resistor (2 <sup>nd</sup> order)	9.0	7.0	10 <sup>-6</sup> /°C <sup>2</sup>
Common mode voltage	0.5*Vdd	0.5*Vdd	V
<b>Sensitivity</b>	<b>Pressure</b>	<b>Acceleration</b>	
Sensitivity	32	32	μV/VkPa / μV/Vg
Temp.coeff.sensitivity drift (1 <sup>st</sup> order)	-2.1	-2.0	10 <sup>-3</sup> /°C
Non linearity	See separate chart	±0.1	%FSO
<b>Zero point</b>	<b>Pressure</b>	<b>Acceleration</b>	
Zero point	±2.6	5.0	mV/V
Temp.coeff.zero point (1 <sup>st</sup> order)	±12	5.0	μV/V°C

## NON-LINEARITY

ELECTRICAN  
CIRCUIT DIAGRAM

## ELECTRICAL CONTACTS

