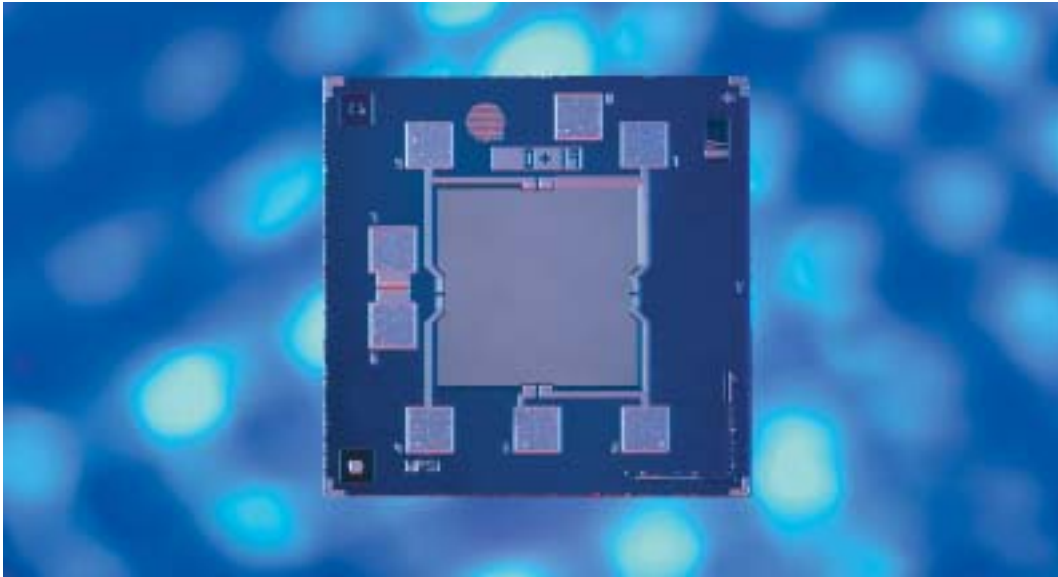




First Sensor
TECHNOLOGY



High Stability Line

Silicon Pressure Sensor Dies



High Stability Line – Silicon Pressure Sensor Dies

Description

The High Stability Line is a silicon micromachined piezoresistive pressure sensor chip with a pressure-proportional voltage output signal and an electrical shield.

The devices allow absolute measurement and the application of pressure on both sides of the diaphragm for the use as gauge or differential sensor. The dies are probed and shipped on tape or in waffle packs.

Features

- High impedance bridge
- High long term stability
- Low pressure and temperature hysteresis
- High sensitivity and linearity
- Fatigue free monocrystalline silicon diaphragm giving high load cycle stability
- Fast response

Application

- Industrial controls

Common Characteristics

Type	Parameter	min.	typ.	max.	Unit
VPSi060	Pressure range		6		kPa
	Sensitivity	667			$\mu\text{V}/\text{V}/\text{kPa}$
LPSi035	Pressure range		35		kPa
	Sensitivity	285	570	1,425	$\mu\text{V}/\text{V}/\text{kPa}$
LPSi100	Pressure range		100		kPa
	Sensitivity	100	200	500	$\mu\text{V}/\text{V}/\text{kPa}$
MPSi002.5	Pressure range		250		kPa
	Sensitivity	40	80	200	$\mu\text{V}/\text{V}/\text{kPa}$
MPSi005	Pressure range		500		kPa
	Sensitivity	20	40	100	$\mu\text{V}/\text{V}/\text{kPa}$
MPSi010	Pressure range		1,000		kPa
	Sensitivity	10	20	50	$\mu\text{V}/\text{V}/\text{kPa}$
MPSi030	Pressure range		3,000		kPa
	Sensitivity	3.3	6.6	16.7	$\mu\text{V}/\text{V}/\text{kPa}$
MPSi100	Pressure range		10,000		kPa
	Sensitivity	4	5	6	$\mu\text{V}/\text{V}/\text{kPa}$

Electrical Characteristics

at $U_{\text{Supply}} = 5 \text{ V}$, $T_0 = 25 \text{ }^\circ\text{C}$, unless otherwise specified

Parameter	min.	typ.	max.	Unit
Bridge resistance	4,000	6,000	8,000	Ω
Offset voltage	-25	-	+25	mV
Span voltage (F.S.O.) (MPSi100-NT-A/G-001)	50 (200)	100 250	250 300)	mV
Temperature coefficient of offset ¹	-0.05		+0.05	%F.S.O./K
Temperature coefficient of span ¹	-0.14	-0.19	-0.24	%F.S.O./K
Temperature coefficient of bridge resistance ¹	+0.08	+0.10	+0.12	%/K
Temperature coefficient of U_{Diode} ¹	-2.0	-2.1	-2.2	mV/K
Linearity error ²		<0.3	0.5	$\pm\%$ F.S.O.

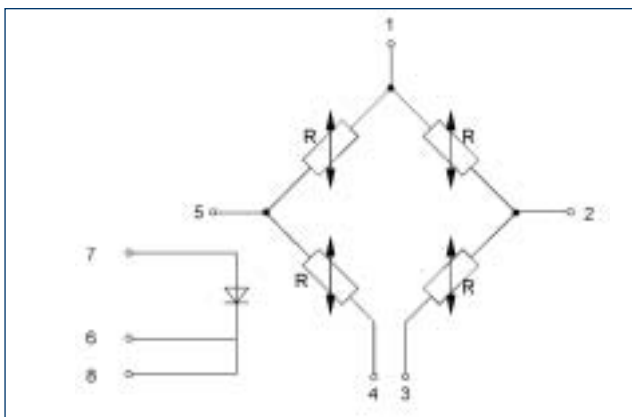
¹ Measured from 25 °C to 85 °C.

² The linearity error is calculated as end point straight line linearity error.

Maximum Ratings

Parameter	Limit Values		Unit
	min.	max.	
Over pressure (Front- and Backside) (Not valid for MPSi100-NT-A/G-003/4)	2x		Rated full scale pressure
Burst pressure (Front- and Backside) (Not valid for MPSi100-NT-A/G-003/4)	3x		Rated full scale pressure
Burst pressure for MPSi100-NT-A/G-003/4 (Frontside only)	2x		Rated full scale pressure
Operating temperature range	-40	+125	°C
Storage temperature range	-55	+150	°C
Supply voltage	typ. 5		V

Bondpad Configuration



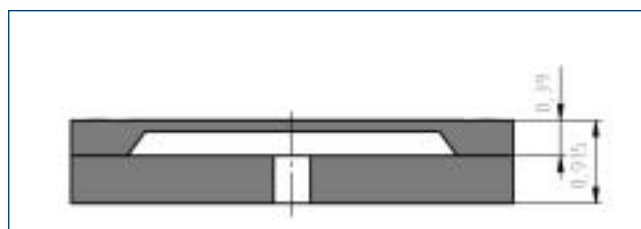
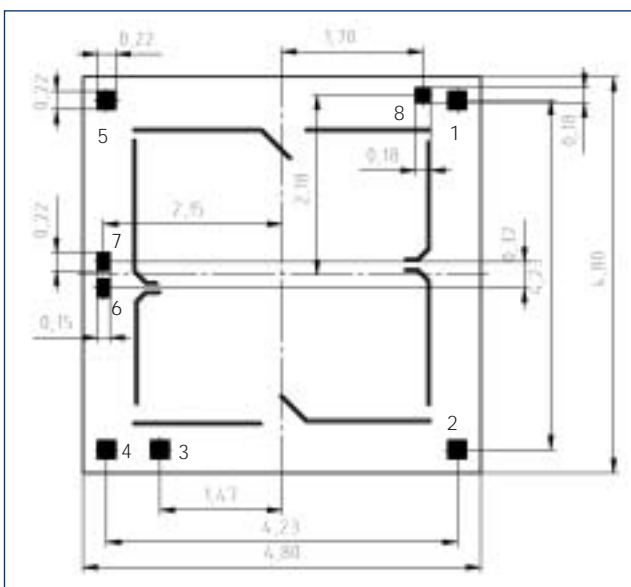
1	+V _{Supply}
2	+V _{Out}
3	-V _{Supply}
4	-V _{Supply}
5	-V _{Out}
6	-I _{Diode} /Substrate
7	+I _{Diode}
8	Substrate

Substrate and cathode of diode have the same electrical potential. To avoid bias effects, diode and bridge cannot be used simultaneously.

Pressure applied to the frontside.

Schematic Drawing

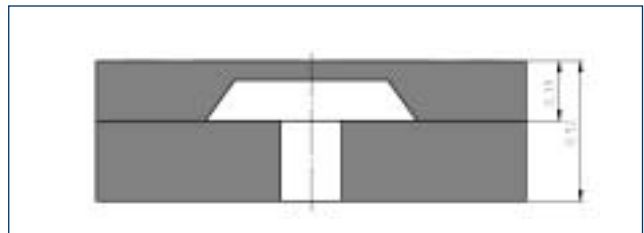
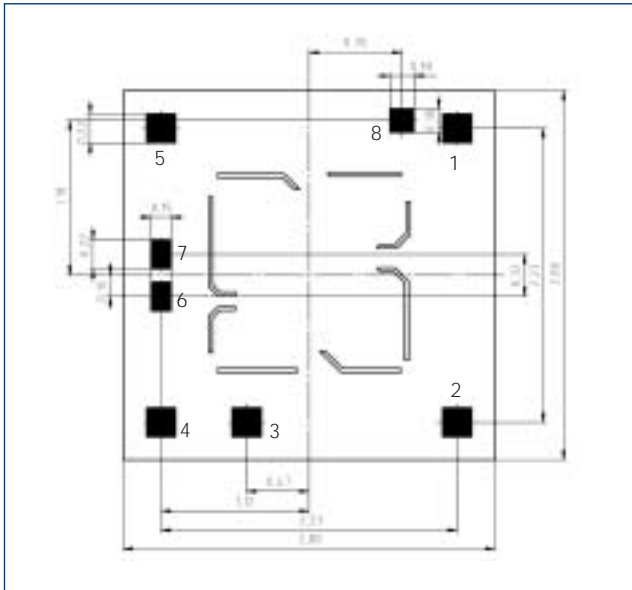
Layout VPSi



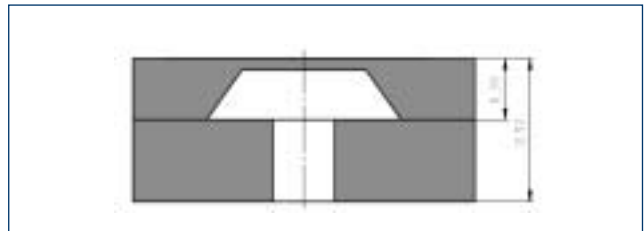
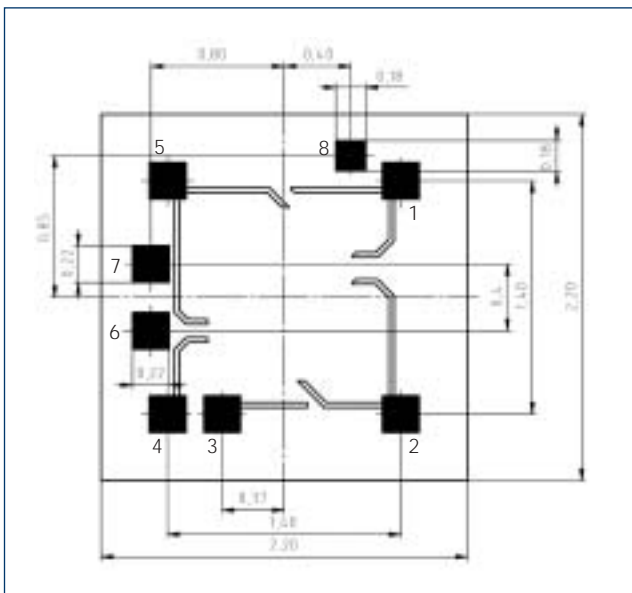
Dimensions in mm

Schematic Drawing

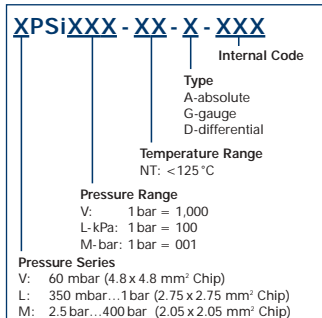
Layout LPSi



Layout MPSi



Ordering Code



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TECHNOLOGY**

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