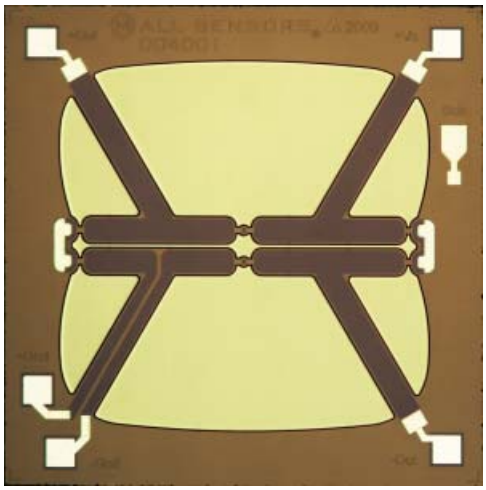
MEMS Piezoresistive Low Pressure Sensing Die



Features

- Low pressure from 5 inch H2O to 30 inch H2O
- High pressure sensitivity
- Low gravity/vibration sensitivity
- Reduced sensitivity to package induced stress
- Die in wafer form with ≈ 3,000 die/6″ wafer
- Die metal suitable for aluminum or gold wire bond
- Die backside suitable for RTV or epoxy die attach
- Die surface suitable for parylene or silgel coating

General Description

The All Sensors' pressure sensor die uses a proprietary Collinear Beam technology registered as COBEAM2 ™. This technology advances the state of the art for piezoresistive pressure sensors beyond what has been achievable for low pressure sensing using silicon based longitudinal and transverse strain technology. The technology achieves a high level of pressure sensitivity previously requiring boss structures and larger die topologies. By eliminating the more typical boss structure in the design both gravity and vibration sensitivity are significantly reduced. The strain sensitive resistors are processed to allow either constant current or voltage excitation through selection of temperature coefficients of resistance and sensitivity. The COBEAM2 ™ technology embodies aspects of 1950's bonded strain gage sensors with state of the art MEMS processing of six inch silicon wafers.

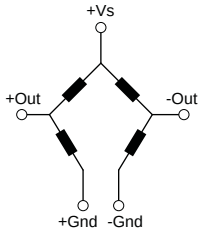
Applications

- HVAC variable air volume controls
- Automotive fuel vapor recovery systems
- Medical air flow

Ordering Information

Device	Operating Range	Pressure Type
DIE-L05G	± 5 inH2O	Gage
DIE-L10G	± 10 inH2O	Gage
DIE-L20G	± 20 inH2O	Gage
DIE-L30G	± 30 inH2O	Gage

Equivalent Circuit



Positive ouput for pressure applied to the top (circuit) side of the sensor.

Approvals

MKT DATE	MFG DATE	ENG DATE	QA DATE
☐ As Is ☐ With Change	☐ As Is ☐ With Change	☐ As Is ☐ With Change	☐ As Is ☐ With Change

A 16035 Vineyard Blvd. Morgan Hill, CA 95037 P 408 225 4314 F 408 225 2079 www.allsensors.com ALL SENSORS

Performance Characteristics for DIE Series

All parameters are measured at 2.8V supply at room temperature, unless otherwise specified.

Parameter	Min	Typ	Max	Units	Notes
Excitation Voltage	0	2.8	6.0	V	1
Excitation Current	0	0.85	1.8	mA	1
Span (FS Range)					2
DIE-L05G	20	40	60	mV	
DIE-L10G	25	50	75	mV	
DIE-L20G	25	50	75	mV	
DIE-L30G	25	50	75	mV	
Offset	-35	0	35	mV	-
TC Span	-2500	-2000	-1600	ppm/°C	3
TC Offset	-45	20	85	uV/°C	3
Position Sensitivty					6
DIE-L05G	-	0.015	0.035	%FSO/g	
DIE-L10G, DIE-L20G, DIE-L30G	-	0.010	0.025	%FSO/g	
Linearity	-0.5	±0.2	0.5	%FSO	8
Front to Back Linearity	-	±0.75	-	%FSO	5
Bridge Resistance	2.5	3.2	3.8	KΩ	-
TC Resistance	2400	2800	3300	ppm/°C	3
Proof Pressure	10X	-	-	Rated FSP	7
Burst Pressure	15X	-	-	Rated FSP	4
Operating Temperature	-40	-	125	°C	-
Storage Temperature	-55	-	150	°C	-

Specification Notes

NOTE 1: Bridge may be driven with positive or negative excitation as long as Vsub is not connected. All Sensors does recommend connecting the Vsub to the highest voltage in the bridge for added offset stability.

NOTE 2: Measured at 2.8 constant voltage excitation.

NOTE 3: Measured from 0 to 70 °C

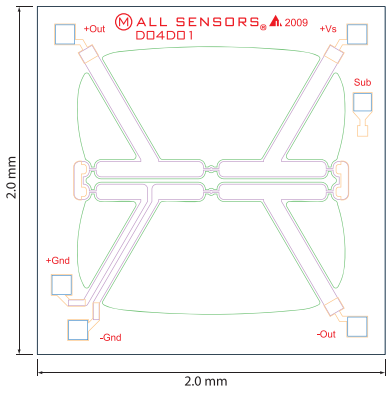
NOTE 4: Burst pressure is the pressure where the part can survive the overpressure but may degrade over repeated cycles.

NOTE 5: Front-Back Linerity computed as: $\text{Lin}_{FB} = \left(\left| \frac{\text{Span}_{Front}}{\text{Span}_{Back}} \right| - 1 \right) \cdot 100\%$

NOTE 6: Parameter is characterized and not 100% tested.

NOTE 7: Proof pressure is the maximum prressure that may be applied to the sensor without causing any changes in performance to the specifications.

NOTE 8: The maximum deviation of measured output at constant temperature (25°C) from "best straight line" determined by three points (offset pressure, full-scale pressure, and one-half full-scale pressure) where Y= measured value for each device.



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