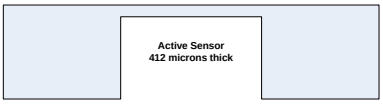
Series AC3010/AC30125 PSI to 300 PSI (0.35 to 20 bar)
Pressure Sensor Die

The AC3010/AC3012 series pressure die is a new generation of medium-pressure die. It has been designed to replace existing pressure die with a much smaller foot-print, and improved zero-stability.

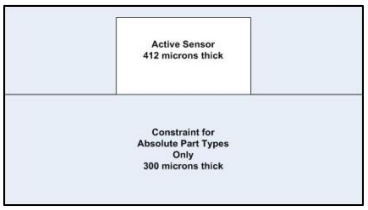
Based on the same basic process used for Acuity's industry-leading AC3030 and AC3050 series low pressure die, the AC3010 is a small (1.6 mm X1.8 mm) die that features a rectangular diaphragm to enable good output levels while maintaining good linearity. The part is available in 7 ranges (5, 15, 30, 50, 100, 150 and 300 PSI) and comes as either a gauge or absolute sensor.

The **AC3010** series has a nominal 3.6 kohm bridge while the **AC3012** has a nominal 5.0 kohm bridge. All other parameters are the same.

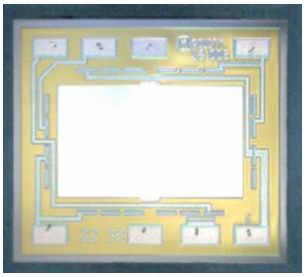
Suitable for a wide range of packages, it is particularly designed for medium pressure sensing in such applications as barometric monitoring, oil-filled sensors, flow restrictors, and a variety of industrial pressure and flow applications.

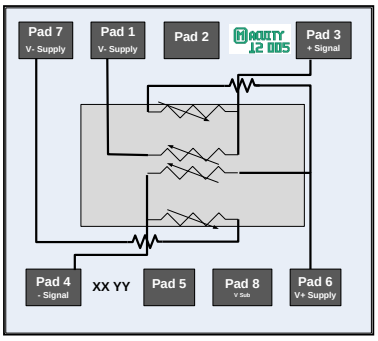


Cross-section of die for Gauge Applications



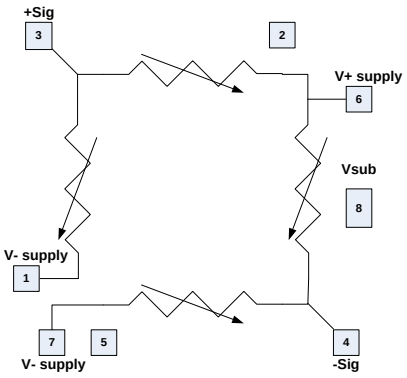
Cross-section of die for Absolute Applications





Schematic Layout of AC3010Pressure Die

+ Sig increases and **–Sig** decreases when pressure is applied to the top of the die



Equivalent Circuit Diagram

For maximum performance, VSub (Pad 8) should be tied to the highest voltage in the circuit.

Specification		Pressure Sensor - AC301X				Note
Electrical						
Resistance						
Bridge resistance	AC3010	3.1	3.6	4.1	kohms	1
	AC3012	4	5	6	kohms	1
TCR		2300	2800	3100	ppm/degree C	2
Resistance Ratiometricity		-1	0.1	1	%	3
Offset						
Offset - No Pressure		-50	0	50	mV	1
Offset Ratiometricity		-0.2	0	0.2	mV/V	3
TCO		-25	2	25	microV/V/degree C	2
Leakage						
Current Leakage - individual		0.5	4	20	nA	4
Sensitivity	**Range (PSI)**					
Span	5	51	60	70	mV	5
	15	90	110	125	mV	5
	30	98	115	130	mV	5
	50	105	126	150	mV	5
	100	135	160	180	mV	5
	150	105	125	150	mV	5
	300	85	105	125	mV	5
TCS		-2100	-1800	-1400	ppm/degree C	2
Pressure Nonlinearity		-0.1	0.02	0.1	%	6
Mechanical Pressure						
Full Scale Pressure Ranges		**5, 15, 30, 50, 100, 150, 300**			**PSI**	7
Overpressure - Burst		>15X			FS Pressure	
Overpressure - Proof		>5X			FS Pressure	
Mechanical		Min	Nominal	Max	Unit	
Stepping size	X	1.599	1.6	1.601	mm	
	Y	1.799	1.8	1.801	mm	
Unconstrained thickness – Gauge Type	Z	0.402	0.412	0.422	mm	8
Constrained thickness – Absolute Type	Z	0.682	0.712	0.742	mm	8

Ordering Information:

AC301R-XXX-T

Where **R** = 0 for 3.6k ohm nominal
= 2 for 5.0k ohm nominal

XXX = 005 for 5 PSI,
= 015 for 15 PSI,
= 030 for 30 PSI,
= 050 for 50 PSI,
= 100 for 100 PSI,
= 150 for 150 PSI and
= 300 for 300 PSI

T = A for Absolute
= G for Gauge

Note

1 Measured at 5.0 volts

2 Measured at +25 and +70 °C, normalized by reading at 25 °C

3 Measured at -2.5 and 5.0 Volts, normalized by reading at 5.0 volts

4 Measured from VSub substrate contact to any Resistor Pad at 10 V

5 Full scale output at 5 Volt drive and rated pressure;

6 1/2 TBNL (Terminal Base Nonlinearity at 0, 50%, and 100% FS) with pressure applied from the top

7 For custom pressure ranges, consult APSP.

8 Gauge parts are unconstrained and approximately 412 microns thick. Absolute parts have a constraint and are approximately 712 microns thick.

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