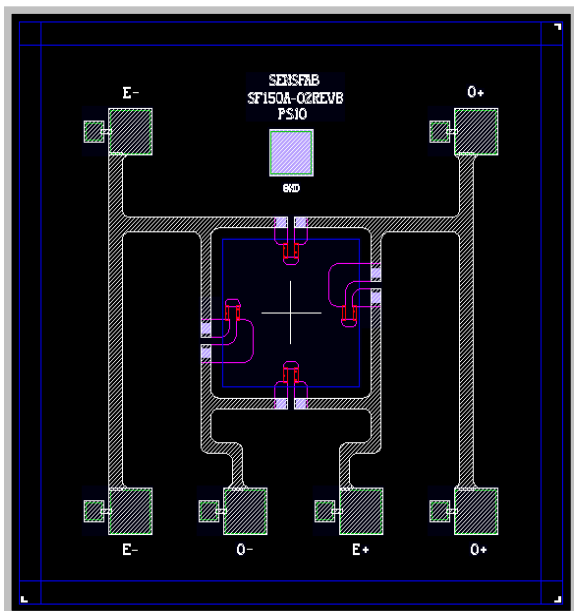
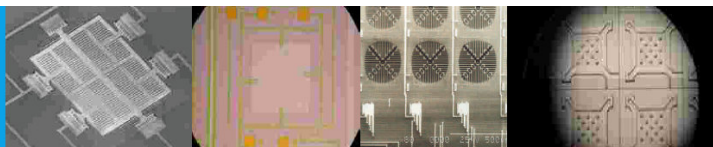


MTPD-500A-13G

Uncompensated Pressure Sensor Die



The MTPD500 series piezo-resistive pressure sensor dies are manufactured on six inch silicon wafers in a class 100 clean room using a state of the art 1.2 micron CMOS facility and are then bulked micro-machined in a class 1000 clean room. The wafers are batch manufactured using a electrochemical etch stop process to achieve excellent repeatability.

Applied pressure deforms a diaphragm causing piezo-resistors to change their resistance. This change in four resistors, which constitute a Wheat Stone Bridge, results in a pressure-proportional voltage.

Die are probed, inked, diced and visually inspected and shipped on tapes, in rings or in waffle packs. Dies can be mounted on ceramic or PCB substrates or packaged in application specific packages for measuring pressure in non-corrosive media.

FEATURES

- Piezo-resistive bridge
- Solid state
- High reliability
- Optimally sized for application
- Low cost design
- Meets industry specifications
- 6" wafer availability
- 100% factory tested
- Excellent repeatability
- Rated pressure of sensor 0 to 500 psi

THE MAIN FIELD OF APPLICATIONS

- ✓ Air conditioning system
- ✓ Fluid hydraulics
- ✓ Pneumatic gauges
- ✓ Marine
- ✓ Industrial machinery and equipment
- ✓ Test and measurement

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MEMSENZ™ III
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MEMSENZ™ IV
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MTPD-500A-13G

Uncompensated Pressure Sensor Die

TECHNICAL DATA

Maximum ratings

Specification	Min.	Typ.	Max.	Unit
Operating Temperature	-40	-	+125	°C
Storage Temperature	-40	-	+125	°C
Supply Voltage	+1	5	+10	V
Operating Current	-	0.7	-	mA

Data

Temperature=22±2°C, Relative humidity=45±5%, Supply voltage=5V

Specification	Min.	Typ.	Max.	Unit
Operating Pressure Range	0	-	500	psiA
	0	-	25850	mmHg
	0	-	3447	kpa
	0	-	34.5	bar
Max. Pressure	-	2500	-	psiA
	-	17.24	-	Mpa
	-	172.4	-	bar
Zero Pressure Offset Voltage (before bonding)	-15	0	+15	mV
Sensitivity	0.8	1.2	1.6	µV/V/mmHg
	0.04	0.06	0.08	mV/V/psi
	0.006	0.009	0.012	mV/V/kpa
	2.9	4.4	5.9	mV/bar
Full Scale Span	100	150	200	mV
Non Linearity	-2	-	+2	%FS
Bridge Resistance	4500	5000	5500	Ω
TCO	-45	0.1	45	µV/V/°C
TCR	1180	1300	1410	ppm/°C
TCS	-98	-1	96	%FS/100°C

- Supply voltage DC and AC up to 5kHz, $V_{pp} = 10V \pm 0.1 VDC$
- Current is linear in full range
- Total error at half span is based on the difference between half span measurement and a straight line projection over the span of the device where

$$NL(\%) = \frac{O(\frac{s}{2}) - \frac{O(0)+O(S)}{2}}{O(\frac{s}{2})} \times 100$$
- Top side pressure application
- Testing pressure range from 0-12.5psi
- Resistance is measured by sourcing a constant current of 0.7mA.
- Parameters (except zero pressure offset which is measured directly) are computed from individual piezo-resistance measurements made at different pressures under application of a current of 0.7mA, which represents the typical operating conditions
- TCO, TCR & TCS are tested from 0°C to 50°C

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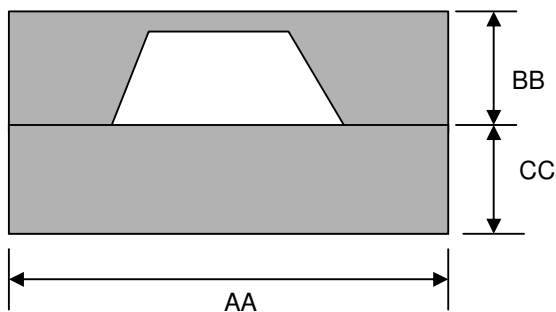
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MTPD-500A-13G

Uncompensated Pressure Sensor Die

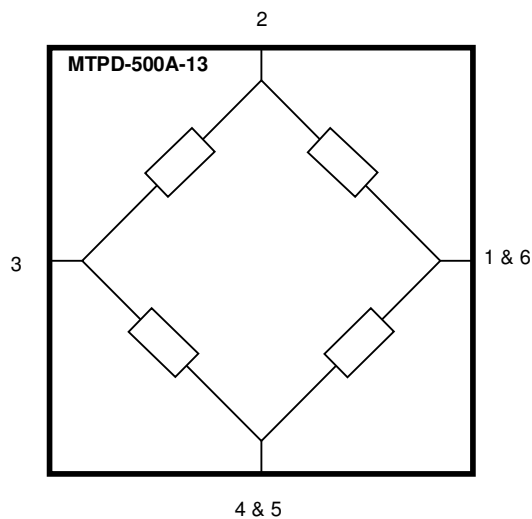
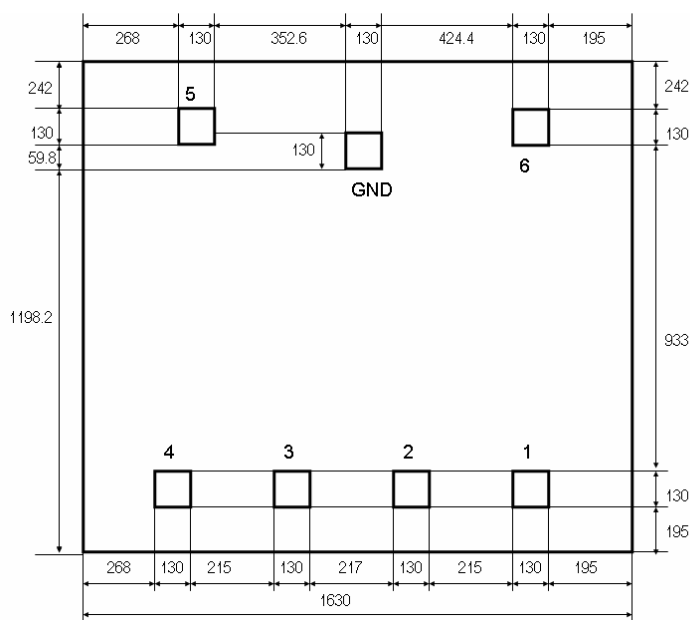
DIMENSIONS



Dim.	Typical	Tolerance	Units
AA	1630	± 0.33	µm
BB	397	± 10	µm
CC	700	± 25	µm
Dicing process	100	± 15	µm

Note: Dimension AA & CC are prior to dicing process.

ELECTRICAL AND DIE LAYOUT



Note

- All dimensions are in µm.
- Mask fabrication tolerance of ±0.3µm
- Design fabrication tolerance of ±0.03µm

Pad	Symbol	Description
1	O+	Output voltage
2	E+	Supply voltage
3	O-	Output voltage
4	E-	Supply voltage
5	E-	Supply voltage
6	O+	Output voltage
GND	GND	Ground

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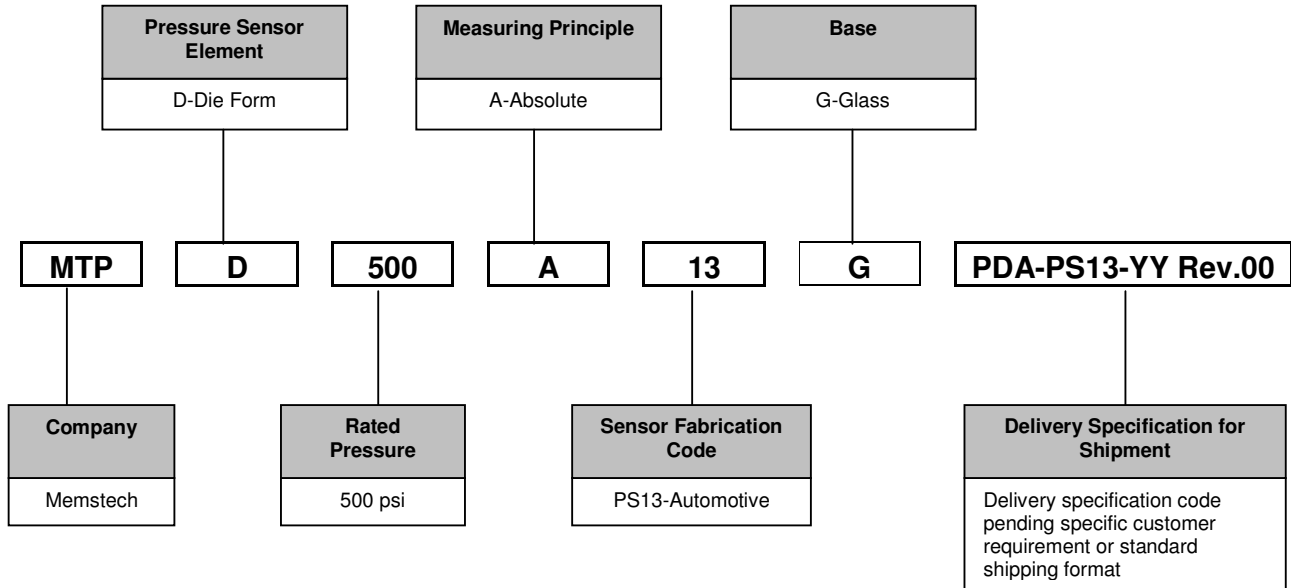
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MTPD-500A-13G

Uncompensated Pressure Sensor Die

HOW TO SPECIFY PART NUMBER



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Email: bkpatmon@memstech.com **Website:** www.memstech.com

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