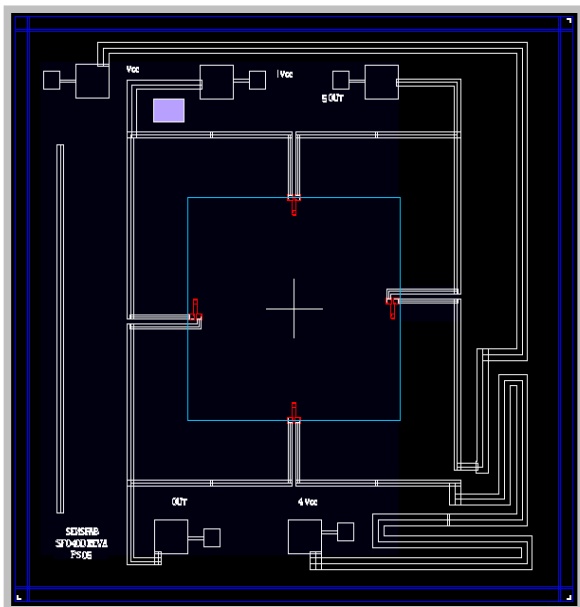
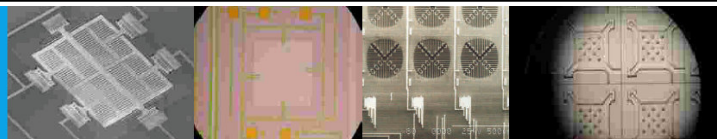


MTPD-040D-05S

Uncompensated Pressure Sensor Die



The MTPD040 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 an 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

- High impedance bridge
- Surface passivation
- Solid state
- High reliability
- Optimally sized for application
- Low cost design
- Suitable for invasive applications
- Meets industry specifications
- 6" wafer availability
- 100% factory tested
- Excellent repeatability
- Rated pressure of sensor 0 to 40 psi

THE MAIN FIELD OF APPLICATIONS

- ✓ Water flow monitoring
- ✓ Fluid flow rates
- ✓ Industrial fluid
- ✓ Appliances
- ✓ Hydraulics
- ✓ Low power application

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MEMSENZ™ IV
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 Bulk
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MTPD-040D-05S

Uncompensated Pressure Sensor Die

TECHNICAL DATA – Voltage source of 3V

Maximum ratings

Specification	Min.	Typ.	Max.	Unit
Operating Temperature	-40	-	85	°C
Storage Temperature	-40	-	125	°C
Operating voltage	-	3	-	V

Data

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

Specification	Min.	Typ.	Max.	Unit
Supply Voltage	1.5	3	6	V
Operating Pressure Range	0	40	120	psi
	0	2068	6204	mmHg
	0	276	827	kpa
	0	3	8.3	bar
Max. Pressure	200	-	-	psi
	10340	-	-	mmHg
	1379	-	-	kpa
	13.8	-	-	bar
Zero Pressure Offset Voltage	-10	0	+10	mV
Sensitivity	19	23	26	µV/V/mmHg
	1.0	1.2	1.3	mV/V/psi
	0.1	0.2	0.2	mV/V/kpa
	43	52	59	mV/bar
Span	118	143	161	mV
Non Linearity	-1.0	-	+1.0	%FS
Bridge Resistance	9.5	10	10.5	kΩ
TCO	600	1100	1700	µV/V/°C
TCR	9	17	27	ppm/°C
TCS	-18	-13	-8	%/100°C

- Supply voltage DC and AC up to 5 kHz, $V_{pp} = 10V \pm 0.1 VDC$
- 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
- Parameters are computed from individual piezo-resistance measurements made at different pressures under application of a constant voltage of 3V, which represents the typical operating conditions
- Constant voltage application
- TCO, TCR & TCS are tested from 0°C to 50°C

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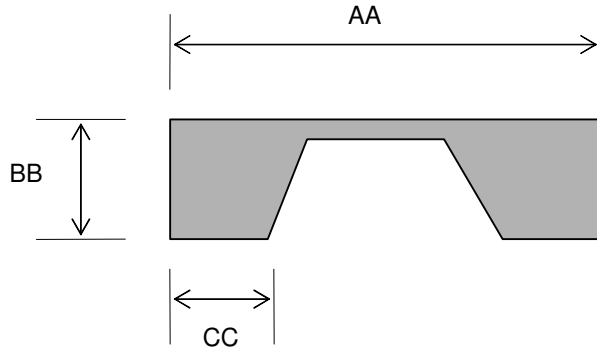
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MTPD-040D-05S

Uncompensated Pressure Sensor Die

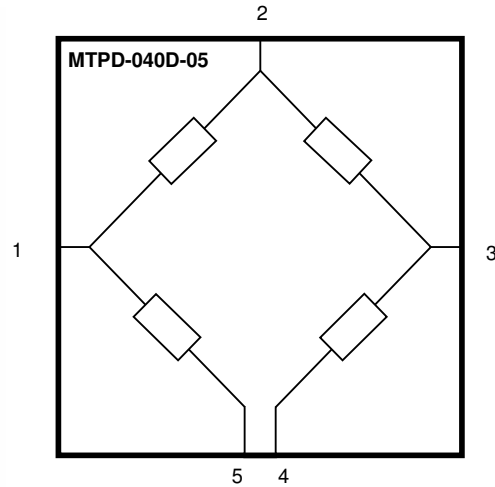
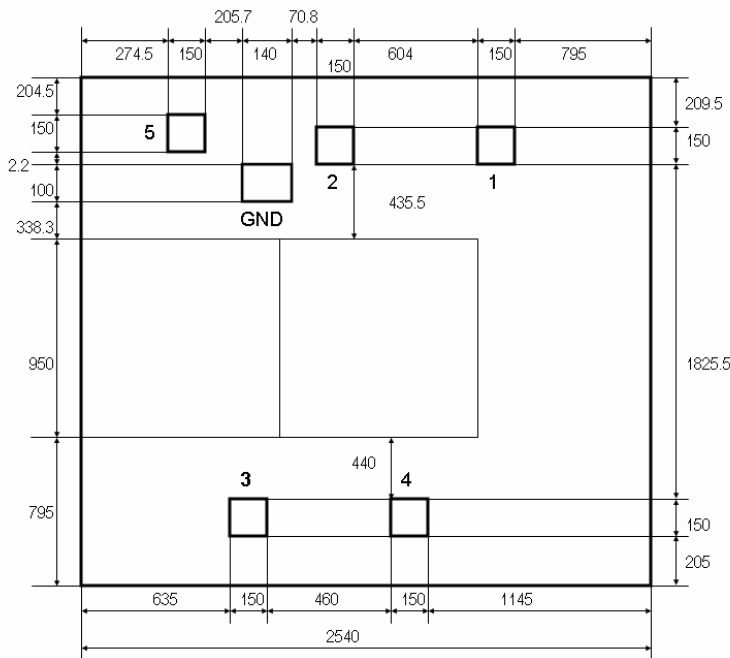
DIMENSIONS



Dim.	Typical	Tolerance	Units
AA	2540	± 0.33	µm
BB	557	± 10	µm
CC	407.5	± 2.33	µm
Dicing process	60	± 15	µm

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

ELECTRICAL AND DIE LAYOUT



Pad	Symbol	Description
1	V_{out+}	Output voltage
2	V_{cc-}	Supply voltage
3	V_{out-}	Output voltage
4	V_{cc+}	Supply voltage
5	V_{cc+}	Supply voltage
GND	GND	Ground

Note

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

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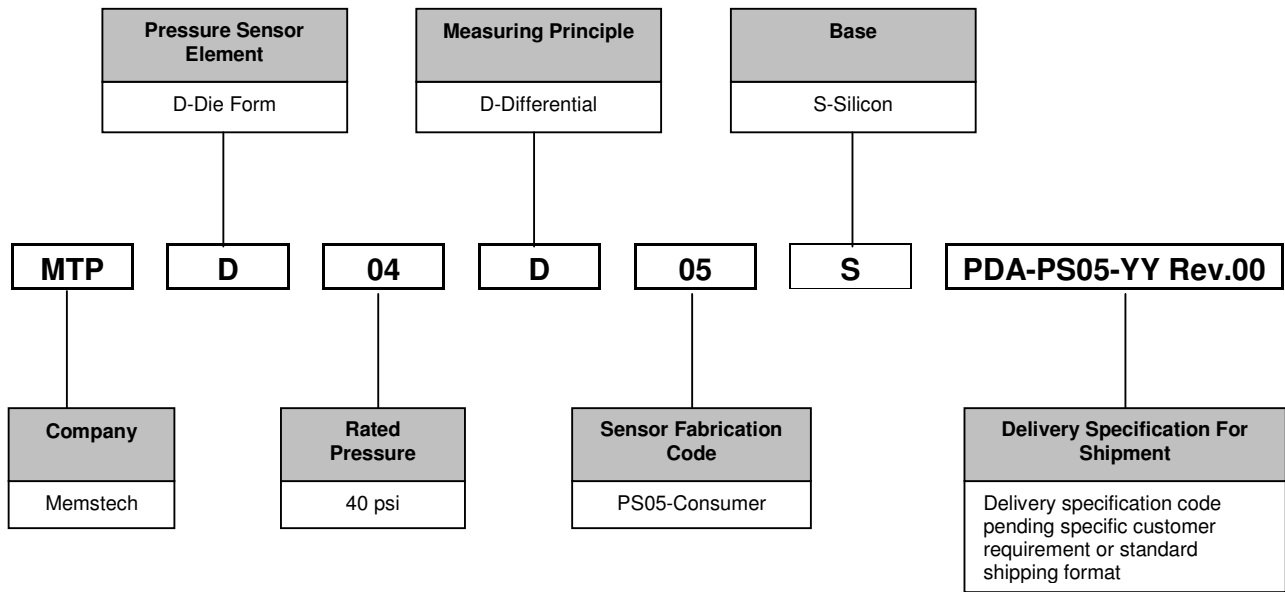
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MTPD-040D-05S

Uncompensated Pressure Sensor Die

HOW TO SPECIFY PART NUMBER



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 Malaysia: PTD 43005 Jalan Perindustrian Murni 11, Taman Perindustrian Murni, 81400 Senai Johor Malaysia **Tel:** +607 - 5996323 **Fax:** +607 - 598 6388
Email: bkpatmon@memstech.com **Website:** www.memstech.com

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