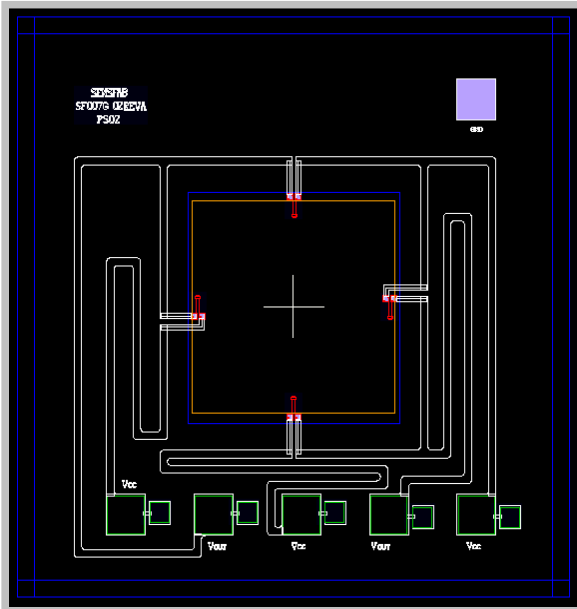
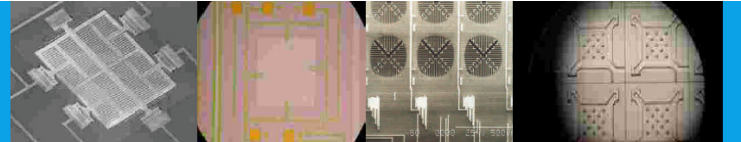


MTPD-007G-03S

Uncompensated Pressure Sensor Die



The MTPD007 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

- Piezo-resistive 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 7 psi

THE MAIN FIELD OF APPLICATIONS

- ✓ Medical instrumentation
- ✓ Blood pressure measurement
- ✓ Infusion pumps
- ✓ Kidney dialysis machines

MEMSENZ™ I
 Transduction Principle
 Capacitive
 Processing Technology
 Bulk/Deep RIE
 Actuation Mechanism
 Force (External)
 Signal Condition
 Two chips/Single chip

MEMSENZ™ II
 Transduction Principle
 Piezoresistive
 Processing Technology
 Bulk/Deep Wet Etch
 Actuation Mechanism
 Pressure (External)
 Signal Condition
 Two chips/Single chip

MEMSENZ™ III
 Transduction Principle
 Resistive
 Processing Technology
 Surface
 Actuation Mechanism
 Thermal
 Signal Condition
 Two chips

MEMSENZ™ IV
 Transduction Principle
 Capacitive
 Processing Technology
 Bulk
 Actuation Mechanism
 Sound
 Signal Condition
 Two chips

MTPD-007G-03S

Uncompensated Pressure Sensor Die

TECHNICAL DATA

Maximum ratings

Specification	Min.	Typ.	Max.	Unit
Operating Temperature	-40	-	85	°C
Storage Temperature	-40	-	125	°C
Supply Voltage	+1	6	10	V
Operating Current	-	2.5	-	mA

Data

Temperature=22±2°C, Relative humidity=45±5%, Supply voltage=6V

Specification	Min.	Typ.	Max.	Unit
Operating Pressure Range	-30	-	+300	mmHg
	-0.6	-	5.8	psi
	-4	-	40	kpa
	-0.04	-	0.4	bar
Over Pressure	125	-	-	psi
	6463	-	-	mmHg
	862	-	-	kpa
	8.6	-	-	bar
Zero Pressure Offset Voltage	-3	-1.5	0	mV/V
Sensitivity	32	39	45	µV/V/mmHg
	1.7	2.0	2.3	mV/V/psi
	0.2	0.3	0.3	mV/V/kpa
	145	177	204	mV/bar
Span	69	85	98	mV
Non Linearity	-	+0.5	+1	%FSO
Bridge Resistance (see note 5)	1000	1150	1300	Ω
TCO	-	-	±0.3	mmHg/°C
TCR	1100	1500	1800	ppm/°C
TCS	-	-	-0.1	%/°C

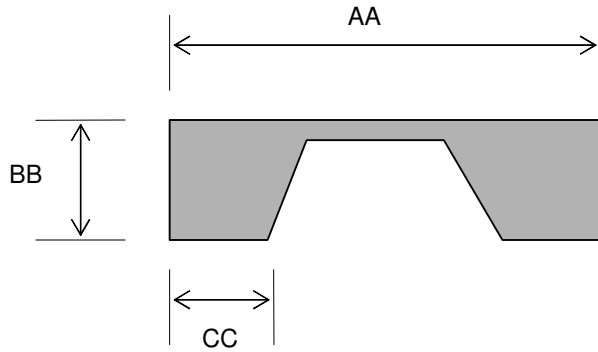
- Supply voltage DC and AC up to 5kHz, $V_{pp} = 10V \pm 0.1$ VDC
- Current is linear in full range
- Total error at half span is based on the difference between half span measurement and a straight line projection over the span of the device where

$$NL(\%) = \frac{O(\frac{S}{2}) - \frac{O(0)+O(S)}{2}}{O(\frac{S}{2})} \times 100$$
- Top side pressure application
- Resistance is measured by sourcing a constant current of 2.5mA
- 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 2.5mA, which represents the typical operating conditions
- TCO, TCR & TCS are tested from 0°C to 50°C

MTPD-007G-03S

Uncompensated Pressure Sensor Die

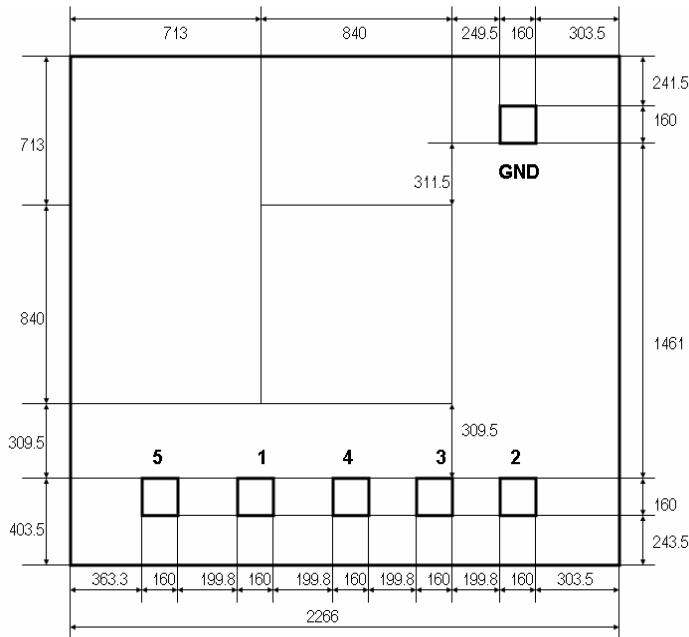
DIMENSIONS



Dim.	Typical	Tolerance	Units
AA	2266	± 0.33	µm
BB	541	± 10	µm
CC	345.5	± 2.33	µm
Dicing Process	60	± 15	µm

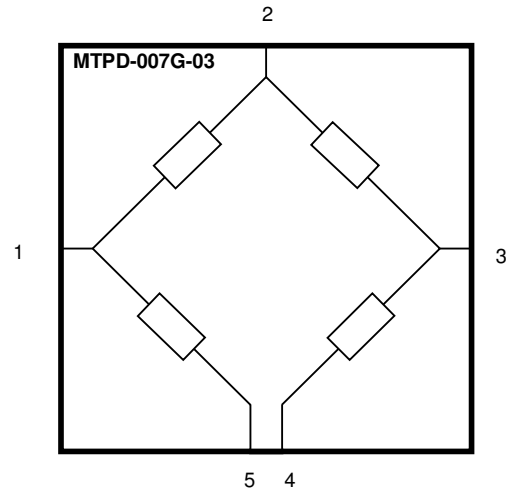
Note: Dimension AA & CC are prior to dicing process.

ELECTRICAL AND DIE LAYOUT



Note

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

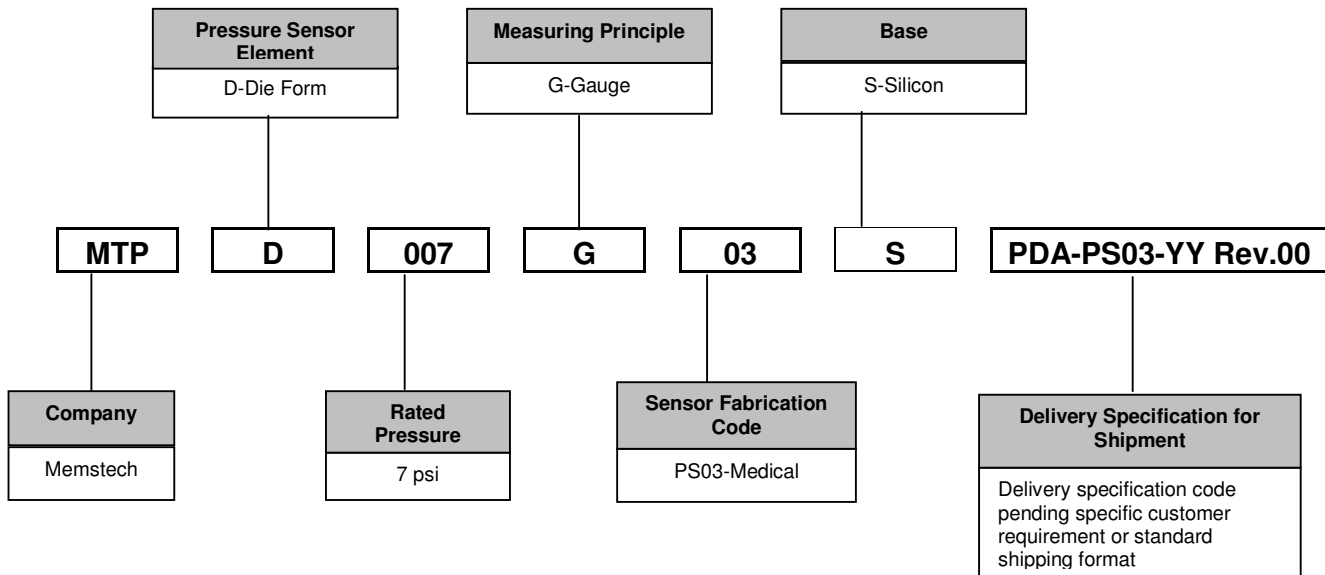


Pad	Symbol	Description
1	$V_{out +}$	Output voltage
2	$V_{cc +}$	Supply voltage
3	$V_{out -}$	Output voltage
4	$V_{cc -}$	Supply voltage
5	$V_{cc -}$	Supply voltage
GND	GND	Ground

MTPD-007G-03S

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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