

MS767

PRESSURE SENSOR DIE (0-7 BAR)



- 0 to 700 kPa range (7 bar or 102 PSI)
- Absolute pressure sensors
- RoHS-compatible & Pb-free¹

DESCRIPTION

The sensor element of the MS767 consists of a silicon micro-machined membrane with a Pyrex glass mounted under vacuum. Implanted resistors make use of the piezo-resistive effect. The MS767 is available as an absolute sensor (MS767A) where a sealed vacuum cavity underneath the membrane is used as reference pressure.

FEATURES

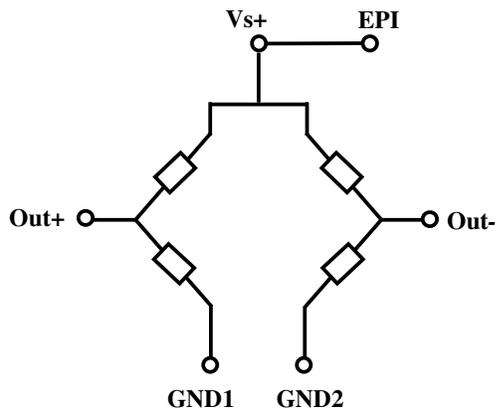
- Uncompensated pressure sensor die
- Output Span 392mV @ 5V
- Temperature Range -40°...+125°C
- Linearity 0.15% (typical)
- Die Size 1.72 x 1.58mm
- Low Cost, High reliability

APPLICATION

- For absolute pressure sensor systems
- Tire pressure measurements
- Electronic scales

ELECTRICAL CONNECTIONS

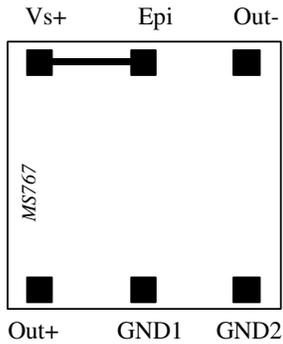
Positive output for pressure applied topside



- Vs+ : Supply voltage of Wheatstone bridge
- Epi : Connection of epitaxial layer (membrane)
- Out- : Negative output
- Out+ : Positive output
- GND1 : Ground
- GND2 : Ground

¹ The European RoHS directive 2002/95/EC (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment) bans the use of lead, mercury, cadmium, hexavalent chromium and polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

PAD OUT

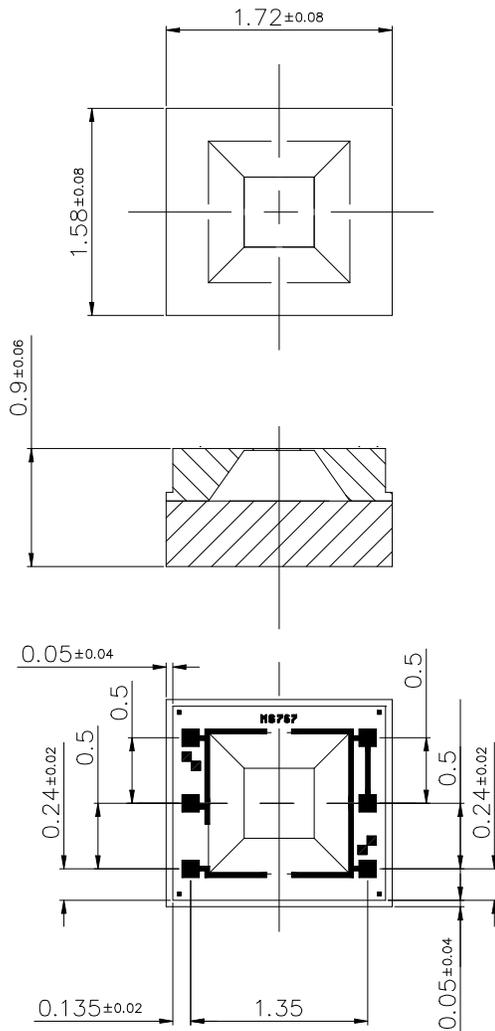


Important remarks:

As the sensing elements are diffused resistances, the voltage applied on the ground pads (GND1 and GND2) has to be lower than the voltage applied on supply voltage pad (Vs+).

The epitaxial layer is connected to the Vs+ pin on the die

LAYOUT



Bondable area=100x100um

FULL SCALE PRESSURE

kPa	bar	mbar	PSI	atm	mm Hg	m H ₂ O	Inches H ₂ O
700	7	7000	102	6.9	5250	71	2810

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Conditions	Min	Max	Unit
Supply voltage	VS+	T _a = 25 °C		20	V
Storage temperature	T _s		-40	+150	°C
Pressure overload				21	Bar

ELECTRICAL CHARACTERISTICS

(Reference conditions: Supply Voltage VS+ = 5 Vdc; Ambient Temperature T_a = 25 °C)

Parameter	Min	Typ	Max	Unit	Notes
Operating Pressure Range	0		7	Bar	
Operating Temperature Range	-40		125	°C	
Bridge Resistance	3.0	3.4	3.8	kΩ	
Full-scale span (FS)	322	392	462	mV	
Zero Pressure Offset	-40	0	40	mV	
Linearity		± 0.15	± 0.4	% FS	1
Temperature Coefficient of Resistance	+ 2400	+ 2800	+ 3300	ppm/°C	2
Span	- 1500	- 1900	- 2300	ppm/°C	
Offset	- 80		+ 80	μV/°C	
Pressure Hysteresis		± 0.05	± 0.15	% FS	3
Repeatability		± 0.1	± 0.2	% FS	4
Temperature Hysteresis			0.3	% FS	5

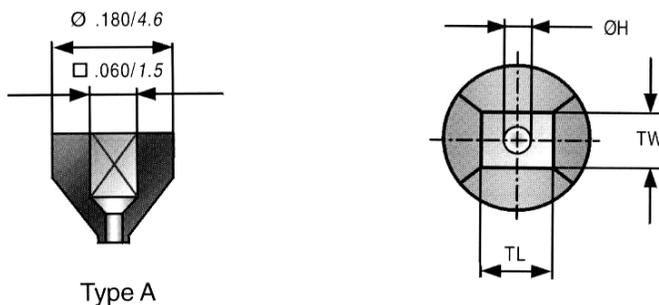
NOTES

- 1) Deviation at one half full-scale pressure from the least squares best line fit over pressure range (0 to 7 bar).
- 2) Slope of the endpoint straight line from 25 °C to 60 °C.
- 3) Output deviation at any pressure within the specified range, when this pressure is cycled to and from the minimum or maximum rated pressure, at 25 °C.
- 4) Same as 3) after 10 pressure cycles
- 5) Maximum difference in offset after one thermal cycle from -40 °C to +125 °C.

PICKING TOOLS

The MS767 sensors have a sensitive membrane (0.5 x 0.5 mm) the sensor dice outer diameter is: 1.62 x 1.48 mm. The pick and place tool has to be of a soft material as rubber (Hardness 78-97 Shore A). Its external size must fit the sensor and the vacuum cavity must be as large as the membrane itself. Successful test where done with some tools of SPT (see SPT drawing and references below).

SPT references	RTR-A1-060x060
External dimension	TL & TW: 0.06 inch / 1.52 mm
Internal dimensions	ØH: 0.035 inch / 0.89 mm



Type A

ORDERING INFORMATION

Product Code	Product	Art.-Nr.
MS767A-0.5	700 kPa Absolute Pressure Sensor with Pyrex™ 0.5 mm thick (standard)	76710025
MS767A-0.2	700 kPa Absolute Pressure Sensor with Pyrex™ 0.2 mm thick	76710022

The MS767 dice are supplied sawn on blue foil, mounted on plastic rings

FACTORY CONTACTS

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