

PRSA-L400-F30-TL-PCB/CHP

Silicon piezo-resistive sensing cantilevers



General description

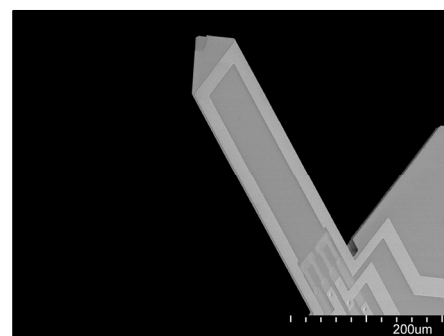
Piezo-Resistive Sensing Active (PRSA) probes are silicon cantilevers with integrated piezo-resistors on-chip and a heater for self-sensing and self-actuating probe applications. The piezo-resistors are integrated into a matched Wheatstone bridge to raise the sensitivity and compensate environmental thermal drift. By using the self-sensing readout no laser adjustment is necessary in comparison to conventional optical readout AFM systems. This saves time during a cantilever change. The free space above the cantilever enables new applications. The cantilever chip is bonded to a small printed circuit board (PCB) with a small connector for a quick cantilever change. A non-bonded chip is also available (-CHP version). The cantilever PCB can be connected to a SCL's low-noise pre-amplifier via a SCL's flex PCB with its counter-part PCB.

Specifications	
Model*	PRSA-L400-F30-TL-PCB PRSA-L400-F30-TL-CHP
Resonant frequency	14...45 kHz
Spring constant (calc.)	0.3...12 N/m
sensitivity**	1 μ V/nm
force sensitivity**	0.3...12 nN/ μ V
Length, width	410 \pm 5 μ m, 115 \pm 3 μ m
Material	silicon cantilever, boron doped 1k Ohm piezo resistors, aluminium tracks
Deflection sensing	on chip piezo-resistive bridge
Actuator	external shaker or on-chip heater (12 +/-4 Ohm)
Electrical connections	bonded to small PCB with connector (counter part PCB available) or delivered as bare chip (bonding pads on-chip)
Chip dimensions (h, w, l)	0.3 / 1.2 / 2.5 mm
* Electrical characterization is only possible for bonded cantilevers.	
** measured without amplification, 2.048 V bridge supply	

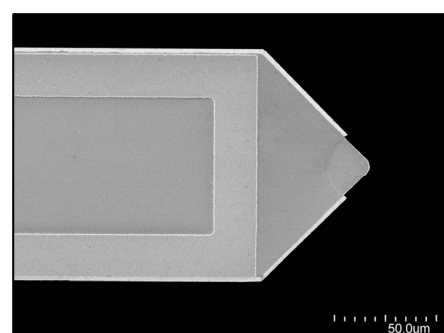
Applications:

- Integration in various setups for gas property, torque magnetometry or force measurements.
- Force or deflection measurements within TEM, SEM, XPS, etc.

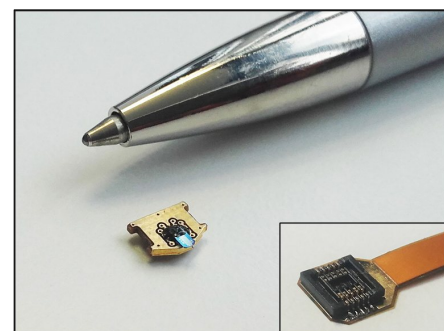
What about your application? Contact us!



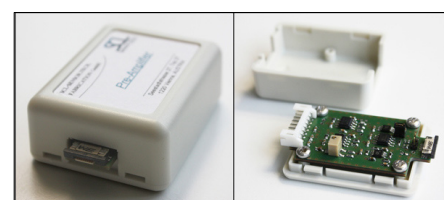
Top side of a PRSA-L400 cantilever with Al tracks for reading out the sensor signal



Top view of a PRSA-L400 cantilever with heater /current loop structure



Cantilever is bonded to a 6 x 4.5 mm PCB (height with connector 1.6 mm, complete height connected to CP-PCB: 1.8 mm); left: counter part PCB



Hardware for amplified readout:
Low-noise pre-amplifier (45x35 mm)

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