

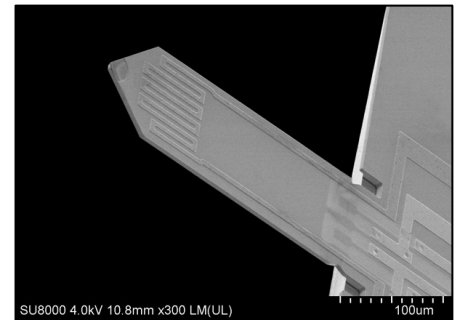
PRSA-L300-F50/60/80-TL-PCB/CHP

Silicon piezo-resistive sensing cantilevers

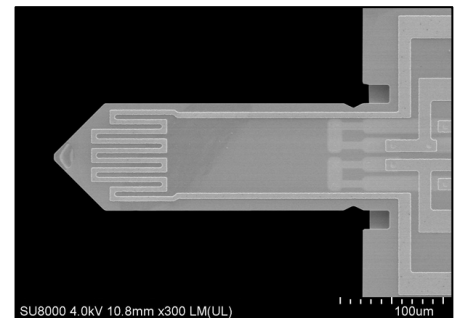


General description

Piezo-Resistive Sensing Active (PRSA) tipless probes are silicon cantilevers with on chip integrated piezo-resistors and a thermal actuator for various self-sensing cantilever 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. This saves time during a cantilever change and makes it independent from laser readout optics. This enables new sensing applications (e.g. force and gas sensing, torque magnetometry, etc.). By standard the cantilever Si chip is mounted to a small printed circuit board (CL-PCB) with a small 10 pin connector for a quick and easy cantilever change. The connector fits to a counter part PCB, for customized wiring or it can be directly connected to a SCL's low-noise pre-amplifier by a flat flex cable. Optional the cantilevers can be ordered as Si chips.



Tipless probe with Al sensor signal tracks



Top view of the probe

Specifications	PRSA-L300-F60-TL-CHP	
	PRSA-L300-F50-TL-PCB	PRSA-L300-F80-TL-PCB
Model **		
Resonant frequency **	30...65 kHz	65...95 kHz
Spring constant **	1...15 N/m	15...56 N/m
Application	torque magnetometry, force sensing, gas properties, mounting of special tips	
sensitivity*	1...2 µV/nm	
force sensitivity*	0.5...56 nN/µV	
Length / Width	300 ±5 µm / 110 ±3 µm	
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	
Electrical connections	bonded to small PCB with connector (counter part PCB available) or optional bonding pads on chip	
Chip dimensions (h, w, l)	0.3 / 1.2 / 2.5 mm	
* not amplified (signal direct at the chip), 2.048 V bridge supply		
** Cantilever models are divided in two parameter ranges when electrical characterization is possible with bonded cantilevers		

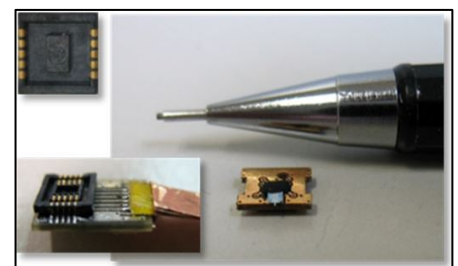
Applications:

- Integration on a standard AFM scanner
- Force or deflection measurements within TEM, SEM, XPS, etc.
- Torque magnetometry
- Various cantilever based sensor applications (media properties, air pressure/acoustic wave, etc.)

What about your application? Contact us!



10 self-sensing cantilevers (STD on PCB, optional as Si-chips), Si-chip h=0.3 mm



Cantilever is bonded onto a 6 x 4.5 mm PCB (height with connector 1.6 mm, with CP-PCB: 2.5 mm); left: counter part PCB

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