

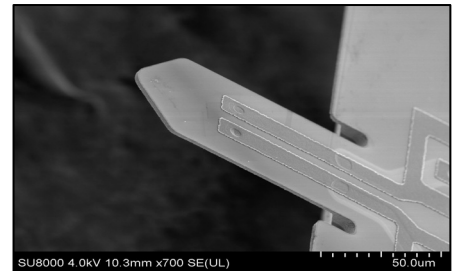
PRS-L100-F500-TL-PCB/CHP

Silicon piezo-resistive sensing cantilevers

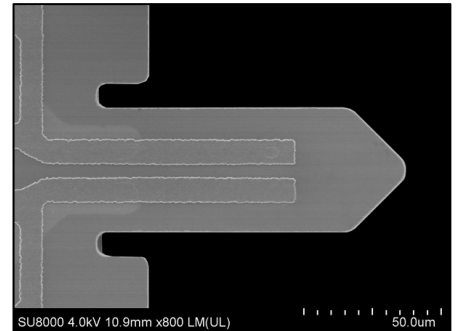


General description

Piezo-Resistive Sensing (PRS) tipless probes are silicon cantilevers with on chip integrated piezo-resistors 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, special tip mounting). 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 non-bonded Si-chips.



Tipless probe with Al sensor signal tracks



Top view of the probe

Specifications

Model	PRS-L100-F500-TL-PCB PRS-L100-F500-TL-CHP
Resonant frequency	200...800 kHz
Spring constant	6...400 N/m
sensitivity*	1...3 $\mu\text{V}/\text{nm}$
force sensitivity*	6...400 nN/ μV
Length, width	100 μm (+/-5), 48 \pm 3 μm
Material	silicon cantilever, boron doped 1k Ohm piezo resistors, aluminium tracks
Deflection sensing	on chip piezo-resistive bridge
Actuator	external shaker
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 / 2.7 mm

* not amplified, 2.048 V bridge supply

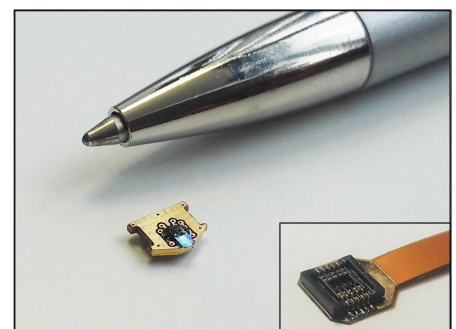


10 self-sensing cantilevers (on PCB or optional as Si-chips), Si-chip h=0.3 mm

Applications:

- Force or deflection measurements within TEM, SEM, XPS, etc.
- Torque magnetometry
- Mounting of special tips
- Various cantilever based sensor applications (media properties, air pressure/acoustic wave, etc.)

What about your application? Contact us!



Cantilever is bonded to 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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