

# PRS-L300-F50/60/80-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, etc.). 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.

## Specifications

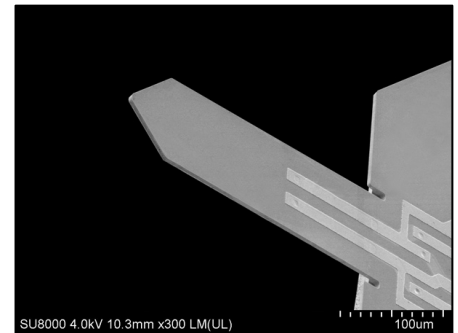
Model**	PRS-L300-F60-TL-CHP	
	PRS-L300-F50-TL-PCB	PRS-L300-F80-TL-PCB
Resonant frequency**	30...65 kHz	65...95 kHz
Spring constant**	1...15 N/m	15...56 N/m
sensitivity*	1...2 $\mu\text{V}/\text{nm}$	
force sensitivity*	0.5...56 $\text{nN}/\mu\text{V}$	
Length / Width	300 $\pm$ 5 $\mu\text{m}$ / 110 $\pm$ 3 $\mu\text{m}$	
Material	silicon cantilever, boron doped 1k Ohm piezo resistors, aluminium tracks	
Deflection sensing	on chip piezo-resistive bridge	
Actuator	external shaker	
Electrical connections	mounted to a small PCB with 10 pin connector (counter part PCB available) or optional as Si chip	
Chip dimensions (h, w, l)	0.3 / 1 / 2.6 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

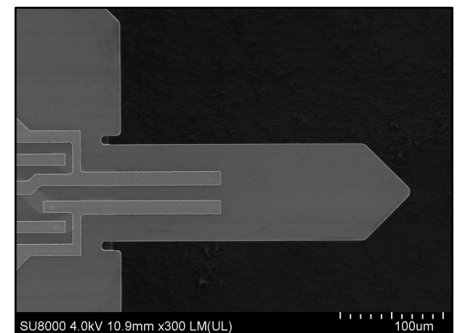
## Applications:

- 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!**



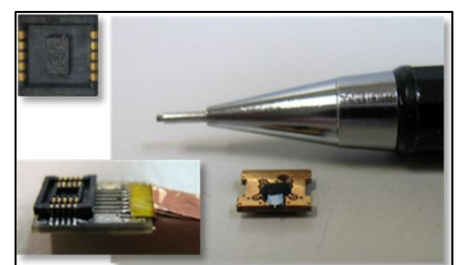
Tipless probe with Al sensor signal tracks



Top view of the probe



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



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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