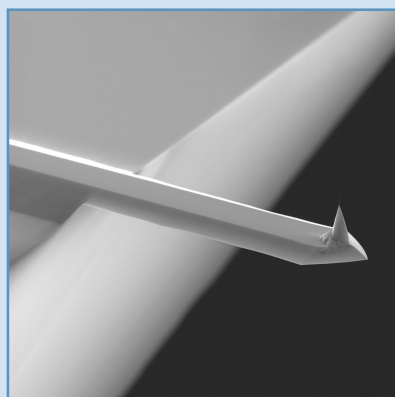


M-CIS SEM scan.



SEM scan of an NT-RTESPA AFM probe.

## Type: M-CIS

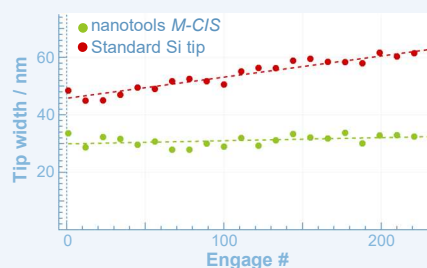
### The industry standard for precise and cost-efficient inspection of contact image sensors (CIS).

M-CIS probe made of high density, diamond-like carbon (HDC/DLC) for reliable and long-lasting high-resolution access to fine structures such as microlens arrays. Extract true depth information and highly precise pattern profiles with considerably reduced tip convolution effects due to the accurately tilt-compensated tip with an aspect ratio better than 1:5.

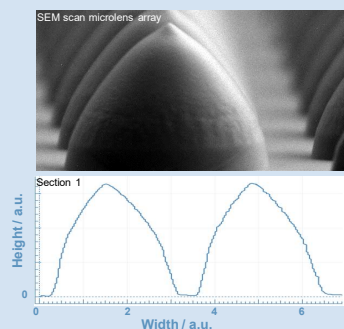
### Features

- **Precisely shaped.** Conical, rotationally symmetric tip shape fabricated with nanometer precision and an aspect ratio  $>1:5$ . Considerable reduction of tip artifacts compared to standard pyramidal Si tips.
- **Improved throughput.** Diamond-like material properties. Excellent long-term measurement stability for an outstanding cost-performance ratio.
- **Quality guaranteed.** 100% quality control for every individual tip. Online datasheets including individual dimensional values available 24/7 via QR code.

### Improved throughput



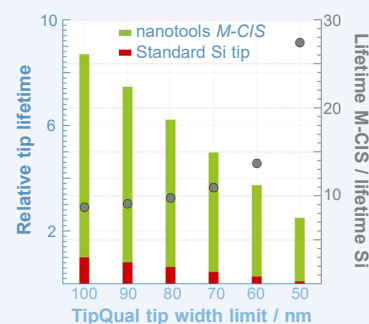
Tip width versus number of engages of an M-CIS probe (green) compared to a state-of-the-art Si probe (red), together with the corresponding linear fits (dashed lines). After 200 engages the tip width of the standard Si tip is considerably increased by ~32 %, while the relative tip width increase of the M-CIS probe is ~7 %.



Qualitative representation of a microlens array inspected with M-CIS (disguised customer data).

Left axis: relative tip lifetime of M-CIS (green bars) and a state-of-the-art Si probes (red bars) depending on the tip qualification tip width limit. With decreasing tip width limit, the enhanced tip lifetime of an M-CIS probe becomes more and more pronounced (right axis, grey dots).

At a tip width limit of 50 nm the tip lifetime of the M-CIS probe is more than 25 times larger than that of the standard Si probe.



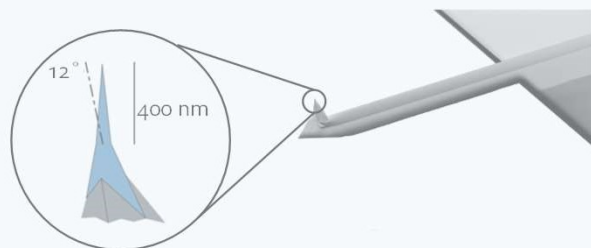


## Technical specifications

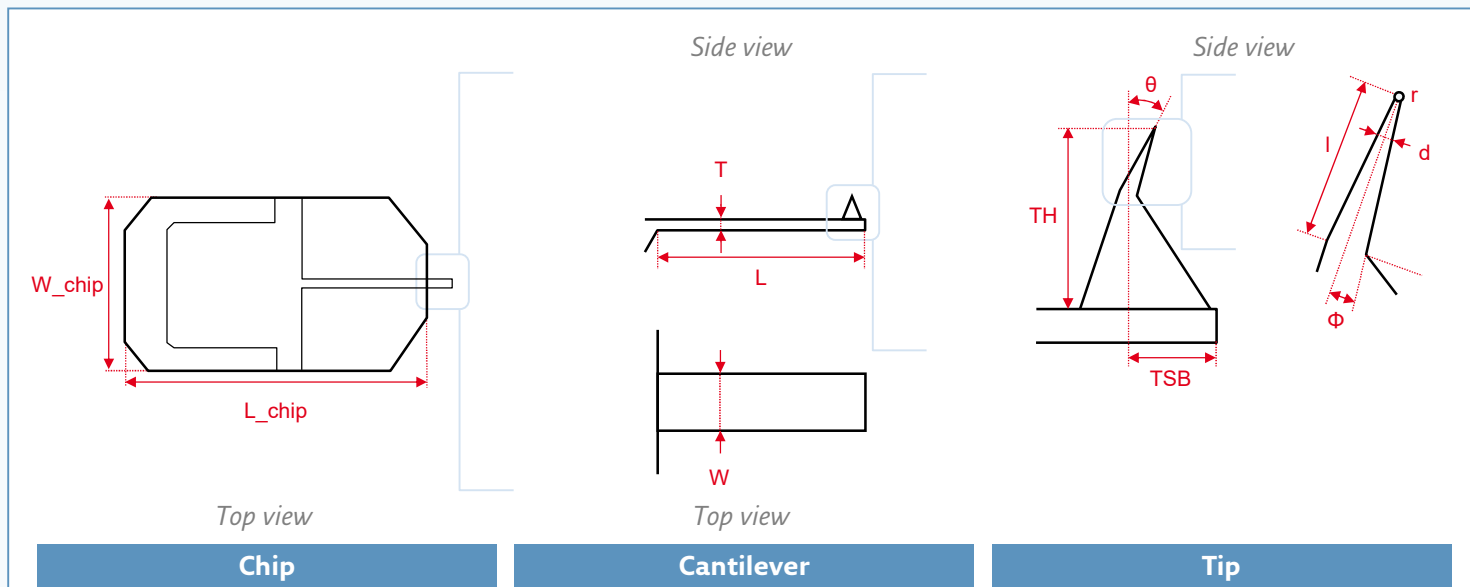
## M-CIS

Part number	NT_MCIS_v0020	
Tip		
Material	HDC/DLC	
Shape	conical	
Length / l	400 nm	(±100 nm)
Width / d	n/a	
Half cone angle / Φ	<4°	(AR >5)
Sharpness (radius) / r	10 nm	(±2 nm)
Tilt compensation / θ	12°	(±1°)
Total tip height / TH	15 μm	(10-15 μm)
Tip set back / TSB	15 μm	(5-25 μm)
Cantilever		
Material	Si	
Shape	NT-RTESPA	
Length / L	120 μm	(±5 μm)
Width / W	30 μm	(±2 μm)
Thickness / T	4.4 μm	(±0.5 μm)
Force constant <sup>[1]</sup> / k	40 N/m	(±20 N/m)
Resonance frequency <sup>[1]</sup> / f	320 kHz	(±50 kHz)
Tip side coating	none	
Back side coating	reflex	
Chip		
Length / L_chip	3400 μm	
Width / W_chip	1600 μm	
Thickness / T_chip	315 μm	
Alignment grooves	no	

- Consistent dimensions
- Carbon durability
- Industry proven reliability



[1] Resonance frequency  $f$  extracted from LDV measurements; cantilever stiffness  $k$  calculated from the (measured) cantilever geometry. Actual values of >90% of all probes are guaranteed to be within the specified range. | n/a: specification not applicable for this product.



For more information please visit  
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