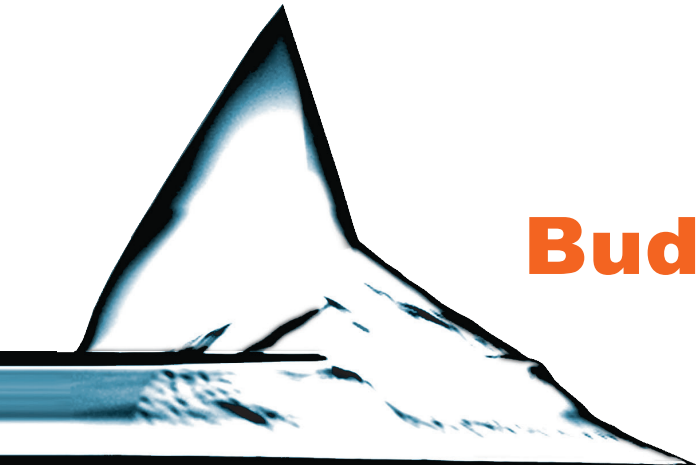


# AFM Probes Catalogue



**Budget** *Sensors*

Quality meets Price

# Index:

## Silicon AFM Probes

Tapping Mode	Tap300-G / Tap300Al-G	p. 2
Tapping Mode (Long Cantilever)	Tap190-G / Tap190Al-G	p. 3
Soft Tapping Mode	Tap150-G / Tap150Al-G	p. 4
Force Modulation Mode	Multi75-G / Multi75Al-G	p. 5
Contact Mode	Contact-G / ContAl-G	p. 6

## Conductive AFM Probes

Tapping Mode	ElectriTap300-G	p. 8
Tapping Mode (Long Cantilever)	ElectriTap190-G	p. 9
Soft Tapping Mode	ElectriTap150-G	p.10
Force Modulation Mode	ElectriMulti75-G	p.11
Contact Mode	ElectriCont-G	p.12

## GOLD Series

Tapping Mode and special applications	Tap300GD-G / Tap300GB-G	p. 14
Tapping Mode (Long Cantilever) and special applications	Tap190GD-G / Tap190GB-G	p. 15
Soft Tapping Mode and special applications	Tap150GD-G / Tap150GB-G	p. 16
Force Modulation and special applications	Multi75GD-G / Multi75GB-G	p. 17
Contact Mode and special applications	ContGD-G / ContGB-G	p. 18

<b>Magnetic AFM Probes</b>	Multi75M-G	p.20
----------------------------	------------	------

## Diamond-Like-Carbon AFM Probes

Tapping Mode	Tap300DLC	p. 22
Tapping Mode (Long Cantilever)	Tap190DLC	p. 23
Soft Tapping Mode	Tap150DLC	p. 24
Force Modulation Mode	Multi75DLC	p. 25
Contact Mode	ContDLC	p. 26

## Silicon Nitride AFM Probes

SiNi	p. 28
------	-------

## All In One - Silicon AFM Probes

AIO with 4 different cantilevers	All-In-One / All-In-OneAI	p. 31
4 tipless cantilevers	Tipless-All-In-One / Tipless-All-In-OneAI	p. 32
4 conductive cantilevers	ElectriAll-In-One	p. 33
4 DLC coated cantilevers	All-In-One-DLC	p. 34
4 diamond coated cantilevers	All-In-One-DD	p. 35

## Mixed box of AFM Probes

BudgetComboBox	p. 36
----------------	-------

## Single Hi-Res AFM Probes

SHR300	p. 39
SHR150	p. 40
SHR75	p. 41

## Calibration Standards

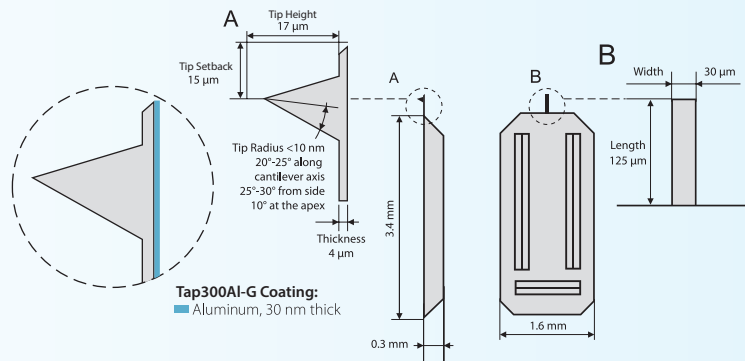
AFM Tip Characterizer	TipCheck	p. 43
Height Calibration Standards	HS-20MG / HS-100MG / HS-500MG	p. 44
XYZ Calibration Nanogrid	CS-20NG	p. 45

# Silicon AFM Probes



# Tapping Mode

	Tap300-G	Tap300AI-G
10 probes	Tap300-G-10	Tap300AI-G-10
50 probes	Tap300-G-50	Tap300AI-G-50
380 probes	Tap300-G-380	Tap300AI-G-380



Technical Data:	VALUE	RANGE
Resonance Frequency	300 kHz	± 100 kHz
Force Constant	40 N/m	20 to 75 N/m
Length	125 µm	± 10 µm
Mean Width	30 µm	± 5 µm
Thickness	4 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	<10 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

**Application:** Tapping Mode, Intermittent Contact Mode

**Coating:** None (Tap300-G) or 30nm thick Aluminum reflex coating (Tap300AI-G)

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 10 nm gives good resolution and reproducibility.

This probe uses an “on scan angle” symmetric tip to provide a more symmetric representation of features over 200 nm.

[View image gallery for application images taken with this product!](#)

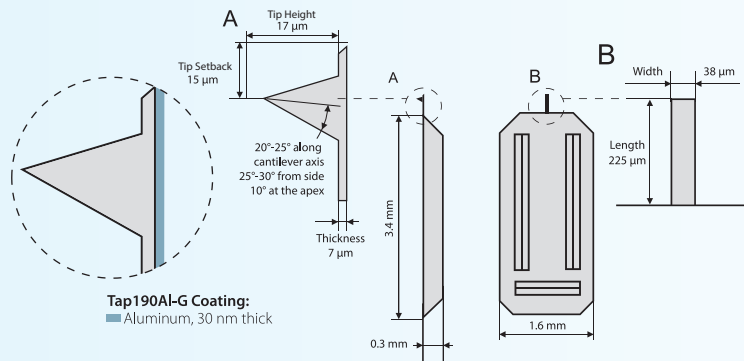
The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**



# Tapping Mode

-3-



**Application:** Tapping Mode, Intermittent Contact Mode

**Coating:** None (Tap190-G) or 30nm thick Aluminum reflex coating (Tap190AI-G)

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 10 nm gives good resolution and reproducibility.

This probe uses an “on scan angle” symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size:** 3.4 x 1.6 x 0.3 mm

Tap190-G

Tap190AI-G

10 probes

Tap190-G-10

Tap190AI-G-10

50 probes

Tap190-G-50

Tap190AI-G-50

380 probes

Tap190-G-380

Tap190AI-G-380

Technical Data:

VALUE

RANGE

Resonance Frequency

190 kHz

± 30 kHz

Force Constant

48 N/m

28 to 75 N/m

Length

225 µm

± 10 µm

Mean Width

38 µm

± 5 µm

Thickness

7 µm

± 1 µm

Tip Height

17 µm

± 2 µm

Tip Setback

15 µm

± 5 µm

Tip Radius

<10 nm

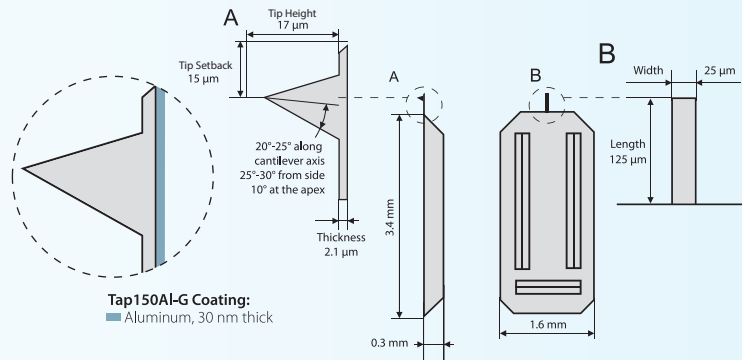
Half Cone Angles

20°-25° along cantilever axis  
 25°-30° from side  
 10° at the apex

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# Soft Tapping Mode

	Tap150-G	Tap150Al-G
10 probes	Tap150-G-10	Tap150Al-G-10
50 probes	Tap150-G-50	Tap150Al-G-50
380 probes	Tap150-G-380	Tap150Al-G-380



Technical Data:	VALUE	RANGE
Resonance Frequency	150 kHz	± 75 kHz
Force Constant	5 N/m	1.5 to 15 N/m
Length	125 µm	± 10 µm
Mean Width	25 µm	± 5 µm
Thickness	2.1 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	<10 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

**Application:** Soft Tapping Mode, Intermittent Contact Mode

**Coating:** None (Tap150-G) or 30nm thick Aluminum reflex coating (Tap150Al-G)

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 10 nm gives good resolution and reproducibility.

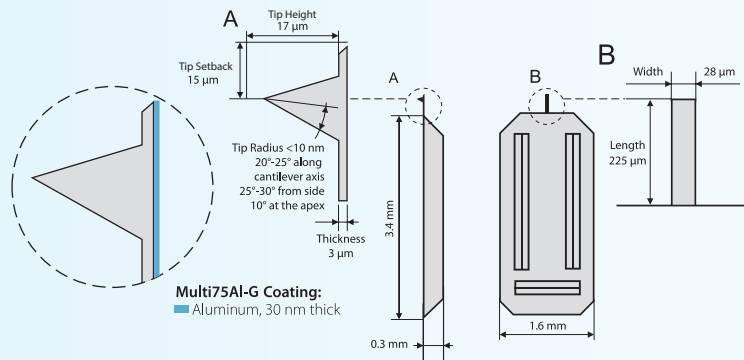
This probe uses an "on scan angle" symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**

# Force Modulation

-5-



**Application:** Force Modulation Mode, Light Tapping Mode, Pulsed Force Mode (PFM)

**Coating:** None (Multi75-G) or 30nm thick Aluminum reflex coating (Multi75AF-G)

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 10 nm gives good resolution and reproducibility.

This probe uses an “on scan angle” symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

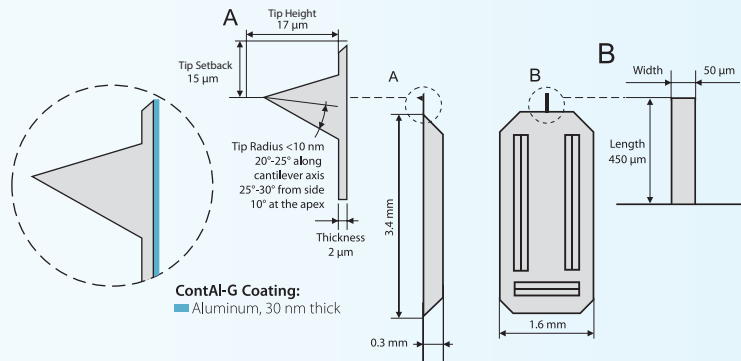
**Chip size: 3.4 x 1.6 x 0.3 mm**

	Multi75-G	Multi75AF-G
10 probes	Multi75-G-10	Multi75AF-G-10
50 probes	Multi75-G-50	Multi75AF-G-50
380 probes	Multi75-G-380	Multi75AF-G-380

Technical Data:	VALUE	RANGE
Resonance Frequency	75 kHz	± 15 kHz
Force Constant	3 N/m	1 to 7 N/m
Length	225 µm	± 10 µm
Mean Width	28 µm	± 5 µm
Thickness	3 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	<10 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

# Contact Mode

Contact-G	ContAl-G
10 probes <b>Contact-G-10</b>	<b>ContAl-G-10</b>
50 probes <b>Contact-G-50</b>	<b>ContAl-G-50</b>
380 probes <b>Contact-G-380</b>	<b>ContAl-G-380</b>



Technical Data:	VALUE	RANGE
Resonance Frequency	13 kHz	± 4 kHz
Force Constant	0.2 N/m	0.07 to 0.4 N/m
Length	450 µm	± 10 µm
Mean Width	50 µm	± 5 µm
Thickness	2 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	< 10 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

**Application:** Contact Mode

**Coating:** None (Cont-G) or 30nm thick Aluminum reflex coating (ContAl-G)

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 10 nm gives good resolution and reproducibility.

This probe uses an **"on scan angle"** symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**

# Conductive AFM Probes



# Conductive AFM Probes

## ElectriTap300-G

10 probes

Tap300E-G-10

50 probes

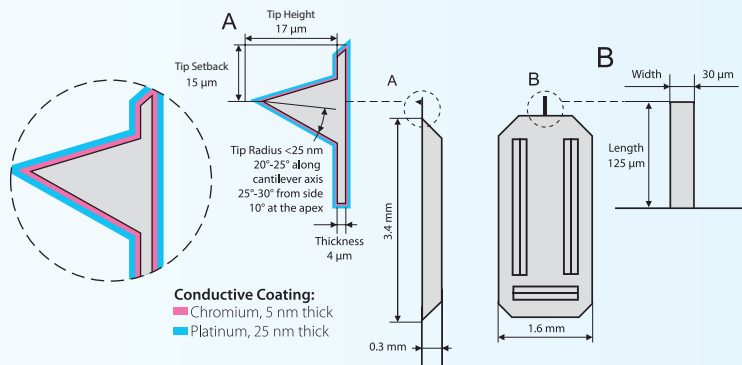
Tap300E-G-50

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 25 nm gives good resolution and reproducibility.

This probe uses an “on scan angle” symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has alignment grooves on the backside and fits most commercial AFMs as it is industry standard size.

Chip size: 3.4 x 1.6 x 0.3 mm



Technical Data:	VALUE	RANGE
Resonance Frequency	300 kHz	± 100 kHz
Force Constant	40 N/m	20 to 75 N/m
Length	125 µm	± 10 µm
Mean Width	30 µm	± 5 µm
Thickness	4 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	<25 nm	
Half Cone Angles	20°-25° along cantilever axis	
	25°-30° from side	
	10° at the apex	
Contact Resistance	300 Ohm on Platinum thin film surface	

**Application:** Tapping, Intermittent Contact and electric modes such as:

- Scanning Capacitance Microscopy (SCM)
- Electrostatic Force Microscopy (EFM)
- Kelvin Probe Force Microscopy (KPFM)

**Coating:** Electrically conductive coating of 5 nm Chromium and 25 nm Platinum on both sides of the cantilever. This coating also enhances the laser reflectivity of the cantilever.

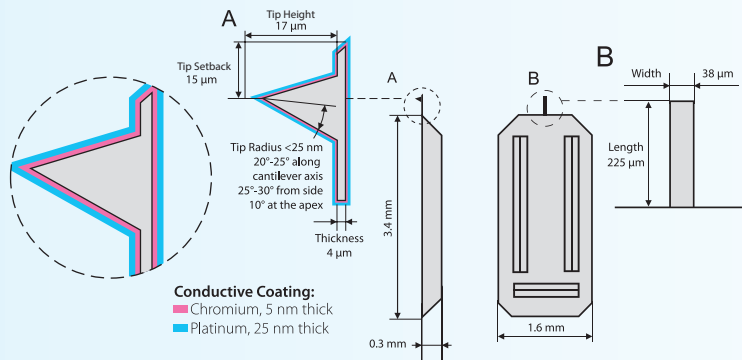
# Conductive AFM Probes

-9-

## ElectriTap190-G

**10 probes** Tap190E-G-10

**50 probes** Tap190E-G-50



The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 25 nm gives good resolution and reproducibility.

This probe uses an **"on scan angle"** symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has alignment grooves on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**

**Application:** Tapping, Intermittent Contact and electric modes such as:

- Scanning Capacitance Microscopy (SCM)
- Electrostatic Force Microscopy (EFM)
- Kelvin Probe Force Microscopy (KPFM)

**Coating:** Electrically conductive coating of 5 nm Chromium and 25 nm Platinum on both sides of the cantilever. This coating also enhances the laser reflectivity of the cantilever.

Technical Data:	VALUE	RANGE
Resonance Frequency	190 kHz	± 30 kHz
Force Constant	48 N/m	28 to 75 N/m
Length	225 µm	± 10 µm
Mean Width	38 µm	± 5 µm
Thickness	7 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	<25 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

# Conductive AFM Probes

## ElectriTap150-G

10 probes

Tap150E-G-10

50 probes

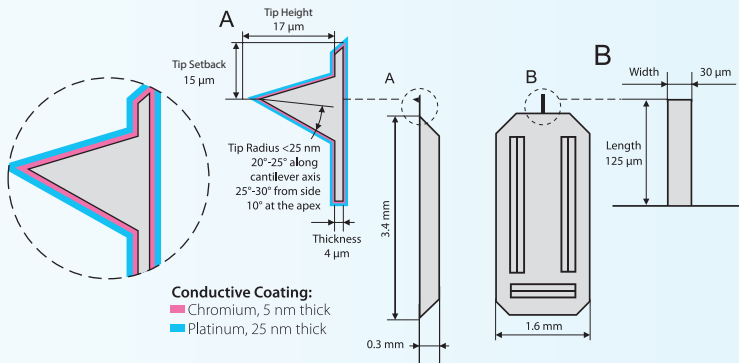
Tap150E-G-50

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 25 nm gives good resolution and reproducibility.

This probe uses an “on scan angle” symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has alignment grooves on the backside and fits most commercial AFMs as it is industry standard size.

Chip size: 3.4 x 1.6 x 0.3 mm



### Technical Data:

### VALUE

### RANGE

Resonance Frequency	150 kHz	± 75 kHz
Force Constant	5 N/m	1.5 to 15 N/m
Length	125 µm	± 10 µm
Mean Width	25 µm	± 5 µm
Thickness	2.1 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	<25 nm	
Half Cone Angles	20°-25° along cantilever axis	
	25°-30° from side	
	10° at the apex	

**Application:** Soft Tapping, Intermittent Contact and electric modes such as:

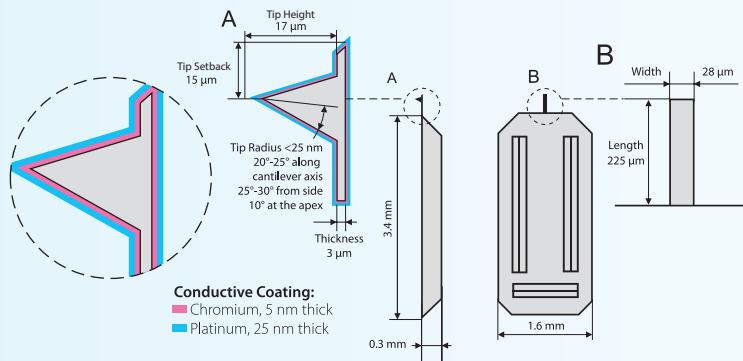
- Scanning Capacitance Microscopy (SCM)
- Electrostatic Force Microscopy (EFM)
- Kelvin Probe Force Microscopy (KPFM)

**Coating:** Electrically conductive coating of 5 nm Chromium and 25 nm Platinum on both sides of the cantilever. This coating also enhances the laser reflectivity of the cantilever.



# Conductive AFM Probes

-11-



The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 25 nm gives good resolution and reproducibility.

This probe uses an "on scan angle" symmetric tip to provide a more symmetric representation of features over 200 nm.

## ElectriMulti75-G

**10 probes** Multi75E-G-10

**50 probes** Multi75E-G-50

The **AFM Probe Holder Chip** has alignment grooves on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**

**Application:** Force Modulation Mode, Light Tapping Mode, Pulsed Force Mode and electric modes such as:

- Scanning Capacitance Microscopy (SCM)
- Electrostatic Force Microscopy (EFM)
- Kelvin Probe Force Microscopy (KPFM)

**Coating:** Electrically conductive coating of 5 nm Chromium and 25 nm Platinum on both sides of the cantilever. This coating also enhances the laser reflectivity of the cantilever.

Technical Data:	VALUE	RANGE
Resonance Frequency	75 kHz	± 15 kHz
Force Constant	3 N/m	1 to 7 N/m
Length	225 µm	± 10 µm
Mean Width	28 µm	± 5 µm
Thickness	3 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	< 25 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	
Contact Resistance	300 Ohm on Platinum thin film surface	

# Conductive AFM Probes

## ElectriCont-G

10 probes

ContE-G-10

50 probes

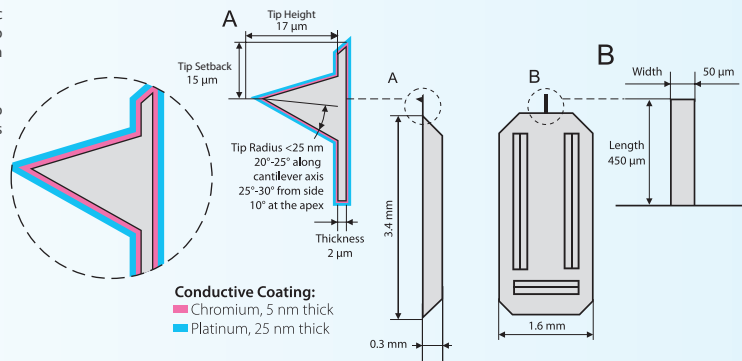
ContE-G-50

The **AFM Probe Holder Chip** has alignment grooves on the backside and fits most commercial AFMs as it is industry standard size.

Chip size: 3.4 x 1.6 x 0.3 mm

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 25 nm gives good resolution and reproducibility.

This probe uses an **"on scan angle"** symmetric tip to provide a more symmetric representation of features over 200 nm.



### Technical Data:

### VALUE

### RANGE

Resonance Frequency	13 kHz	± 4 kHz
Force Constant	0.2 N/m	0.07 to 0.4 N/m
Length	450 µm	± 10 µm
Mean Width	50 µm	± 5 µm
Thickness	2 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	<25 nm	
Half Cone Angles	20°-25° along cantilever axis	
	25°-30° from side	
	10° at the apex	
Contact Resistance	300 Ohm on Platinum thin film surface	

**Application:** Contact Mode and electric modes such as:

- Scanning Capacitance Microscopy (SCM)
- Electrostatic Force Microscopy (EFM)
- Kelvin Probe Force Microscopy (KPFM)

**Coating:** Electrically conductive coating of 5 nm Chromium and 25 nm Platinum on both sides of the cantilever. This coating also enhances the laser reflectivity of the cantilever.

# Gold Series

## Gold Coated Silicon AFM Probes



# Gold Series

Tap300GD-G

Tap300GB-G

10 probes

Tap300GD-G-10

Tap300GB-G-10

50 probes

Tap300GD-G-50

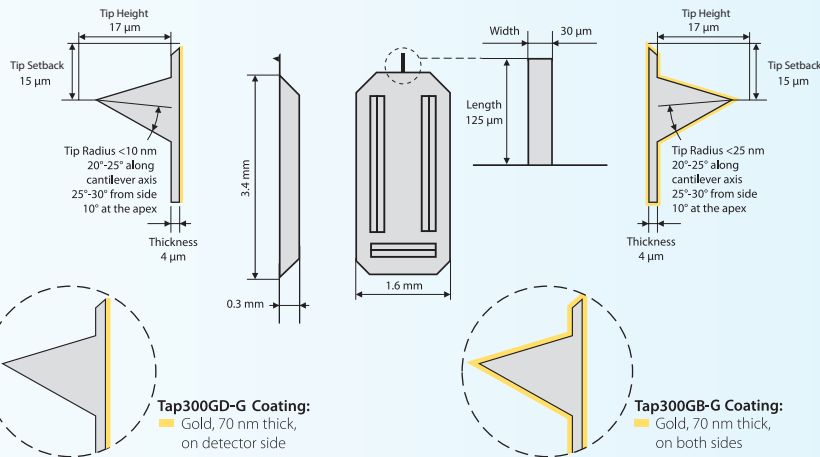
Tap300GB-G-50

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 10 nm for Tap300GD-G and less than 25 nm for Tap300GB-G gives good resolution and reproducibility.

This probe uses an “on scan angle” symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has alignment grooves on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**



## Tap300GD-G

**Application:** Tapping Mode, Intermittent Contact Mode

**Coating:** 70 nm Gold coating on detector side of the cantilever

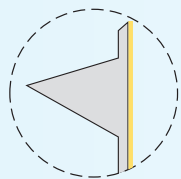
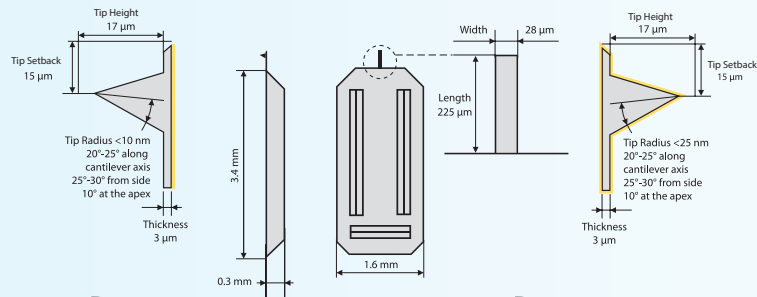
## Tap300GB-G

**Application:** Tapping Mode, Intermittent Contact Mode and special applications

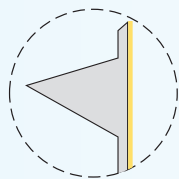
**Coating:** 70 nm Gold coating on both sides of the cantilever

# Gold Series

-15-



**Tap190GD-G Coating:**  
Gold, 70 nm thick,  
on detector side



**Tap190GB-G Coating:**  
Gold, 70 nm thick,  
on detector side

## Tap190GD-G

**Application:** Tapping Mode,  
Intermittent Contact Mode,  
Long Cantilever

**Coating:** 70 nm Gold on detector  
side of the cantilever

## Tap190GB-G

**Application:** Tapping Mode,  
Intermittent Contact Mode,  
Long Cantilever  
and special applications

**Coating:** 70 nm Gold coating on both  
sides of the cantilever

## Tap190GD-G

## Tap190GB-G

10 probes

**Tap190GD-G-10**

**Tap190GB-G-10**

50 probes

**Tap190GD-G-50**

**Tap190GB-G-50**

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 10 nm gives good resolution and reproducibility.

This probe uses an "on scan angle" symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size:** 3.4 x 1.6 x 0.3 mm

Technical Data:	VALUE	RANGE
Resonance Frequency	190 kHz	± 30 kHz
Force Constant	48 N/m	28 to 75 N/m
Length	225 µm	± 10 µm
Mean Width	38 µm	± 5 µm
Thickness	7 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	<10 nm (Tap190GD-G) / <25 nm (Tap190GB-G)	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

## Tap150GD-G

## Tap150GB-G

10 probes

Tap150GD-G-10

Tap150GB-G-10

50 probes

Tap150GD-G-50

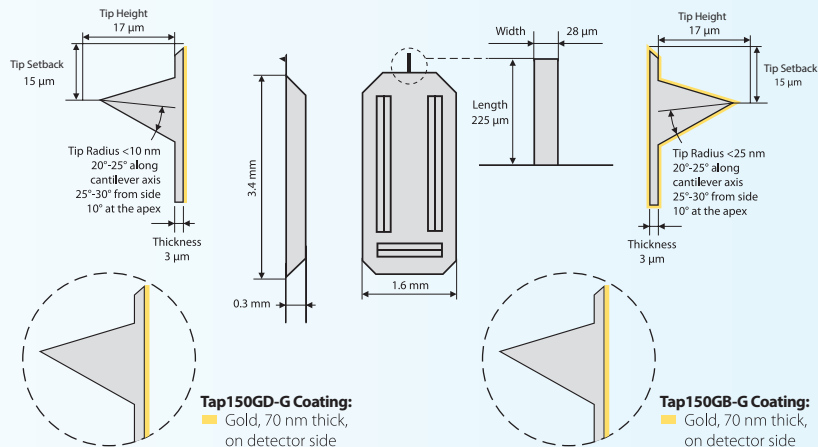
Tap150GB-G-50

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 10 nm for Tap150GD-G and less than 25 nm for Tap150GB-G gives good resolution and reproducibility.

This probe uses an “on scan angle” symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has alignment grooves on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**



## Tap150GD-G

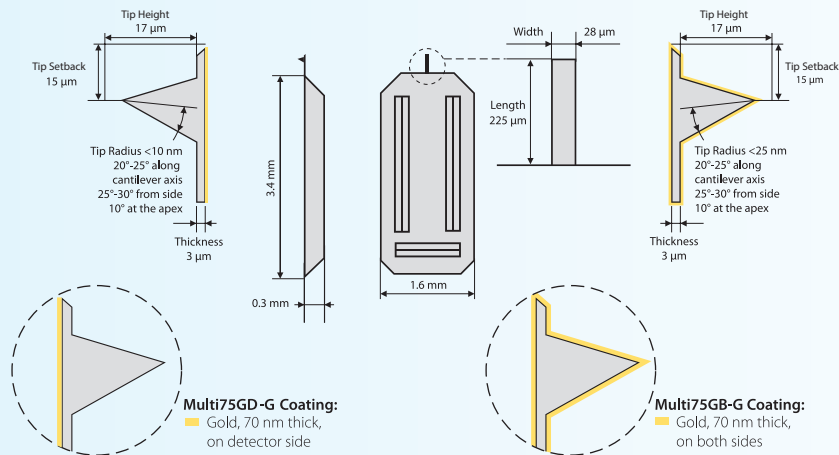
**Application:** Soft Tapping Mode, Intermittent Contact Mode

**Coating:** 70 nm Gold on detector side of the cantilever

## Tap150GB-G

**Application:** Soft Tapping Mode, Intermittent Contact Mode and special applications

**Coating:** 70 nm Gold coating on both sides of the cantilever



## Multi75GD-G

**Application:** Force Modulation Mode, Light Tapping Mode, Pulsed Force Mode(PFM)

**Coating:** 70 nm Gold on detector side of the cantilever

## Multi75GB-G

**Application:** Force Modulation Mode, Light Tapping Mode, Pulsed Force Mode(PFM) and special applications

**Coating:** 70 nm Gold coating on both sides of the cantilever

## Multi75GD-G

## Multi75GB-G

10 probes

**Multi75GD-G-10**

**Multi75GB-G-10**

50 probes

**Multi75GD-G-50**

**Multi75GB-G-50**

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 10 nm for Multi75GD and less than 25 nm for Multi75GB-G gives good resolution and reproducibility.

This probe uses an "on scan angle" symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has alignment grooves on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size:** 3.4 x 1.6 x 0.3 mm

Technical Data:	VALUE	RANGE
Resonance Frequency	75 kHz	± 15 kHz
Force Constant	3 N/m	1 to 7 N/m
Length	225 µm	± 10 µm
Mean Width	28 µm	± 5 µm
Thickness	3 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	<10 nm (Multi75GD-G) / <25 nm (Multi75GB-G)	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

## ContGD-G

## ContGB-G

10 probes

ContGD-G-10

ContGB-G-10

50 probes

ContGD-G-50

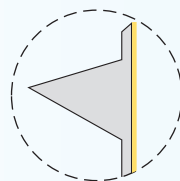
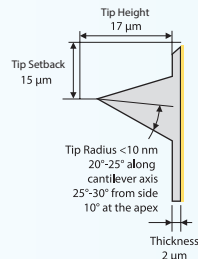
ContGB-G-50

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 10 nm for ContGD and less than 25 nm for ContGB-G gives good resolution and reproducibility.

This probe uses an “**on scan angle**” symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has alignment grooves on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**



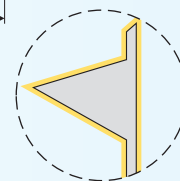
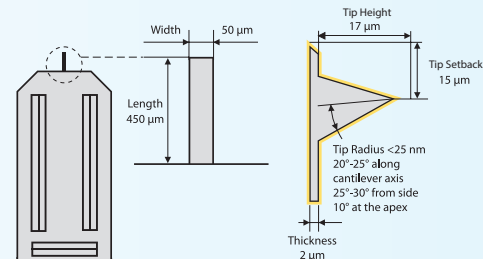
**ContGD-G Coating:**

Gold, 70 nm thick, on detector side

## ContGD-G

**Application:** Contact Mode

**Coating:** 70 nm Gold on detector side of the cantilever



**ContGB-G Coating:**

Gold, 70 nm thick, on both sides

## ContGB-G

**Application:** Contact Mode and special applications

**Coating:** 70 nm Gold coating on both sides of the cantilever



# Magnetic AFM Probes



# Magnetic AFM Probes

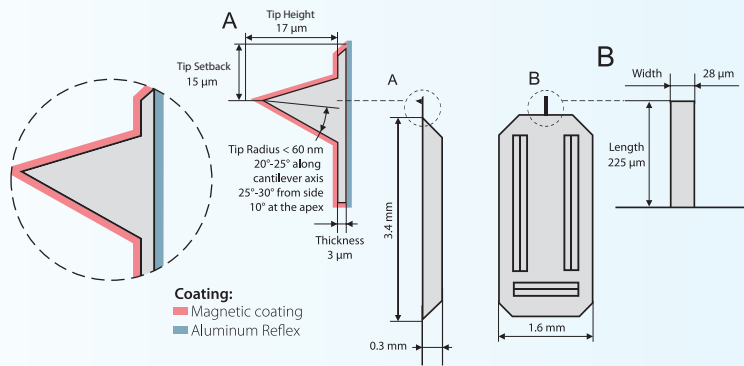
## Magnetic Multi75-G

10 probes

Multi75M-G-10

50 probes

Multi75M-G-50



Technical Data:	VALUE	RANGE
Resonance Frequency	75 kHz	± 15 kHz
Force Constant	3 N/m	1 to 7 N/m
Length	225 µm	± 10 µm
Mean Width	28 µm	± 5 µm
Thickness	3 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	<60 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

**Application:** Magnetic Force Microscopy (MFM)

**Coating:** Magnetic coating on the tip side  
and aluminum reflex coating on detector side

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 60 nm gives good resolution and reproducibility.

This probe uses an “on scan angle” symmetric tip to provide a more symmetric representation of features over 200 nm.

[View image gallery for application images taken with this product!](#)

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**

# Diamond-Like-Carbon AFM Probes

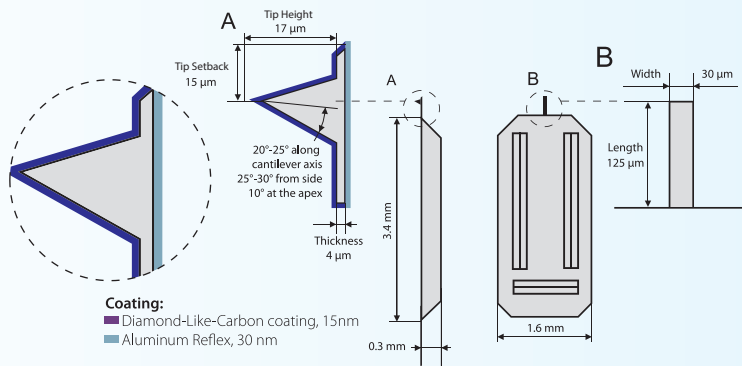


# DLC AFM Probes

## Tap300DLC

10 probes Tap300DLC-10

50 probes Tap300DLC-50



Technical Data:	VALUE	RANGE
Resonance Frequency	300 kHz	± 100 kHz
Force Constant	40 N/m	20 to 75 N/m
Length	125 µm	± 10 µm
Mean Width	30 µm	± 5 µm
Thickness	4 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	< 15 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

**Application:** Tapping Mode, Intermittent Contact Mode

**Coating:** Diamond-Like-Carbon coating on the tip side of the cantilever, 15 nm thick;  
 Aluminum reflex coating on detector side of the cantilever, 30 nm thick

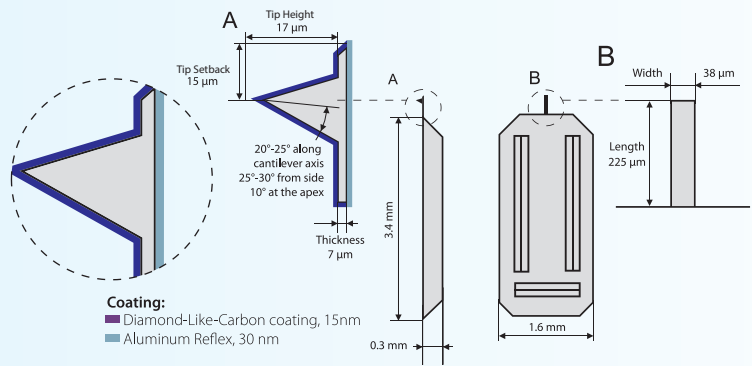
The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 15 nm gives good resolution and reproducibility.

This probe uses an "on scan angle" symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**

# DLC AFM Probes



**Application:** Tapping Mode, Intermittent Contact Mode, Long Cantilever

**Coating:** Diamond-Like-Carbon coating on the tip side of the cantilever, 15 nm thick;  
Aluminum reflex coating on detector side of the cantilever, 30 nm thick

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 15 nm gives good resolution and reproducibility.

This probe uses an “on scan angle” symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size:** 3.4 x 1.6 x 0.3 mm

Tap190DLC

10 probes Tap190DLC-10

50 probes Tap190DLC-50

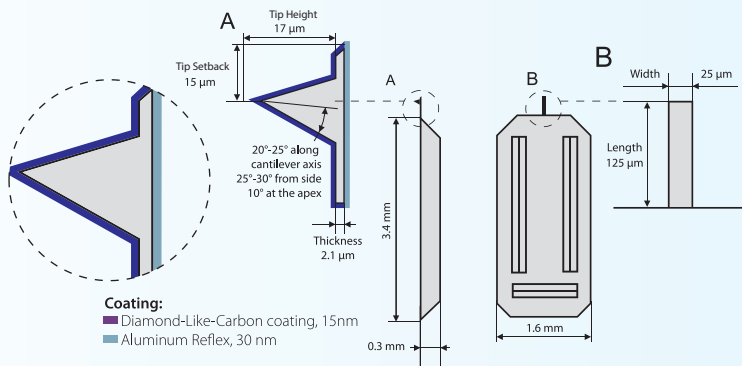
Technical Data:	VALUE	RANGE
Resonance Frequency	190 kHz	± 30 kHz
Force Constant	48 N/m	28 to 75 N/m
Length	225 µm	± 10 µm
Mean Width	38 µm	± 5 µm
Thickness	7 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	<15 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

# DLC AFM Probes

## Tap150DLC

10 probes Tap150DLC-10

50 probes Tap150DLC-50



Technical Data:	VALUE	RANGE
Resonance Frequency	150 kHz	± 75 kHz
Force Constant	5 N/m	1.5 to 15 N/m
Length	125 µm	± 10 µm
Mean Width	25 µm	± 5 µm
Thickness	2.1 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	< 15 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

**Application:** Soft Tapping Mode, Intermittent Contact Mode

**Coating:** Diamond-Like-Carbon coating on the tip side of the cantilever, 15 nm thick;  
 Aluminum reflex coating on detector side of the cantilever, 30 nm thick

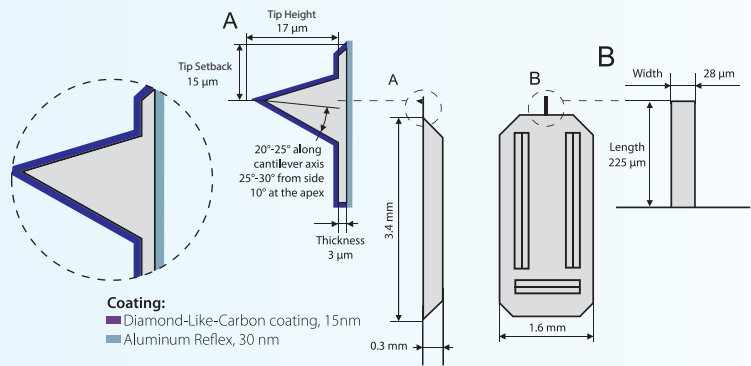
The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 15 nm gives good resolution and reproducibility.

This probe uses an "on scan angle" symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has alignment grooves on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**

# DLC AFM Probes



**Application:** Force Modulation Mode, Pulsed Force Mode (PFM)

**Coating:** Diamond-Like-Carbon coating on the tip side of the cantilever, 15 nm thick;  
Aluminum reflex coating on detector side of the cantilever, 30 nm thick

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 15 nm gives good resolution and reproducibility.

This probe uses an “**on scan angle**” symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size:** 3.4 x 1.6 x 0.3 mm

## Multi75DLC

10 probes Multi75DLC-10

50 probes Multi75DLC-50

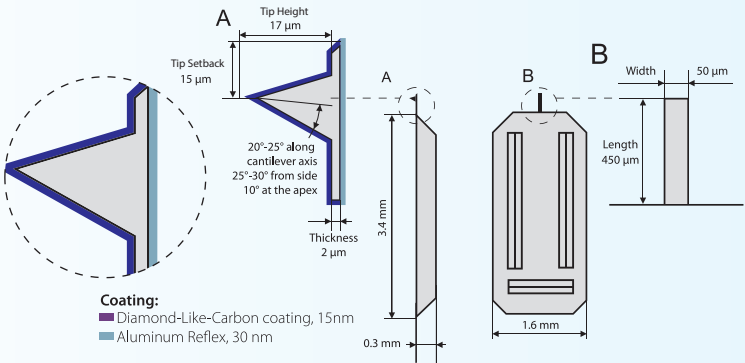
Technical Data:	VALUE	RANGE
Resonance Frequency	75 kHz	± 15 kHz
Force Constant	3 N/m	1 to 7 N/m
Length	225 µm	± 10 µm
Mean Width	28 µm	± 5 µm
Thickness	3 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Tip Radius	< 15 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

# DLC AFM Probes

## ContDLC

10 probes ContDLC-10

50 probes ContDLC-50



Technical Data:	VALUE	RANGE
Resonance Frequency	13 kHz	$\pm 4$ kHz
Force Constant	0.2 N/m	0.07 to 0.4 N/m
Length	450 $\mu\text{m}$	$\pm 10$ $\mu\text{m}$
Mean Width	50 $\mu\text{m}$	$\pm 5$ $\mu\text{m}$
Thickness	2 $\mu\text{m}$	$\pm 1$ $\mu\text{m}$
Tip Height	17 $\mu\text{m}$	$\pm 2$ $\mu\text{m}$
Tip Setback	15 $\mu\text{m}$	$\pm 5$ $\mu\text{m}$
Tip Radius	< 15 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

**Application:** Contact Mode

**Coating:** Diamond-Like-Carbon coating on the tip side of the cantilever, 15 nm thick;  
Aluminum reflex coating on detector side of the cantilever, 30 nm thick

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 15 nm gives good resolution and reproducibility.

This probe uses an **"on scan angle"** symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**



# Silicon Nitride

## AFM Probes



# Silicon Nitride AFM Probes

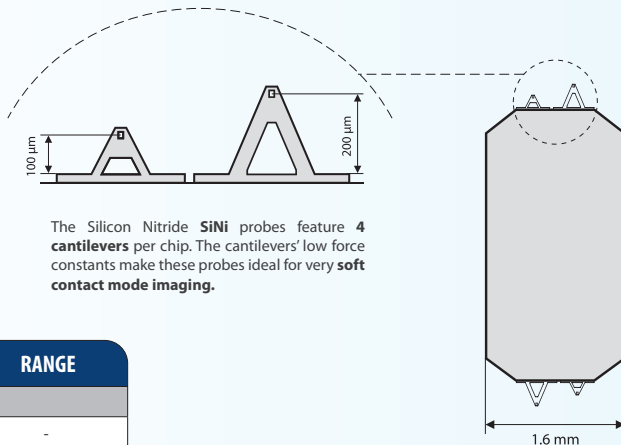
## SiNi

10 probes **SiNi-10**

30 probes **SiNi-30**

100 probes **SiNi-100**

300 probes **SiNi-300**



The Silicon Nitride **SiNi** probes feature **4 cantilevers** per chip. The cantilevers' low force constants make these probes ideal for very **soft contact mode imaging**.

The **AFM Probe Holder Chip** fits most commercial AFMs as it is industry standard size.

The SiNi has triangular Silicon Nitride cantilevers with 2 different lengths.

**Chip size: 3.4 x 1.6 x 0.45 mm**

### Technical Data:

### TYPICAL VALUES

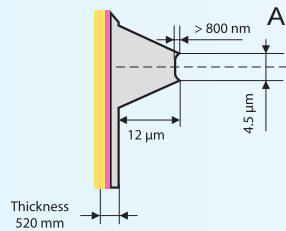
### RANGE

	short cantilever	long cantilever	
Resonance Frequency	30 kHz	10 kHz	-
Force Constant	0.27 N/m	0.06 N/m	-
Length	100 μm	200 μm	± 10 nm
Width	16 μm	30 μm	± 5 nm
Thickness	520 nm (45 nm SiNi + 70 nm coating)		± 50 nm
Tip Height (Wedge Tip)	12 μm (overall) > 800 nm (effective)		± 2 μm -
Double Tip Spacing	4.5 μm		± 0.5 μm
Tip Radius	< 15 nm		
Half Cone Angles	35° (macroscopic)		
Cantilever Bending	< 3°		

**Application:** Soft Contact Mode

**General:** 4 Silicon Nitride triangular cantilevers,  
2 different lengths

**Coating:** 70 nm thick, Chromium-Gold  
on detector side of the cantilever

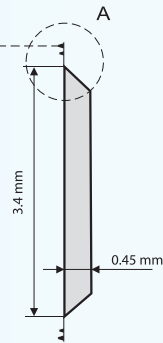


Wedge tip with 12 μm overall tip height  
and > 800 nm effective tip height  
Double tip spacing 4.5 μm  
Tip radius of curvature < 15 nm

Half-cone angles:  
35° (macroscopic)  
15° (last 200 nm near apex)

Cantilever Backside Coating:

- Chromium, 10 nm thick
- Gold, 60 nm thick

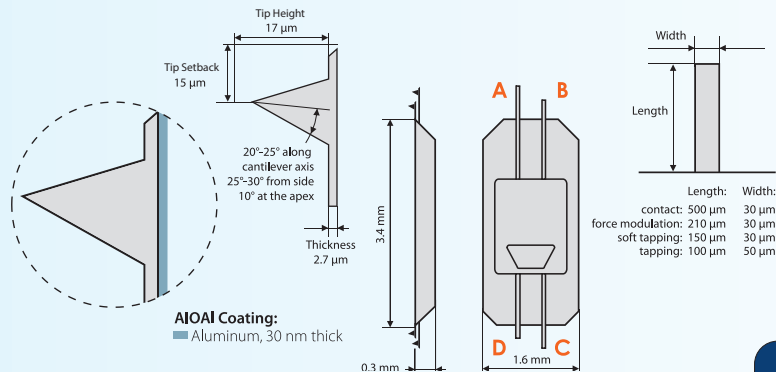




# All In One

## Silicon AFM Probes

Budget *Sensors*



The **All-in-One** probes offer four cantilevers with different geometry for all topography measurement modes: **Contact**, **Force Modulation**, **Soft Tapping** and **Tapping Mode**.

The resonance frequencies and force constants are similar to the ones of the well-established modes **Contact-G**, **Multi75-G**, **Tap150-G** and **Tap300-G**.

The long cantilevers **A** for contact mode and **B** for force modulation mode are located at one end of the chip while the short cantilevers **C** for soft tapping mode and **D** for tapping mode are located at the opposite end.

The short cantilever end is marked by a trapezoidal pattern visible with bare eyes.

The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 10 nm gives good resolution and reproducibility.

This probe uses an “on scan angle” symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**

## All-In-One

## All-In-OneAI

10 probes

**AIO-10**
**AIOAI-10**

50 probes

**AIO-50**
**AIOAI-50**

**Application:** Several measurement modes

**Coating:** None (AIO) or 30 nm thick Aluminum reflex coating (AIOAI)

Technical Data:	TYPICAL VALUE	RANGE	TYPICAL VALUE	RANGE
Cantilever/Similar to:	A / Contact-G		B / Multi75-G	
Resonance Frequency	15 kHz	± 5 kHz	80 kHz	± 30 kHz
Force Constant	0.2 N/m	0.04 - 0.7 N/m	2.7 N/m	0.04 - 10 N/m
Length	500 µm	± 10 µm	210 µm	± 10 µm
Mean Width	30 µm	± 5 µm	30 µm	± 5 µm
Thickness	2.7 µm	± 1 µm	2.7 µm	± 1 µm
Cantilever/Similar to:	C / Tap150-G		D / Tap300-G	
Resonance Frequency	150 kHz	80 ± kHz	350 kHz	150 ± kHz
Force Constant	7.4 N/m	1 - 29N/m	40 N/m	7 - 160 N/m
Length	150 µm	± 10 µm	100 µm	± 10 µm
Mean Width	30 µm	± 5 µm	50 µm	± 5 µm
Thickness	2.7 µm	± 1 µm	2.7 µm	± 1 µm
Tip Specs:	height: 17 µm (±2);		radius: <10nm;	tip setback: 15 µm (±5);

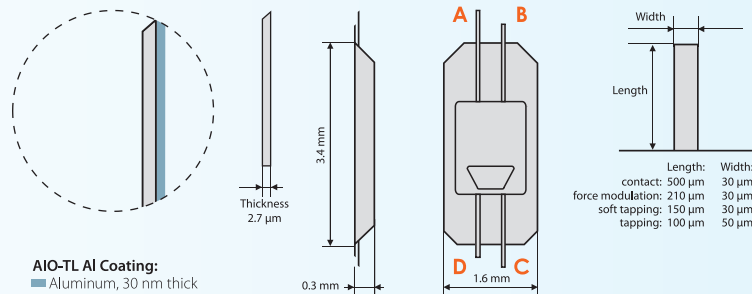
## All-In-One-Tipless / All-In-OneAI-Tipless

**10 probes** AIO-TL-10 AIOAI-TL-10

**50 probes** AIO-TL-50 AIOAI-TL-50

**Application:** Several measurement modes

**Coating:** None (AIO-TL) or 30 nm thick Aluminum reflex coating (AIOAI-TL)



### Technical Data: TYPICAL VALUE RANGE TYPICAL VALUE RANGE

Cantilever/Similar to:	A / Contact-G		B / Multi75-G	
Resonance Frequency	15 kHz	± 5 kHz	80 kHz	± 30 kHz
Force Constant	0.2 N/m	0.04 - 0.7 N/m	2.7 N/m	0.04 - 10 N/m
Length	500 μm	± 10 μm	210 μm	± 10 μm
Mean Width	30 μm	± 5 μm	30 μm	± 5 μm
Thickness	2.7 μm	± 1 μm	2.7 μm	± 1 μm
Cantilever/Similar to:	C / Tap150-G		D / Tap300-G	
Resonance Frequency	150 kHz	80 ± kHz	350 kHz	150 ± kHz
Force Constant	7.4 N/m	1 - 29 N/m	40 N/m	7 - 160 N/m
Length	150 μm	± 10 μm	100 μm	± 10 μm
Mean Width	30 μm	± 5 μm	50 μm	± 5 μm
Thickness	2.7 μm	± 1 μm	2.7 μm	± 1 μm

The **All-in-One** probes offer four cantilevers with different geometry for all topography measurement modes: **Contact, Force Modulation, Soft Tapping and Tapping Mode**.

The resonance frequencies and force constants are similar to the ones of the well-established models **Contact-G, Multi75-G, Tap150-G and Tap300-G**.

The long cantilevers **A** for contact mode and **B** for force modulation mode are located at one end of the chip while the short cantilevers **C** for soft tapping mode and **D** for tapping mode are located at the opposite end.

The short cantilever end is marked by a trapezoidal pattern visible with bare eyes.

The AFM Probe is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 10 nm gives good resolution and reproducibility.

This probe uses an "on scan angle" symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**



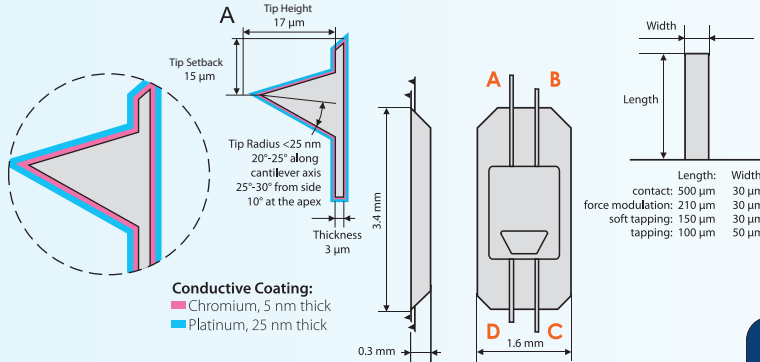
## ElectriAll-In-One

10 probes

AIOE-10

50 probes

AIOE-50



Versatile monolithic silicon AFM probe with 4 different platinum coated cantilevers on a single AFM holder chip for various applications: contact mode, force modulation mode, soft tapping mode and high frequency tapping / non-contact mode and electric modes such as: **Scanning Capacitance Microscopy (SCM)**, **Electrostatic Force Microscopy (EFM)** and **Kelvin Probe Force Microscopy (KPFM)**.

The resonance frequencies and force constants are similar to the ones of the well-established models **Contact-G**, **Multi75-G**, **Tap150-G** and **Tap300-G**.

The long cantilevers A for contact mode and B for force modulation mode are located at one end of the chip while the short cantilevers C for soft tapping mode and D for tapping mode are located at the

opposite end. The short cantilever end is marked by a trapezoidal pattern visible with bare eyes.

This probe uses an "on scan angle" symmetric tip to provide a more symmetric representation of features over 200 nm. The consistent **tip radius of less than 25 nm** gives good resolution and reproducibility.

The **AFM Probe Holder Chip** fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**

**Application:** Various electric modes

**Coating:** Electrically conductive coating of 5 nm Chromium and 25 nm Platinum on both sides of the cantilever. This coating also enhances the laser reflectivity of the cantilever.

Technical Data:	TYPICAL VALUE	RANGE	TYPICAL VALUE	RANGE
Cantilever/Similar to:	A / Contact-G		B / Multi75-G	
Resonance Frequency	15 kHz	± 5 kHz	80 kHz	± 30 kHz
Force Constant	0.2 N/m	0.04 - 0.7 N/m	2.7 N/m	0.04 - 10 N/m
Length	500 µm	± 10 µm	210 µm	± 10 µm
Mean Width	30 µm	± 5 µm	30 µm	± 5 µm
Thickness	2.7 µm	± 1 µm	2.7 µm	± 1 µm
Cantilever/Similar to:	C / Tap150-G		D / Tap300-G	
Resonance Frequency	150 kHz	80 ± kHz	350 kHz	150 ± kHz
Force Constant	7.4 N/m	1 - 29 N/m	40 N/m	7 - 160 N/m
Length	150 µm	± 10 µm	100 µm	± 10 µm
Mean Width	30 µm	± 5 µm	50 µm	± 5 µm
Thickness	2.7 µm	± 1 µm	2.7 µm	± 1 µm
Tip Specs:	height: 17 µm (±2);		radius: < 25nm;	tip setback: 15 µm (±5);

## All-In-One-DLC

10 probes AIODLC-10

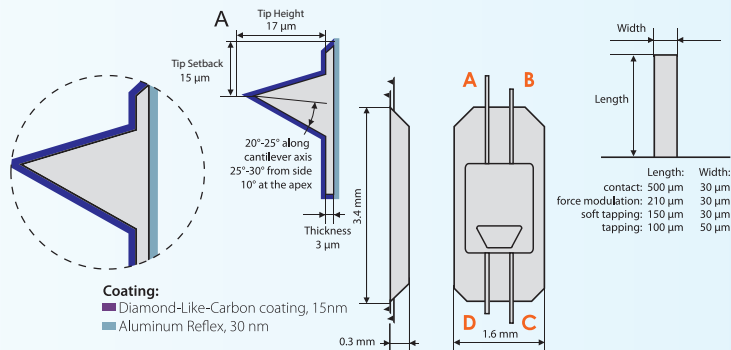
50 probes AIODLC-50

**Application:** Several measurement modes

**Coating:** Diamond-Like-Carbon coating on the tip side of the cantilever, 15 nm thick; Aluminum reflex coating on detector side of the cantilever, 30 nm thick

### Technical Data: TYPICAL VALUE RANGE TYPICAL VALUE RANGE

Cantilever/Similar to:	A / Contact-G		B / Multi75-G	
Resonance Frequency	15 kHz	± 5 kHz	80 kHz	± 30 kHz
Force Constant	0.2 N/m	0.04 - 0.7 N/m	2.7 N/m	0.04 - 10 N/m
Length	500 µm	± 10 µm	200 µm	± 10 µm
Mean Width	30 µm	± 5 µm	30 µm	± 5 µm
Thickness	2.7 µm	± 1 µm	2.7 µm	± 1 µm
Cantilever/Similar to:	C / Tap150-G		D / Tap300-G	
Resonance Frequency	150 kHz	80 ± kHz	350 kHz	150 ± kHz
Force Constant	7.4 N/m	1 - 29 N/m	40 N/m	7 - 160 N/m
Length	150 µm	± 10 µm	100 µm	± 10 µm
Mean Width	30 µm	± 5 µm	50 µm	± 5 µm
Thickness	2.7 µm	± 1 µm	2.7 µm	± 1 µm
Tip Specs:	height: 17 µm (±2 µm); radius: < 15nm;		tip setback: 15 µm (±5 µm);	



The **All-in-One** probes offer four cantilevers with different geometry for all topography measurement modes: **Contact, Force Modulation, Soft Tapping and Tapping Mode**.

The resonance frequencies and force constants are similar to the ones of the well-established models **Contact-G, Multi75-G, Tap150-G and Tap300-G**.

The long cantilevers **A** for contact mode and **B** for force modulation mode are located at one end of the chip while the short cantilevers **C** for soft tapping mode and **D** for tapping mode are located at the opposite end.

The short cantilever end is marked by a trapezoidal pattern visible with bare eyes.

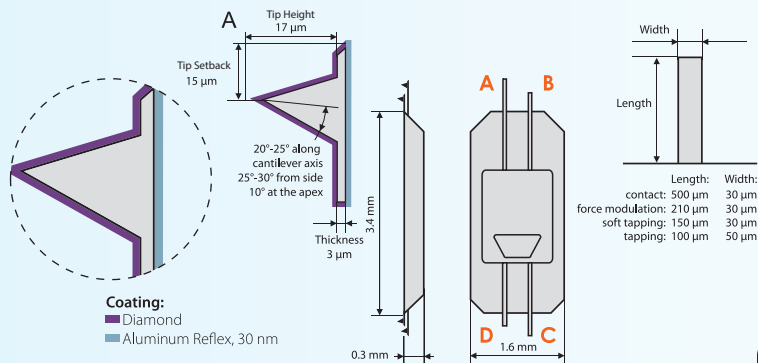
The **AFM Probe** is micromachined, made of monolithic Silicon, exhibiting excellent uniformity and a sharp tip radius. The consistent tip radius of less than 25 nm gives good resolution and reproducibility.

This probe uses an “on scan angle” symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**





Versatile monolithic silicon AFM probe with 4 different cantilevers on a single AFM holder chip for various applications: **Nanolithography, Nanoindentation and electric modes such as: Scanning Capacitance Microscopy (SCM), Electrostatic Force Microscopy (EFM), Kelvin Probe Force Microscopy (KPFM) and Conductive Atomic Force Microscopy (C-AFM).**

The long cantilevers A for contact mode and B for force modulation mode are located at one end of the chip while the short cantilevers C for soft tapping mode and D for tapping mode are located at the opposite end. The short cantilever end is marked by a trapezoidal pattern visible with bare eyes.

The doped polycrystalline diamond tip coating provides unprecedented hardness and durability,

as well as electrical conductivity for demanding electrical applications. The resulting tip radius is in the range 100 - 250 nm.

This probe uses an “on scan angle” symmetric tip to provide a more symmetric representation of features over 200 nm.

The **AFM Probe Holder Chip** fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**

**Application:** Various electric modes

**Coating:** Diamond coating on the tip side of the cantilever;  
Aluminum reflex coating on detector side of the cantilever, 30 nm thick

## All-In-One-DD

**5 probes** **A10-DD-5**

**10 probes** **A10-DD-10**

**20 probes** **A10-DD-20**

**50 probes** **A10-DD-50**

## Technical Data: TYPICAL VALUE RANGE TYPICAL VALUE RANGE

Cantilever/Similar to:	A / Contact-G		B / Multi75-G	
Resonance Frequency	19 kHz	± 5 kHz	110 kHz	± 30 kHz
Force Constant	0.5 N/m	0.02 - 0.9 N/m	6.5 N/m	3 - 12 N/m
Length	500 µm	± 10 µm	210 µm	± 10 µm
Mean Width	30 µm	± 5 µm	30 µm	± 5 µm
Thickness	2.7 µm	± 1 µm	2.7 µm	± 1 µm
Cantilever/Similar to:	C / Tap150-G		D / Tap300-G	
Resonance Frequency	200 kHz	60 ± kHz	450 kHz	150 ± kHz
Force Constant	18 N/m	8 - 35 N/m	100 N/m	48- 190 N/m
Length	150 µm	± 10 µm	100 µm	± 10 µm
Mean Width	30 µm	± 5 µm	50 µm	± 5 µm
Thickness	2.7 µm	± 1 µm	2.7 µm	± 1 µm
<b>Tip Specs:</b>	height: 17 µm (±2 µm);		radius: < 250 nm;	tip setback: 15 µm (±5 µm);

# BudgetComboBox

Mixed box of 50 BudgetSensors AFM  
Probes of your choice



# BudgetComboBox

-37-

## Whatever You Want!

Mixed box of 50 BudgetSensors AFM Probes of your choice

**BudgetComboBox** gives you the freedom to choose freely your personalized box with AFM probes out of any available BudgetSensors AFM Probe models you need.

### Ordering:

Order your **BudgetComboBox** online at [www.budgetsensors.com](http://www.budgetsensors.com) or from our distributors.

### Prices:

Following our motto "**Quality meets Price**", we are offering you a very transparent and fair price structure of your personalized BudgetComboBox.

The price of each **BudgetComboBox** is calculated as the value of all AFM Probes in the relevant box, where the price of a single AFM Probe is the price of the same AFM Probe if you ordered it in a regular pack of 50 pieces.

### Shipment Conditions:

**BudgetComboBox** is a personalized product made to customer's request. Nevertheless, we are able to ship it from Europe within 48 hrs after receiving a Purchase Order.

If Ordered via one of our distributors, please allow the additional transit time needed to ship it to you in the fastest possible way.



# Single Hi-Res AFM Probes



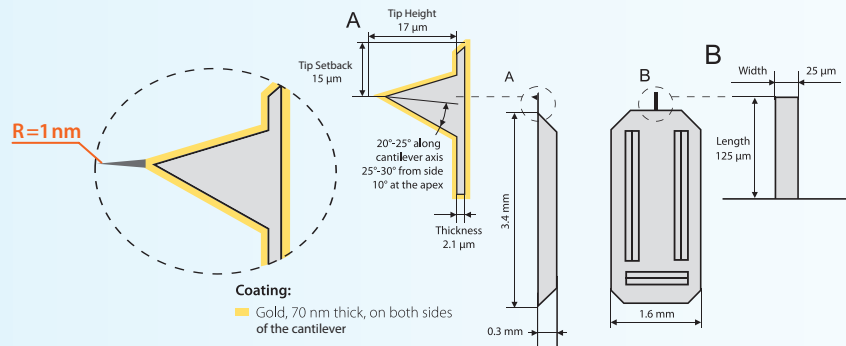
# SINGLE HI-RES AFM PROBES

-39-

SHR300

5 probes

SHR300-5



**Application:** High Resolution Tapping Mode, Intermittent Contact Mode

**Coating:** 70 nm Gold on both sides of the cantilever. Carbon spike not coated!

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size:** 3.4 x 1.6 x 0.3 mm

## SINGLE CARBON SPIKE ON SILICON APEX!

Based on BudgetSensors' well established **Tap300GB-G probe**

The SHR-300 probe has a single hydrophobic diamond-like carbon extratip at the apex of a Gold coated silicon etched probe. There are no additional smaller extratips near the main one, just one well defined extratip. The SHR-150 can be used even for imaging of relatively rough surfaces – there will not be repeated features in the scan due to tip artefacts from extratips with different length and angle.

Technical Data:	VALUE	RANGE
Resonance Frequency	300 kHz	± 100 kHz
Force Constant	40 N/m	20 to 75 N/m
Length	125 µm	± 10 µm
Mean Width	30 µm	± 5 µm
Thickness	4 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Typical Spike Height	100 nm - 200 nm	
Typical Spike Radius	1 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

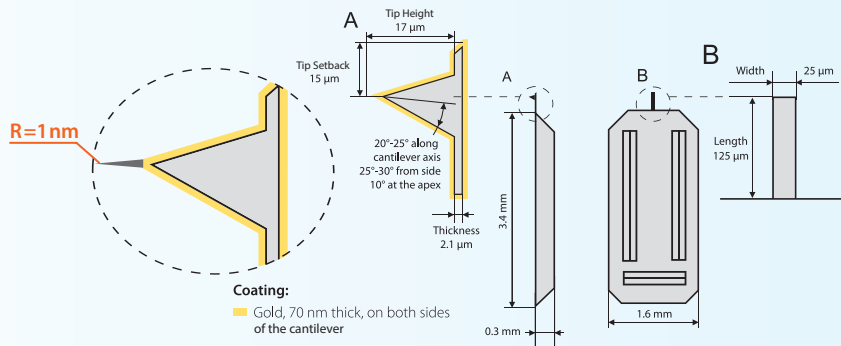
# SINGLE HI-RES AFM PROBES

**SHR150**
**5** probes

**SHR150-5**

**Application:** High Resolution Soft Tapping Mode, Intermittent Contact Mode

**Coating:** 70 nm Gold on both sides of the cantilever.  
Carbon spike not coated!



Technical Data:	VALUE	RANGE
Resonance Frequency	150 kHz	± 75 kHz
Force Constant	5 N/m	1.5 to 15 N/m
Length	125 µm	± 10 µm
Mean Width	25 µm	± 5 µm
Thickness	2.1 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Typical Spike Height	100 nm - 200 nm	
Typical Spike Radius	1 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size: 3.4 x 1.6 x 0.3 mm**

## SINGLE CARBON SPIKE ON SILICON APEX!

Based on BudgetSensors' well established **Tap150-G probe**

The SHR-150 probe has a single hydrophobic diamond-like carbon extratip at the apex of a Gold coated silicon etched probe. There are no additional smaller extratips near the main one, just one well defined extratip. The SHR-150 can be used even for imaging of relatively rough surfaces – there will not be repeated features in the scan due to tip artefacts from extratips with different length and angle.

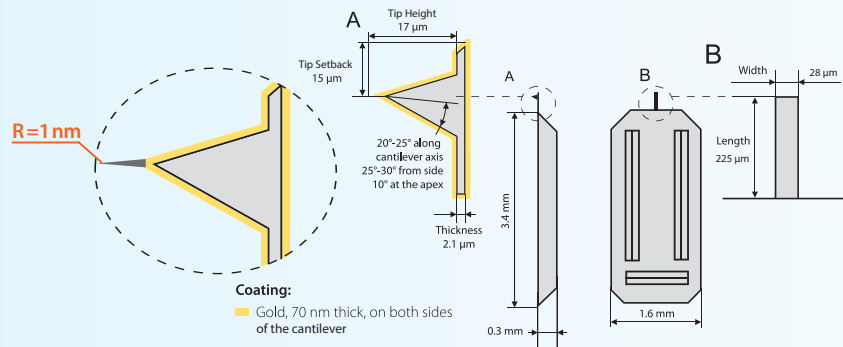
# SINGLE HI-RES AFM PROBES

-41-

SHR75

5 probes

SHR75-5



**Application:** High Resolution Soft Tapping Mode, Intermittent Contact Mode

**Coating:** 70 nm Gold on both sides of the cantilever. Carbon spike not coated!

The **AFM Probe Holder Chip** has **alignment grooves** on the backside and fits most commercial AFMs as it is industry standard size.

**Chip size:** 3.4 x 1.6 x 0.3 mm

## SINGLE CARBON SPIKE ON SILICON APEX!

Based on BudgetSensors' well established **Multi75GB-G probe**

The SHR-75 probe has a single hydrophobic diamond-like carbon extratip at the apex of a Gold coated silicon etched probe. There are no additional smaller extratips near the main one, just one well defined extratip. The SHR-150 can be used even for imaging of relatively rough surfaces – there will not be repeated features in the scan due to tip artefacts from extratips with different length and angle.

Technical Data:	VALUE	RANGE
Resonance Frequency	75 kHz	± 15 kHz
Force Constant	3 N/m	1 to 7 N/m
Length	225 µm	± 10 µm
Mean Width	28 µm	± 5 µm
Thickness	3 µm	± 1 µm
Tip Height	17 µm	± 2 µm
Tip Setback	15 µm	± 5 µm
Typical Spike Height	100 nm - 200 nm	
Typical Spike Radius	1 nm	
Half Cone Angles	20°-25° along cantilever axis 25°-30° from side 10° at the apex	

# Calibration Standards





# Tip Check

-43-

## Calibration Standard

ONE piece

TipCheck

### The Problem

When imaging a sample by AFM, it may be difficult to know whether the surface is mapped accurately or is affected by a blunt or broken tip.

Blunt or broken tips will falsify measurement results like surface roughness or structures dimensions dramatically!

To be sure you are using a proper tip, used tips must be thrown away or checked by SEM regularly, both methods being extremely uneconomic or time consuming.

### The Solution

**BudgetSensors** introduces the **TipCheck** - an SPM sample for fast and convenient determination of the AFM tip condition.

The clear differences between the tips become apparent even within a single scan line. Therefore the **TipCheck** offers a fast and easy way to compare and categorize different AFM probes with respect to tip apex, shape and sharpness.

You can easily check whether your tip is still good, starts showing wear or is already blunted or broken without the need of scanning an entire image or doing SEM inspection.

Additionally, this sample works perfectly with AutoTipQualification and Tip Characterization software that is available on the market.

The **BudgetSensors TipCheck** sample consists of an extremely wear-resistant thin film coating that is deposited on a silicon chip.

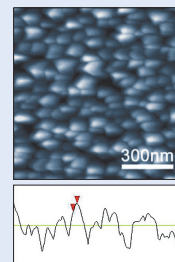
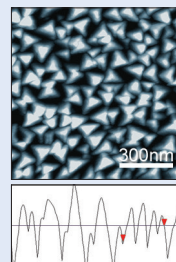
This thin film coating shows a granular, sharply peaked nanostructure which makes it ideal for reversely imaging an AFM probe's tip apex. The die size of the **TipCheck** is 5x5 mm.



The following figures show a comparison between different probe tips used to image the **TipCheck** sample.

The scan size is  $1 \times 1 \mu\text{m}$  for all images.  
The height scale is 100 nm.

Below the topography images you can find a representative cross-section of the respective image.



# Height Standards

## Height Standard

ONE piece HS-20MG

ONE piece HS-100MG

ONE piece HS-500MG

**HS-20MG / HS-100MG / HS-500MG** are height standards introduced by **BudgetSensors** as a response to the increased demand for affordable high-quality AFM calibration standards.

The **HS-20MG / HS-100MG / HS-500MG** feature Silicon Dioxide structure arrays on a 5x5 mm Silicon chip.

The fabrication process guarantees excellent uniformity of the structures across the chip. This in turn ensures easy and reliable Z-axis calibration of your AFM system.

## Why do you need Height Calibration Standards?

Atomic Force Microscopy has become a valuable tool not only for visualization but also for performing accurate measurements on the nanometer and micrometer scale.

In order to make the most of their measurement capabilities, AFM systems need to be properly calibrated

The calibration area is situated in the center of the chip. It is easy to find with the AFM optical system.

The structure step height is in the range of **20 nm for HS-20MG, 100 nm for HS-100MG and 500 nm for HS-500MG**. The exact value for each chip is indicated on the box label.

Arrays of structures with different shape and pitch are integrated on the chip. The larger square (1x1 mm) contains square pillars and holes with a 10  $\mu$ m pitch.

The smaller square (500x500  $\mu$ m) contains circular pillars and holes as well as lines in the X- and Y-direction with a 5  $\mu$ m pitch.

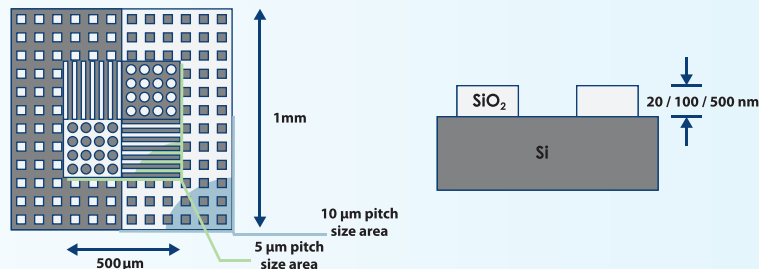
Aside from Z-axis calibration, this design also allows X- and Y-axis calibration for bigger scanners (40-100  $\mu$ m range). What is more, the structure symmetry makes it possible to calibrate your AFM system without the need to rotate and realign the sample in-between X- and Y-axis calibration.

The **HS-20MG / HS-100MG / HS-500MG** chips are glued onto a 12 mm metal disc using a high-quality electrically-conductive epoxy resin and it is ready for use as shipped.

## TECHNICAL DATA AT A GLANCE

Die size:		Structure geometry:
5x5mm		
Step height: *		- square holes and pillars with a 10µm pitch arranged in a 1x1mm square
HS-20MG	~20 nm	- circular pillars and holes, and lines in the x- and y-direct on with a 5µm pitch arranged in a 500x500µm square
HS-100MG	~ 100 nm	
HS-500MG	~ 500 nm	
* The precise value is stated on the label of each box		

\* The precise value is stated on the label of each box



# XYZ Calibration Nanogrid

## XYZ Calibration Nanogrid

ONE piece

CS-20NG

### Why XYZ Calibration Nanogrid?

In order to make the most of their measurement capabilities, AFM systems need to be properly calibrated. Therefore, the more precise your calibration standard, the

better AFM measurement results can be achieved. In this aspect, nanogrid calibration standards allow the most precise AFM system calibration.

### Our Solution

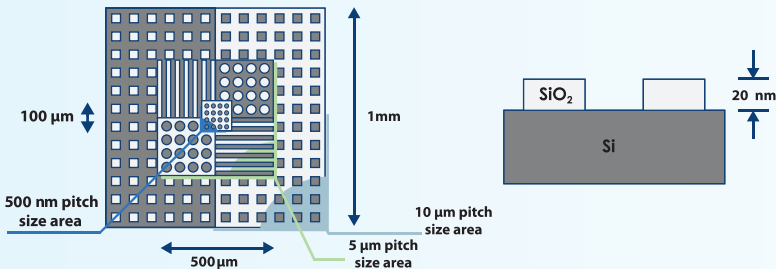
**CS-20NG** is an advanced XYZ calibration nanogrid that enables calibration down to the nanometer level. It features silicon dioxide structure arrays on a 5x5 mm silicon chip. The fabrication process guarantees excellent uniformity of the structures across the chip. This in turn ensures easy and reliable X, Y and Z axis calibration of your AFM system.

The structure step height is in the range of 20 nm. The exact value for each chip is indicated on the box label.

Arrays of structures with different shape and pitch are integrated on the chip. The large square (1x1 mm) contains square pillars and holes with a 10 µm pitch. The middle square contains circular pillars and holes as well as lines in the X- and Y-direction with a 5 µm pitch. The small square contains circular holes with a 500 nm pitch.

The **CS-20NG** is suitable for both lateral and vertical AFM scanner calibration. The structure symmetry makes it possible to calibrate your AFM system in one step without rotating the sample in-between X- and Y-axis calibration. The **CS-20NG** chip is glued onto a 12 mm metal disc using a high-quality electrically conductive epoxy resin and it is ready for use as shipped.

The calibration area is situated in the center of the chip. It is easy to find with the AFM optical system.



### TECHNICAL DATA AT A GLANCE

Die size:	Structure geometry:
5x5mm	- Square holes and pillars with 10 µm pitch arranged in a 1x1mm square
Step height: *	- Circular pillars and holes, and lines in the x- and y-direction with a 5 µm pitch arranged in a 500x500 µm square
~20 nm	- Circular holes with a 500nm pitch arranged in a 100x100 µm square

\* The precise value is stated on the label of each box

# Image Gallery

## Application Images





**Water etched gypsum crystal**

Scanned with Tap300AI-G AFM Probe

*Application images by courtesy of Scott MacLaren,  
University of Illinois at Urbana-Champaign, USA*

**Polymer blend of polystyrene and polycaprolactone**

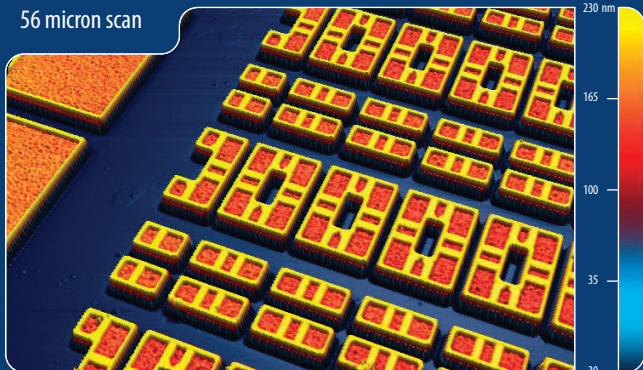
Scanned with Tap300AI-G AFM Probe

*Application images by courtesy of Scott MacLaren,  
University of Illinois at Urbana-Champaign, USA*



# Image Gallery

56 micron scan



**SRAM memory device**

Scanned with Tap300Al-G AFM Probe

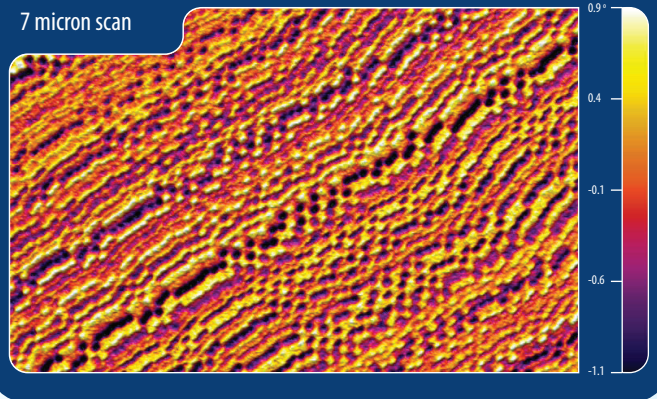
*Application images by courtesy of Scott MacLaren,  
University of Illinois at Urbana-Champaign, USA*

**MFM image of high density hard disk  
(500 GB capacity)**

Scanned with *MagneticMulti75-G* AFM Probe

*Application images by courtesy of Scott MacLaren,  
University of Illinois at Urbana-Champaign, USA*

7 micron scan



# Image Gallery

-49-

8 micron scan



**Rosemary leaf**

Scanned with Tap300AI-G AFM Probe

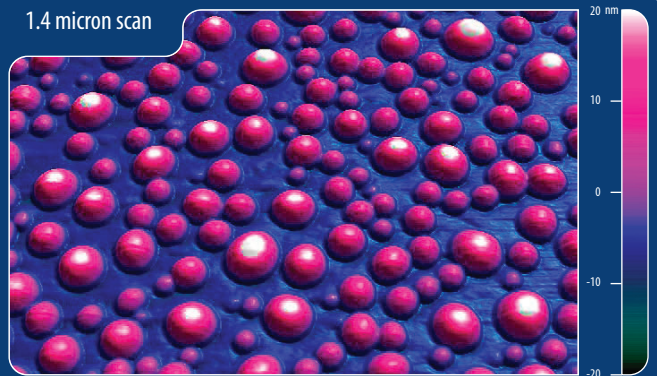
*Application images by courtesy of Scott MacLaren,  
University of Illinois at Urbana-Champaign, USA*

**Polystyrene thin film**

Scanned with Tap300AI-G AFM Probe

*Application images by courtesy of Scott MacLaren,  
University of Illinois at Urbana-Champaign, USA*

1.4 micron scan





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