

Technical Datasheet

SCOUT & SPARK Series

Product overview

SCOUT series :

General purpose probes for imaging in AC modes (non-contact/soft tapping) and force modulation, exhibiting exemplary dimensional tolerances and tip sharpness, characteristic of all our AFM probes.

- Standard Models (70, 150, 350): For everyday topographic imaging and force modulation in air
- High-Aspect-Ratio Models (70 HAR, 350 HAR): For imaging highly 3-dimensional samples with deep trenches , featuring cone angles of less than 15° over the last 1 μm
- Coating Options: Available uncoated, with gold (RAu), or aluminum (RAI) reflective backside coatings

SPARK series :

Conductive AFM probes for electrical characterisation in both contact and AC modes (non-contact/soft tapping), with conductive platinum coating on both sides of the probe.

- Models optimized for different force ranges and measurement modes
- Suitable for CAFM, PFM, EFM, and KPFM measurements

Product selection guide

Model	Primary application	Key feature	Resonant frequency (kHz)	Spring constant (N/m)	Tip radius (nm)
SCOUT 70	Soft AC & force modulation	Low spring constant	70	2	5
SCOUT 70 HAR	Deep trenches / 3D soft	HAR tip (≤15°) + soft	70	2	5
SCOUT 70 HAR RAu	Deep trenches / 3D soft	HAR + gold + soft	70	2	5
SCOUT 150	General AC imaging	Sharp tip, no coating	150	18	5
SCOUT 150 RAu	AC imaging	Gold reflective coating	150	18	5
SCOUT 150 RAI	AC imaging	Aluminum reflective coating	150	18	5
SCOUT 350	Fast AC imaging	Higher resonance, no coating	350	42	5
SCOUT 350 RAu	Fast AC imaging	Gold reflective coating	350	42	5
SCOUT 350 RAI	Fast AC imaging	Aluminum reflective coating	350	42	5
SCOUT 350 HAR	Deep trenches / 3D	High-aspect-ratio tip (≤15°)	350	42	5
SCOUT 350 HAR RAu	Deep trenches / 3D	HAR tip + gold coating	350	42	5
SCOUT 350 HAR RAI	Deep trenches / 3D	HAR tip + aluminum coating	350	42	5
SPARK 70 Pt	Electrical (contact & AC)	Soft cantilever, conductive	70	2	18
SPARK 150 Pt	Electrical (contact & AC)	Medium stiffness, conductive	150	18	18
SPARK 350 Pt	Electrical (AC mode only)	High frequency, conductive	350	42	18

Cantilever specifications

Parameter	SCOUT 70 / 70 HAR / 70 HAR RAu	SCOUT 150 /150 RAu / 150 RAI	SCOUT 350/350 RAu / 350 RAI	SCOUT 350 HAR HAR RAu / HAR RAI	SPARK 70 Pt	SPARK 150 Pt	SPARK 350 Pt
Spring constant (N/m)	Nominal: 2	Nominal: 18	Nominal: 42	Nominal: 42	Nominal: 2	Nominal: 18	Nominal: 42
	Range: 0.5-3.5	Range: 5-25	Range: 25-70	Range: 25-70	Range: 0.5-3.5	Range: 5-25	Range: 25-70
Resonant frequency (kHz)	Nominal: 70	Nominal: 150	Nominal: 350	Nominal: 350	Nominal: 70	Nominal: 150	Nominal: 350
	Range: 45-80	Range: 120-170	Range: 300-400	Range: 300-	Range: 45-80	Range: 120-170	Range: 300-400
Shape	Rectangular	Rectangular	Rectangular	Rectangular	Rectangular	Rectangular	Rectangular
Length (μm)	Nominal: 225	Nominal: 225	Nominal: 125	Nominal: 125	Nominal: 225	Nominal: 225	Nominal: 125
	Range: 223-227	Range: 223-227	Range: 123-127	Range: 123-	Range: 223-227	Range: 223-227	Range: 123-127
Width (μm)	Nominal: 30	Nominal: 30	Nominal: 30	Nominal: 30	Nominal: 30	Nominal: 30	Nominal: 30
	Range: 28-32	Range: 28-32	Range: 28-32	Range: 28-32	Range: 28-32	Range: 28-32	Range: 28-32
Thickness (μm)	Nominal: 2.5	Nominal: 5.5	Nominal: 4.5	Nominal: 4.5	Nominal: 2.5	Nominal: 5.5	Nominal: 4.5
	Range: 2.0-3.0	Range: 5.0-6.0	Range: 4.0-5.0	Range: 4.0-5.0	Range: 2.0-3.0	Range: 5.0-6.0	Range: 4.0-5.0
Material	Silicon (n-type, antimony)	Silicon (n-type, antimony)	Silicon (n-type, antimony)	Silicon (n-type, antimony)	Silicon (n-type, antimony)	Silicon (n-type, antimony)	Silicon (n-type, antimony)
Resistivity (Ωcm)	Nominal: 0.02	Nominal: 0.02	Nominal: 0.02	Nominal: 0.02	Nominal: 0.02	Nominal: 0.02	Nominal: 0.02
	Range: 0.015-0.025	Range: 0.015-0.025	Range: 0.015-0.025	Range: 0.015-0.025	Range: 0.015-0.025	Range: 0.015-0.025	Range: 0.015-0.025

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Tip specifications

Parameter	SCOUT 70	SCOUT 70 HAR / 70 HAR RAu	SCOUT 150 /150 RAu / 150 RAl	SCOUT 350 350 RAu / 350 RAl	SCOUT 350 HAR HAR RAu / HAR RAl	SPARK 70 Pt	SPARK 150 Pt	SPARK 350 Pt
Radius (nm)	Nominal: 5	Nominal: 5	Nominal: 5	Nominal: 5	Nominal: 5	Nominal: 18	Nominal: 18	Nominal: 18
	Range: <10	Range: <10	Range: <10	Range: <10	Range: <10	Range: <30	Range: <30	Range: <30
Height (µm)	Nominal: 12	Nominal: 12	Nominal: 12	Nominal: 12	Nominal: 12	Nominal: 12	Nominal: 12	Nominal: 12
	Range: 10-13	Range: 10-13	Range: 10-13	Range: 10-13	Range: 10-13	Range: 10-13	Range: 10-13	Range: 10-13
Set back (µm)	Nominal: 7.5	Nominal: 7.5	Nominal: 7.5	Nominal: 7.5	Nominal: 7.5	Nominal: 7.5	Nominal: 7.5	Nominal: 7.5
	Range: 6.5-8.5	Range: 6.5-8.5	Range: 6.5-8.5	Range: 6.5-8.5	Range: 6.5-8.5	Range: 6.5-8.5	Range: 6.5-8.5	Range: 6.5-8.5
Shape	Conical	Conical	Conical	Conical	Conical	Conical	Conical	Conical
Cone angle (°)	Nominal: 25	Nominal: 10	Nominal: 25	Nominal: 25	Nominal: 10	Nominal: 25	Nominal: 25	Nominal: 25
	Range: 15-40	Range: <15	Range: 15-40	Range: 15-40	Range: <15	Range: 15-40	Range: 15-40	Range: 15-40
Material	Silicon (n-type, antimony)	Silicon (n-type, antimony)	Silicon (n-type, antimony)	Silicon (n-type, antimony)	Silicon (n-type, antimony)	Silicon (n-type, antimony)	Silicon (n-type, antimony)	Silicon (n-type, antimony)
Resistivity (Ωcm)	Nominal: 0.02	Nominal: 0.02	Nominal: 0.02	Nominal: 0.02	Nominal: 0.02	Nominal: 0.02	Nominal: 0.02	Nominal: 0.02
	Range: 0.015-0.025	Range: 0.015-0.025	Range: 0.015-0.025	Range: 0.015-0.025	Range: 0.015-0.025	Range: 0.015-0.025	Range: 0.015-0.025	Range: 0.015-0.025

Coatings

Model	Frontside/Tip	Backside/Reflective
SCOUT 70	None	None
SCOUT 70 HAR	None	None
SCOUT 70 HAR RAu	None	5 nm Ti / 40 nm Au
SCOUT 150	None	None
SCOUT 150 RAu	None	5 nm Ti / 40 nm Au
SCOUT 150 RAl	None	40 nm Al
SCOUT 350	None	None
SCOUT 350 RAu	None	5 nm Ti / 40 nm Au
SCOUT 350 RAl	None	40 nm Al
SCOUT 350 HAR	None	None
SCOUT 350 HAR RAu	None	5 nm Ti / 40 nm Au
SCOUT 350 HAR RAl	None	40 nm Al
SPARK 70 Pt	5 nm Ti / 40 nm Pt	5 nm Ti / 40 nm Pt
SPARK 150 Pt	5 nm Ti / 40 nm Pt	5 nm Ti / 40 nm Pt
SPARK 350 Pt	5 nm Ti / 40 nm Pt	5 nm Ti / 40 nm Pt

Chip specifications

Parameter	Value
Length (mm)	3.4
Width (mm)	1.6
Thickness (mm)	0.3
Cantilever anchor	Yes
Alignment grooves	No

All models share identical chip specifications

Model specific notes:

- SCOUT 70 / 70 HAR series: Optimized for soft contact, soft tapping, and force modulation
- SPARK 70 Pt: Suitable for both contact and AC modes
- SPARK 150 Pt: Suitable for both contact and AC modes
- SPARK 350 Pt: Optimized for AC modes only (non-contact/tapping)

Notes:

- Nominal values for spring constants and resonant frequencies are calculated using well-known formulae and based on expected probe dimensions
- The ranges are calculated using measured dimensional variation
- All Scout probes exhibit exemplary dimensional tolerances and tip sharpness, characteristic of all our AFM probes
- All Spark probes feature conductive platinum coating on both sides for electrical characterization applications

Supplier information:

Albasci B.V. is a trusted partner for Nu Nano Ltd AFM probes. This datasheet compiles technical specifications and product information provided by the manufacturer, Nu Nano Ltd.

Disclaimer:

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