



九域半导体  
SEMIANALY

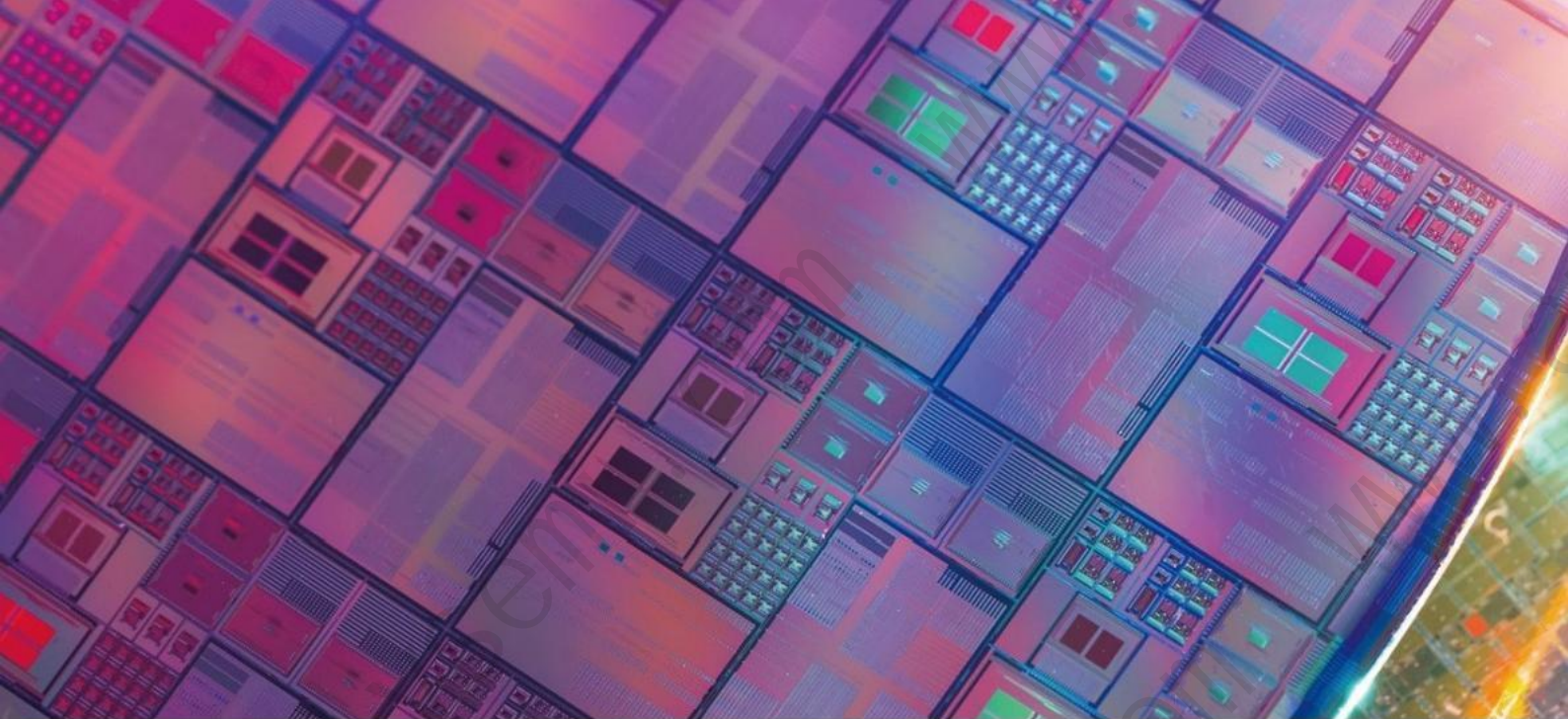
# Semianaly

semiconductor technology (Suzhou)Co.,Ltd.

Specializing in non-contact semiconductor measurement testing and analysis solutions.

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Staying true to our roots,  
we are dedicated to advancing national brands and bolstering national confidence.



## Company Profile

Established in 2021, Semianaly Semiconductor Technology (Suzhou) Co., Ltd. is a non-contact semiconductor testing and analysis equipment manufacturer with world-leading technology. The company integrates research, design, manufacturing, and sales, focusing on overcoming foreign monopoly technologies, substituting imported products, and promoting the localization of semiconductor material testing equipment.

**Main Products:** Non-contact non-destructive block resistance tester, wafer resistance tester, sheet resistance tester, silicon wafer resistivity tester, eddy current method high and low resistivity analyzer, ingot resistivity analyzer, eddy current resistivity probe, PN probe tester, mobility (Hall) tester, minority carrier lifetime tester, wafer and silicon wafer thickness tester, surface photovoltage instrument JPV\SPV, Mercury CV, ECV. Providing testing and solutions for silicon carbide, silicon wafer, gallium nitride, substrates, and epitaxial manufacturers.

With advanced technology and rich product design experience, we have applied for over 20 intellectual property rights. We have developed into one of the few semiconductor equipment providers in mainland China with certain international competitiveness. Our products have gained recognition from numerous domestic and international mainstream semiconductor manufacturers and have earned a good market reputation.





## Product Catalog

Mobility (Hall) Tester	03
Resistance (Resistivity) Tester	05
Resistivity PN Temperature Testing Module	09
Diffusion Thin Film Sheet Resistance Analysis Module (JPV Structure Photovoltage Method)	11
Thickness Tester	13
Manual Resistivity PN Thickness Tester	13
Handheld Ingot Testing System / Minority Life Tester	14
EFEM Fully Automatic Resistivity / Mobility Tester	15
Product Models & Technical Features	16
Cooperative Advantages & Intellectual Property Rights	17

## Mobility (Hall) Tester



### Product Description:

The equipment primarily utilizes microwave testing principles to non-contactly measure the sheet resistance, mobility, and carrier concentration of radio frequency (RF) HEMT structured semiconductor materials. It can conduct single-point tests and also perform area scanning tests, offering advantages such as speed, non-destructiveness, and accuracy. It is used for material research, process monitoring, and quality control.

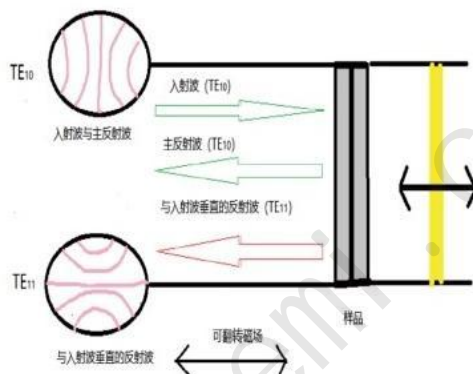
### Features:

- Suitable for measuring mobility in the range of 100cm<sup>2</sup>/V·s to 3000cm<sup>2</sup>/V·s for RF HEMT epitaxial wafers.
- Non-contact, non-damaging testing, with advantages of fast testing speed, good repeatability, and high testing sensitivity, enabling direct testing of product wafers.

### Technical Specifications:

Specifications	Descriptions
Carrier Mobility Test Range	100~20000cm <sup>2</sup> /V ·s
Sheet Resistance Test Range	100-30002/so
Carrier Concentration	1E+11-1E+14
Carrier Mobility Dynamic Repeatability	≤2%
Carrier Mobility Static Repeatability	≤1%
Carrier Mobility Test Accuracy	±10%
Sheet Resistance Dynamic Repeatability	≤2%
Sheet Resistance Static Repeatability	≤1%
Sheet Resistance Test Accuracy	±10%
Allowed Sample Thickness	200-1500μm
Sample Size	2"-8"
Magnetic Induction Strength	1.0T (Removable and Reversible)
Software Functions	Automatically generates reports containing Mapping, 2D Contour, and 3D Maps
Automatic Transfer Testing Capability	Optional

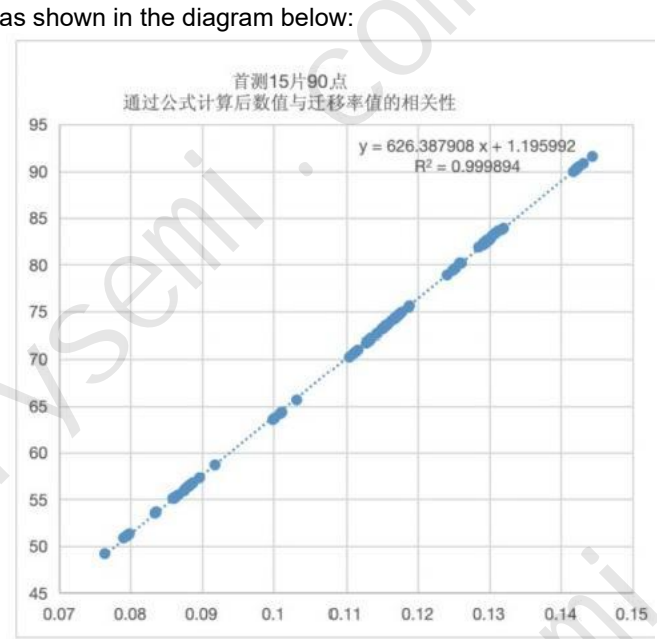
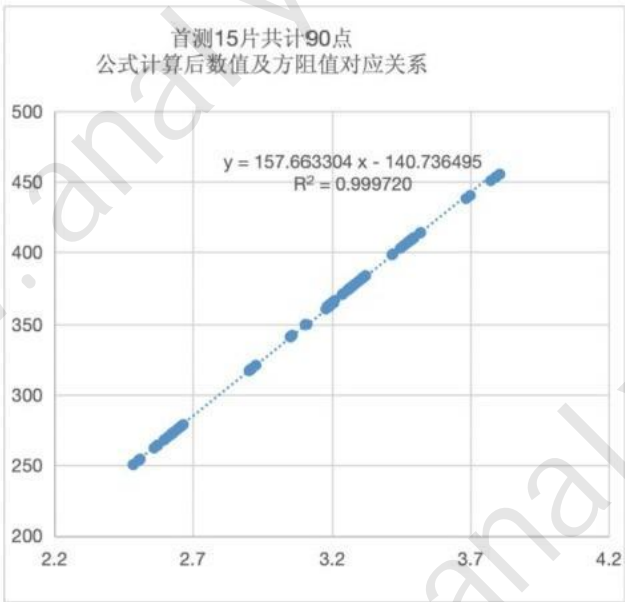
Principle of Microwave-Hall Method for Testing Semiconductor Sheet Resistance and Carrier Mobility



Principle:

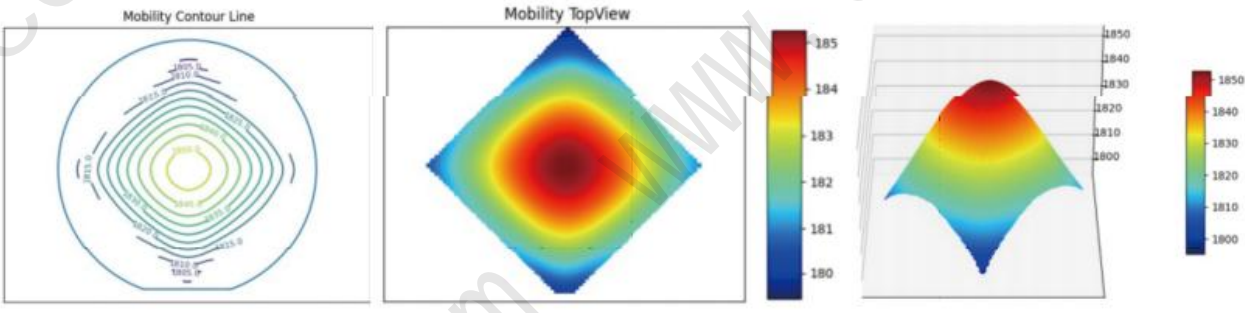
Utilizing a microwave source to transmit microwaves through a waveguide to the test sample's surface, different samples with varying mobility under the influence of a magnetic field exhibit different microwave reflection effects. By detecting the reflected microwave power and converting it into the corresponding conductivity tensor, a model is established to calculate the carrier concentration and mobility of the HEMT structure.

Microwave-Hall method testing of semiconductor block resistance core algorithm correlation



Report Time	2023/08/17 11:43
Analysis Time	2023/08/17 11:30
Operator ID	admin111
Substrate Settings	test
Substrate Thickness	500um
Size Specifications	100mm

Number of Test Samples	6
Maximum Mobility	1852.68
Minimum Mobility	1794.41
Average Mobility	1813.35
Standard Deviation	21.3136
Relative Standard Deviation	1.1754%



## Resistance (Resistivity) Tester (Wafer and Ingot)



### Product Description:

The equipment primarily utilizes eddy current testing principles to non-contactly test the sheet resistance (resistivity) of semiconductor materials, graphene, transparent conductive films, carbon nanotubes, metals, and other materials. It enables single-point and area scanning tests, used for material research and process monitoring for quality control purposes.

### Features:

This instrument is non-contact and non-destructive, with advantages of fast testing speed, good repeatability, high testing sensitivity, allowing direct testing of product wafers.

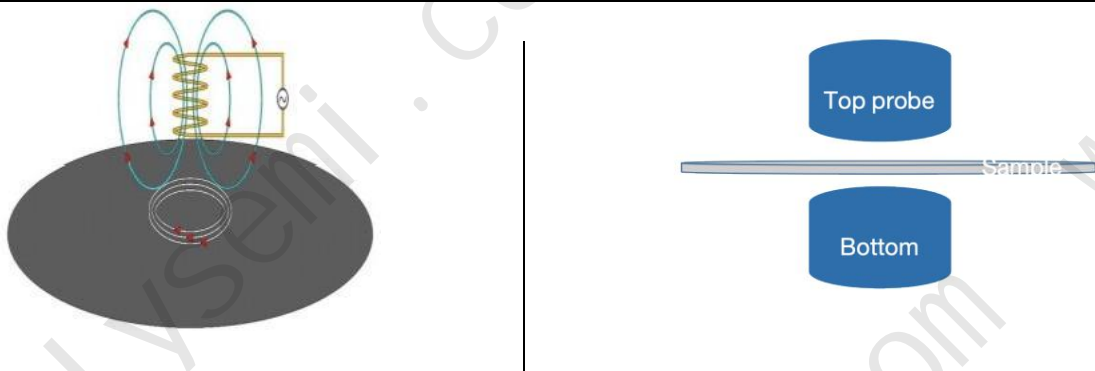
### Technical Specifications:

Parameters	Probe	Resistance Range	Resistivity Range	Testing Method
Range	Low-resistance probe	0.005-1Ω/□	0.25-500mΩ*cm	Eddy current method, non-contact
	Mid-resistance probe	0.05-10Ω/□	2.5-500mΩ*cm	
	High-resistance probe	10-3000Ω/□	0.5-150mΩ*cm	
	Ingot probe	0.01-2Q*cm		
Repeatability	<0.2%(≤50% range)		<0.5%(>50% range)	
Accuracy	<2%(≤50% range)		<3%(>50% range)	
Probe Information	Type of Probe: Dual-probe (upper and lower probes with a 2-3mm gap), Probe Diameter: Outer diameter 20mm, Inner diameter 14mm (effective testing part), Probe Gap: 30mm			
Coordinate Settings	Arbitrary Coordinate Settings			
Store data	Internal Database Storage (Exportable Table Files), PDF Test Report containing test information (time, operator), wafer information (number, size, thickness), data information (number of test points, max/min/average values, relative standard deviation, etc.), contour maps, surface maps, etc. CSV Table Data Storable to Remote Server Modifiable report information as per customer requirements			
WAFER Information	Size: 2"-8" (inches)	Thickness:100-1500mm		
System Requirements	Power Supply: AC220V,50/60Hz Relative Humidity:20%-80%RH	Power: 600W Size: 975*465*425(mm)	Environment: Temperature 24℃±10℃ Lifespan: >10 years	



Eddy Current Testing Principle

When a detection coil carrying an alternating current approaches the tested conductor, due to the coil's alternating magnetic field, eddy currents are induced in the tested conductor, creating a magnetic field opposite to the original magnetic field, partially offsetting the original magnetic field, resulting in changes in the resistance and inductance of the detection coil.



$\text{Resistivity} = \text{Sheet Resistance} * \text{Wafer Thickness}$

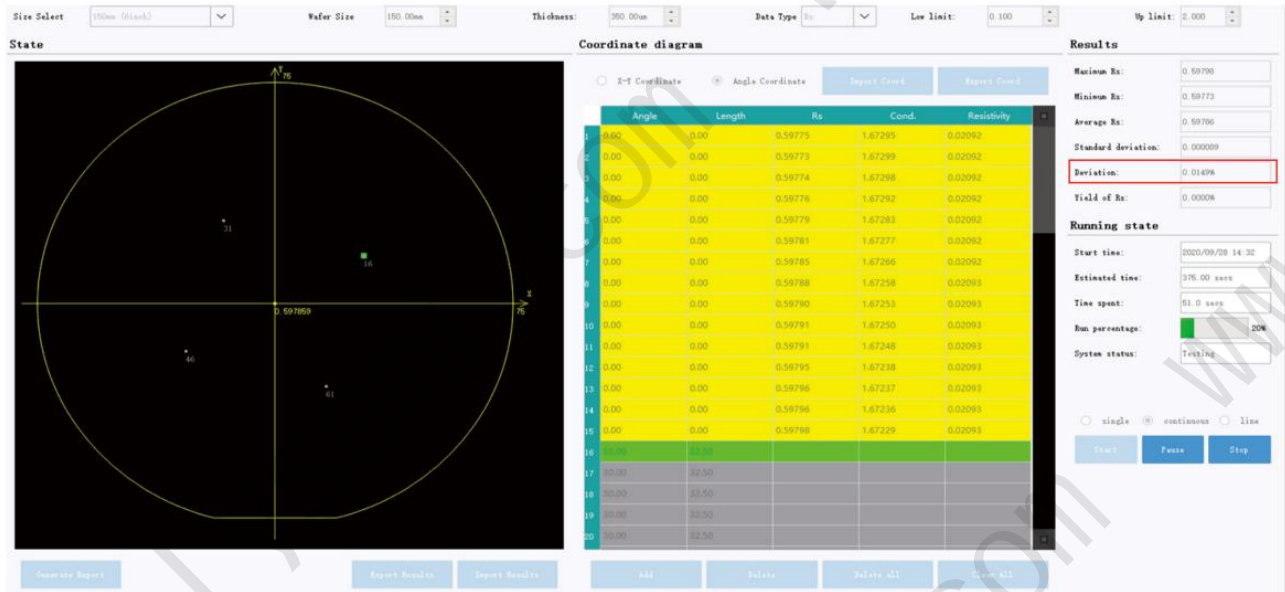
Sheet Resistance and V have a relationship

Resistivity is used to represent the electrical resistance characteristics of a material, it is a physical quantity of the material's electrical properties.

Material	Resistivity	Sheet Resistance
Silicon wafer	Y	Y
Sic wafer /Ingot	Y	Y
GaO wafer /Ingot	Y	Y
GaN wafer 2DEGI	Y	Y
GaAs 2EDG		Y
GZO/LTPS/ITO		Y
flat panel)		Y
TCO(Touch panel)		Y
Graphene		Y
Metal film		



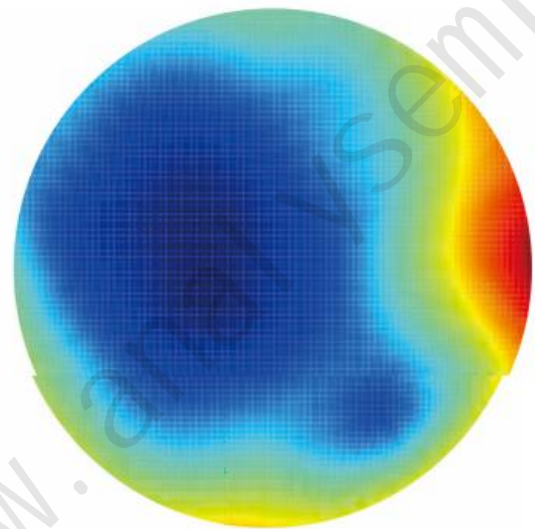
## Stability Performance



Relative standard deviation = 0.0149% @ 15 points measured at the center.  
Data derived from the software testing process.

## Sheet Resistance Mapping Report (55 points)

Report Time	2021/03/29 13:51	Number of Samples Tested	55
Analysis Time	2021/03/29 13:47	Maximum Sheet Resistance	0.0232
Operator ID	0	Minimum Sheet Resistance	0.02277
Batch ID	0	Average Sheet Resistance	0.02293
Sample ID	A-1-55	Standard Deviation	0.000111
Size Specification	100mm	Relative Standard Deviation	0.4861%





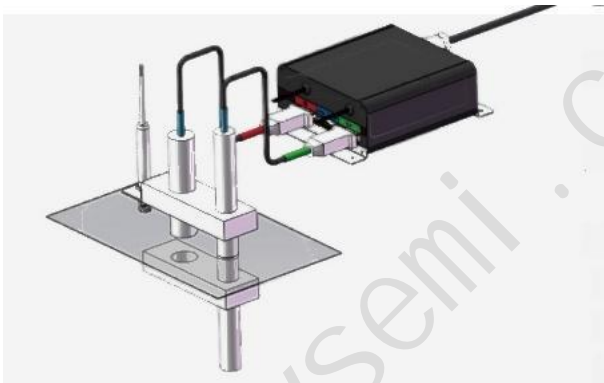
### Point-by-Point Dynamic Reproducibility Data (38 coordinate points) Consistency Data (measured 5 times on the sample surface)

	1st	2nd	3rd	4th	5th	Reproducibility	Max
1	0.12459	0.12466	0.12467	0.12471	0.12472	0.0413%	0.0703%
2	0.12347	0.12351	0.12356	0.12358	0.12362	0.0477%	
3	0.12315	0.12321	0.12323	0.12326	0.12329	0.0431%	
4	0.12389	0.12398	0.124	0.12402	0.12405	0.0489%	
5	0.12421	0.12424	0.12428	0.12438	0.12441	0.0703%	
6	0.12396	0.12403	0.12406	0.12408	0.12412	0.0484%	
7	0.12387	0.12389	0.12398	0.124	0.12403	0.0566%	
8	0.12482	0.12486	0.1249	0.12493	0.12496	0.0444%	
9	0.12431	0.12434	0.1244	0.12447	0.12451	0.0679%	
10	0.12429	0.12435	0.12438	0.12442	0.12445	0.0500%	
11	0.12372	0.12378	0.1238	0.12383	0.12386	0.0429%	
12	0.12381	0.12389	0.12392	0.12393	0.12396	0.0462%	
13	0.1237	0.12374	0.1238	0.12381	0.12385	0.0481%	
14	0.12386	0.12394	0.12396	0.12399	0.12403	0.0512%	
15	0.12394	0.124	0.12404	0.12407	0.12409	0.0482%	
16	0.12496	0.125	0.12504	0.12507	0.12509	0.0421%	
17	0.1245	0.12454	0.12452	0.12464	0.12465	0.0562%	
18	0.12414	0.12418	0.12422	0.12425	0.12427	0.0424%	
19	0.12392	0.12396	0.124	0.12404	0.12406	0.0462%	
20	0.12487	0.12491	0.12496	0.12501	0.12501	0.0495%	
21	0.12355	0.1236	0.12363	0.12367	0.12372	0.0526%	
22	0.12402	0.12409	0.12412	0.12415	0.12417	0.0473%	
23	0.12442	0.12444	0.12453	0.12456	0.12458	0.0578%	
24	0.12419	0.12423	0.12428	0.12431	0.12434	0.0486%	
25	0.12388	0.12395	0.12396	0.12398	0.12403	0.0438%	
26	0.12501	0.12505	0.12509	0.12512	0.12516	0.0468%	
27	0.1244	0.12444	0.12453	0.12453	0.12458	0.0592%	
28	0.12441	0.12445	0.12452	0.12453	0.12457	0.0519%	
29	0.12385	0.12389	0.12393	0.1239f	0.124	0.0473%	
30	0.12379	0.12383	0.12385	0.12387	0.12392	0.0389%	
31	0.12367	0.1237	0.12372	0.12374	0.12381	0.0425%	
32	0.12393	0.12397	0.12402	0.12403	0.12409	0.0492%	
33	0.12394	0.12396	0.124	0.12405	0.12409	0.0502%	
34	0.12506	0.12509	0.12514	0.12519	0.12521	0.0510%	
35	0.12449	0.12452	0.12459	0.12465	0.12466	0.0610%	
36	0.12423	0.12423	0.12431	0.12434	0.12436	0.0491%	
37	0.12382	0.12386	0.12386	0.12392	0.12395	0.0421%	
38	0.12494	0.12497	0.12502	0.12508	0.12508	0.0507%	

### Stability Testing with Different Resistance Values (Statistical Analysis of 1000 data points)

	Real Value	Static	Dynamic
Stability	0.1013	0.05%	0.05%
	0.1596	0.04%	0.04%
	0.2884	0.05%	0.06%
	0.5657	0.07%	0.05%
	0.9746	0.07%	0.08%
	1.5941	0.11%	0.09%
	3.1808	0.16%	0.27%
	16.662	0.489	0.96%
	56.4	0.03%	0.05%
	180.6	0.10%	0.10%
	264.4	0.10%	0.16%
	573.7	0.28%	0.36%
	750.9	0.34%	0.43%

## Resistance PN Temperature Testing Module



### Product Description:

This product integrates sheet resistance (resistivity), PN type, and temperature three probes for measurement. It can be widely used in photovoltaic and semiconductor measurement fields such as silicon wafer sorting machines and production process analysis.

### Features:

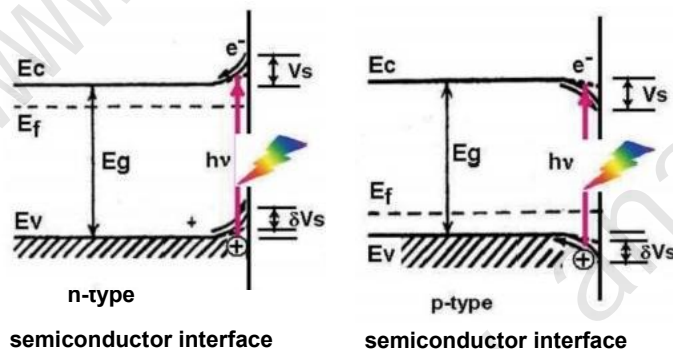
- Integration of resistivity, PN, and temperature
- Option to integrate thickness probes
- Mainly used in the photovoltaic field

### Technical Specifications:

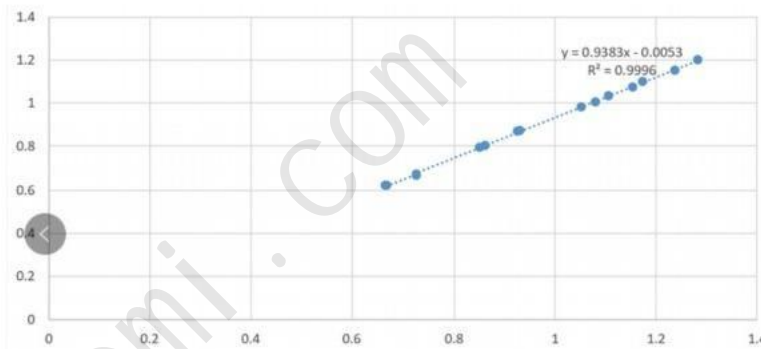
Parameters	Sheet Resistance (Thickness approximately 100 $\mu$ m)		
Probe Range	6-2000 $\Omega/\square$ (0.1-30 $\Omega\cdot\text{cm}$ )		
Probe Performance	Dynamic Reproducibility	Static Reproducibility	Display Error
	006-080 $\Omega/\square$ (0.1-0.8 $\Omega\cdot\text{cm}$ ) <0.15%	<0.02%	$\leq\pm 3\%$
	080-160 $\Omega/\square$ (0.8-1.6 $\Omega\cdot\text{cm}$ ) <0.3%	<0.039%	$\leq\pm 3\%$
	160-320 $\Omega/\square$ (1.6-3.2 $\Omega\cdot\text{cm}$ ) <0.4%	<0.05%	$\leq\pm 3\%$
	320-2000 $\Omega/\square$ (3.2-20 $\Omega\cdot\text{cm}$ ) <0.5%	<0.1%	$\leq\pm 3\%$
Dimensions	Upper Probe: $\phi 20 \times 145\text{mm}$ Lower Probe: $\phi 20 \times 100\text{mm}$ Control Box: 173*130*55mm		
Signal Acquisition	Sampling Rate: $\leq 1\text{ms}$ , Data Acquisition >300 points Data Interface: RS232 RS485 CAN TCP/IP Transmission Protocol: Modbus Rtu/Modbus Tcp, user-defined SOCKET protocol, etc. Automatic Temperature Compensation System Raw signals can be accessed openly		

### PN Testing Principle (SPV Method)

Monochromatic light with energy greater than the semiconductor material bandgap width is irradiated onto the surface, generating electron-hole pairs inside the semiconductor material. Driven by concentration gradients, electrons and holes near the surface space charge region of the semiconductor material are separated by self-built electric fields, creating photo-generated voltage, known as surface photovoltage.



Changes in the surface barrier height of n-type and p-type semiconductor materials under light induction

**Correlation and Reproducibility Comparison with Imported \*\*\* Instrument (from customer testing)****Correlation Coefficient R2=0.9996, indicating excellent linearity**

Sample 1							Sample 2						
Imported ****				Semianaly			Imported ****				Semianaly		
No	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	
	0.376	0.385	0.312	0.375	0.383	0.318	0.64	0.648	0.542	0.636	0.643	0.547	
2	0.377	0.386	0.311	0.375	0.383	0.317	0.64	0.649	0.541	0.636	0.643	0.546	
3	0.376	0.386	0.311	0.375	0.384	0.318	0.641	0.647	0.541	0.634	0.642	0.546	
4	0.378	0.386	0.314	0.376	0.384	0.319	0.642	0.642	0.542	0.635	0.646	0.542	
5	0.377	0.385	0.314	0.375	0.383	0.316	0.639	0.647	0.545	0.635	0.644	0.545	
6	0.376	0.382	0.315	0.375	0.383	0.318	0.64	0.649	0.542	0.636	0.645	0.545	
7	0.378	0.384	0.311	0.375	0.383	0.317	0.642	0.648	0.543	0.636	0.644	0.545	
8	0.378	0.384	0.311	0.375	0.384	0.316	0.641	0.648	0.541	0.635	0.644	0.544	
9	0.377	0.382	0.313	0.375	0.384	0.318	0.64	0.647	0.542	0.635	0.643	0.546	
10	0.376	0.383	0.313	0.376	0.384	0.318	0.641	0.648	0.545	0.635	0.645	0.544	
Rsd	0.232%	0.408%	0.483%	0.112%	0.137%	0.306%	0.151%	0.309%	0.278%	0.106%	0.186%	0.259%	
%				0.00%	0.26%	1.60%				0.94%	-0.46%	-0.18%	
Sample 3							Sample 4						

Sample 3							Sample 4					
Imported ****				Semianaly			Imported ****			Semianaly		
No.	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min
	1.251	1.285	0.972	1.26	1.271	0.965	2.005	2.011	1.689	1.992	2.002	1.666
2	1.25	1.278	0.971	1.257	1.272	0.968	2.006	2.011	1.687	1.992	2.001	1.654
3	1.251	1.277	0.969	1.256	1.271	0.967	2.001	2.008	1.698	1.993	2.003	1653
4	1.248	1.287	0.966	1.258	1.268	0.968	2.002	2.015	1.688	1.991	2.005	1.655
5	1.247	1.283	0.964	1.258	1.274	0.962	2.006	2.018	1.687	1.992	2.002	1.665
6	1.252	1.281	0.963	1.258	1.274	0.962	2.004	2.019	1.685	1.997	2.001	1.653
7	1.250	1.282	0.962	1.259	1.271	0.965	2.008	2.021	1.697	1.992	2.009	1.653
8	1.252	1.282	0.964	1.257	1.272	0.960	2.008	2.035	1.683	1.998	2.01	1.658
9	1.252	1.284	0.968	1.256	1.274	0.966	2.009	2.021	1.682	1.996	2.01	1.655
10	1.253	1.277	0.97	1.255	1.271	0.965	2.004	2.022	1.685	1.992	2.008	1.659
Rsd	0.152%	0.266%	0.370%	0.120%	0.147%	0.280%	0.131%	0.381%	0.320%	0.126%	0.189%	0.295%
%				0.16%	-0.47%	-0.5290				-0.60%	-0.699%	-1.546

**Photovoltaic Probe Stability (This product has been successfully launched in the photovoltaic field, stable testing exceeding 2 billion samples)****Boxplot of 20 test repetitions is very stable**



## Diffusion Thin Film Sheet Resistance Analysis Module (JPV Structure Photovoltage Method)

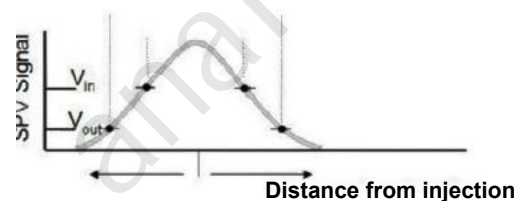
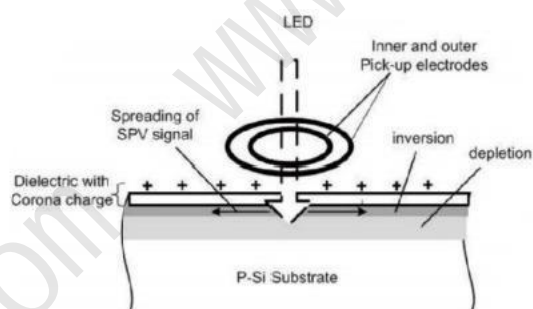


### Product Description:

Primarily uses structure photovoltage technology for non-contact testing of samples with P/N or N/P structures for sheet resistance (emitter thin layer sheet resistance). This instrument is non-contact and non-destructive in testing, with advantages of high testing speed, good repeatability, and ability to directly test product slices.

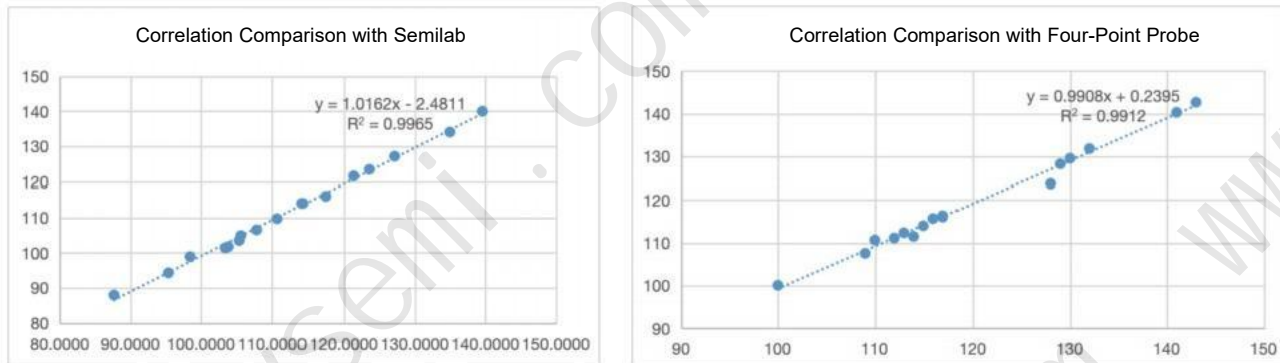
### Technical Specifications:

Probe Range	10-500Q/□		
Probe Performance	Dynamic Reproducibility	Static Reproducibility	Display Error
	Testing Conditions: Sampling rate 50SPS (20ms), 20 points per cycle		
	010-050Q/□<2%	<0.5%	≤±3%
	050-200Q/□<1%	<0.2%	≤±3%
Dimensions	200-500Q/□<0.6%	<0.15%	≤±3%
	Probe: 60mm*30mm*100mm (LW*H) Control Box: 173*130*55mm		
Signal Acquisition	Sampling Rate: up to 500SPS		
	Data Interface: RS232 RS485 CAN TCP/IP		
	Transmission Protocol: Modbus Rtu/Modbus Tcp, user-defined SOCKET protocol, etc.		



## JPV Test Data

### Experimental Data - Correlation

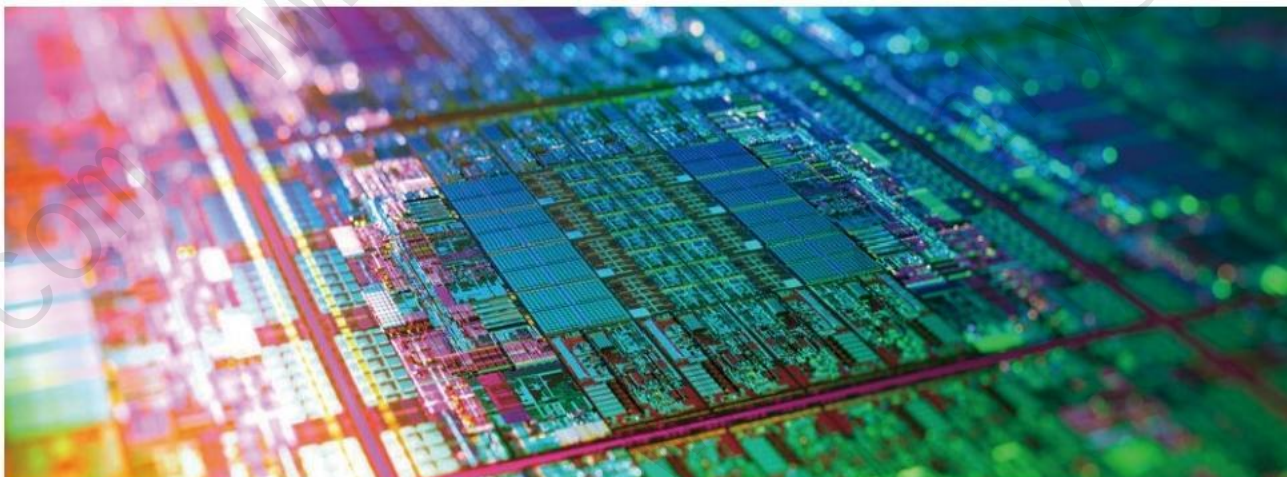


### Experimental Data - Reproducibility and Accuracy

Sample 1				Sample 2			Sample 3			Sample 4		
	Four-point probe	SemiLab	Semianaly	Four-point probe	SemiLab	Semianaly	Four-point probe	SemiLab	Semianaly	Four-point probe	SemiLab	Semianaly
1	98.5	99.51	98.11	106.1	105.77	105.65	131.2	131.82	131.84	146.6	148.52	147.32
2	98.6	99.84	98.1	105.4	105.96	105.63	130.1	131.55	131.99	148.2	148.81	147.23
3	98.9	99.68	97.99	106.8	105.98	105.78	132.5	131.57	131.94	148	148.85	147.18
4	99	98.78	97.98	106.7	106.54	105.78	132.4	131.86	131.97	146.9	148.78	147.14
5	98.6	98.75	97.99	105.8	105.21	105.84	131.8	131.85	131.78	145.5	148.86	147.39
6	98.3	98.56	97.92	106.8	105.11	105.79	132.8	131.89	131.86	146.5	148.26	147.32
7	98	98.57	97.92	105.7	105.78	105.81	131.7	131.54	131.7	148.5	148.1C	147.26
8	98.2	98.79	98.06	105.3	105.95	105.76	131.1	132.66	131.81	148.6	148.21	147.15
9	97.6	98.69	97.82	105.5	105.76	105.76	131.4	132.05	131.76	147.4	148.51	147.28
10	98.6	99.13	97.92	106.2	106.14	105.82	130.8	132.29	131.73	148.1	148.15	147.09
Ave	98.43	99.03	97.98	106.03	105.82	105.76	131.58	131.91	131.84	147.43	148.51	147.236
Rsd	0.43%	0.48%	0.09%	0.55%	0.39%	0.07%	0.63%	0.270%	0.080%	0.69%	0.20%	0.060%
%		0.61%	0.46%		-0.20%	-0.25%		0.25%	0.20%		0.82%	-0.15%

#### Explanation:

1. Four-point probe has poor reproducibility, with probe heads prone to issues causing significant testing deviations.
2. Reproducibility deviation between Semilab and Semianaly is minimal.
3. Accuracy deviation remains within a certain range for both.



## Thickness Tester



### Product Description:

Primarily uses capacitance detection technology for high-precision non-contact detection. Non-contact and non-destructive testing, offering advantages of high testing speed, good repeatability, and high testing sensitivity, suitable for directly testing product slices.

Components	Thickness Probe	Method: Non-contact capacitance detection technology
		Range: 50 $\mu$ m-1000 $\mu$ m
		Measurement Error: $\leq \pm 3\mu$ m
		Repeatability: $\leq 0.2\%$
		Single-point Measurement Time: <1 second

## Manual Resistance PN Thickness Tester



### Product Description:

Desktop-type manual resistance PN thickness measurement equipment. It utilizes eddy current, surface photovoltage, and capacitance methods to test resistivity, PN, and thickness, primarily for semiconductor and other material measurements. Equipped with various testing platforms according to different needs for customer selection.

### Applications:

Semiconductor materials, solar cell materials (silicon, polycrystalline silicon, silicon carbide, etc.), new materials, functional materials, conductive films (metals, ions, etc.), diffusion layers, silicon-related epitaxial materials.

Weight	35kg
Dimensions	460mm (L)×505mm (W)×205mm (H)
Interfaces	Ethernet Port×1 DB9×1 Power Cord Interface×1 Foot Switch×1 Air Source Port×1 Switch Button×1
	Square Sample: 125mm×125mm, 156mm×156mm Circular Sample: 4", 5", 6", 8", 12"
Silicon Wafer Requirements	Silicon Wafer Thickness Range: 50 $\mu$ m~1000 $\mu$ m
	Silicon Wafer Resistivity Range: 0.1Q*cm~20Q*cm (resistivity range can be customized) (Thickness approximately 180 $\mu$ m)

### Data Indicators

Single-point and multi-point thickness	Error: $\leq \pm 3.00\mu$ m
	Repeatability: $\leq \pm 0.5\%$
Resistivity	Error: $\leq \pm 3\%$
	Repeatability: $\leq 0.5\%$

### Environmental Requirements

Temperature	22℃~25℃
Humidity	35%~60%





## HANDHELD INGOT TESTING SYSTEM



- Resistivity Range  $<100\Omega\cdot\text{cm}$
- Silicon ingot integration with PN and temperature
- Manual switch trigger, integrating MAPPING diagram and temperature compensation function
- Long lifespan ( $>10$  years), no consumables required

## MINORITY LIFE TESTER



- Adapts to the testing needs of low resistivity samples, with small sample resistivity down to  $0.12\mu\text{S}$
- Fully automatic operation and data processing
- For solar-grade silicon wafers, pre-processing before testing is generally not required
- Able to test single crystal or polycrystalline silicon rods, slices, or ingots
- Testing possible at any position on the sample
- Quality control available for multi-step samples:  
Incoming and outgoing inspection of silicon rods and slices;  
Silicon wafers after diffusion;  
Silicon wafers after surface coating, and finished batteries.

### Technical Specifications:

Measurement Principle	QSSPC (Quasi-Steady-State Photoconductance)
Minority Life Measurement Range	$0.1\mu\text{S}\sim 1000\mu\text{S}$
Measurement Modes	QSSPC, transient, lifetime normalization analysis
Compatible Sheet Resistance Range	$2\sim 1000\Omega/\square$
Sample Specifications	40mm~300mm
Pulse Width	80 nS
Environmental Temperature	$20^{\circ}\text{C}\sim 30^{\circ}\text{C}$
Peak Power	60W
Power Requirements	AC100~240V, 50/60Hz

#### Features:

- ① Non-contact, non-destructive measurement of minority life suitable for single crystal or polycrystalline silicon samples



## EFEM FULLY AUTOMATIC RESISTIVITY MOBILITY TESTER



### Product Description:

The EFEM (Front-End Module of Semiconductor Equipment) is a part of semiconductor production equipment, primarily composed of a wafer loading module, FFU air filter, wafer transport robot, wafer alignment device, wafer code reading device, and automatic control module. The core components include the wafer loading system (Loadport), wafer transport robot (Robot), wafer alignment device (Aligner), and wafer code reading device (OCR).

## PRODUCT MODEL SUMMARY

Product Name and Model	Model	Application Field	Comparable Imported Equipment	
Non-contact Eddy Current Sheet Resistance Tester	ER1110	Substrate and epitaxial testing of semiconductor materials (Si, SiC, GaN, ingots)	Semilab Napson	LEI-1510 Series NC-80MAF
Non-contact Eddy Current Resistivity Test Probe	ER-P1000	Photovoltaic cell sorting, Si wafer sorting	Napson	EC-80P
Non-contact SPV PN Test Probe	ER-P0100	Photovoltaic cell sorting, Si wafer sorting	Napson	PN-50E
Non-contact Hall Effect Mobility Tester	HM-2000	RF GaN HEMT epitaxial slice testing	Semilab	LEI-1610E100AM Series
Non-contact JPV Surface Sheet Resistance Test Probe	SP-P3000	Surface sheet resistance after P or N diffusion of battery cells	Semilab	CMS-1AP

## TECHNICAL FEATURES

All products are compared to imported products, with performance indicators not inferior to international brands. All products are designed based on original principles, and there is no infringement or counterfeiting behavior.

### Hardware System

- Independently developed detection probes
- Independently developed analysis system
- Independently developed structural system

### Software System

- Independently developed applications
- Independently developed Mapping
- Compatible with domestic operating systems





# INTELLECTUAL PROPERTY

- Applied for 5 invention patents
- Applied for 15 utility model patents, granted 8
- Applied for 5 design patents, granted 6
- Applied for 5 software copyrights, granted 3



## COLLABORATION AND ADVANTAGES

**Good repeatability vs. current market reference**

**Good stability vs. current market reference**

**Good accuracy vs. current market reference**

**Some products have obtained CE certification or relevant certifications**

**Independently developed hardware, software, and structures based on original principles without intellectual property infringement**

**Domestic high-quality service and response speed**

**Selective strategic partnerships**

### Partners

Semiconductor wafer  
manufacturers

Photovoltaic silicon wafer sorting  
machine service providers

Semiconductor material  
research institutions

Photovoltaic cell  
manufacturers

Universities, research institutions,  
enterprise testing organizations

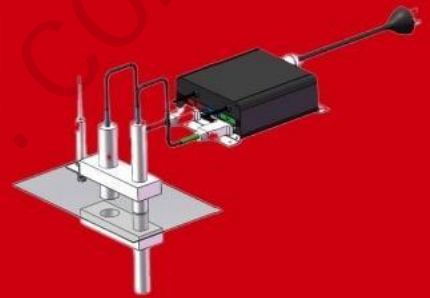
Ingots and chip  
manufacturers

RF substrate and epitaxial production manufacturers





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