

OVERVIEW

HSR-25AC is a measurement system for carrier density, mobility and resistivity of semiconductor wafers and films. The main advantages of HSR-25AC are the AC magnetic field, and a unique high-sensitivity, low-noise electronics that make it possible to measure very low hall voltages. HSR-25AC can be used for metal films, TCO, organic and inorganic semiconductors, in various applications such as LEDs, solar cells and electronic devices. With this system, measurement of very high resistivity films is also possible.

FEATURES

- AC applied magnetic field
- Unique electronics for measurement of very low signals
- Suited for high resistivity films as well as low resistivity films
- Bench-top and small-size



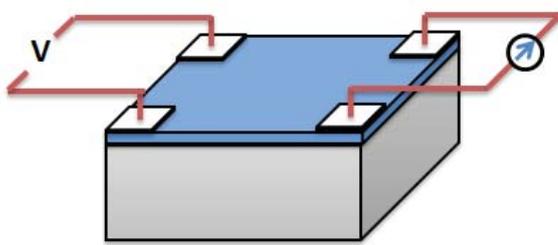
SPECIFICATIONS

HSR Technical Specifications	
Model	HSR-25AC
Type	AC
Maximum field intensity	1 T (peak to peak)
AC field frequency range	0.01-10 Hz
Minimum measurable Hall voltage	10 nV
Maximum surface resistance of sample	10 GΩ
Current Source	10 nA-1 A
Voltage measuring range	Hall unit: 30 mV-1 V (8 steps) Four-point resistance unit: 30 mV-1 V (8 steps)
Maximum compliance voltage	48 V
Sample size (max.)	20 mm × 20 mm
Standard module temperature	Room Temperature
Pole dimension	48 mm × 50 mm
Air gap at room temperature	10 mm
Input voltage	240-200 VAC, 60-50 Hz

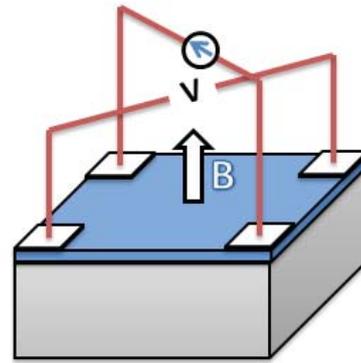
HOW IT WORKS

Samples can be in the form of wafers or thin films. In the standard van der Pauw configuration, for a sample of typically 1 cm in size 4 point contacts at the corner are created. It is very important to make ohmic contacts. For the hall measurement, a magnetic field is applied perpendicular to the sample, a DC current is passed through the crossing contacts and the hall voltage is read across the two other contacts. For sheet resistance, the current passes through adjacent contacts and voltage is measured at two other contacts.

HSR-24AC automatically changes the magnetic field direction (through AC field), and measures 6 different input-output configurations to remove DC offsets and other sources of error, to calculate the right values of hall voltage and resistivity.



Surface Resistance Measurement



Voltage Measurement