LEHIGHTON ELECTRONICS INC.

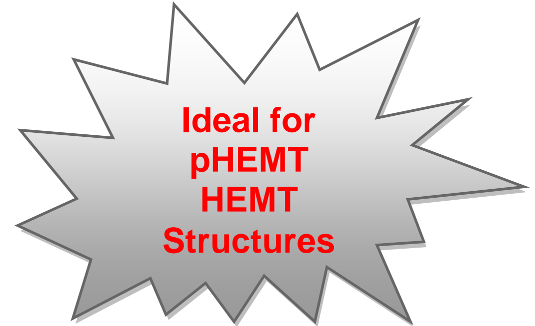
LEHIGHTON ELECTRONICS, INC.
Quality Service Since 1963
P.O. Box 328
208 Memorial Dr.
Lehighton, PA 18235-0328

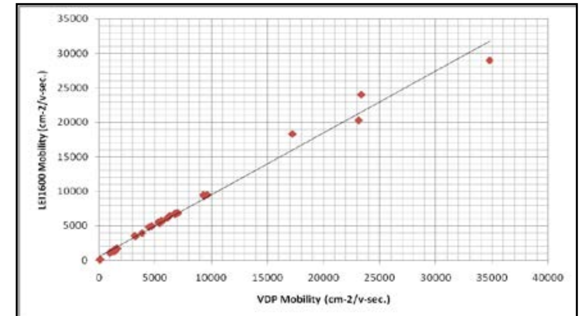
CALL/CONTACT
Phone: (800) 535-1112
Fax: (610) 377-6820
E-mail: salesinfo@lehighton.com
Website: www.lehighton.com

Contactless Carrier Mobility/ Carrier Density/ Sheet Resistance
Measurement and Mapping Systems

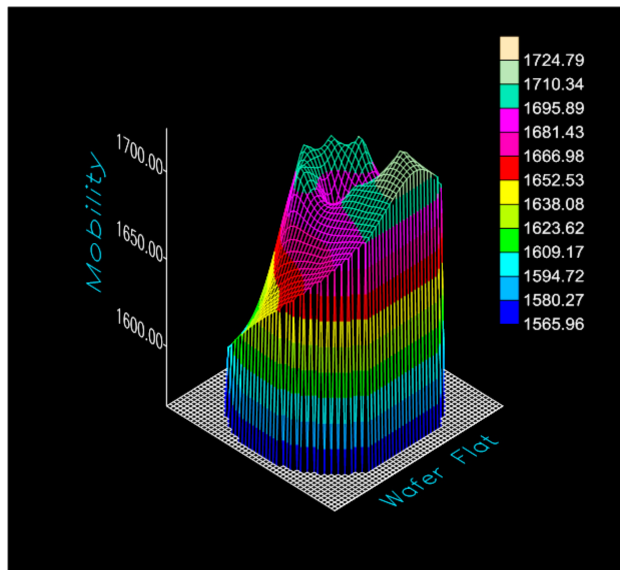
LEI1605-AM

Figure 1: LEI1605AM - Measurement System

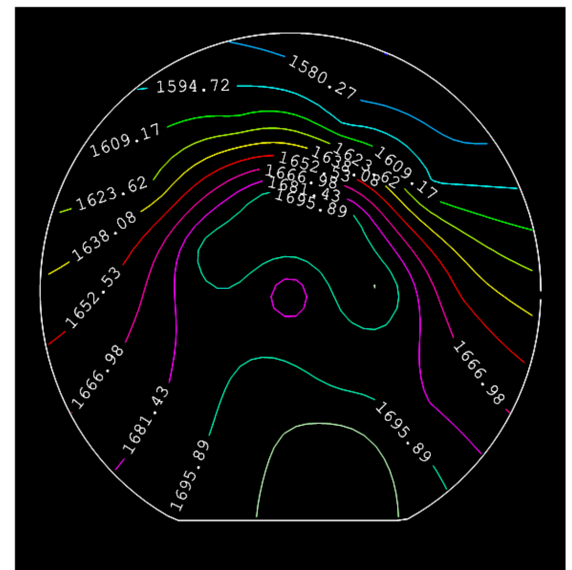




Correlation of mobility data obtained by van der Pauw Hall Measurements



Surface Map



Contour Map

Nondestructive Measurement of Semiconductor Wafers

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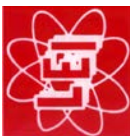

Benefits vs. van der Pauw Hall

Less Expensive

* No need to destroy samples
* Rapid ROI
* Minimal operator training required
* Carrier Concentration/Density

Faster

* No sample preparation; shorter measurement time means immediate feedback on wafer transport properties

Improved Repeatability

* Lead attachment = more consistent test conditions
* No variability

Increase Utility

* No variability
* *Automated system tuning
* Measure wafers at any point in the deposition or manufacturing process

Wafer Mapping

* Up to 55 measurement points

Characterization of

* **GaAs, InP, InAs, GaN, AlN, Si, SiC based device structures: HEMTs, pHEMTs, HBTs, FETs,** (epi on semi insulating and some doped substrates)

Performance and Features

Measurement Features

* Hall Mobility
* Hall Coefficient
* Sheet Resistance
* Carrier Concentration/Density

Measurement Capabilities

* Sample thickness range of 450 to 1000 microns
* Normal wafer gap (>/= .060 mils)
* Manual loading
* Size: 2” to 8” wafers

Measurement Resolution Options

* 21 mm or 14 mm diameter
* Measurement gap adjustment

Magnet

* Permanent 2.5 - 3.0Kgauss (0.25 - 0.30T)

Specifications	
Measure	**Measurement ranges**
Mobility	~ 600 - 20,000 cm2/.sec
Sheet Res.	~ 100 - 3,000 ohm/ sq.

*** Dynamic Repeatability**

1% to 4% depends on the range

*** Static Repeatability** < ± 1%

1% to 2% depends on the range

*** Accuracy (estimated)** < ± 10%

** Specifications subject to change; contact LEI for the latest.*

Nondestructive Measurement of Semiconductor Wafers