# NOVEL WAFER-LEVEL CHARACTERISATION TECHNIQUES

 Si Photonics device characterization C-,L- and O-band Passive and active



- -O Photonic BiCMOS functional test
- **b** Electromechanical RF-MEMS Characterization based on Laser-Doppler Vibrometry





Get support for your challenging DC and RF measurement tasks!



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Neasurement Service



### **Device Measurements**



#### **MEASUREMENT CAPABILITIES**

- **D**C down to 1 fA current resolution
- -• True Kelvin measurements (force/sense)
- -• 48 channel low leakage switch matrix
- -O C(V) from 20 Hz to 1 MHz
- TLP ESD characterization up to 7 kV HBM equivalent
- -O Impedance up to 3 GHz
- -• S-Parameters up to 170 GHz (500 GHz on request)
- -• 4Port S-Parameters up to 120 GHz
- -•• X-Parameters up to 50 GHz
- **-O** Spectrum analysis
- -O Low frequency noise 0.1 Hz to 10 MHz
- -O High frequency noise from 2G Hz to 26 GHz
- -• Wafer size: all sizes ≤300 mm
- -O Semi-automatic mapping
- Temperature range: -60°C to +300°C (for S-Parameters the temperature range is limited)
- Standard pad configuration for S-Parameters: 100 μm GSG

## **Functional Testing**



FEATURES OF IHP'S VLSI TEST EQUIPMENT

- V93000 SoC High-performance cycle-based production tester
- -• Tester-per-pin architecture
- Device power supplies:
  - 12 channels: ±8 V, max. 16 A
  - 32 channels: 0-7 V, max. 48 A @3 V
- -• Up to 320 digital channels:

256 channels with up to 1.6 Gb/s 64 channels (32 diff. pairs) with up to 8 Gb/s

32 channels (16 diff. pairs) with up to 16Gb/s

Analog resources:

4 waveform generators, max 200 MHz @50 Ms/s

4 digitizers, max 16 bit @300 MHz

- -• Fully automatic wafer prober
- -• Wafer size: 125 mm, 150 mm, 200 mm
- Temperature range: -40°C to +150°C

## **Circuit Measurements**



### **MEASUREMENT CAPABILITIES**

- -• Analog mixed signal
- -O Analog RF signal

#### **TEST SYSTEMS**

- -• NI PXI test systems
- **-O** Tests at elevated temperatures
- -O Customized test programs
- -O Automated mapping

#### SUPPORTED PROBE CARDS

- •• Cantilever probe cards
- Vertical probe cards with high pin count for flip chip designs
- -O Customized load boards

### **RESULT FORMAT**

- Electronic maps
- Inked wafers