IC CAP user training

Course Overview

Through interactive lectures and labs, students will learn about the IC-CAP software and how to define measurements, select a model, perform parameter extractions, simulate and fine-tune the parameters.

The instructions cover the basic tools in IC-CAP, including measurement data management, PEL (Parameter Extraction Language), the use of built-in functions, and automating modeling tasks with macros.

What you will learn

Navigating the IC-CAP user interface.
• Driving measurement systems from IC-CAP to collect data.
• Organizing the measurement data and checking them for consistency.
• Extracting the model parameters.
• Simulating the model and comparing the results to measured data.
• Optimizing the fitting between measurements and simulation results.
• Writing PEL programs (Parameter Extraction Language) to enter custom extraction methods and to automate IC-CAP.
• Importing data from IC-CAP into the IC designer's simulator like Spectre or ADS (Advanced Design System)

Course Type

Basic User Training

Audience

Modeling engineers who need to understand the functions of the IC-CAP software

Prerequisites

Basic knowledge of measurement and modeling concepts and techniques

Course Length

3 days

Course Format

The course combines Lecture presentations with instructor guided hands-on lab.

Delivery Location
To be defined

Delivery Dates
To be defined

KEYSIGHT TECHNOLOGIES

Detailed Course Agenda

DAY 1:
Making reliable Baseband and RF Measurements

DC measurements tutorial: Force-Sense technique, shielding, self-heating, self-oscillation, handling DUTs with big capacitances.

CV measurements tutorial: Measurement principle, how to handle unused pins during measurements and simulations, max. signal level, the right CV frequency, max. DC bias.

S-parameter basics for modeling engineers

NWA measurements tutorial: Accounting for DC bias losses, max. applicable RF signal, NWA calibration & verification, de-embedding and its verification, data consistency checks.

Automating on-wafer measurements:
Keysight WaferPro/DataPro

DAY 2:
Introduction to IC-CAP

Modeling Overview
IC-CAP User Interface and Model Structure
Linking to DC, CV and RF Instruments
Measurements and Data in IC-CAP
Model Extraction
Circuits, Simulation and Optimization
Plot Features and Using the Plot Optimizer
PEL Programming for Custom Extraction and Automation
Build and Run a Diode Model Extraction

DAY 3
Getting further with IC-CAP

Device Modeling extensions (sub-circuits, Verilog-A)
Verilog-A Model of a diode
Keysight ICCAP Toolkits: example on GaN FET Modeling

Programming in ICCAP and creating GUIs (Graphical User Interfaces):
PEL/Python commands, variables & strings & arrays
PEL/Python Programming: extracting Parameters, executing Programs, accessing data
Setting up GUIs and execute them from programs

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