



Outline of MDC CSM/Win SYSTEM FUNCTIONS and FEATURES and HARDWARE



High Frequency Variable Frequency Quasi-Static Current-Voltage

1. Junction Programs:
 - a. C-V Plotting
 - b. Doping Profiling
 - c. Resistivity Profiling
 - d. Average Doping or Resistivity Function
 - e. Find Flat Zone Function
 - f. Q-V Plotting
 - g. Doping-Voltage Plotting
 - h. Series Resistance Correction
 - i. $1/C^2$ -V Plotting
 - j. 2DEG Analysis
2. MOS Programs:
 - a. C-V Plotting
 - i) Swept, Pulsed, Retrace, and Hysteresis
 - ii) Dual Frequency Mode for Leaky Oxides
 - iii) Inversion Layer Stabilization
 - iv) Series Resistance Correction
 - b. Conductance-Voltage Plotting
 - c. Theoretical MOS C-V Plots
 - d. CVC Computations for Thin Oxides
 - e. Quantum Modeling using CVC
 - f. Polysilicon Depletion Modeling using CVC
 - g. Dielectric Constant Mode
 - h. Ricco Analysis for Thin Oxide Parameters
 - i. Sub-Oxide Doping Profiling (Ziegler)
 - j. Implant Profiling
 - k. Partial Dose Integration
 - l. Mobile Ionic Charge (CVBT Method)
 - m. Tests for Valid/Invalid CVBT Shifts
 - n. Overlay Plots
 - o. Production Version
3. Capacitance-Time Programs
 - a. C-T Plots
 - b. Lifetime-Depth Plots
 - c. Zerbst Plots
 - d. Automatic Time Selection Mode
4. Conductance-Voltage-Frequency Plots
 - a. C-F Plots
 - b. G-F Plots
 - c. Dit-V Plots
 - d. Nicollian-Goetzberger Analysis
 - e. G(F,V) Plot Families
 - f. C(V,F) Plot Families
5. Quasi-Static C-V Plots
 - a. Leakage Correction
 - b. Offset Correction
 - c. Theoretical Plots
 - d. Alternate CVC Computations
 - e. Quantum Modeling using CVC
 - f. Polysilicon Depletion Modeling using CVC
6. Capacitance - Surface Potential Plots
 - a. Find Bergland Integration Constant
 - b. Dit versus Surface Potential using Kuhn Method
 - c. Dit versus Energy using Kuhn Method
 - d. Dit versus Surface Potential using Castagne Method
7. TVS Plots
 - a. Mobile Ionic Charge Concentration
 - b. Mobile Ionic Charge Species
 - c. Plot C-V or I-V
 - d. Find Peak Current
 - e. Production Version
8. Current versus Voltage Plots
 - a. Plot Current versus Voltage
 - b. Fowler Nordheim Analysis for Thin Oxides
 - c. Junction Characteristics for pn or Schottky Barriers
 - d. Pulsed I-V Measurement Mode
 - e. Current-Time Plots for Cu Diffusion Studies
 - f. PV Mode for Solar Cells. Finds Pmax, Rs, Rsh, FF
9. GOI Tests
 - a. Force Constant Voltage (TDDB-V)
 - b. Force Ramped Voltage (TZBD)
 - c. Force Constant Current (TDDB-I)
 - d. Force Stepped Voltage (JT)
 - e. Pulsed Voltage Source (PVBDB)
 - f. Pulsed Voltage Wearout (TDDW-V)
 - g. Pulsed Current Wearout (TDDW-I)
 - h. Fixed Voltage
 - i. Analyses
 - j) Histograms
 - ii) TDDB Plots
 - iii) JT Plots
 - iv) Qbd Plots
10. Dielectric Constant Tests
 - a. Find Permittivity
 - b. Find Loss Factor
11. Probe Station Interfacing
 - a. Standard Hot Chuck
 - b. Prober with Stepping
 - c. Prober with Autoloading
 - d. Glove Box for Oxygen-Free Measurements
 - e. QuietCHUCK with Hermetic Enclosure for Oxygen-Free Measurements
 - f. Mercury Probes for Rapid, Non-Destructive Measurements
 - g. Cryogenic Prober for Low Temperature Measurements
12. System Features
 - a. Multi-level password protection
 - b. Database Interface
 - c. ASCII File Output
 - d. Spreadsheet Compatible Output
 - e. Multiple Plot Overlays
 - f. Tabular Outputs
 - g. Operator Message Monitor
 - h. Test Functions for Multiplexers and Hot Chucks
 - i. Remote Mode for Software Operation in Other Computers
 - j. Network Interface (Ethernet)
13. Help File
 - a. Automatic Help Links in Program
 - b. Help with all Measurements and Tests
 - c. Diagrams of Ideal and Anomalous Plots
 - d. Comprehensive Reference List
 - e. Over 1,000 Pages of Information
 - f. Repair Information
 - g. Circuit Diagrams
14. Special Functions
 - a. Production Resistivity Measurements
 - b. Production TVS Measurements
 - c. Implant Modeling
15. TFT or Transistor Test Suite
 - a. Transfer Characteristics
 - b. Saturation Characteristics
 - c. Output Characteristics
 - d. Leakage Tests
 - e. Conductivity tests
16. Calculations
 - a. Parallel Plate Capacitor
 - b. Doping-Resistivity
 - c. Depletion-Doping-Voltage
 - d. Breakdown Voltage-Doping
17. Four Point Probe Tests
 - a. Resistance
 - b. Resistivity
 - c. Sheet Resistance
 - d. Doping
18. Multiple Material Parameters
 - a. Permittivity
 - b. Bandgap
 - c. Electron Affinity
 - d. Mobility
19. Drive Level Capacitance Profiling
 - a. C-V Plot Family
 - b. Defect Density Profiles
 - c. Standard CV Profiles
 - d. Variable Frequency
 - e. Variable Temperature
- d. SPC
- e. Generation Lifetime
- f. Multiple Measurement Sequencing
- g. Electromigration
- h. Parametric Testing