# LabExpress

Flexible Electrical Parameter Testing Software

PRIMARIUS

Introduction

LabExpress Electrical Parameter Testing Software is a GUI based professional tool designed for electrical parameter test applications across research, development and production of semiconductor devices, enabling efficient and coordinated control of Primarius testing instruments, third-party instruments, both semi-automatic and fully automatic probe stations. It supports a wide range of test instruments, powerful measurement and analysis functions, as well as flexible customization capabilities.

Users can perform measurement tasks efficiently with rich ready-to-use application testing library, or define custom test algorithms and processes for complex experiments. And test results can be displayed in multiple windows and analyzed with flexible expressions and algorithms.

The software is also deeply optimized for automated measurement scenarios with capabilities of wafer mapping, massive data management and controlling diverse types of probe stations, switch matrix and 3rd-party test instruments for automated testing. It comes with rich professional application testing features to improve the efficiency and user experience of automated testing and analysis.
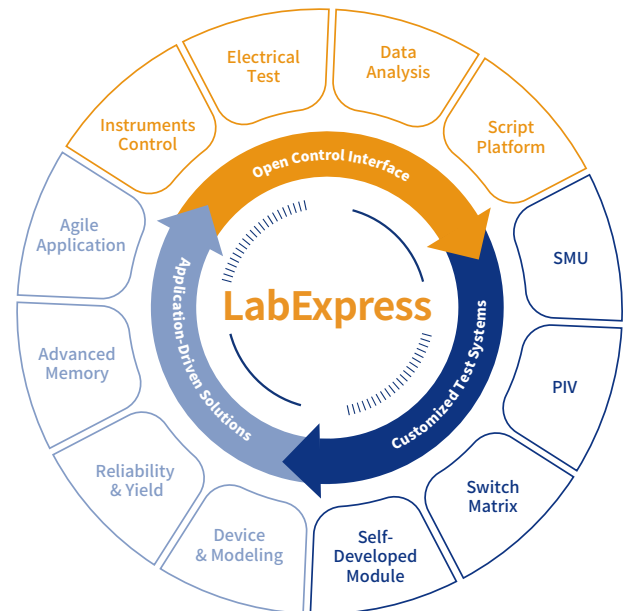
Specifications

- **Complete DUT Types**

  MOSFET, BJT, diodes, resistors, capacitors, addressable devices, and customized devices

- **Rich Built-In Library of Application Tests**

  DC IV test, pulse IV test, transient IV test, ultra-fast pulsed IV test, arbitrary waveform generation and test, capacitance test, noise test, kelvin (4-wire) connection test and JEDEC standard reliability tests, such as HCI, BTI, TDDB, RAMP

- **Powerful Signal Generation and Scanning**

  Built-in diverse signal generation algorithms and sweep functions, such as linear, logarithmic, scatter, multi-segment, bidirectional and parameterized scanning. It enables users to acquire complex signal waveform graph images without programming.

- **Supporting a Wide Range of Instruments**
  - All Primarius testing products and complete test functions
  - Diverse third-party testing instruments
  - Both semi-automatic and fully automatic probe stations
  - Support controlling more instruments through GPIB and LAN interfaces

- **Flexible Algorithm Process**
  - Script programming platform, no need for compilation and memory management
  - Java-style syntax helps users to better understand algorithms and reduces development difficulty
  - Complete instrument control interface
  - Customizable testing flow and algorithms

- **Wafer-Level Data Management**
  - Graphical wafer mapping edit function enables quick creation of test plans
  - Support data review and data analysis at any time with built-in database
  - Data can be exported to CSV or XLS format files
  - Data can be exported to BSIMProPlus and MeqLab formats

Applications

- Wafer-level electrical parameter testing (WAT)
- Model electrical characteristic curve testing
- Wafer-level reliability testing
- Various mass production tests

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Key Advantages

- **Easy-To-Use**
  Intuitive GUI for convenient viewing & processing of test applications

- **Versatile Applications**
  Complete DUT types and rich ready-to-use test applications library

- **Powerful Capabilities**
  Support Primarius test instruments with full functionalities, mainstream probe stations, switch matrix and 3rd party test instruments

- **Data Analysis**
  Real-time multitasking data analysis, one-click transformation of graph images, and capable of distances, slopes, and correlation coefficients measurements on the graph images directly

- **Wafer-Level Testing**
  Wafer-level measurement setup, execution, analysis and data management

- **Custom Extension**
  Support custom test algorithms, flexible test processes and complex mathematical analysis with customizable script programming platform
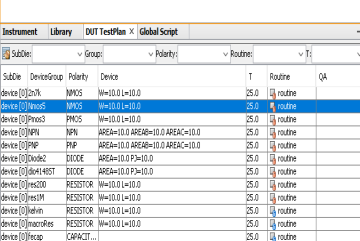
Easy-To-Use GUI Tool Bar Supports Intuitive Settings
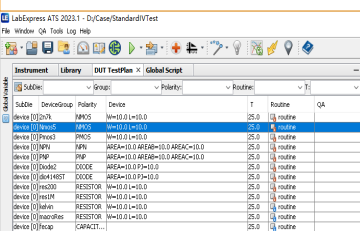
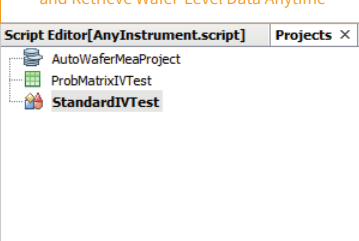The Script Editor Supports Double-Click to Edit
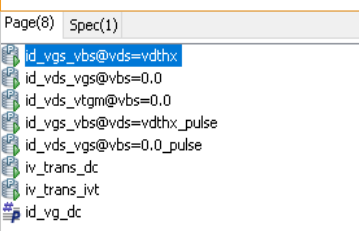
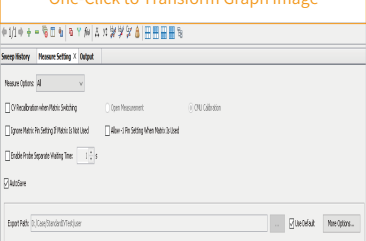Multi-Window Data Display and Comparision
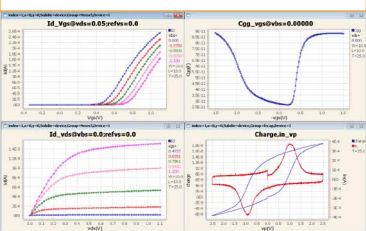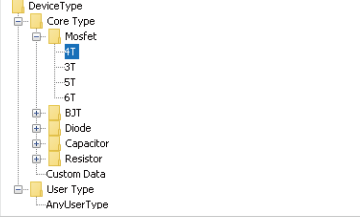
Get an Instant Overview of DUTs' Information

Powerful Database Supports Auto-Save and Retrieve Wafer-Level Data Anytime
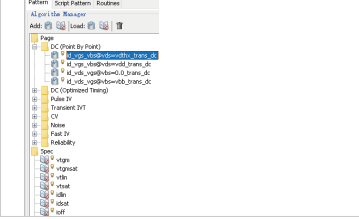
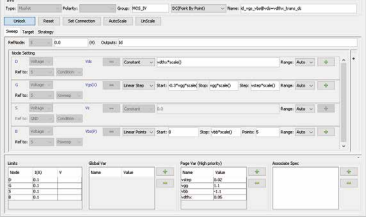Powerful Data Analysis Tools Supports One-Click to Transform Graph Image
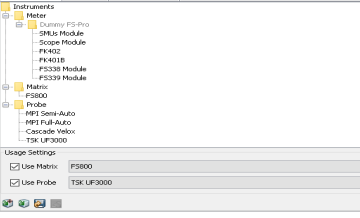
Complete DUT Types
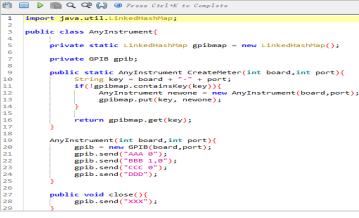
Various Built-In Test Algorithms

Graphical Setup Interface

Supporting a Wide Range of Instruments

Flexible Algorithm Process

Wafer Level Data Management