# 9812E

PRIMARIUS

## Compact Low Frequency Noise Measurement System

## Introduction

Flicker noise is the dominant noise for deep sub-micron and nanometer CMOS, bipolar junction transistor (BJT), field effect transistor (FET) and heterojunction bipolar transistor (HBT) devices.

Primarius 9812E is a compact version of the industry's de-facto standard flicker noise (1/f noise) measurement systems 9812DX, which also supports different types of measurement requirements for flicker noise and random telegraph noise or signal (RTN or RTS).

To meet the challenge of explosive growth requirements for low frequency noise test, 9812E delivers a significant and innovative improvement in the design of system hardware and software.

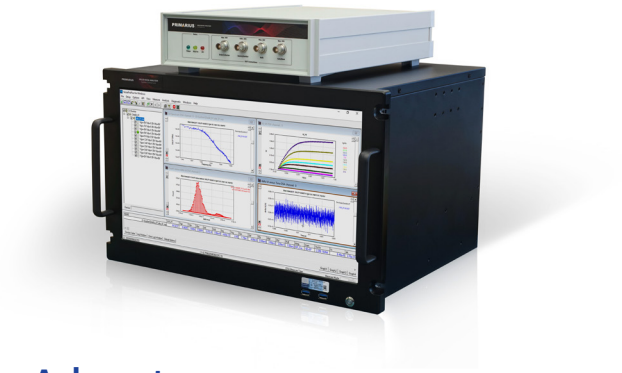
9812E can be used in conjunction with the Primarius semiconductor parameter testing system FS-Pro, providing a parallel testing framework solution that significantly improves testing efficiency and throughput.

## Applications

- Noise characterization for SPICE model extraction
- Process/device evaluation for advanced circuit designs
- Noise characterization for semiconductor device research
- Process quality evaluation and monitoring for technology development

## Hardware Specifications

- Wide range
  - Maximum terminal voltage and current: 50V, 100mA
- High resolution
  - System noise current resolution: $<1\times10^{-25}A^2/Hz$
- Fast speed
  60 sec/bias for typical device 1/f noise
- Wide impedance range
  DUT impedance ranging from 10Ω to 10MΩ
- Gate/Base resistors
  - 0, 10, 30, 100, 300, 1K, 3K, 10K,30K, 100K, 300K,1M, 3M, 10M, 30M, 100Mohm
- Drain/Collector resistors
  - 3, 10, 30, 100, 300, 1K, 3K, 10K, 30K, 100K, 300K, 1M, 3M, 10M, 30Mohm

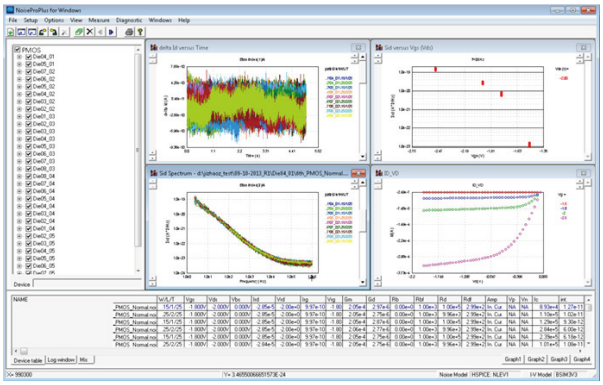


## Key Advantages

- Ultimate resolution
  - Multiple built-in LNAs provide wide impedance matching range
- Full device type coverage
  - MOSFET, SOI, FinFET, TFT, HV/LDMOS, BJT/HBT, JFET, Diode, Resistor, packaged IC
- Cost-effective
  - Superior quality with competitive cost

## Software Specifications

The 9812E features NoiseProPlus as the built-in software. NoiseProPlus has very powerful functionality for 1/f noise and RTN noise measurement and data analysis

Specifications

- Rich graphical and data analysis features
- Drivers for 9812E, and all popular IV meters
- Drivers for Cascade/SUSS/MPI probe stations
- Simultaneous 1/f and RTN noise characterization
- Statistical noise characterization and analysis features
- Multi-mode device and bias auto-measurement control