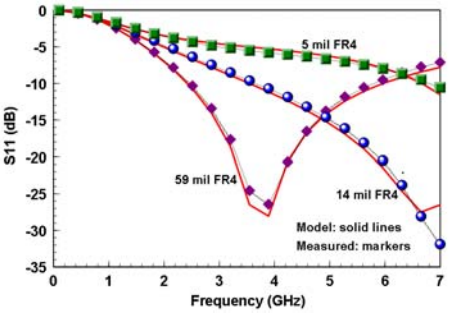
Precision Measurements and Models You Trust

Modelithics NLD Library

The Modelithics NLD Non-Linear Diode Library contains the industry's first and only substrate-scalable models for surface mount diodes. These reliable, measurement-based models will help you get the most from your RF/MW electronic design automation (EDA) software, reduce cycle times, and lower product development costs. The Modelithics NLD Library contains models for a variety of industry-leading varactor, Schottky and PIN diodes from several major vendors.

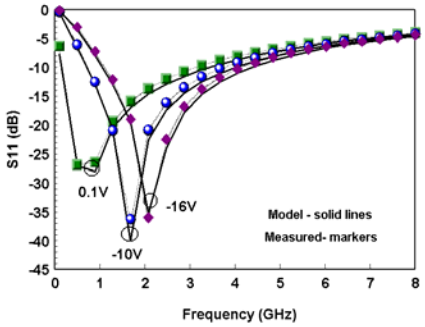
Modelithics models are engineered to help you win your race to design success. Surface mount parts simply do not behave the same on all substrates, regardless of the technology. The versatility and accuracy of substrate-scalable models help to ensure proper component selection at the simulation stage. Bench-turning and prototype iterations decrease. Accurate simulations get your designs from concept to market faster.

Substrate Scalable



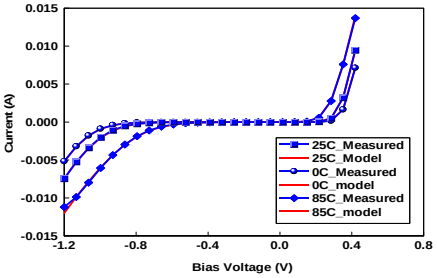
S11 for a Schottky diode in 2-port series configuration on various substrates

Bias and Power



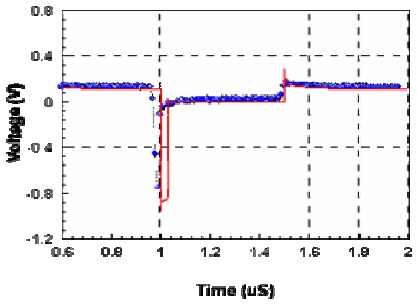
S11 for a Schottky diode at a different bias voltages

Non-Linear, Temperature Dependent



I-V curve for a Schottky diode over temperature

Time Domain Simulations



Measured and simulated output voltage waveforms for a PIN diode corresponding to an input bias condition of 0V(red line-Modelithics model; markers—data

Substrate Scalable

Modelithics models incorporate advanced features that enable full accounting for substrate related effects. Models are generated from multiple sets of S-parameter measurements, made with parts mounted on several PCB fixtures. The models are valid over a continuous range of substrate thickness and dielectric constant, bounded by the H/Er range of the fixtures used for model development

Substrate scalability is critical in achieving accurate simulation results on your chosen PCB material, distinguishing Modelithics models from all others

Bias and Power

Each model in the Modelithics NLD Diode Library has been developed using precise DC current-voltage and capacitance measurements. The empirical data is used to generate bias-dependent factors used in the expressions defining the non-linear I-V and C-V characteristics, which are integrated into each model. Models are also RF power dependent and are validated using gain compression measurements.

Modelithics non-linear diode models accurately reflect device characteristics over wide frequency, bias and power ranges.

Circuit Topology

The models in the Modelithics NLD Library use a physically-motivated equivalent circuit topology. Although simpler models may fit a specific set of measured S-parameters, such models can fail badly when used in any configuration that differs from that used for model extraction. Modelithics models are experimentally validated to ensure accuracy in all common mounting configurations. Because of the physically based topology, the models remain well behaved under extrapolation above and below the measured S-parameter range.