Modelithics®
Accelerating Your Design Success!

Modelithics Susumu MVP Library
for High Accuracy Electronic Simulation

Modelithics® Vendor Partner

SSM SUSUMU
Thin Film Specialist and Innovator

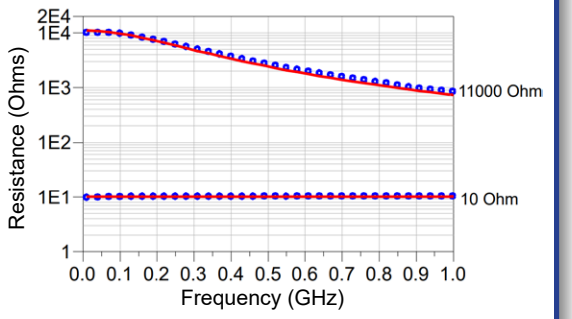
OVERVIEW

The **Modelithics Susumu MVP Library** is a collection of highly accurate measurement-based models that can be simulated in popular Electronic Design Automation (EDA) software tools. These models offer broadband parasitic prediction from DC up to 67 GHz and offer scalable design parameters such as part value, pad dimensions, and substrate conditions. These state-of-the-art models install seamlessly into the EDA software, placing high accuracy models at your fingertips, which allow for first pass design success!

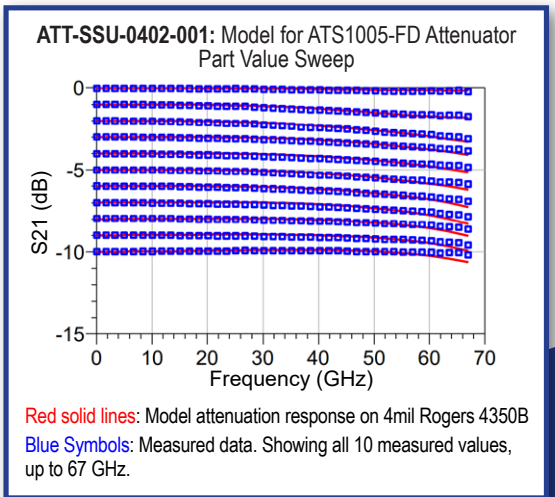
LIBRARY FEATURES

The Modelithics Susumu MVP Library offers a collection of **Microwave Global Models™** that provide many advantages over ideal and S-parameter file-based models. Valuable features of the models include:

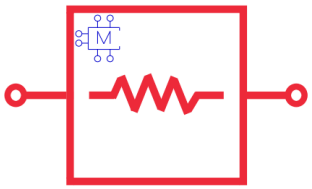
- **MEASUREMENT-BASED** — Each global model is developed using highly accurate measurements across multiple conditions including different substrates and pad dimensions. By developing models using measurements, designers can have confidence that their simulations will represent real-world conditions.
- **SCALABLE** — The models can be scaled for part value, pad value, and substrate properties, allowing designers to simulate based on their specific conditions.
- **OPTIMIZATION AND STATISTICAL ANALYSIS** — Model parameters can be tuned and optimized in the EDA software to provide best case parameter selection rapid achievement of design goals. Model parameters can also be set up for statistical analysis.
- **AVAILABLE FOR POPULAR EDA TOOLS** — Keysight Advanced Design System (ADS), Keysight Technologies' RF Synthesis (Genesys), Cadence® AWR Design Environment®, Ansys® HFSS™, Sonnet® Suites™, Cadence Spectre RF® Option, Mathworks MATLAB®, and SIMULIA® CST Studio Suite®.
- **COMPLETE DOCUMENTATION** — Each model contains a comprehensive model datasheet that lists recommended model validity parameters, measurement and test fixture details, and model-to-measurement data comparisons.



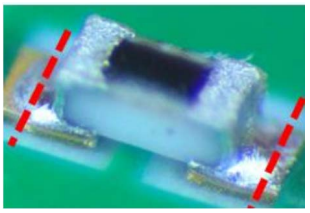
Red Solid Lines: Model response on 60 mil Rogers 4003C
Blue Symbols: Measured on 60 mil Rogers 4003C



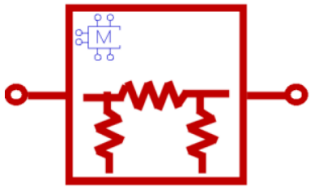
Red solid lines: Model attenuation response on 4mil Rogers 4350B
Blue Symbols: Measured data. Showing all 10 measured values, up to 67 GHz.



RG0603 Thin Film Chip Resistor Device Image



Reference Planes at pad edge



RG0603 Thin Film Chip Resistor Device Image



Reference Planes at pad edge

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List of Components in the Modelithics® Susumu MVP Library

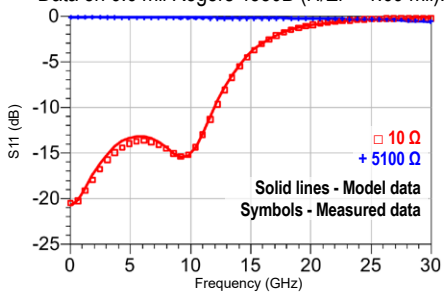
Attenuators	Resistors		
ATS1005-FD	RFD0603P	RG1005	RG2012
ATS2012-FD	RG0603	RG1608	RG3216

Visit our website for an updated complete list of the Modelithics Susumu models:
www.Modelithics.com/MVP/Susumu

Advanced Model Features for More Accurate High Frequency Design

Part Value Scaling

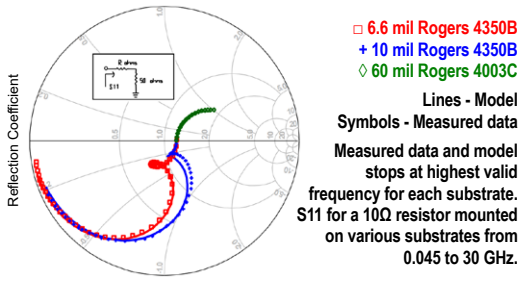
RES-SSU-0603-001: Modelithics Model for RG1608 Resistor: Model vs. Measured Series 2-port S-parameter Data on 6.6 mil Rogers 4350B (H/Er = 1.69 mil):



Modelithics Microwave Global Models™ for Susumu components have all values within a part series within one model. This allows for tuning and optimization by inductance and eliminates the need to manually substitute individual models during a design sequence.

Substrate Scaling

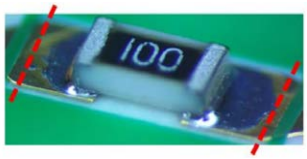
RES-SSU-0603-001: Modelithics Model for RG1608 Resistor: Frequency Sweep Performance, Reflection Coefficient:

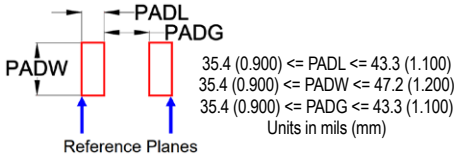


Variations in substrate properties have a significant effect on the response of surface mount components in high frequency designs. Modelithics models are substrate scalable and validated over a continuous range of substrate properties based on board thickness and dielectric constant.

Pad Size Scaling

RG1608 Resistor Device Image
Reference Planes at pad edge



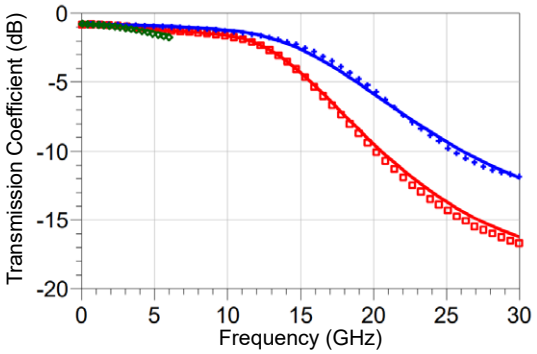


35.4 (0.900) <= PADL <= 43.3 (1.100)
35.4 (0.900) <= PADW <= 47.2 (1.200)
35.4 (0.900) <= PADG <= 43.3 (1.100)
Units in mils (mm)

Modelithics models (in default mode) include the PCB pad with reference planes at the outer edges of the pads. The pad scaling feature lets designers adjust the dimensions to match their design, which is important for achieving maximum simulation-to-measurement agreement.

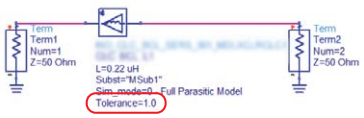
Broadband Validation

RES-SSU-0603-001: Model for RG1608 Resistor: Frequency Sweep, Transmission Coefficient



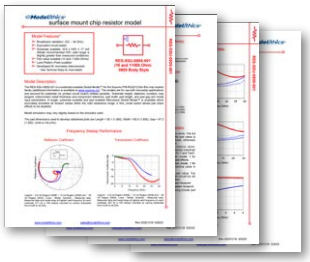
Modelithics world class models are developed by performing accurate lab measurements with techniques that have been refined over 20 years. Models are validated against broadband measurements made possible by Modelithics wide array of test capabilities.

Statistical Analysis



The Susumu models have a "Tolerance" parameter which enables compatibility with statistical analysis tools in some EDA software. Powerful analyses, such as yield prediction and tolerance analysis, can be done to help optimize design performance and reduce production cost.

Datasheets



Each Modelithics model has a datasheet that provides detailed information about the model, such as the validation frequencies, reference planes, part value / pad scalability / substrate scalability ranges, model performance, and details about other features and model parameters.

What's in YOUR DREAM LIBRARY?

Help us build ***YOUR*** dream library! Pre-Release models are added based on customer demand. Share your desired models with **sales@modelithics.com**!

Visit the Susumu MVP Page on the Modelithics website to:

- Explore the current list of available Susumu component models
- View model datasheets
- Browse literature collection for application notes, presentations, etc.
- Request a FREE* 90 day trial of the Modelithics Susumu model library: **www.Modelithics.com/MVP/Susumu**

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**with approval and/or valid registration*

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