Modelithics®
Accelerating Your Design Success!

Modelithics CapV MVP Library
for High Accuracy Electronic Simulation

Modelithics® Vendor Partner

OVERVIEW

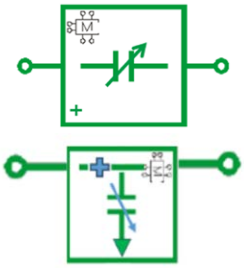
The **Modelithics CapV MVP Library** is a collection of highly accurate measurement-based models that can be simulated in popular Electronic Design Automation (EDA) software tools. These models offer broadband parasitic prediction from DC up to 67 GHz and offer scalable design parameters such as temperature. These high-performance models integrate seamlessly with the EDA software, providing highly accurate modeling capabilities that help drive first-pass design success.

CapV MICROCHIPS

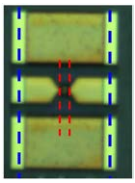
LIBRARY FEATURES

The Modelithics CapV 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 S-parameter measurements on CPW feedlines which are de-embedded from the circuit models. By developing models using measurements, designers can have confidence that their simulations will represent real-world conditions.
- **SCALABLE** — The models can be scaled for temperature, 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 Technologies' Advanced Design System (ADS), Cadence® AWR Design Environment®, and Keysight Technologies' RF Synthesis (Genesys).
- **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.

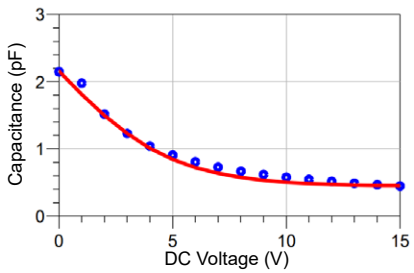


CAPV 0.5 pF Series Varactor Device Image (Series Configuration)



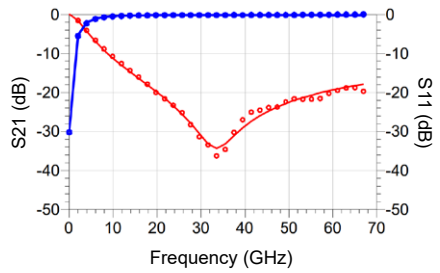
Measurement Reference Planes
Model Reference Planes

CAPV_CPV_2pF_SHNT_001 : Model for 2 pF Varactor Chip in Shunt Configuration; Capacitance vs DC Bias Characteristics



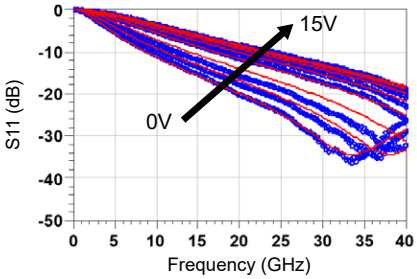
Red solid lines – Model performance vs DC bias (0 to +15 V)
Blue symbols – Typical component performance measured at 2GHz at 25C
Reference planes are as measured.

CAPV-CPV-0p5pF-SERS-001: Model for 0.5 pF Varactor Chip in Series Configuration; Broad-Band S-Parameters Characteristics



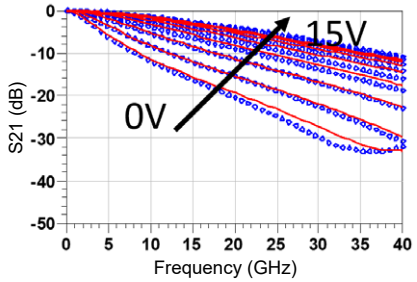
S11 (dB) and S21 (dB)
Solid lines - Model data, Symbols - Measured data 0V at 25C
Reference planes are as measured.

CAPV_CPV_0p5pF_SERS_001
0.5pF Varactor, S-Parameter Model Performance, Bias Sweep 0-15V, Step 2V @25C



Red - Model performance;
Blue – Measurement Data

CAPV_CPV_2pF_SHNT_001
10x10 VCT Etch S-Parameter Model Performance, Bias Sweep 0-15V, Step 2V @25C



Red - Model performance;
Blue – Measurement Data
Typ. Error Between model and measurement < 0.1 or 10%

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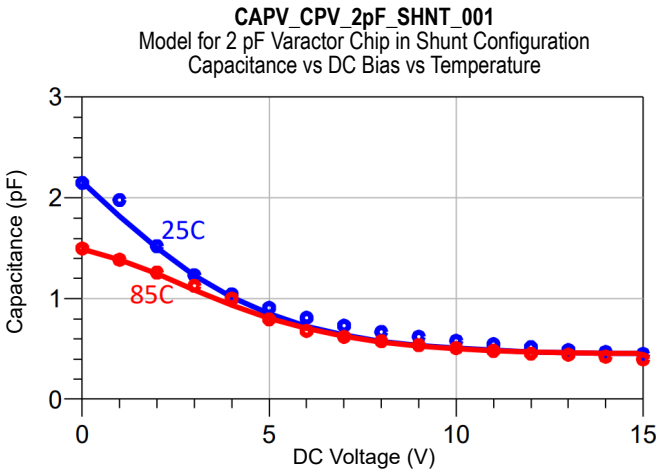
List of Components in the Modelithics® CapV MVP Library

Varactor Chips		
CAPV 0.5 pF Series Varactor	CAPV 0.5 pF Shunt Varactor	CAPV 2pF Shunt Varactor

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

Advanced Model Features for More Accurate High Frequency Design

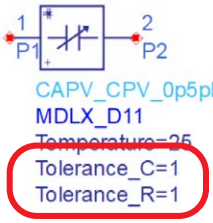
Temperature Scaling



Modelithics added temperature dependence input parameter so the model predicts associated capacitance change for a particular DC voltage and temperature environment. The model solution was validated with RF / mm-wave measurements performed at Modelithics lab facility.

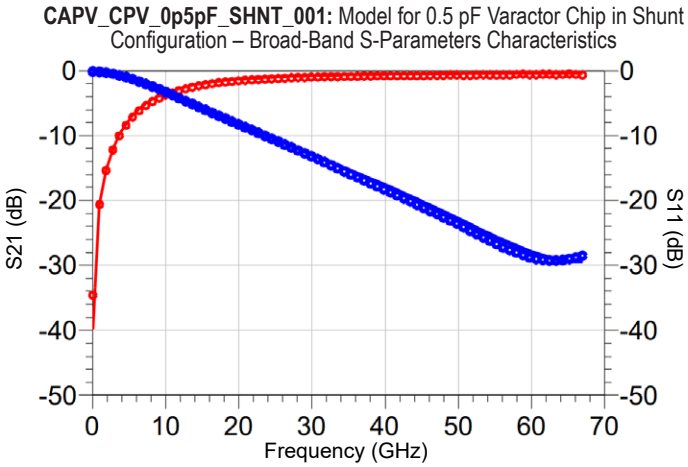
C-V vs temperature (+25 C, +85 C) Solid lines - Model data; Symbols - Measured data. Typical performance at 2GHz. Reference planes are as measured.

Statistical Analysis



The CapV 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.

Broadband Validation

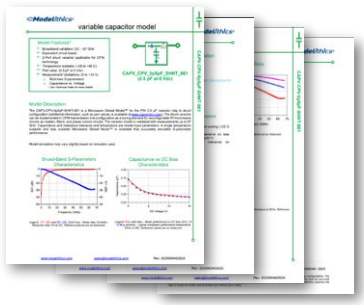


Modelithics world class models are developed by performing accurate lab measurements with techniques that have been refined over 20 years. Models are validated against broadband measurements made possible by Modelithics wide array of test capabilities.

S11 (dB); S21 (dB)

Solid lines: Model data; Symbols: Measured data, 0V at 25C. Reference planes are as measured.

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 CapV MVP Page on the Modelithics website to:

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

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**with approval and/or valid registration*

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