Modelithics®
Accelerating Your Design Success!

Modelithics Tecdia MVP Library
for High Accuracy Electronic Simulation

Modelithics®
Vendor Partner

Let's do this.
TECDIA

OVERVIEW

The **Modelithics Tecdia 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 to up 110 GHz and offer scalable design parameters such as capacitance 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 Tecdia 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 inductance 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 Technologies' Advanced Design System (ADS), Cadence® AWR Design Environment®, Keysight Technologies' RF Synthesis (Genesys), Keysight System Design (SystemVue), 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.

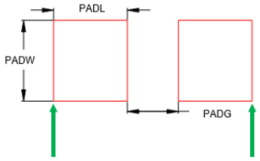


CAPV-TCD-0201-002
Modelithics Model for
HBC2R2KY20X10X5A02
Dielectric Varactor

Model Representation

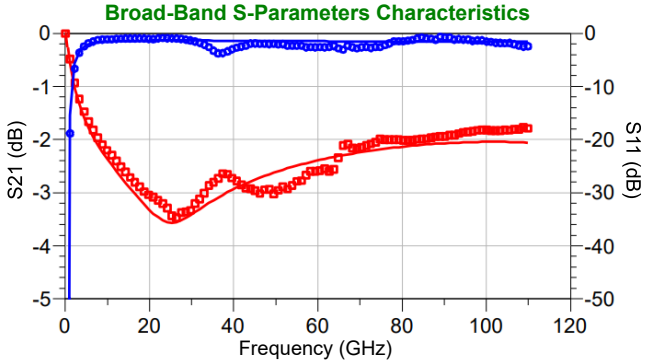


PC Board Footprint



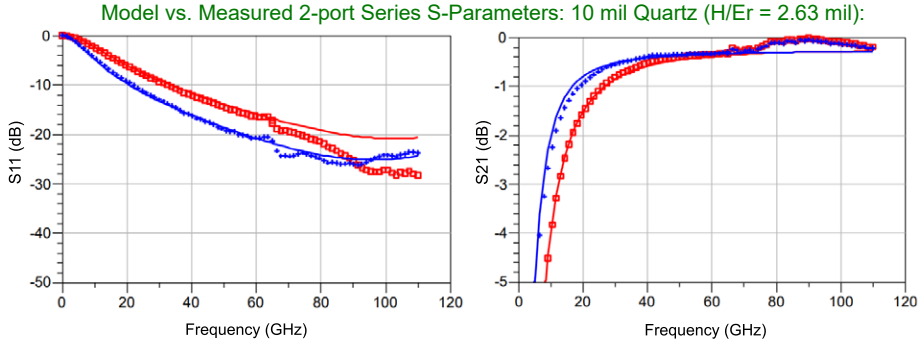
Reference Planes
PADL =7.8 (0.197)
PADW = 7.1 (0.180)
PADG = 4.5 (0.114)
Units in mil (mm)

CAPV-TCD-0201-102 Modelithics Model
for **HBC2R2KY20X10X5A02** Dielectric Varactor
Broad-Band S-Parameters Characteristics



Legend: S11 (dB) and S21 (dB); Solid lines - Model data, Symbols - Measured data on 10 mil Quartz; No Bias at 25C.

CAPV-TCD-0201-101 Modelithics Model
for **HBCR22AY20X10X5A02** Dielectric Varactor
Model vs. Measured 2-port Series S-Parameters: 10 mil Quartz (H/Er = 2.63 mil):



Legend: □ -25V ,+ 0V, Solid lines - Model data, Symbols - Measured data

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List of Components in the Modelithics® Tecdia MVP Library

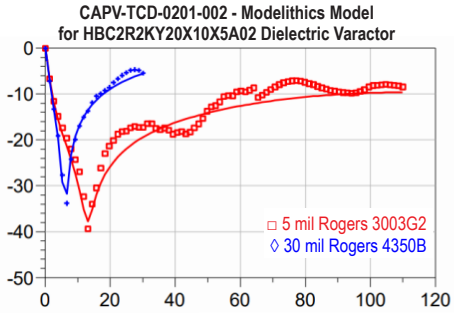
Capacitor Varactors		
CMSK280*	CMSK90*	HBC2R2KY20X10X5A02
CMSK40*	CMSK1600*	HBCR22AY20X10X5A02
	CMSK2800*	

*3D Brick Model version also available for supported Modelithics simulators

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

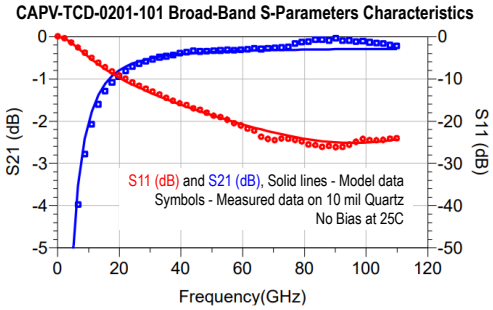
Advanced Model Features for More Accurate High Frequency Design

Substrate Scaling



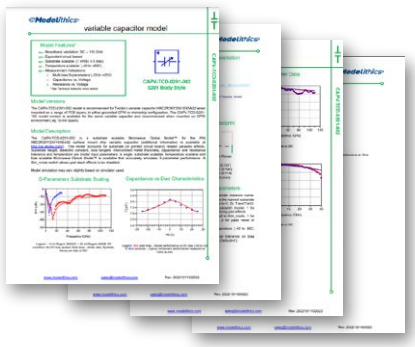
Variations in substrate properties have a significant effect on the response of surface mount components in high frequency designs. Modelithics models are substrate scalable and validated over a continuous range of substrate properties based on board thickness and dielectric constant.

Broadband Validation



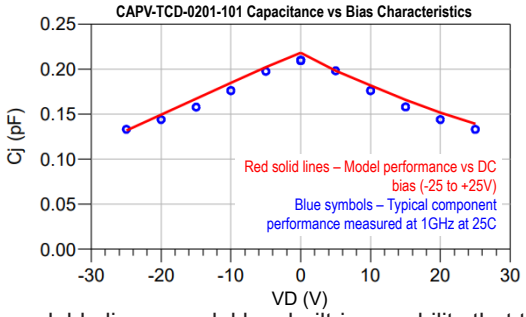
Modelithics world class models are developed by performing accurate lab measurements with techniques that have been refined over 20 years. Models are validated against broadband measurements made possible by Modelithics expertise in test fixture design and wide range of test capabilities.

Datasheets



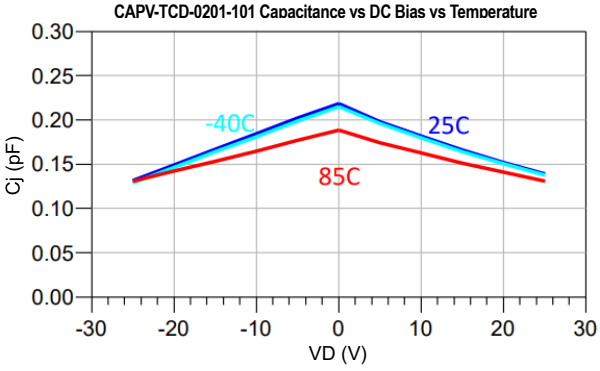
Each Modelithics model has a datasheet that provides detailed information about the model, such as the validation frequencies, reference planes, part value / pad scalability / substrate scalability ranges, model performance against measured data, and details about other features and model parameters.

Capacitance vs. Bias Voltage



The scalable linear model has built-in capability that tracks capacitance vs DC voltage (-25 to +25 V range) observed in measurements of the dielectric varactors.

Temperature Scaling



Model performance for C-V vs temperature (-40, +25, +85 C) on 10 mil Quartz substrate, typical performance at 1GHz.

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.

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 Tecdia MVP Page on the Modelithics website to:

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

*with approval and/or valid registration

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