Modelithics®
Accelerating Your Design Success!

Modelithics Coilcraft MVP Library
for High Accuracy Electronic Simulation

Modelithics® Vendor Partner

Coilcraft

OVERVIEW

The **Modelithics Coilcraft 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 20-30 GHz and offer scalable design parameters such as inductance 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!

Literature Featuring Modelithics Coilcraft Models

- Model Rap Blog: Microwave Supermodels Reach the mmWave Realm
- App Note 088: High-Current Bias Tee Design Using Cadence AWR Design Environment and Modelithics Models
- Application Note 092: Designing a Cauer-Chebyshev (Elliptic) Bandpass Filter with Keysight PathWave RF Synthesis (Genesys) and Modelithics Models

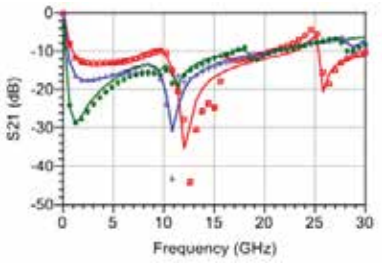
LIBRARY FEATURES

The Modelithics Coilcraft 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:

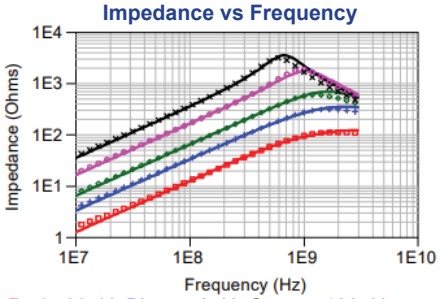
- **MEASUREMENT-BASED** — Each global model is developed using highly accurate measurements across multiple conditions including different substrates and pad dimensions. By developing models using measurements, designers can have confidence that their simulations will represent real-world conditions.
- **SCALABLE** — The models can be scaled for capacitance 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), Cadence® AWR Design Environment®, Keysight RF Synthesis (Genesys), Keysight System Design (SystemVue), Keysight RFPro, Ansys® HFSS™, Sonnet® Suites™, Cadence Spectre RF® Option, Cadence® Clarity™ 3D Solver,and Mathworks MATLAB®.
- **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.



IND-CLC-0402-003
Modelithics Model for Coilcraft 0402AF Inductor Series
Model vs. Measured Series
2-port S-parameter Data
on 6.6 mil Rogers 4350B (S21)

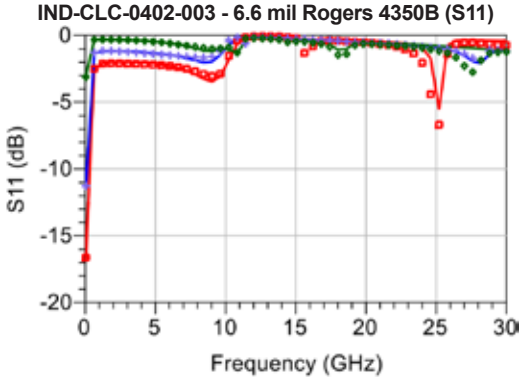


IND-CLC-0402-003 - Modelithics Model for Coilcraft 0402AF Inductor Series
Impedance vs Frequency



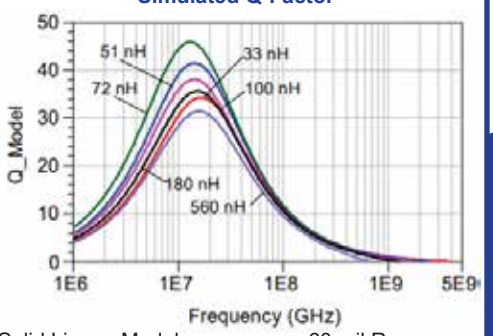
Red - 20nH, Blue - 56nH, Green - 100nH, Magenta - 270nH, Black - 560nH
Lines - Model Data, Symbols - Measured Data
Data is extracted from S-Parameter data on 60 mil Rogers 4003C substrate.

Model vs. Measured Series 2-port S-parameter Data:
IND-CLC-0402-003 - 6.6 mil Rogers 4350B (S11)



Modelithics model for Coilcraft 0402AF inductor series. 51nH - 300nH capacitance simulated on 6.6 mil Rogers 4350B to 30 GHz.

IND-CLC-0402-003 - Modelithics Model for Coilcraft 0402AF Inductor Series
Simulated Q-Factor



Solid Lines - Model response on 60 mil Rogers 4003C. *Note: Plot shows selected values within the model range.*

Excellence in Modeling Since 2001

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List of Components in the Modelithics® Coilcraft MVP Library

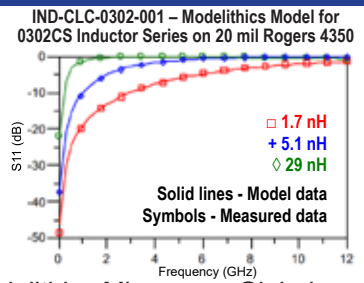
Inductors					
0201DS	0403HQ	0805HT	1008HQ	1508	2929SQ
0201HL	0603CS*	0805LS	1008HS	1515SQ	4310LC
0302CS	0603HP	0806SQ	1010VS	1606	AxxT*
0402AF	0603LS	0807SQ	1111SQ	1812CS	BCL
0402CS	0604HQ	0906	1206CS	1812SMS	BCR
0402DC	0805CS	0908SQ	1212VS	2222SQ	BxxT*
0402DF	0805HP	1008CS	132_xxSM	2508	GA309X
0402HP	0805HQ	1008CT			

*3D version also available for Ansys HFSS / Keysight RFPro / Cadence Clarity

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

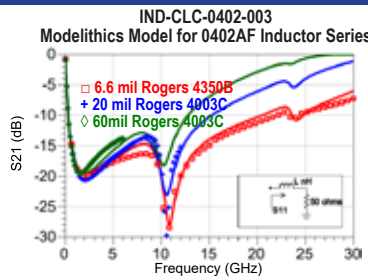
Advanced Model Features for More Accurate High Frequency Design

Part Value Scaling



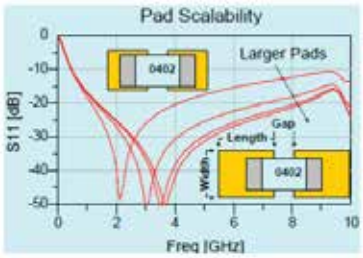
Modelithics Microwave Global Models™ for Coilcraft inductors have all values within a part series within one model. This allows for tuning and optimization by inductance and eliminates the need to manually substitute individual models during a design sequence.

Substrate Scaling



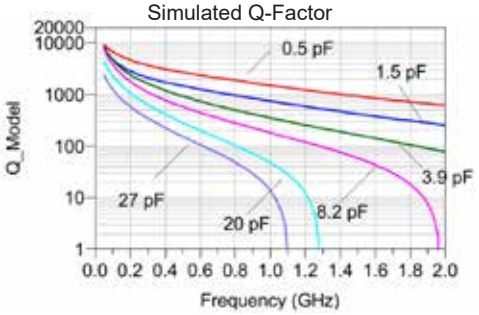
Variations in substrate properties have a significant effect on the response of surface mount components in high frequency designs. Modelithics models are substrate scalable and validated over a continuous range of substrate properties based on board thickness and dielectric constant.

Pad Size Scaling



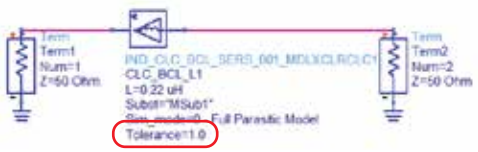
Modelithics models (in default mode) include the PCB pad with reference planes at the outer edges of the pads. The pad scaling feature lets designers adjust the dimensions to match their design, which is important for achieving maximum simulation-to-measurement agreement.

Quality Factor



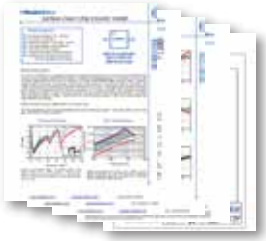
Capacitor models in the Coilcraft MVP Library incorporate precise Effective Series Resistance (ESR) measurements. Accurate ESR is important in determining the loss factor or Q-factor of low loss circuits.

Statistical Analysis



The Coilcraft inductor 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 Coilcraft MVP Page on the Modelithics website to:

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

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*with approval and/or valid registration

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