



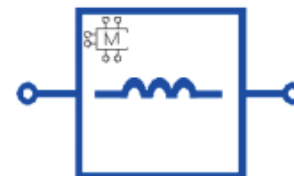
OVERVIEW

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!

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:

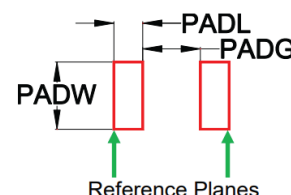
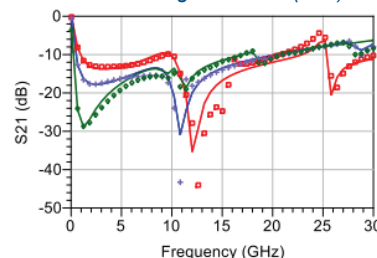
- **MEASUREMENT-BASED** — Each global model is developed using highly accurate measurements across multiple conditions including different substrates and pad dimensions. By developing models using measurements, designers can have confidence that their simulations will represent real-world conditions.
- **SCALABLE** — The models can be scaled for inductance value, pad dimensions, 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 and rapid achievement of design goals. Model parameters can also be set up for statistical analysis. These features are available based on simulator capabilities.
- **AVAILABLE FOR POPULAR EDA TOOLS** — Keysight Technologies' Advanced Design System (PathWave ADS), Cadence® AWR Design Environment®, Keysight Technologies' PathWave RF Synthesis (Genesys), Ansys® HFSS™, Sonnet® Suites™, and Cadence Virtuoso® Spectre RF®.
- **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

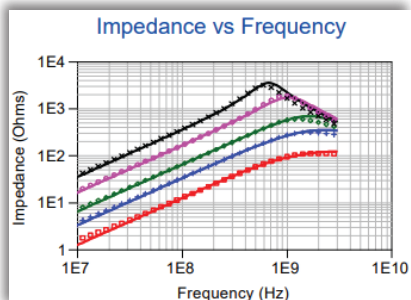
Model vs. Measured Series
2-port S-parameter Data
on 6.6 mil Rogers 4350B (S21)



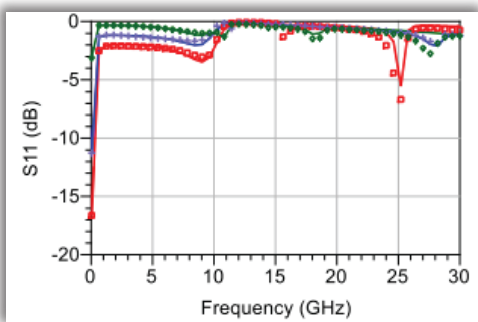
17.0 (0.43) ≤ PADL ≤ 29.5 (0.75)
21.3 (0.54) ≤ PADW ≤ 29.1 (0.74)
9.8 (0.25) ≤ PADG ≤ 18.0 (0.46)

Units in mil (mm)

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



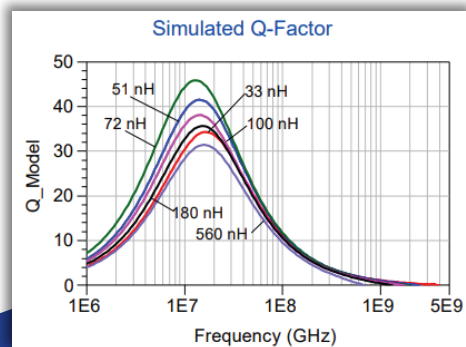
Legend: (Red) 20nH, (Blue) 56nH, (Green) 100nH, (Magenta) 270nH, (Black) 560nH
Solid lines - Model data, Symbols - Measured data.
Data is extracted from S-Parameter data on 60 mil Rogers 4003C substrate.



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.



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

List of Components in the Modelithics® Coilcraft MVP Library

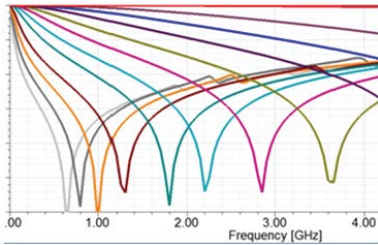
Inductors								
0201DS	0402HP	0604HQ	0806SQ	1008CT	1206CS	1606	2508	BCL
0302CS	0403HQ	0805CS	0807SQ	1008HQ	1212VS	1812CS	2929SQ	BCR
0402AF	0603CS*	0805HP	0906	1008HS	132_xxSM	1812SMS	4310LC	BxxT*
0402CS	0603HP	0805HQ	0908SQ	1010VS	1508	2222SQ	AxxT*	GA309X
0402DF	0603LS	0805HT	1008CS	1111SQ	1515SQ			

More to come! New models are added continually. Visit our website for an updated complete list, and see our available Pre-Release models (www.Modelithics.com/MVP/Coilcraft)

*3D version also available for ANSYS HFSS

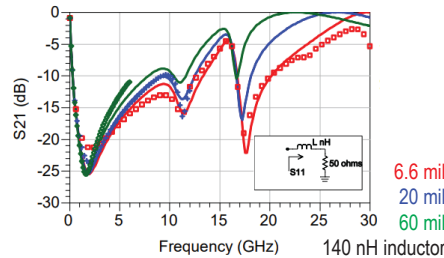
Advanced Model Features for More Accurate High Frequency Design

Part Value Scaling



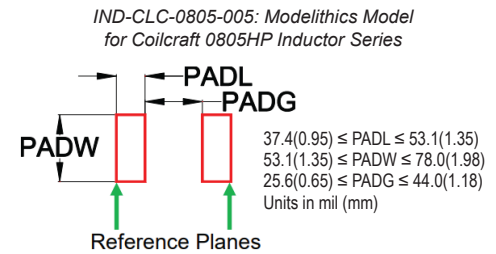
Modelithics Microwave Global Models™ for Coilcraft inductors have all values within a part series within one model. This allows for tuning and optimization by inductance and eliminates the need to manually substitute individual models during a design sequence.

Substrate Scaling



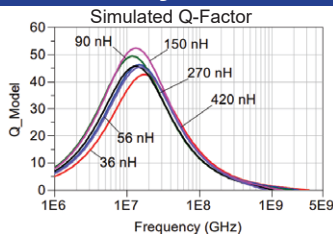
Variations in substrate properties have a significant effect on the response of surface mount inductors in high frequency designs. Modelithics models are substrate scalable, validated over a continuous range of substrate properties, based on board thickness and dielectric constant.

Pad Size Scaling



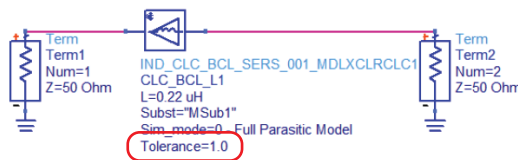
Modelithics models (in default mode) include the PCB pad with reference planes at the outer edges of the pads. The pad scaling feature lets designers adjust the dimensions to match their design, which is important for achieving maximum simulation-to-measurement agreement.

Quality Factor



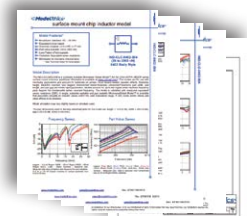
The inductors in the Coilcraft library use precise Effective Series Resistance (ESR) measurements. The data is used to generate a frequency-dependent expression and in determining the loss factor or Q-factor of low loss circuits.

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 capacitor models
- View model datasheets
- Browse literature collection for application notes, presentations, etc.
- Request a FREE* 90 day trial of the Modelithics Coilcraft model library:

www.Modelithics.com/MVP/Coilcraft

*with approval and/or valid registration

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