Modelithics®

World's Best RF and Microwave Simulation Models

Modelithics® AVX Library
for High Accuracy Electronic Simulation

**Modelithics® Vendor Partner**

AVX

Overview

The Modelithics® AVX Component Library is a comprehensive collection of simulation models that offer many advanced features capable of significantly increasing accuracy during the design phase. Many AVX components are available as Modelithics Microwave Global Models™, including capacitors, inductors, resistors, diplexers, couplers and attenuators. Each model represents an AVX component series (or individual part in some cases), and offers scalable or selectable parameters to match the specific design environment and accurately predict parasitic effects.

Model Features

The Modelithics AVX Library provides designers with a very flexible and accurate electronic design tool that offers many advantages over ideal or file-based models. Valuable features of the models include:

- **Support for Popular Simulation Software***—Keysight Advanced Design System, National Instruments AWR Design Environment, Keysight Genesys and ANSYS Electronics Desktop HFSS.
- **Measurement-based**—Each equivalent circuit model is developed using multiple specialized measurements under device-specific test conditions.
- **Scalable**—Part-value and pad scalability are incorporated into most AVX RLC component models, and orientation selectability is available for some capacitor models. Substrate scaling is a feature in nearly every component model in the Modelithics AVX Library.
- **Statistical Analysis Capable**—Model parameters can be tuned, optimized, and set up for statistical analyses, depending on the tools available in the particular simulation software.
- **Well-Documented**—Each model contains a model datasheet that lists recommended model validity parameters, measurement and test fixture details, and model-to-measurement data comparisons.

*Models available may vary between simulators.
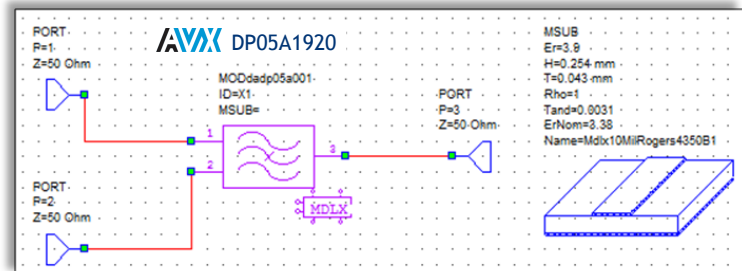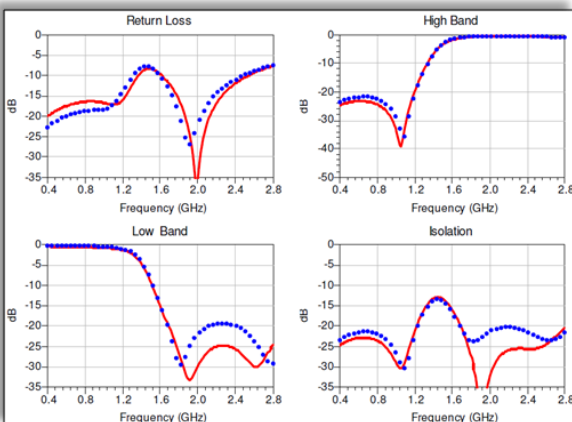
Narrow-band S-parameters of AVX DP05A Low Profile Multilayer Organic surface mount diplexer.
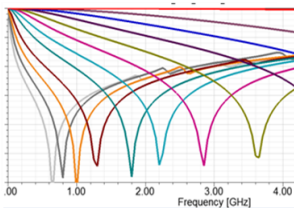**Solid Red Line=Model**, **Blue Symbols=Measurement**

Precision Measurements and Models You Trust
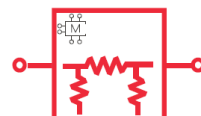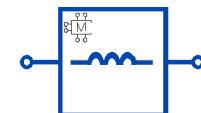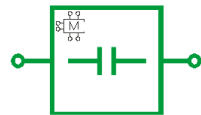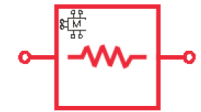
Example List of Components in the Modelithics® AVX Component Library

Capacitors	Inductors	Attenuators	Diplexers
0101YA, 02013A, 0201YC, 0201YD, 0603xA, 0603xC, 08051A, 12101U, 01005 ACCU-P, 0201 ACCU-P, 0402 ACCU-P, 0603 ACCU-P, CDR12, DLA 09024, DLA 09025, GX01, GX02, GX03, GX0S, ML03, AQ12, UQCA (NPO), UQCB (NPO), UQCF (NPO), UQCL (NPO), UQCR (NPO), UQCS (NPO), SQCA (P90), SQCB (NPO), SQCB (P90), SQCB (X7R), SQCF (NPO), SQCS (NPO)	L0402, HLQ02, HLC02, HL02, DLA 11017, DLA 11018, DLA 11019, 0201 ACCU-L, 0402 ACCU-L, 0603 ACCU-L, 0805 ACCU-L	RP10975A01DBFP, RP10975A03DBFP, RP10975A20DBFP, RP10975A30DBFP	DP03A5425, DP03B5425, DP03C1580, DP05A1920, DP05A1940, DP05A5250, DP05B5425, DP06A1945, DP06A2180, DP06B2180

	Resistors	Couplers	** 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/AVX)
	Style RP (High Power) RP42010R0050G, RP42010R0100G, RP43737, RP52010R0050G, RP52010R0100G, RP53725R0050G, RP53725R0100G, RP92010T0050G, RP93725T0050G, RP93737T0050G	CP0402AxxxxAN, CP0402AxxxxBN, CP0402AxxxxCN, CP0402AxxxxDN, CP0402AxxxxEN, CP0402AxxxxFN, CP0402W2700FN, CP0603, DB0603N2140AN, DB0603N2400AN, DB0603N3000AN, DB0603N3500AN, PC2025A2100, PC2025A2700	

Advanced Model Features Enable Accurate High Frequency Design
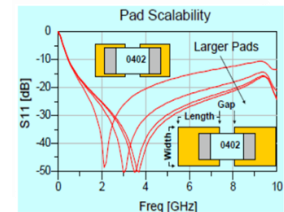
Part Value Scaling

Many AVX components in the Modelithics library are Microwave Global Models™. One feature is that all part values from a component series are contained within one model. This allows for optimization and/or tuning based on part value and eliminates the need to manually substitute individual models during a design sequence.

Substrate Scaling
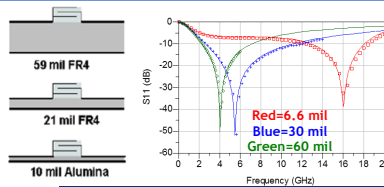
S11 for 1.5pf capacitor. Symbols=measurement, Line=model

Variations in the substrate parameters have a significant effect on the frequency response of surface mount components, and Modelithics models offer the valuable feature of substrate scalability. Each model is validated over a continuous range of substrate properties, based on board thickness and dielectric constant.

Pad Size Scaling

Modelithics models (in default simulation mode) include the solder mount pad layout and parasitic effects, 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.
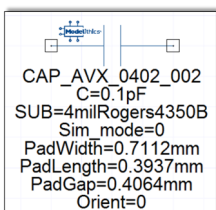
Orientation Selection
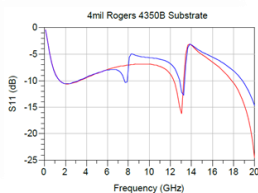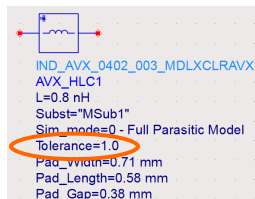
Some AVX capacitor models include orientation selectability. This represents the physical orientation in which the component is attached to the pads. The change in orientation is a 90° rotation of the part along one edge of the part length. Capacitors show different response depending on the mounting orientation.

Statistical Analysis

IND_AVX_0402_003_MDLXCLRAVX1
AVX_HLC1
L=0.8 nH
Subst="MSub1"
Sim_mode=0 - Full Parasitic Model
Tolerance=1.0
Pad_Width=0.71 mm
Pad_Length=0.58 mm
Pad_Gap=0.38 mm

The AVX component models have a "Tolerance" parameter that makes them compatible with statistical analysis tools in the EDA software. Useful analysis can be done with this capability, such as yield prediction and tolerance analysis, to help optimize design performance and production cost savings.

System Level Components
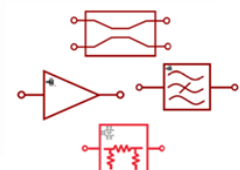
System Level Component (SLC) models are accurate and reliable system block models extracted from precision measurements. AVX SLC component models include attenuators, couplers, and diplexers. These models offer substrate scaling and can simulate non-linear characteristics and broadband performance.

CAP_AVX_0402_002
C=0.1pF
SUB=4milRogers4350B
Sim_mode=0
PadWidth=0.7112mm
PadLength=0.3937mm
PadGap=0.4064mm
Orient=0

Visit the AVX MVP page on the Modelithics website to:
- **Explore the latest list of available AVX component models**
- **View model datasheets**
- **Access application notes that demonstrate the model features**
- **Request a FREE* 90 day sponsored trial of the Modelithics AVX Library at www.Modelithics.com/mvp/AVX** *with approval

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