



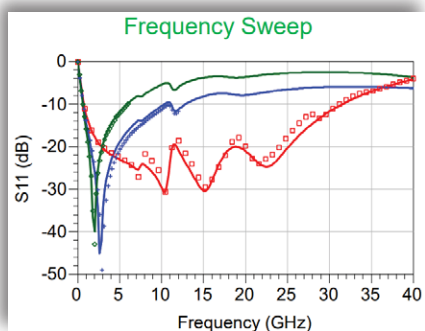
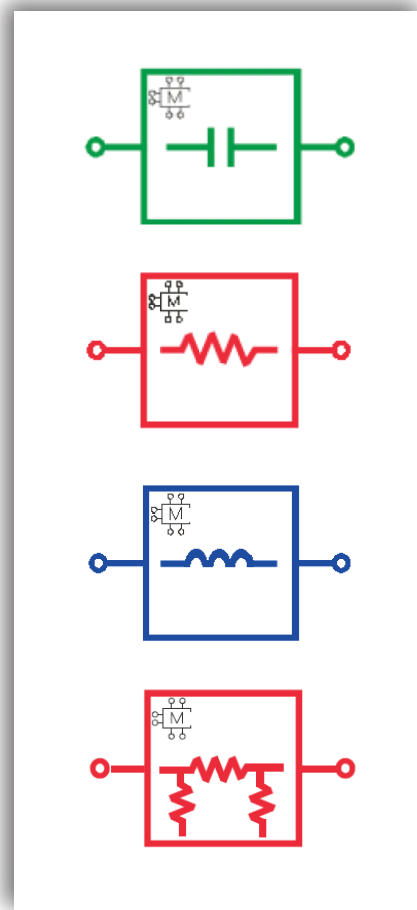
### OVERVIEW

The Modelithics AVX 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 40 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® AVX 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:

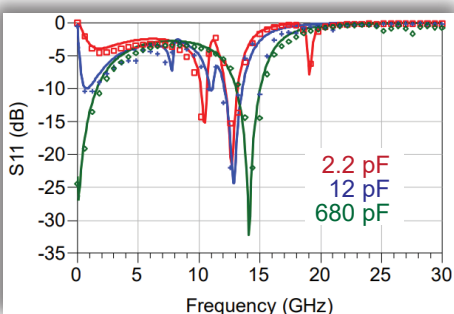
- **MEASUREMENT-BASED** — Each global model is developed using highly accurate measurements across multiple conditions including different substrates and pad dimensions. By developing models using measurements, designers can have confidence that their simulations will represent real-world conditions.
- **SCALABLE** — The models can be scaled for capacitance value, 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 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 (PathWave ADS), AWR Design Environment/Microwave Office™, Keysight Technologies' 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.



Modelithics model for AVX 0402U capacitor series.

**Legend:** □ 6.6 mil Rogers 4350B, + 20 mil Rogers 4003C, ◇ 60mil Rogers 4003C  
Lines - Model, Symbols - Measured data.  
Measured data stops at highest valid frequency for each substrate. S11 for a 6.8 pF capacitor mounted on various substrates from 0.05 to 40 GHz.

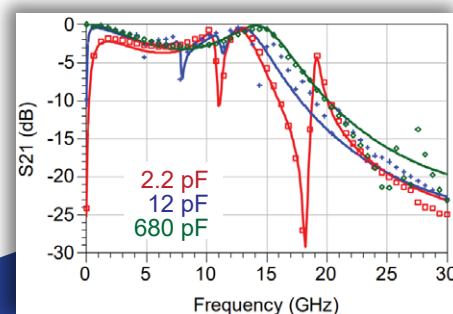
### S11



Modelithics model for ATC 700A capacitor series. H/Er = 1.7 mil. Simulated on 4mil Rogers 4350B to 20 GHz.

Solid lines - Model data  
Symbols - Measured data

### S21



# List of Components in the Modelithics® AVX MVP Library

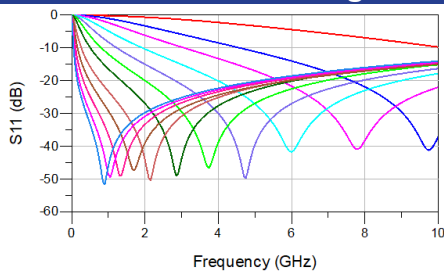
AVX Components					
Capacitors		Couplers	Inductors	Resistors	Diplexers
101YA	DLA09025	CP0402AxxxxAN	Accu-L(L0201)	RP42010R0050GTTR	DP03A5425
02013A	ML03	CP0402AxxxxBN	Accu-L(L0402)	RP42010R0100GTTR	DP03B5425
0201YC	SQCA(NPO)	CP0402AxxxxCN	Accu-L(L0603)	RP43737	DP03C1580
0201YD	SQCA(X7R)	CP0402AxxxxDN	Accu-L(L0805)	RP52010R0050GTTR	DP05A1920
0402xU	SQCB(NP0)	CP0402AxxxxEN	DLA11017	RP52010R0100GTTR	DP05A1940
0603xA(C0G)	SQCB(P90)	CP0402AxxxxFN	DLA11018	RP53725R0050GTTR	DP05A5250
0603xC(X7R)	SQCB(X7R)	CP0402W2700FN	DLA11019	RP53725R0100GTTR	DP05B5425
0603xU	SQCF	CP0603	HL02	RP81020T0050	DP06A1945
08051A	SQCS(NP0)	DB0603N2140AN	HLC02	RP92010T0050GTTR	DP06A2180
0805xU	UQCA(NP0)	DB0603N2400AN	HLQ02	RP93725T0050GTTR	DP06B2180
12101U	UQCB	DB0603N3000AN	Attenuators		RP93737T0050GTTR
Accu-P	UQCF	DB0603N3500AN	RP10975AxxDB		
AQ12	UQCL(NP0)	PC2025A2100			
CU01	UQCR(NP0)	PC2025A2700			
DLA09024	UQCS(NP0)				

\*\*Visit our website for an updated complete list, and see our available Pre-Release models ([www.Modelithics.com/MVP/AVX](http://www.Modelithics.com/MVP/AVX))

ATC Components					
Resistors		Capacitors		Attenuators	
504L	CW12010T0100GBK	100A	400Z	700A	FA10975PxxDB
CS12010T0050GBK	CW13725T0050GBK	100B	520L	700B	Inductors
CS12010T0100GBK	CW13725T0100GBK	200A	530L	800A	MOL
CS13737T	CZ12010T0050GBK	200B	600F	800B	
CT11020T0050	CZ13725T0050GBK	400L	600L	800R	
CW12010T0050GBK	CZ13737T0050GBK	400S	600S		

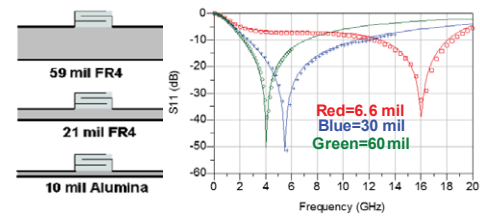
## Advanced Model Features for More Accurate High Frequency Design

### Part Value Scaling



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

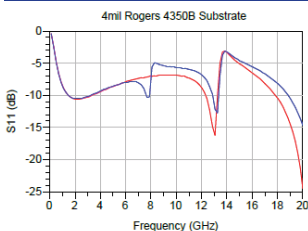
### Substrate Scaling



S11 for 1.5pF capacitor. Symbols=measurement, Line=model

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

### 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

```

CAP_ATC_0402_002_MDLXCLRATC1
ATC_400L_0402_C1
C=0.05 pF
Subst="MSub1"
Sim_mode=0 - Full Parasitic Model
Tolerance=1.0
Pad_Width=0.5 mm
Pad_Length=0.45 mm
Pad_Gap=0.29 mm
    
```

AVX component 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.



Help us build **YOUR** dream library! Pre-Release models are added based on customer demand. Share your desired models with [sales@modelithics.com](mailto:sales@modelithics.com)!

Visit the AVX MVP Page on the Modelithics website to:

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

[www.Modelithics.com/MVP/AVX](http://www.Modelithics.com/MVP/AVX) \*with approval