

Overview

The **Modelithics COMPLETE+3D Library** for Ansys HFSS brings incredible flexibility and accuracy to the high frequency electronic design process. The integration of Modelithics' high accuracy scalable parasitic models into the HFSS design environment makes EM co-simulation a seamless process. The advanced-feature models, along with electromagnetic layout analysis, results in very accurate model-to-measurement agreement and fewer design iterations. Full-wave 3D EM models are now included in the library. The 3D models take the design analysis a step further and capture electromagnetic interactions between components and surrounding elements. All models are measurement validated and designed to accelerate the design process.

Library Features

The **Modelithics COMPLETE+3D Library** is a comprehensive collection of models, representing thousands of components from many popular vendors, and offering powerful advanced features:

Modelithics Microwave Global Models™

- Substrate scaling
- Part value scaling
- Pad dimension scaling
- Statistical analysis
- Seamless EM co-simulation

Modelithics 3D Geometry Models

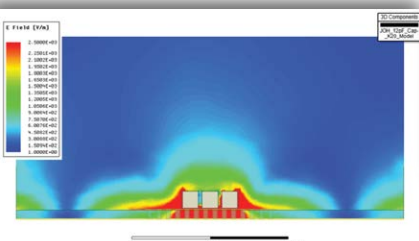
- Substrate independent
- Full-wave 3D EM simulation
- Predict coupling effects
- Design necessary shielding

Modelithics 3D Brick Models

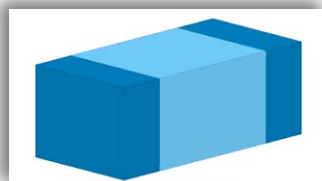
- Simplified capacitor 3D geometry
- Can capture component coupling effects between capacitors and environment
- Compatible with tuning, optimization, & statistical analyses.

All Modelithics Models

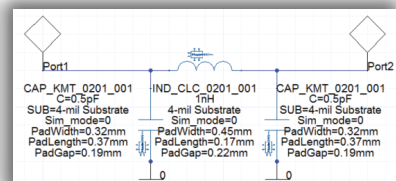
- **Measurement-based** — Each model is developed using specialized measurements under device-specific test conditions.
- **Model Documentation** — Each model contains a model datasheet that lists recommended model validity parameters, measurement and test fixture details, and model-to-measurement data comparisons.



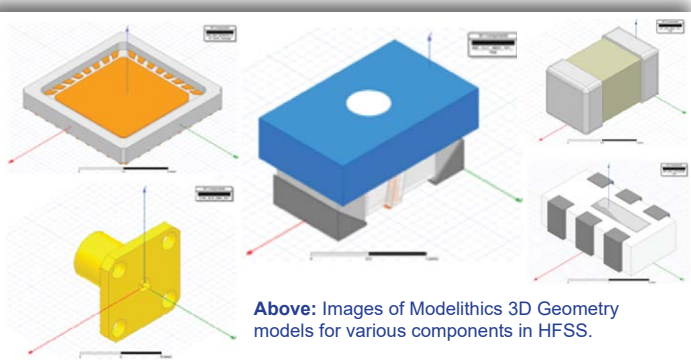
Above: Magnitude E-field simulation of 3 capacitors in shunt configuration in close proximity.



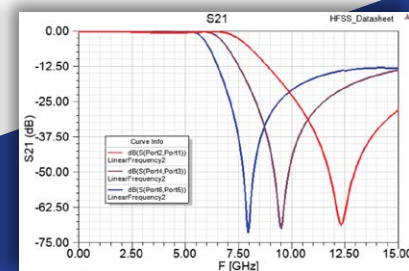
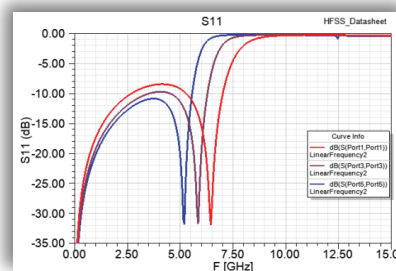
Above: Modelithics 3D brick models are available in a variety of case sizes: 01005, 0201, and 0402.



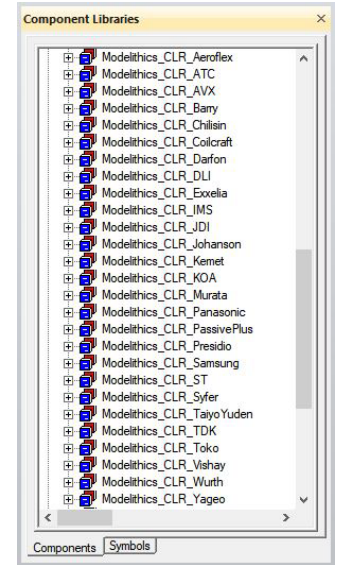
Above: Simulated S-parameters of a simple low-pass filter on three different substrates to 15 GHz. Modelithics models scale by substrate properties accurately capturing parasitic effects.



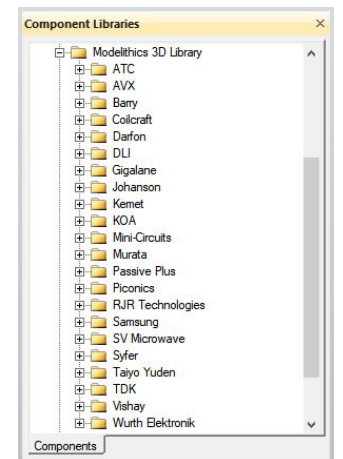
Above: Images of Modelithics 3D Geometry models for various components in HFSS.



— 4-mil substrate
— 20-mil substrate
— 60-mil substrate



Modelithics Microwave Global Models in Ansys circuit design component library window



Modelithics 3D Geometry Models in Ansys HFSS component library window

Amotech
CAPACITORS A60F, A80BA60Z, A60L
API Inmet
RESISTORS ANC50-100W, ANC50-50W, NPC20-4-S, NPC50-100W, NPC50-50W, PPC100-200AW
Barry Industries
RESISTORS RE0805CT, RE1005CT, REC1206CT, RK0603Z, RY0805CT, RY1005CT, RYC1206CT, RZC1206CT (1-port) & (2-port)
Chilisin
INDUCTORS CL2012, CLH1608, CLH2012
Coilcraft
INDUCTORS 0201HL, 0201DS, 0302CS, 0402CS, 0402DC, 0402HP, 0402HQ, 0603CS, 0603CT, 0603HL, 0603HP, 0603LS, 0604HQ, 0805, 0805CS, 0805HP, 0805HQ, 0805HT, 0805LS, 0806SQ, 0807SQ, 0906, 0908SQ, 1008CS, 1008CT, 1008HQ, 1008HS, 1010VS, 1111SQ, 1206CS, 1212VS, 132-xxSM, 1508, 1515SQ, 1606, 1812CS, 1812SMs, 2222SQ, 2508, 2929SQ, 4310LC, AxxT, BCL, BCR, Bxxt, GA309X
Darfon
CAPACITORS C0402NPO, C0603NPO

Exxelia
CAPACITORS CLE, CLX, SHF251xxx
IMS
RESISTORS RC4-0302PW, RC3-0402PW, NDX-1020EZW
JDI
CAPACITORS R14, R15
Johanson
CAPACITORS R05L, R07S, R14S, R15G, R15S, S42E
INDUCTORS L-05Cxxx, L-07Cxxx, L-07Wxxx, L-14C, L-14W
KEMET
CAPACITORS C0402(C0G, X5R, X7R), C0603, C0805(BX), C0805 (C0G, X5R, X7R), CBR02, CBR04, CBR04 Auto, CBR05, CBR06, CBR06 Auto, CBR08
KOA
RESISTORS RK73B1J(RK73H), RK73B2A, RK73B2B, RK73x1E(RK73H), RK73x1H(RK73B), RK73x2E, RK73x3A, RK73H, WK73S3A
CAPACITORS HFC1005

Knowles
CAPACITORS (Syfer) H-Range, High-Q Ultra-Low ESR (Dielectric Labs) C04BL121x, C04UL, C06BI, C06UL, C06CF, C08BL, C08BL102X, C11UL, Milli-cap, Opti-cap
Kyocera-AVX
RESISTORS RP81020T0050, RP42010R0050GTTR, RP42010R0100GTTR, RP43737, RP52010R0050, RP52010R0100, RP53725R0050, RP3725R0100, RP92010T0050, RP93725T0050, RP93737T0050 (ATC) 504L, CS12010T0050GBK, CS12010T0100GBK, CS13737T, CT11020T0050, CW12010T0050GBK, CW12010T0100GBK, CW13725T0050GBK, CW13725T0100GBK, CZ12010T0050GBK, CZ13725T0050GBK, CZ13737T0050GBK
CAPACITORS 0101YA, 02013A, 0201YC, 0201YD, 0603xU, 0603x(A/C0G), 0603x(C/X7R), 08051A, 08051C, 12101U, 1201U, 1206x, 550Z, 550U, Accu-P (01005), Accu-P (0201), Accu-P (0402), Accu-P (0603), AQ12, DLA09024, DLA09025, MP01, MP02, MP03, SQCA(NP0), SQCA(X7R), SQCA(P90), ML03, SQCB(NP0), SQCB(P90), SQCB(X7R), SQCF, SQCS(NP0), UQCA(NP0), UQCB, UQCF, UQCL(NP0), UQCR(NP0), UQCS(NP0), CU01, 0402xU, 0806xU (ATC) 100A, 100B, 200A, 200B, 400L, 400S, 400Z, 520L, 530L, 600F, 600L, 600S, 700A, 700B, 800A, 800B, 800R

Kyocera-AVX (Cont'd)
INDUCTORS Accu-L(L0201), Accu-L(L0402), Accu-L(L0603), Accu-L(L0805), HL02, HLC02, HLQ02, DLA11017, DLA11018, DLA11019 (ATC) MOL
Murata
INDUCTORS LQP02HQ, LQP02T, LQP02TQ, LQP03T, LQW04A, LQG15HS, LQP15M, LQW15A, LQG18, LQP18M, LQW18A, LQP03HQ
CAPACITORS GJM022, GJM03, GJM15, GQM1555C, GQM187, GQM188, GQM219, GQM22M, GRM022, GRM033, GRM0335, GRM1555C1H, GRM155R71E, GRM155R71H, GRM188C1H, GRM188R71H, GRM188R72A, GRM2165C2A, GRM219, GRM32ER71J
SILICON CAPACITOR UBSC_935_152_492_510
Panasonic
INDUCTORS ELJRE, ELJRF, ELJRG
RESISTOR ERJ2GE0R00X
Passive Plus
CAPACITORS 01005BB104, 0201BB104, 0201N, 0402N, 0505C, 0603N, 0708N, 0805N, 1111C, 1111N
RESISTORS R35-1209BB, R35-2010BB
Piconics
INDUCTORS CCxx1xxK240GS-C

Presidio
CAPACITORS 0402UP, 0603UP, MVP0505, BB0201X7R103M, BB0402X7R104M2, BB0502X7R104M
Samsung
CAPACITORS CL02CxxxxxA, CL02CxxxxxG, CL03C
RESISTOR RC0402
Smiths Interconnect
RESISTORS CT0404ALN1WB1, CT0404ALN2WB1, CT0603ALN1SMTF
ST Micro
CAPACITOR pTIC
Taiyo Yuden
CAPACITORS EMK042, EMK063, JMK063, LMK042, JMK042, TMK063, TVS042, UMK105
INDUCTORS HK0603, HK1005, HK1608, HK1215, HKQ0603S, HKQ0603U, HKQ0603W
TDK
INDUCTORS MHQ0402PSA, MHQ1005P, MLF2012, MLG0402Q, MLG0603P, MLG0603S, MLG1005S, MLG1608B, MLK1005S, NLV25T

TDK (Cont'd)
CAPACITORS C0402C0G, C0603C0G, C1005CH, C1005X5R, C3225, CGA1A2C0G, CGA1A2X7R, CGB1T3X5R0J104M
Toko
INDUCTORS LL1005-FHL, LL1608-FSL, LL2012-FHL, LLV0603-F
Vishay
RESISTORS CH02016, CHW01002, CH0603, CRCW0505, CRCW1206, D10, D11, FCA0402, MCT0603, MMA0204
CAPACITORS HPC0402A, VJ0402D, VJ0603D
Würth Elektronik
CAPACITORS WCAP-CSRF 0201 & 0402, WCAP-CSRF(NP0) WCAP-CSMH 0603 (NP0/X7R) & 0805 (NP0/X7R, 0.8mm & 1.25mm)
INDUCTORS WE-CAIR, WE-MK, WE-KI, WE-KI-CH, WE-TCI, WE-AC HC 1010 / 1212
Yageo
RESISTOR RC0100
CAPACITORS AQ0402, AQ0603, CQ0201, CQC0402, CQ0603

Modelithics 3D Geometry and 3D Brick Models™

Barry Industries
PACKAGES QFN5532-050x, QFN3312-0520, QFN3312-0521, QFN-3312-0522, QFN4420-0520, QFN4420-0521, QFN4420-0522, QFN4424-0520, QFN4424-0521, QFN4424-0522, QFN6636-0520, QFN6636-0521, QFN6636-0522, QFN7744-0520, QFN7744-0521, QFN7744-0522, QFN8848-0520, QFN8848-0521, QFN8848-0522
Coilcraft
INDUCTORS 0603CS, AxxT, BxxT
Darfon
CAPACITORS C0402NPO, C0603NPO
Gigalane
CONNECTORS PSF-S00-000

IEH
CONNECTORS HGM1010MDE2X71A200, HGM1010SDE2X71A200, HKC1110BCAD420, HKC1110DCAD020, HMK200FDA3A989E5C2, HMK200MDA3A97E5C2, HMM122FDE2A71E400, HMM122RDE3A97E400, HRM060FDE2X71A000, HRM060RDE2H9D000, HVM030FDE2A71E0020, HVM030MDE2A71E0020
Johanson
CAPACITORS R05L, R07S, R14S
Kemet
CAPACITORS CBR02, C0402(C0G), C0402(X7R), C0402(X5R), CBR04, CBR04 Auto

Knowles
CAPACITORS (Syfer) H-Range (Dielectric Labs) C04BL, C04UL, Milli-Cap
KOA
CAPACITORS HFC1005
Kyocera-AVX
CAPACITORS 0101YA, Accu-P (01005), Accu-P (0201), CU01, MP01, 02013A, 0201YC, 0201YD, Accu-P (0402), UQCL(NP0), DLA09024, 0402xU, MP02 (ATC) 400Z, 400L, 600L, 520L, 530L

Mini-Circuits
FILTERS HFCN-740+, HFCN-880+, HFCN-2700+, HFCN-3800+, HFCN-5500+, LFCG-320+, LFCG-400+, LFCG-530+, LFCG-1000+, LFCG-1575+, LFCG-1700, LFCG-2250+, LFCG-2850+, LFCN-80+, LFCN-120+, LFCN-320+, LFCN-400+, LFCN-490+, LFCN-530+, LFCN-1000+, LFCN-1200+, LFCN-1200D+, LFCN-1575+, LFCN-1700+, LFCN-1800+, LFCN-1800D+, LFCN-2250+, LFCN-2850+, LFCN-3000+, LFCN-3800+, LFCN-4400+
Murata
CAPACITORS GRM022 (X5R, X7R), GRM022, GJM022, GJM03, GRP033, GRM0335, GRM155R71E, GJM15, GQM1555C, GRM1555C1H, GRM155R71H

Passive Plus
RESISTORS R35-1209BB, R35-2010BB
CAPACITORS 01005BB104, 0201BB104, 0201-ultra-low-ESR, 0402N-ultra-low-ESR
Piconics
INDUCTORS CCxxTxxK240GS-C
Presidio
CAPACITORS BB0201X7R103M, BB0402X7R104M2, 0402UP
Samsung
CAPACITORS CL02CxxxxxA, CL02CxxxxxG, CL03C
SV Microwave
CONNECTORS 2985-6004

Taiyo Yuden
CAPACITORS LMK042 / JMK042, EMK04, TVS042, TMK063, JMK063, EMK063, UMK105
TDK
INDUCTORS MHQ0402PSA, MLG0402Q, MLG0603S, MLG0603P, MHQ1005P
CAPACITORS C0402C0G, CGA1A2C0G, CGA1A2X7R, CGB1T3X5R0J104M, C0603C0G, C1005CH, C1005X5R
Vishay
CAPACITORS VJ0402
Würth Elektronik
CAPACITORS WCAP-CSRF(NP0)
Yageo
CAPACITORS AQ0402, CQ0201, CQ0402

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