



Overview

The Modelithics COMPLETE Library for Keysight ADS brings incredible flexibility and accuracy to electronic designs. Modelithics models are scalable, allowing design details, such as substrate and pad characteristics, to be specified and simulated. The Modelithics COMPLETE Library includes thousands of popular passive and active devices with modeling accuracy to deliver first-pass design success.

Library Features

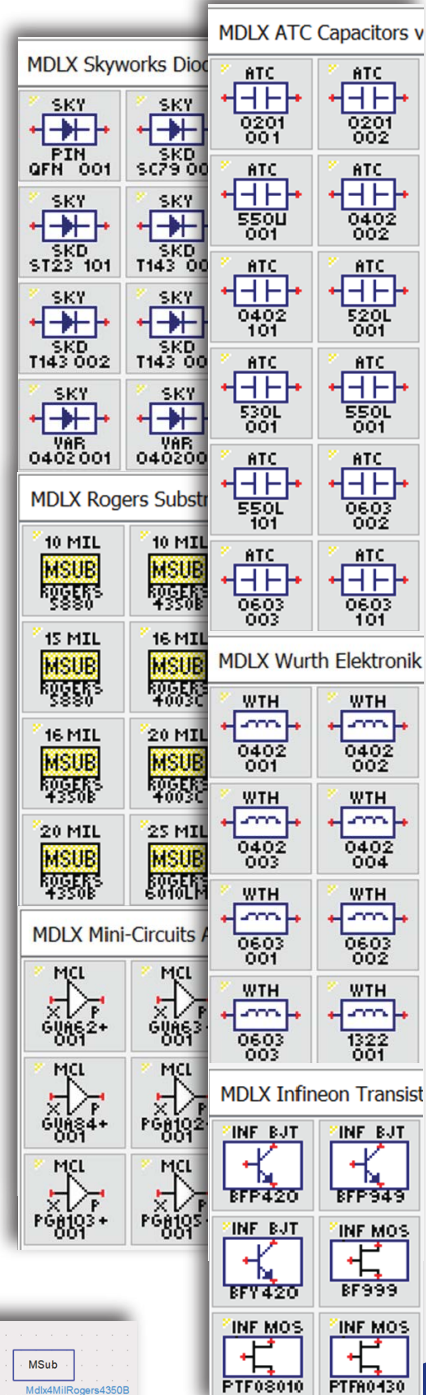
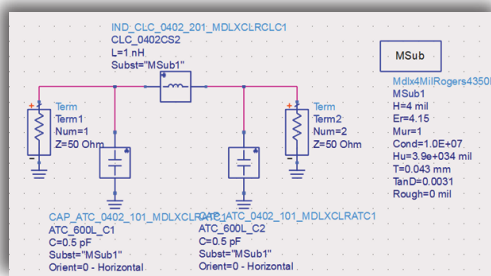
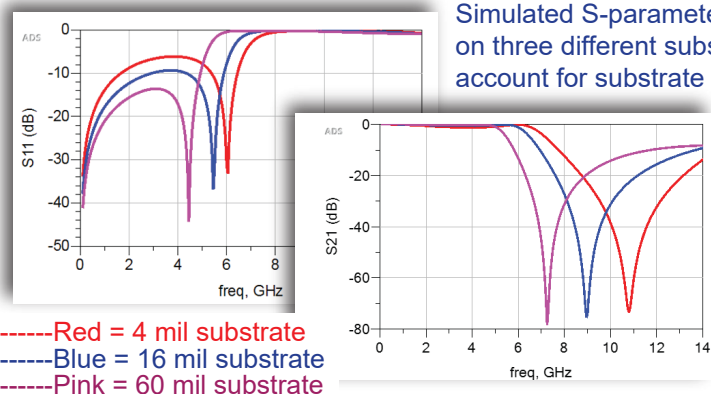
The Modelithics COMPLETE Library for Keysight ADS offers an extensive selection of models, representing thousands of components. The installed models are fully integrated with Keysight ADS electronic design automation (EDA) software. Modelithics COMPLETE also features a substrate library containing measurement-based substrate parameters for many of the most commonly used substrates.

- **Measurement-based** — Each model is developed using specialized measurements under device-specific test conditions.
- **Scalability** — Part-value, substrate, pad-size and temperature scalability are incorporated into many models.
- **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.
- **X-Parameter* models** — An alternative to compact non-linear equivalent circuit models for transistors that can speed up non-linear simulations and facilitate model portability between simulation platforms. They provide accurate non-linear model representations of complex integrated circuits for which equivalent circuit modeling is not practical.

Modelithics COMPLETE at a Glance

- **CLR Library** — Capacitor, inductor and resistor Microwave Global Models™
- **NLD Library** — Non-linear diode models
- **NLT Library** — Non-linear transistor models
- **SLC Library** — System level component models (filters, amplifiers, etc)
- **Substrate Library** — Measurement-based MSub substrate definitions

Simulated S-parameters of a simple low-pass filter on three different substrates. Modelithics models account for substrate parasitics.




* "X-parameters" is a trademark of Keysight Technologies, Inc. The X-parameters format and underlying equations are open and documented. For more information, refer to X-parameters Open Documentation, Trademark Usage & Partnerships.

List of Components in the Modelithics COMPLETE Library for Keysight ADS

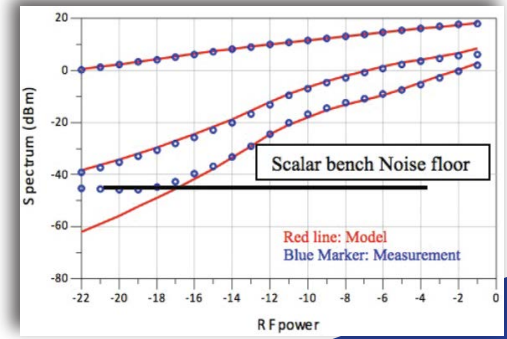
CLR		NLT		SLC	
AVX (Capacitors) C0G (NPO), X7R, X5R, C101, 0402XU, 0603XU, 0805XU, Accu-P (01005, 0201, 0402, 0603), AQ12, UQCA, UQCB, UQCF, UQCL, UQCR, UQCS, SQCA, SQCB, SQCF, SQCS, ML03, DLA (0402, 0603)	Barry Industries (Resistors) RK0603, RE0805, RY0805, RE1005, RY1005, REC1206, RYC1206, RZC1206	Avago AT-41511, AT-41533, AT-64023	Alpha (Attenuator) AA101-80	Skyworks (Switches) AS193-73, AS204-80	Smiths Interconnect (Equalizer) CE-xxxx-N-xxx-SMTF
ATC (Capacitors) 600L, 600S, 600F, 100A, 100B, 200A, 200B, 520L, 530L, 700A, 700B, 800A, 800B, 800R, 400Z, 400L, 400S	Coilcraft (Inductors) 020105, 0302C5, 0402C5, 0603C5, 0402HP, 0402AF, 0402DF, 0403HQ, 0603HP, 0603LS, 0604HQ, 0805C5, 0805HT, 0805HQ, 0805HP, 0906, 1008C5, 1010V5, 1212V5, 1606, 1008HQ, 1008HS, 1008CT, 1206C5, 1812C5, MAXI, M101, M101, 0806/0807/0908CQ, GA309X, 1111/1515/2222/2929CQ, 4310LC, BCL Conical, BCR Conical	CEL CE3512K2, CE3514M4, CE3520K3	AVX (Attenuator) RP10975AxxDB	Toko (Transformer) 617DB-1007	Smiths Interconnect (Attenuator) TT9 Attenuator
AVX (Inductors) HLQ02, HLC02, HL02, Accu-L (0201, 0402, 0603, 0805), DLA (0402, 0603, 0805)	Chilisin (Inductors) CLH1608, CLH2012, CL2012	Cree CGH53030F	ATC (Attenuator) FA10975PxxDB	Toko (Filters) ELFC455E, ELFY455E, ELFY455G	Southwest Microwave (Interconnects) 1092-01A-5, 1093-04A-5
ATC (Inductor) MOL	Chilisin (Inductors) CLH1608, CLH2012, CL2012	Excilite EPA1200A, EPA240BV, EFA060855	AVX (Couplers) CP0603, CP0402, DB0603, PC2025A2100, PC2025A2700	API-Inmet (Attenuators) PCAX/PCAAx/TCAF	Tovocom (Filters) HF373A, HFF-101A, HFF-101B
AVX (Resistors) RP-series (high power)	Chilisin (Ferrite Beads) SBY1005, PBY1608, GBY1608	Freescall MRF281, MRF9030, MFR1517, MRF1518	AVX (Diplexers) DP03, DP05, DP06	AVX (Amplifier) MGA86576	Vanguard (Transformer) 100205
ATC (Resistors) Style CS, CT, CW, CZ (High power), 504L	Darfon (Capacitors) C0402 (01005), C0603 (0201)	Hexawave HWC27NC	Barry Industries (Attenuators) AK405CB, AT0904CB	Freescall (Amplifier) MWWEGC100NR1	UBE (Resonators) K020-03, AO-K016-08
API-Inmet (Resistors) NPC-, ANC-, PPC- (high power)	KOA (Resistors) HFC1005 Capacitor, RK73x1H, RK73x1E, RK73x1L, RK73B2A, RK73B2B, RK73x2E, RK73x3A, WK7353A	Infineon BFP420, BF999, BFR949F, BFY420, PTF0801015, PTF043002E	Barry Industries (Package) QFN5532-050K Package	IMS (Attenuators) A-0402WA-C, A-0603-C, IMS2652, IMS2533, VDR3725SG	NLD
Exxelia (Capacitors) CLX, CLE, SHF251xxx	Knowles-Syfer (Capacitors) 0402 H-Range, 0603 High-Q	MACOM NPT1012, NPT800004	Gigalane (Connector) PSF-500-000	Maxim (Mixer) MAX2681	Aeroflex/Metelics MSSP25250-70, MMP7065-11, MLP7100, -7110, -7120, -7101, -7101, MS0710
IMS (Resistors) RC4-0302PW, RC3-0402PW, NDX-1020EZW	Knowles-Dielectric Labs (Capacitors) C08B121X, C04UL, C06CF, C06UL, C06BL, C08BL, C08BL102X, C11UL, Millicap, Opticap	Microsemi SD1495-03	MACOM (Packages) 2690-1011 Pin Limiter, MAALD10704 Amplifier, MASWSS0204 Switch	Murata (Filters) SFELA10M7GA00_B0	Central Semiconductor CMXD6001 General Purpose
Johanson Technology (Capacitors) R05L, R075, R145, R155, R15G, S42E	Murata (Capacitors) GRM02, GJM02, GJM03, GRM03, GRM15, GQM1555C, GRM18, GRM21, GRM32, GQM18, ERB21, GQM21, GQM22, UBSC-935-152-492-510 (0201M)	MIMIX CF003_01	Mini-Circuits (Amplifiers) GVA-62+, GVA-63+, GVA-84+, PGA-102+, PGA-103+, PGA-105+, PHA-1+, PSA4-5043+	Murata (Resonators) DRR/DRMxxx	Infinion BARxx PIN, BASxx Schottky, BBxx Varactors
Johanson Technology (Inductors) L-05C, L-07W, L-07C	Murata (Capacitors) GRM02, GJM02, GJM03, GRM03, GRM15, GQM1555C, GRM18, GRM21, GRM32, GQM18, ERB21, GQM21, GQM22, UBSC-935-152-492-510 (0201M)	Mitsubishi MGF4953A, MGF4953B, RD01MU51, RD07MU52B, RD07MV51, RD12MV51	Mini-Circuits Filters HFCN High-Pass Filters (5), LFCN Low-Pass Filters (15)	Qorvo (Amplifiers) AH101, TGA8xx	MACOM MA4PH235-1072, MA4P504-132, MAVRxx, SMV20413
KEMET (Capacitors) CD402, C0603, C0805, CBRO2, CBRO4, CBRO5, CBRO6, CBRO8	Murata (Capacitors) GRM02, GJM02, GJM03, GRM03, GRM15, GQM1555C, GRM18, GRM21, GRM32, GQM18, ERB21, GQM21, GQM22, UBSC-935-152-492-510 (0201M)	Motorola MRF1513, MRF1570	Premier Magnetics (Transformers) PM-DB27915, PM-DB27955	RUR Technologies (Packages) QFN01	Microsemi UPP9401 Pin Diode, 1N6442 General Purpose, JANTXV1N6123AUS Transient Voltage Suppressor, JANTXV1N746AUR Zener, JANTX1N4968US Zener
Panasonic (Inductors) ELJRG, ELJRF, ELJRE, ERJ2G	Murata (Ferrite Beads) BLM15, BLM18, BLM21P, BLM31P, BLM41P	MwT MwT-1, MwT-7 MESFET's	SPAR (Data Models)		MDT MP6250-P2715
Piconics (Conical Inductors) Cxxx	Murata (Inductors) LQP02HQ, LQP02T, LQP02QT, LQP03T, LQW15, LQP15, LQW18, LQP18, LQG18, LQW0AA, LQG15, LQP03HQ	NXP BF5505, BF5520, BF5540, PBR941, BF8618, BF862, BLF542, BLF548, BFQ540	Mini-Circuits (Splitters) EP2C+, EP2K+, EP2K+, EP2W1+, EP2W+, EPQ-133+	Guerrilla RF (Amplifiers) GRF2070, GRF2071, GRF2072, GRF2073, GRF2501, GRF2093, GRF2100, GRF 2106, GRF4002, GRF4014	On Semiconductor MMB030L1T1, MMB0330DWT1
Passive Plus (Capacitors) 0201N, 0402N, 0603N, 0708N, 0805N, 1111N, 0201BB, 01005BB, 0505C, 1111C	Smiths Interconnect (Resistors) CR and CT series	On Semiconductor MMB13904L1T1, MMBFU310L1T1	Mini-Circuits (Amplifiers) AVA-183+, PGA-103+, PMA2-133LN+, PMA2-33LN+, PMA2-43LN+, PMA3-83LN+, PMA-545+, PMA-5451+, PMA-5452+, PMA-5453+, PMA-5454+, PMA-5455+, PMA-5456+, PSA4-5043+	Vanguard Electronics (Inductors) 26,000 / 26,200 / 27,000 / 30,000 / 33,000 / 34,000 / 50,000	Rohm RB715F
Presidio (Capacitors) 0402UP, 0505UP, 0603UP, BB0201, BB0402, BB0502	ST Micro (Capacitor) PTIC	Qorvo FPD750	Mini-Circuits (Transformers) NCS1-63+, NCS2-83+, NCS1-422+, NCS2-392+	Vanguard Electronics (Transformers) K-, M-, R-, S-series	Skyworks SMPxx PIN, SMSxx Schottky, SMVxx Varactors, SMS7630-061 Schottky, SMS7630-005LF Schottky, SMS7630-006LF Schottky, SMS7630-079LF Schottky
Samsung (Capacitors) CL03, CL02	ST Micro (Capacitor) PTIC	Qorvo FPD750	Murata (Capacitors) UBSC	Mini-Circuits (Filters) XBF Series, XHF Series, XLF series	Toshiba 15Vxxx, JDV25xx Varactor
Taiyo Yuden (Capacitors) EMK042, LMK042, JMK042, TMK063, JMK063, EMK063, UMK105, TVS042	Toko (Inductors) LLV0603, LL1005, LL1608, LL2012	Rohm UMT1NR, EMT1, EMX1	Mini-Circuits (Transformers) NCS1-63+, NCS2-83+, NCS1-422+, NCS2-392+	SOTA (Resistors) S0202, S0303, S0505, S0603	Virginia Diodes W Band Single Anode and ZBD
Taiyo Yuden (Inductors) HK0603, HK1005, HK1608, HK2125	Vishay (Capacitors) VJ0402, VJ0603, HPC0402	SEDI FLL120MK, FLL800Q, EGN010MK, EGN030MK, FSK017K	** 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)		
TDK Inductors MHQ0402, MHQ1005, MLG0402, MLG0603, MLK1005, MLG1005, MLG1608, NLV25T, MLF2012	Vishay (Resistors) D10, D11	Semicoa 2C2857			
TDK (Capacitors) C0402, C0603, C1005, C3225	Würth Elektronik (Capacitors) WCAP-CSRF 0201 & 0402, WCAP-CSMH 0603 (NPO/X7R) & 0805 (NPO/X7R, 0.8mm & 1.25mm)	Sirenza SLD-1083CZ, SLD-2083-CZ			
Würth Elektronik (Ferrite Beads) 74279223560, WE-CBA 0402 (Wide Band/High Current) / 0603 (High Speed/Wide Band/High Current) / 0805 (High Speed/High Current) / 1206 (Wide Band/High Current) / 1806 (High Current)	Würth Elektronik (Inductors) WE-CAIR, WE-CAIR 5910, WE-MK, WE-KI, WE-KI HC, WE-TCI, WE-AC HC 1010 / 1212	Toshiba RFK3078A, ZSK3476, RFD0406P, RFM03U3CT			

- Scalable Modelithics models accurately predict parasitic effects, providing excellent modeled-to-measured results.
- Microwave Global Models™ can be tuned and optimized to quickly reach design goals in simulation.
- Evaluate tolerance effects with statistical analysis tools.
- Modelithics models are precision measurement-based equivalent circuit models, and will exhibit physical behavior, even beyond the measurement frequency.

Example Modelithics capacitor model in ADS



CAP_PPL1111N_001_MDLXCLRPP11
PAS_1111N_C1
 C=0.2 pF
 Subst="MSub1"
 Sim_mode=0 - Full Parasitic Model
 Tolerance=1.0
 Pad_Width=3.3 mm
 Pad_Length=1.3 mm
 Pad_Gap=1.9 mm
 Orient=0 - Horizontal



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