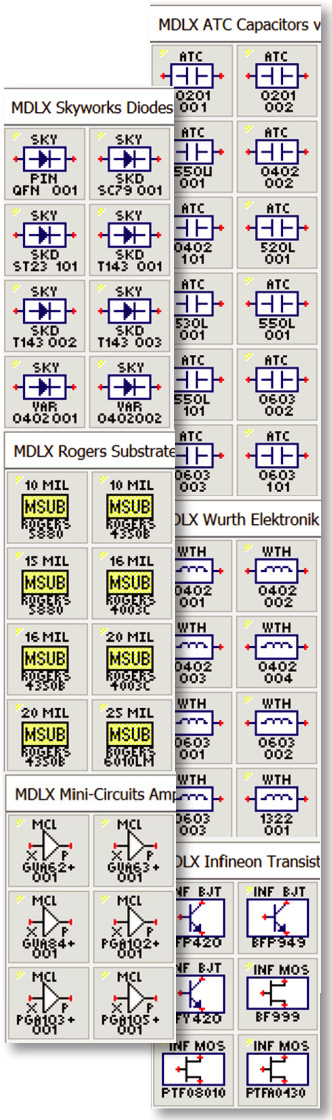
Modelithics®
Accelerating Your Design Success!

Modelithics COMPLETE Library
for Keysight Advanced Design System (ADS)

KEYSIGHT Solution Partner

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. Modelithics COMPLETE Library for Keysight ADS now represents over **31,000** components, from **86** leading commercial component manufacturers for popular passive and active devices for modeling accuracy to deliver first-pass design success. View the **Overview Video** to learn more about the Modelithics COMPLETE Library.



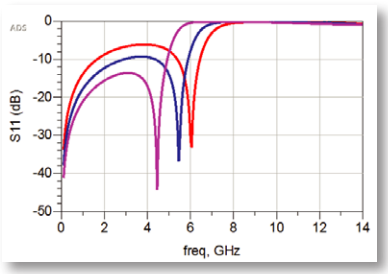
Library Features

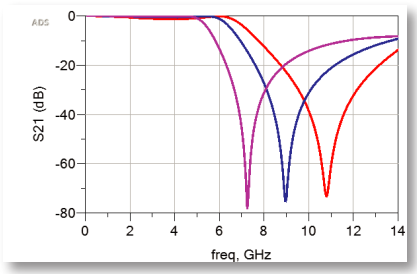
The Modelithics COMPLETE Library for Keysight ADS offers an extensive selection of **Microwave Global Models™**, representing thousands of components. The installed models are fully integrated with Keysight ADS electronic design automation (EDA) software. The COMPLETE Library also features a substrate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

- **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.

Sub-Libraries of the Modelithics COMPLETE Library

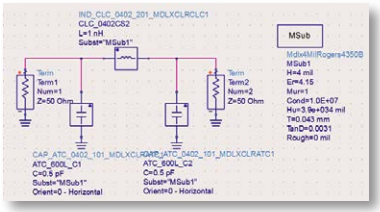
- **mmWave Library** — A collection of models focused on supporting the next generation of cellular communication standards. All models in the mmWave Library are validated to a minimum of 30 GHz, with some validated up to 125 GHz!
- **System Components Library** — Models for discrete die, surface mount and packaged devices.
- **Single-Vendor Sub-Library** — Includes all models for one selected vendor. Choose from the 86 vendors within the Modelithics COMPLETE Library.



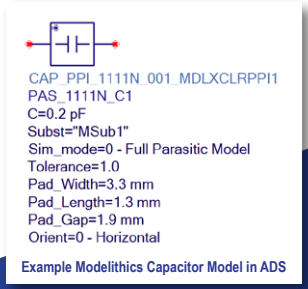


------Red = 4 mil substrate
------Blue = 16 mil substrate
------Pink = 60 mil substrate

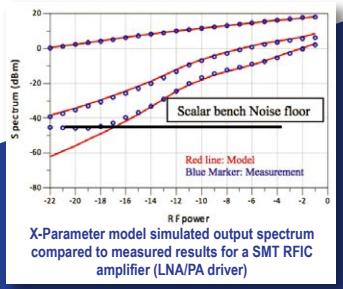
Simulated S-parameters of a simple low-pass filter on three different substrates. Modelithics models account for substrate parasitics.



- 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



X-Parameter model simulated output spectrum compared to measured results for a SMT RFIC amplifier (LNA/PA driver)

** "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.*

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List of Components in the Modelithics COMPLETE Library for Keysight ADS

Modelithics Vendor Partners (MVPs)

Amotech

CAPACITORS
A60S, A60F, A60Z, A60L, A80B, ABCUC06S0xx103, ABCUC06S0xx473, ABCUC06S0xx104, ABCUC16S01x103, ABCUC16S01x104, ABCUA50S02x104, ABCUC25201X103, ABCUC10S01X224, ABCUC1010XX223MNDG, ABCUC16S01X223MNDG

Analog Devices

AMPLIFIER
ADL8142

Avago

AMPLIFIER
MGA86576

NPNBJT PACKAGES
AT-41511, AT-41533, AT-64023

CapV

VARACTOR CHIPS
5x5 um VCT Etch, 10x10 um VCT Etch

CEL

LOW NOISE FET
CE3512K2, CE3514M4, CE3520K3

HMT
CE3512K2

Central Semiconductor

DIODES
CMXD6001 General Purpose

Chilisin

INDUCTORS
CLH1608, CLH2012, CL2012

FERRITE BEADS
SBY1005, PBY1608, GBY1608

Coilcraft

INDUCTORS
0160008C, 0201CT, 0201DS, 0201HL, 0201HT, 0302CS, 0402CS, 0402CT, 0402HP, 0402AF, 0402DC, 0402DF, 0403HQ, 0603CS, 0603CT, 0603DC, 0603HC, 0603HL, 0603HP, 0603LS, 0604HQ, 0805CS, 0805HT, 0805HQ, 0805HP, 0805LS, 0906, 1008CS, 1010VS, 1212VS, 1606, 1008HQ, 1008HS, 1008CT, 1206CS, 1812CS, MAXI, MIDI, MINI, 0806/0807/0908SQ, GA309X, 1111/1515/2222/2929SQ, 2712SP, 4310LC, BCL Conical, BCR Conical, XLG6020

Cornell Dubilier

CAPACITORS
MIN02

CML Micro

MESFET
MWT-1, MwT-7, MWT-1F, MWT-3F, MWT-7F, MWT-9F, MWT-11F

Cree

PACKAGED PHEMT
CGH35030F

Dalicap

CAPACITORS
DLP70A, DLP75P, DLP75D, DLP70B, DLC85C

Darfon

CAPACITORS
C0402 (01005), C0603 (0201)

Excelics

MESFET
EFA060BS5

PHEMT
EPA1200A, EPA240BV

Exxelia

CAPACITORS
CLE, CLX, SHF251xxx

Freescale

MOSFET
MRF1517, MRF1518, MRF281, MRF9030

AMPLIFIER
MWE6IC9100NR1

Gigalane

INTERCONNECTS
PSF-S00-000

Gowanda

INDUCTORS
C060FL, C050SMC, C100FL, C100Sm, C100SMC, C225FL, CC0603

Guerrilla RF

AMPLIFIERS
GRF2070DS, GRF2071DS, GRF2072DS, GRF2073DS, GRF2093, GRF2100, GRF2106, GRF2501DSR, GRF4002, GRF4014

TRANSISTORS
GRF0010, GRF0020, GRF0030, GRF0065, GRF0090, GRF0135

Hexawave

MESFET
HWC27NC

Hirose

SPLITTERS
IPS2346-C, IPS2668-C, IPT0402WA-C-U, IPT0603WA-C, IPT0805WA-C

IMS

RESISTORS
RC4-0302PW, RC3-0402PW, NDX-1020EZW, NDX-0402WA, ND3-0402PA, NDX-0505WA, ND3-0510EVW, ND3-0510SWA, TFI-0201SS, TFI-0402WA

ATTENUATORS
A-0402WA-C, A-0603-C, IA3-0805WA, IA3-1206WA, IMS2652, IMS2533, A-0805, IMS1141

SPLITTERS
IPS2640-C, IPS2668-C, IPT0402WA-C-U, IPT0603WA-C, IPT0805WA-C

Infineon

DIODES
BAR64-03W, BAR88-02V, BAS3010S-02LRH, BAS40, BAS40-04, BAS40-05, BAS40-06, \BAS52-02V, BAS70, BAS70-04, BAS70-05, BB535, BB639, BB833, BBY51-02W, BBY52-02L, BAT62-02V

BJT
BFY193C

NPNBJT
BFP420, BFR949F, BFY420, BFY193C

MOSFET
PTF080101S, PTFA043002E, BF999

JDI

CAPACITORS
R14, R15

Johanson

CAPACITORS
R05L, R07S, R14S, R15S, R15G S42E, QCCF, QCCP, QCCT

INDUCTORS
L-05Cxxx, L-07Wxxx, L-07Cxxx, L-14C, L-14W

KEMET

CAPACITORS
C0402(C0G), C0402(X5R), C0402(X7R), C0603, C0805(BX), C0805(C0G), C0805(NP0), C0805(X5R), C0805(X7R), CBR01, CBR02, CBR04, CBR04 Auto, CBR05, CBR06, CBR06 Auto, CBR08, C0201

KOA

RESISTORS
RK73H, RK73B1J(RK73H), RK73B2A, RK73B2B, RK73x1E(RK73H), RK73x1H(RK73B), RK73x1J, RK73x2E, RK7x3A, WK73S3A

CAPACITOR
HFC1005

Knowles

CAPACITORS
(Syfer)
0402 H-Range, HighQUltraLowESR, H-Range (0805), 22252, 40402, 4040J
(Dielectric Labs)
C04BL, C04UL, C06CF, C06UL, C06BL, C08BL, C11UL, Millicap, Opticap

INDUCTORS
CL1008

RESONATORS
DR02F92QxxxxDYB, DR04F98QxxxxDGB, DR04F98QxxxxDYB, DR06F36QxxxxDYB, DR06F98QxxxxDYB

Kyocera-AVX

INDUCTORS
HL002, HLC02, HL02, Accu-L (0201, 0402, 0603, 0805), DLA (0402, 0603, 0805)

COUPLERS
CP0603, CP0402, DB0603, PC2025A2100, PC2025A2700

RESISTORS
UBR0402, CW12010, CW13725, CZ12010, CZ13725, CZ13737, CS12010, CS13737, CT11020

SINGLE-LAYER CAPACITORS
GH01 Maxi, GH04 Maxi, GH06 Maxi

Kyocera-AVX (Cont'd)

CAPACITORS
CU01, CU10, 100A, 100B, 200A, 200B, 0603xU, 500Z, 520L, 530L, 550Z104, 550Z224, 550W103, 550W104, 560W104, 560Z104, 560Z224, 550Z, 600F, 600L, 600S, 700A, 700B, 800A, 800B, Accu-P (0201, 0402, 0603), 800R, ML03, DLA (0402, 0603), MP01, MP02, MP03, KGM02xCG, KGM03xCG, KGM02xR5, KGM03xR7, KGM15xCG, KGM15xR7, KGM21xCG, KGM31xR7, KGM31xR7, KGQ05xCG, KGQ21xCG, KGQ32xCG

ATTENUATORS
FA10975PXXDB

MACOM

LIMITER
2690-1011

AMPLIFIER
MAAL010704

SWITCH
MASWSS0204

GaN HEMT
NPT1012B, NPTB00004A

DIODES
MA4PH235-1072, MA4PK3000-1252, MA4P504-132, MAVR-00230-1141, MAVR-001330-1279, SMV20413, MLP7100, MLP7101, MLP7110, MLP7120, MMP7065-11, MSD710, MA4E1317, MAVR-011020

COUPLER
MACP-011088

SPLITTER
MAPD-011062

TRANSFORMER
MABA-011125

Maxim

AMPLIFIERS
MAX2371, MAX2373

MIXER
MAX2681

MDT

DIODE
MP6250-P2715

Microchip

DIODES
GC1500879, GC4220, GC4270, GC4490, GC4701, GC4702, GC4711, GC4712, GC4713, GC4721, GC4722, GC4723, GC4731, GC4732, GC4741, GC4742, GC4750, GMV3347-GM1, KV2151, MMP4402GM2, MMP4403GM2, MMP4404GM2, MMP4405GM2, MP6250-P2715, MPP4204206, UMX9989AP, MV3903-P2010, UPP9401

NPNBJT
SD1495-03

Mimix

MESFET
CF003-01

Mini-Circuits

BAND-PASS FILTERS
XBF Series

AMPLIFIERS
AVA-183+, PMA2-133LN+, PMA2-33LN+, PMA2-43LN+, PMA3-83LN+, PMA-545+, PMA-5451+, PMA-5452+, PMA-5453+, PMA-5454+, PMA-5455+, PMA-5456+, PSA4-5043+, GVA-62+, GVA-63+, GVA-84+, PGA-102+, PGA-103+, PGA-105+, PHA-1+, PHA-22+, PSA4-5043+, PMA1-14LN+

ATTENUATORS
RCAT, KAT, YAT, YAT-A

COUPLER
JR1BD+

HIGH-PASS FILTERS
XHF-Series, XHF2-Series, HFCN-2700+, HFCN-3800+, HFCN-5500+, HFCN-740+, HFCN880+

LOW-PASS FILTERS
LFCG-1000+, LFCG-1575+, LFCG-1700+, LFCG-2250+, LFCG-2850+, LFCG-320+, LFCG-400+, LFCG-530+, LFCN-1000+, LFCN-120+, LFCN1200+, LFCN-1200D+, LFCN-1575+, LFCN-1770+, LFCN-1800+, LFCN-1800D+, LFCN-2250+, LFCN-2850+, LFCN-3000+, LFCN-320+, LFCN-3800+, LFCN-400+, LFCN-4400+, LFCN-490+, LFCN-530+, LFCN-630+, LFCN-80+, XLF-Series

SPLITTERS
EP2C+, EP2K1+, EP2K+, EP2KADG+, EP2W1+, EP2W+, EPQ-133+

PHEMT
SAV-331+, SAV-541+, SAV-551+, SAV-581+, TAV2-14LN+, TAV2-501+

TRANSFORMERS
NCS1-63+, NCS2-83+, NCS1-422+, NCS2-392+

Mitsubishi

HEMT
MGF4953A, MGF4953B

MOSFET
RD01MUS1, RD01MUS2B, RD07MUP2B, RD07MUS2B, RD07MVS1, RD12MVS1

Motorola

MOSFET
MRF1513, MRF1570

Murata

INDUCTORS
LQG15HS, LQG18, LQP02HQ, LQP02T, LQP02TQ, LQP03HQ, LQP03TN, LQP15M, LQP18M, LQW04A, LQW15AN_00, LQW15AN-10D, LQW15AN-80, LQW18AN_00, LQW18AN-10D, LQW18AN-80D, LQP02HV, LQP02TN, LQP03TG, LQW15AN-80D

BAND-PASS FILTER
SFELA10M7GAA0_B0

RESONATORS
DRR02011G45, DRR0201G350, DRR204G100, DRR030KE1R2

CAPACITORS
GCM155C, GCM21B, GCM219, GCM31C, GCM31M, GJM022, GJM03, GQM1555C, GQM187, GQM188, GQM219, GQM22M, GRM011, GRM022, GRM022 (X5R, X7R), GRM0335, GRM1555C1H, GRM155R71E, GRM155R71H, GRM1885C1H, GRM188R71H, GRM188R72A, GRM2166C2A, GRM219, GRM31B, GRM31C, GRM31M, GRM32EC7, GRMJ32DC7, GRM32ER71J, GRP033, UBSC_935_151_423_510, UBSC_935_151_424_610, UBSC_935_151_723_510, XBSC_939_118_492_510-xxS, GQM033, GJM033, GQM1555

TRIPLEXER
LMTP33AA148

FERRITE BEADS
BLM15AG, BLM15EG, BLM18A, BLM18HG102SN1, BLM21P, BLM31P, BLM41P

NIC Components

RESISTOR
NRC06

NXP

MOSFET
BF1211, BF1212, BLF542, BLF548

JFET
BF861B, BF862

NPNBJT
BFQ540, BFS505, BFS520, BFS540, PBR941

On Semiconductor

DIODES
MMBD301LT1, MBD330DWT1

JFET
MMBFU310LT1

NPNBJT
MMBT3904LT1

Panasonic

INDUCTORS
ELJRG, ELJRF, ELJRE, ERJ2G

Passive Plus

CAPACITORS
01005BB104, 0201BB104, 0201N, 0201N-ultra-low-ESR, 0402N-ultra-low-ESR, 0505C, 0603N-ultra-low-ESR, 0708N, 0805N-ultra-low-ESR, 1111C, 1111N-ultra-low-ESR

RESISTORS
R35-1209BB, R35-2010BB

INDUCTORS
PPI-xxFL-xRxx-xxx-G6

Piconics

INDUCTORS
CCxxxTxxK240G5-C, CCxxTxxK240G5-004, MK Series, CC36T44K240G5-C, CC10T40K240G5-C, CC36T44K240G5-C, CC10T40K240G5-C

Premier Magnetics

TRANSFORMERS
DB2791S, DB2795S

Presidio

CAPACITORS
0402UP, 0505UP, 0603UP, BB0201X7R103M, BB0402X7R104M2, BB0502X75104M

Qorvo

AMPLIFIERS
AH101, RF2878, RF5110G

Qorvo (Cont'd)

GaAs PHEMT
TGF2040, TGF2060, QPD2018D, QPD2025D, QPD2040D, QPD2060D, QPD2080D, QPD2120D, QPD2160D

RF360

BAND PASS FILTER
B7840

RJR

PACKAGE
QFN01

Rohm

DIODE
RB715F

PNPBJT
EMT1

NPNBJT
EMX1

Samsung

CAPACITORS
CL02Cxxxxxxx, CL02CxxxxxxG, CL03C, CL31A106K, CL32B475K

RESISTORS
RC0402, RC1005

Sawtek

DUPLEXER
856331

SEDI

GaN HEMT
EGN010MK, EGN030MK

MESFET
FLL120MK, FLL800IQ, FSX017X

Semicoa

NPNBJT
2C2857

Silicon Supplies

NPNBJT
2SCC3356

Skyworks

SWITCHES
AS193-73, AS204-80

DIODES
SMP1324-087LF, SMS3927-023, SMS3940-029LF, SMS7621-005, SMS7621-015, SMS7621-079, SMS7630-005LF, SMS7630-006LF, SMS7630-061, SMS7630-079LF, SMV1147, SMV1253-079, SMV1763-040LF, SMV2201-040LF, SMV2202-040LF, SMV2203-040LF, SMV2204-040LF, SMV2205-040LF

Smiths Interconnect

EQUALIZER
CE_XXXX_N_XXX_SMTF

RESISTORS
CT404ALN1WB1, CT404ALN2WB1, CT0603ALN1SMTF, CRxxxxD, CTxxxxD

ATTENUATOR
AT5xxF, AT7xxF, K2TVA, WTVA, TT9, TSX, TS06xxF, TSXWB

SPLITTERS
RPD02-50EAF, RPD04-50EHF, WPD02-1525EBF, WPD02-1525UDF, WPD02-2535ECF, WPD03-1525EEF, WPD04-1525EFF, WPD04-2535EGF

Spectrum Control

RESISTORS
ANC50-100W, ANC50-50W, CA00WBR01, CA00WCB01, CD00WAL01, CJ00SAA01, CJ00WBR01, CJ00WCB01, NPC20-40S, NPC50-100W, NPC50-50W, PPC100-200AW,

ATTENUATORS
40PCA3060, PCA, PCAA, PCAAF, PCAF

Southwest Microwave

INTERCONNECTS
1092-01A-5, 1093-04A-5

SOTA

RESISTORS
S0202AF50R0FEB, S0303AF50R0FWB, S0505AF50R0FEB, S0505CF50R0FHB, S0505DF50R0FEW, S0505EF50R0FEW, S0603CF50R0FHB

ST Micro

CAPACITOR
PTIC

Susumu

RESISTORS
RFD0603, RG0603, RG1005, RG1608, RG2012, RG321

ATTENUATOR
ATS2012-FD, ATS1005-FD

Tagore Technology

HMT
TA9210-D

Taiyo Yuden

CAPACITORS
EMK042, EMK063, JMK063, LMK042_and_JMK042, TMK063, TVS042, UMK105

INDUCTORS
HK0603, HK1005, HK1608, HK2125, HKQ0603S, HKQ0603U, HKQ0603W

TDK

CAPACITORS
C0402C0G, C0603C0G, C1005CH, C1005X5R, C3225, CGA1A2C0G, CGA1A2X7R, CG1T3X5R0J104M

INDUCTORS
MHQ0402PSA, MHQ1005P, MLF2012, MLG0402Q, MLG0603P, MLG0603S, MLG1005S, MLG1608B, MLK1005S, NLV25T

Tecdia

VARIABLE CAPACITORS
HBCR22AY20X10X5A02, HBC2RKY20X10X5A02

SINGLE-LAYER CAPACITORS
CMSK1600, CMSK2800, CMS K40 Dielectric, CMS K90 Dielectric, CMS K280 Dielectric, CMS K280 Dielectric

Toko

TRANSFORMER
617DB-1007

BAND PASS FILTERS
ELFC455E, ELFY455E, ELFY455G

INDUCTORS
LL1005-FHL, LL1608-FSL, LL2012-FHL, LLV0603-F

Toshiba

DIODES
1SV229, 1SV279, 1SV280, 1SV282, 1SV305, 1SV325, 1SV329, JDV2S07FS, JDV2S09FS, JDV2S41FS

MOSFET
2SK3078A, 2SK3476, RFM03U3CT, RFM04U6P

Toyocom

BAND PASS FILTERS
HF373A, HFF-101A, HFF-101B

Transcom

pHEMT
TC2381, TC2384

TTM Tech

RESISTOR
C05N50Z4

COUPLERS
X4C20L1-03G, X4C25L1-03G, X4C40L1-03G

UBE

RESONATORS
AO-K016-08, K020-03

Vanguard

TRANSFORMERS
100205, K Series, M Series, R Series, S Series

INDUCTORS
Series2600, Series2700, Series3000, Series3300, Series3400, Series50000

Virginia Diodes

DIODES
W Band Single Anode, W Band ZBD

Vishay

CAPACITORS
HPC0402, VJ0402, VJ0402D, VJ0603D

RESISTORS
CH02016, CH0402, CH0603, CHTA02016, CRCW01005, CRCW0201, CRCW0402, CRCW1206, D10, D11, FC0402, MCS0402, MCT0603, MMA0204, FCHP0402xxxBGT, FCH0402xxxBTT, TNPW0201

Vishay-Barry

ATTENUATORS
AK0405CB, AT0904CB

RESISTORS
RK0603, RE0805, RY0805, RE1005, RY1005, REC1206, RYC1206, RZC1206

PACKAGE
QFN5532-050x, QFN3312-0520, QFN3312-0521, QFN3312-0522, 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

Voltronics

CAPACITOR
JR030, JR060 , JR100, JR150, JR200, JR300, JR400, JR500

Würth Elektronik

INDUCTORS
WE_ACHC, WE-CAIR, WE-KI, WE-KIHC, WE-MK, WE-TCI, WE-KI HC (0402), WE-KI HC (0603)

FERRITE BEADS
74279223560, WE-CBA0402 (High Current), WE-CBA0402 (Wide Band), WE-CBA0603 (High Current), WE-CBA0603 (High Speed), WE-CBA0603 (Wide Band), WECBA0805 (High Current), WECBA0805 (high Speed), WECBA1206 (High Current), WECBA1206 (Wide Band), WECBA1806 (High Current)

CAPACITORS
WCAP-CSMH(NP0), WCAP-CSMH(X7R), WCAP-CSMH(X7R) 0.8mm, WCAP-CSMH(X7R) 1.25mm, WCAP-CSRF(NP0)

Yageo

RESISTORS
RC0100, RC0201

CAPACITORS
CC0201, CQ0201, CQ0402, CQ0603, AQ0402, AQ0603, CQ0100, CQ0805

Video: Modelithics COMPLETE Library Overview

Learn More About Modelithics' Library & Licensing Options

More to come! New models are added continually.
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