

Mühlhaus RFIC Inductor Toolkit for IHP

User friendly, automated, accurate Inductor Synthesis

With EM solvers like ADS Momentum or Sonnet, you can EM simulate an RFIC inductor if the layout already exists, but how to design the best possible layout? How to find the best inductor layout for your requirements? Mühlhaus Inductor Toolkit for ADS does that synthesis for you, and enables you to efficiently design "optimum" inductors.

Your input:

- Required inductance value and target frequency
- Geometry limitations

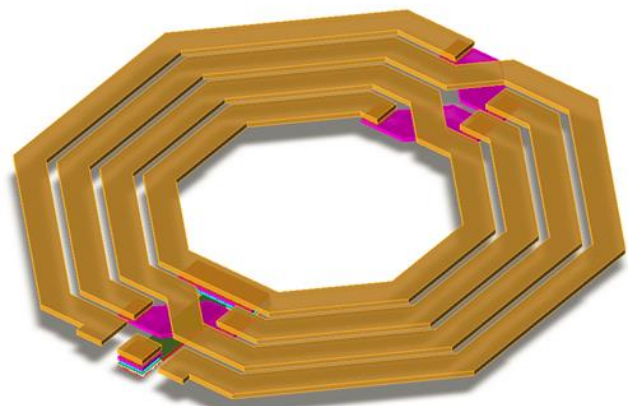
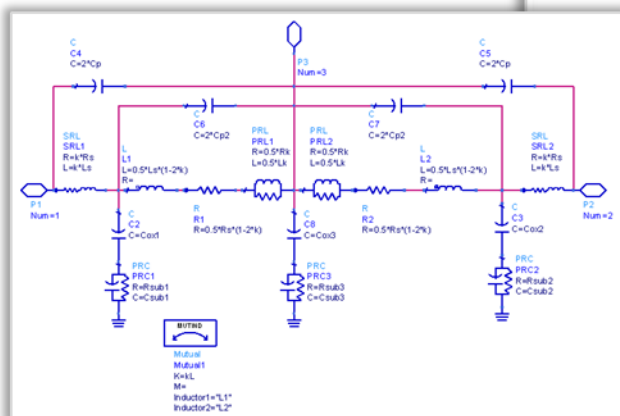
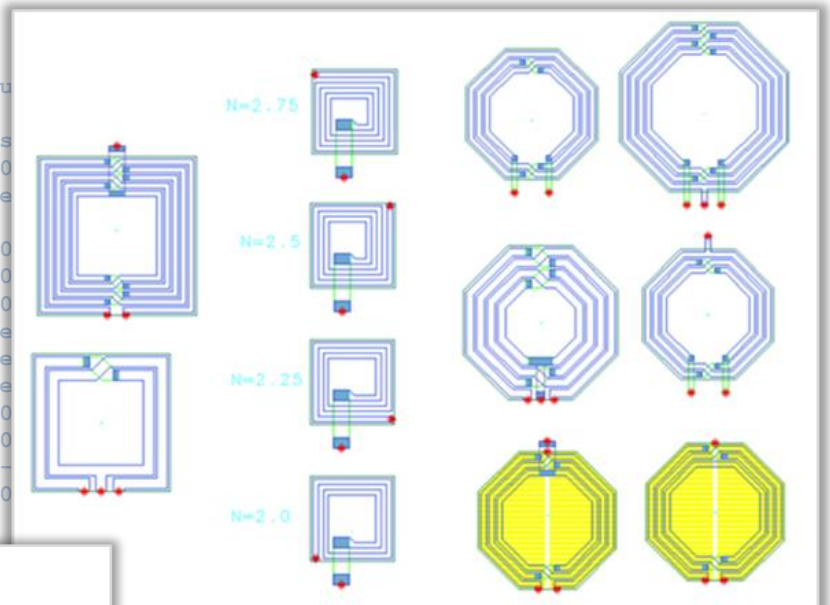
Inductor Toolkit does the work for you:

- The software creates inductor layouts for this inductance value
- The software finds the layout with the best performance (best Q factor)

You get:

- DRC clean layout with the best possible inductor, within the given geometry limits
- EM accurate simulation results for the inductor
- Equivalent circuit model and Spectre *.scs netlist file

```
// Inductor model file www.muehlhaus.com
simulator lang=spectre
subckt OctaDiffStacked_2n0_N2_w18_s
SRL1R (1 100) resistor r=9.81372e-04
SRL1L (100 101) inductor l=2.28284e-04
C4 (1 2) capacitor c=3.38452e-014
C5 (101 104) capacitor c=8.92678e-04
L1 (101 102) inductor l=1.41846e-04
R1 (102 103) resistor r=6.09785e-04
PRL1R (103 104) resistor r=1.00596e-04
PRL1L (103 104) inductor l=8.09504e-04
SRL2R (104 105) resistor r=9.81372e-04
SRL2L (105 200) inductor l=2.28284e-04
C2 (101 200) capacitor c=1.41437e-04
PRC1C (200 3) capacitor c=4.19843e-04
PRC1R (200 3) resistor r=1.23410e-04
```



Inductor Toolkit Functionality

- ADS add-on for user friendly, accurate inductor synthesis
- Layout Pcells for different inductor geometries
- **NEW IN VERSION 4: transformer/balun design**
- Pre-configured EM substrates for Momentum and FEM
- Automation to synthesize inductor & transformer layouts based on inductance
- Automation to find the best performing inductor with best possible Q factor, within given geometry limitations
- Automation to create an ADS cell with layout view, S-parameter simulation view and equivalent circuit model view
- Automation to fit a lumped inductor model, and output that as an *.scs netlist file (not available for transformer/balun design)

License options

For the IHP Edition of Inductor Toolkit, there are two license options:

Inductor Toolkit Basic is free to IHP customers. It supports octagon shapes "ind2" and "ind3" from the IHP PDKs, as well as **interleaved & overlay transformer/balun design**.

Inductor Toolkit Pro adds many more inductor shapes:

- IHP inductors with localized backside etching (LBE) for simulation with the Momentum and/or FEM solvers
- Differential Octagon with/without center tap on TM2
- Differential Octagon with/without center tap, stacked on TM1 + TM2
- Differential Octagon with/without center tap, with patterned ground shield
- Differential Square with/without center tap on TM2
- Differential single turn layout optimized for mm-wave frequencies
- Single ended (non- symmetric) square with 0°/90°/180°/270° feedline orientation

Users of the Basic version can upgrade to the full version with a special discount. For more information, please email us at info@muehlhaus.com

Requirements

All standard IHP technologies are supported: SG25H4/H5, SGB25V, SG13S, SG13G2
Required ADS version: Agilent ADS 2016 or later

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