Application Datasheet

Microwave Office for MMICs

Microwave Office has changed forever the way RF and microwave ideas become reality. Created by monolithic microwave integrated circuit (MMIC) designers for MMIC designers, NI AWR software combines cutting-edge technologies with a straightforward, intuitive user interface that streamlines the MMIC design process. Numerous wireless, microwave, and millimeter-wave products on the market today incorporate components designed with NI AWR software technology.

Features at a Glance

- Design capture with industry-leading tuning
- Linear and nonlinear frequency-domain and time-domain simulation
  - APLAC RF harmonic balance for large-scale and highly nonlinear designs
- ACE automatic circuit extraction technology for interconnect modeling
- EM Socket interface for integration with third-party EM tools
  - AXIEM 3D planar EM analysis (optional)
  - Analyst™ 3D FEM EM analysis for bumps, bond wires, ribbons (optional)
- ERC/DRC/LVS support for tools such as Calibre® and ICED
- Layout with production-ready GDSII export

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The Microwave Office MMIC Design Flow Features and Advantages

Early insight: Microwave Office software and its many features were developed to enable the design of real products. Circuit-based annotations provide immediate simulated feedback for current density and critical voltages, pinpointing reliability issues long before layout. And once to layout, NI AWR software bridge code ensures that vias are properly inserted from any routed line to critical components such as metal insulator metal capacitors (MIM caps), eliminating difficult-to-find open- and short-circuits.

APLAC: This circuit simulator combines linear and nonlinear frequency-domain simulation with time-domain transient simulation and is renowned for its speed and convergence on even the toughest of problems.

ACE: Automated circuit extraction technology powers through your layout to diagnose critical couplings. Creating parameterized netlists using distributed models, many with highly optimized EM solvers built right in, ACE is fast and efficient for your MMIC design topologies.

AXIEM: 3D planar EM analysis delivers exceptionally accurate S-parameter results that are fast and efficient for even highly dense designs.

EXTRACT: Within Microwave Office, the EXTRACT block makes life easier by allowing the schematic to control EM and circuit extraction and eliminating the need to go to the layout and launch EM as a separate (and often manual) step from the schematic. It also ensures that there are no errors when integrating EM back into the circuit and system simulations.

iNet, X-Models and Bridge Code: All are powerful, industry-first technologies found within NI AWR software that address interconnects right up front in the schematic and concurrently and dynamically synchronize them with the rest of the flow from layout to EM simulation and verification. When it comes to MMIC design, the interconnects are not just mindless metal in the design; they are the design.

PDKs: Process design kits (PDKs) are the cornerstone of any MMIC design flow. NI AWR software supports a wide range of type III-V PDKs from the world’s leading foundries that leverage a host of NI AWR software productivity-enhancing features, thereby helping designers realize state-of-the-art MMIC design.