SYNOPSYS®

DATASHEET

Synopsys: Driving the PIC Revolution

Seamless PIC design flow from concept to manufacturable design

Photonics, or the manipulation and movement of light waves, represents a new and growing opportunity for integrated circuit (IC) foundries with applications in high-speed data communications, advanced sensing, and imaging. Photonic integrated circuits (PICs) promise orders-of-magnitude speed improvements with reduced power consumption for data transmission and ultra-sensitive sensing capabilities in multiple domains.

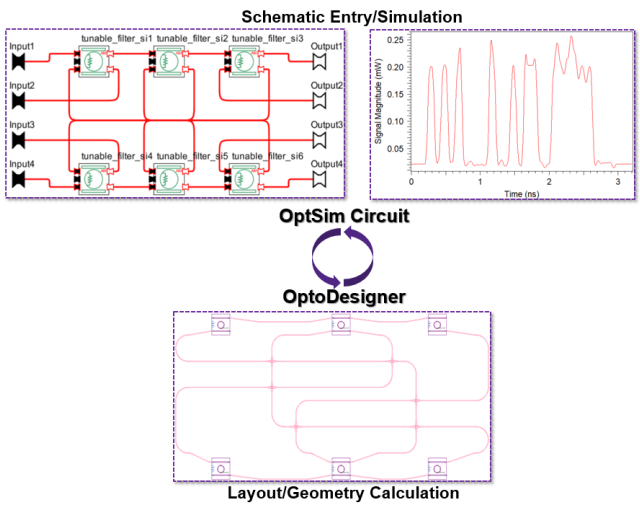
As PIC technologies advance, photonic design automation (PDA) software has become critical for improving PIC design productivity, improving time to market and reducing costs. Synopsys is driving the PIC revolution by offering the industry's only seamless design flow from concept to manufacturable design to accelerate innovation for optical datacom, 5G, radio-over-fiber networks, microwave photonics, and leading-edge applications ranging from AR/VR, quantum computing, LiDAR, and biophotonics.

PIC Device Design

The RSoft™ photonic device tools provide the widest portfolio of photonic device simulators for passive and active devices in optical communications and optoelectronics. You can model and optimize PIC components such as bi-directional waveguides and couplers, light sources, modulators, photo diodes, nanostructures, and more.

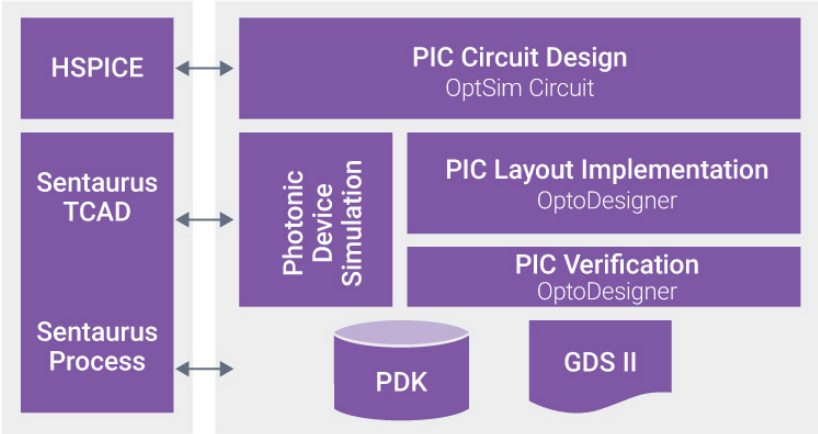
Photonic Integrated Circuit Design

Synopsys' PIC Design Suite, which includes OptSim™ Circuit and OptoDesigner, offers a bidirectional design flow with photonic-aware physical layout capabilities enabled by support for foundry-specific PDKs.



PIC Design Suite key features include:

- Design and optimization of PIC functionality in OptSim Circuit
- Synthesis of PIC layouts for fabrication in OptoDesigner
- Bidirectional interface between OptSim Circuit and OptoDesigner for an efficient PIC design workflow
- PDK support for PIC foundries offering multi-project wafer (MPW) services
- Full support for schematic-driven layout and photonic layout versus schematic verification using IC Validator
- Co-design of photonics and electronics with Synopsys HSPICE® and Sentaurus™ TCAD tools



System Design

The OptSim and ModeSYS™ tools simulate the performance of optical communication and fiber-based systems through comprehensive simulation techniques and component models.

Lowering Access Barriers to PIC Technology with PDK Support

PDKs provide a crucial link between designers and foundries. They are the foundation of PIC circuit design and layout tools by supporting efficient design concept verification, mask generation, and signoff checks. The PIC Design Suite and the RSoft photonic device tools give PIC designers and PDK developers a powerful infrastructure for creating and using custom PDKs, which is vital for generating foundry-specific intellectual property (IP) as well as augmenting existing PDKs with custom components. Synopsys' PDK capabilities include:

- Support for the majority of accessible PIC foundries with more than 30 PDKs developed
- The Custom PDK Utility, which gives PIC designers and PDK developers a powerful tool to create and use custom PDKs
- Support for all technologies:
  - Silicon photonics
  - InP/III-V materials
  - TriPleX™
  - SiO2/SiN technologies, including polymers, silica and more

Synopsys' 30 years of leadership in EDA, combined with OptoDesigner and RSoft products' 25 years of leadership in PDA, positions Synopsys to provide a best-in-class PIC design flow. We facilitate first-time-right PIC manufacturing.

Contact us today at photonics@synopsys.com to request a demo or free 30-day evaluation or visit synopsys.com/photonic-solutions.

SYNOPSYS®
Silicon to Software™

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