

# RSoft OptSim Circuit

Model Single- and Multi-stage Bidirectional Photonic Integrated Circuits (PICs)

## Features at a Glance

- Extends OptSim's system modeling capabilities to include PICs
- Models bidirectional propagation for both optical and electrical signals
- Models forward and backward propagating reflections and resonance
- Models single- and multi-stage bidirectional PICs
- Models multipath interference (MPI) from network and PIC elements
- Includes library of PIC elements such as bidirectional waveguides, bidirectional couplers and connectors, light sources, modulators and photodiodes
- Supports reusable user-defined components and compound components
- Provides a number of options for exporting data and for co-simulation with external tools
- Provides an intuitive graphical user interface
- Comes with powerful options for data visualization, plotting and management of project resources

## Overview

RSoft™ OptSim™ Circuit is an extension of Synopsys' award-winning fiber optic systems modeling tool, OptSim. It delivers a single framework, engine and sets of models to study systems ranging from long-haul optical communication systems to sub-micron photonic circuits. This enables you to evaluate system-level performance in OptSim of a photonic integrated circuit (PIC) that is designed in OptSim Circuit. It is an ideal platform to study optical systems and photonic circuits that operate with coupling and feedback of different optical and electrical signal paths.

OptSim Circuit comes with a rich library of PIC elements including, but not limited to, bidirectional waveguides, bidirectional couplers and connectors, modulators, optical sources (lasers and VCSEL), and photodiodes (PIN and APD). Measurement and plotting tools are supplied, such as optical and electrical scopes, signal, spectrum and eye diagram analyzers, Q-factor and BER estimators, power meters, etc. OptSim Circuit's intuitive representation of repeating and hierarchical elements provides brevity and efficiency to the layouts. For example, you can create custom components and organize and reuse them in the PIC layout.

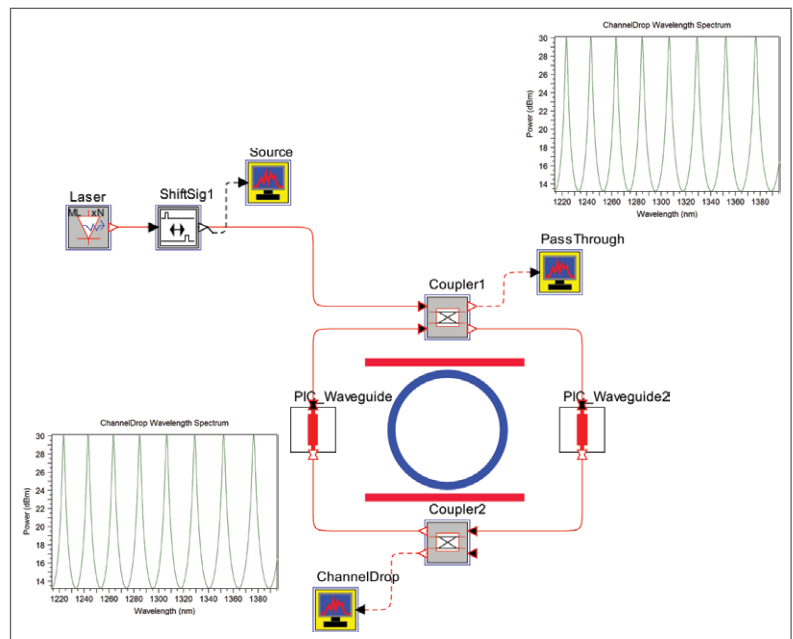


Figure 1: A ring resonator PIC, transmitted and reflected outputs

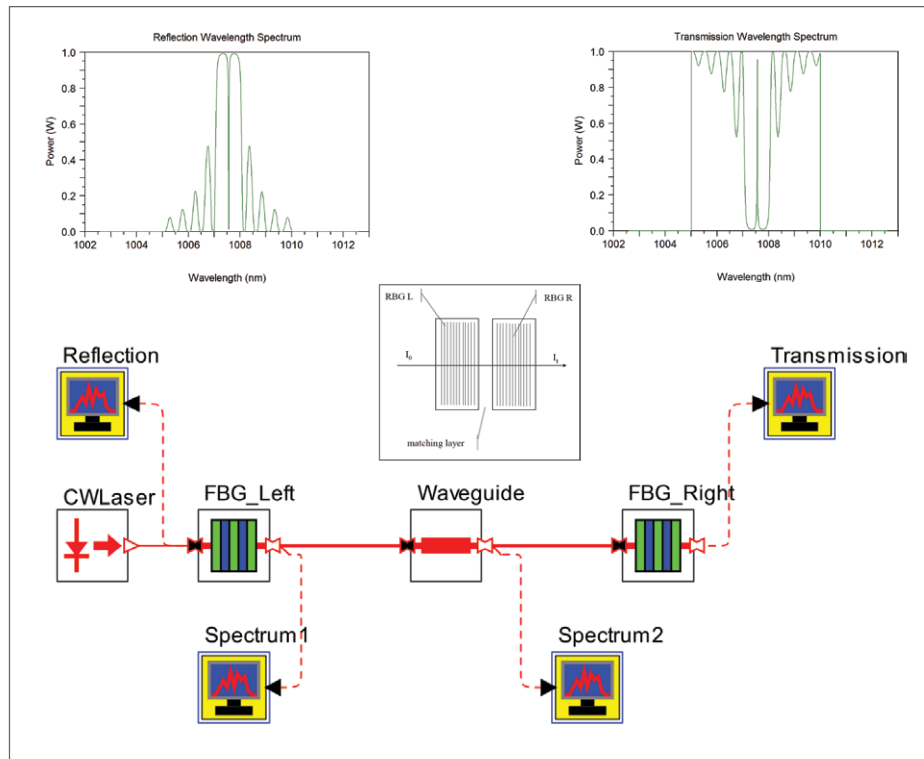


Figure 2: An optical notch filter PIC, transmitted and reflected outputs

OptSim Circuit takes into account bidirectional propagation of both optical and electrical signals. This makes it possible to model complex signal interactions such as reflections and resonance in PICs that otherwise are impossible to model in conventional systems modeling tools.

OptSim Circuit's extensive documentation includes an installation guide, user guide, models reference guide and application notes. The product also includes a number of pre-supplied PIC layouts such as single- and multi-stage micro-ring resonators, a micro-ring modulator, a gratings-based optical notch filter, and more.

If you would like to try OptSim Circuit, please contact Synopsys's Optical Solutions Group at (626) 795-9101, visit [synopsys.com/optical-solutions/rsoft](https://www.synopsys.com/optical-solutions/rsoft), or send an email to [rsoft\\_sales@synopsys.com](mailto:rsoft_sales@synopsys.com).