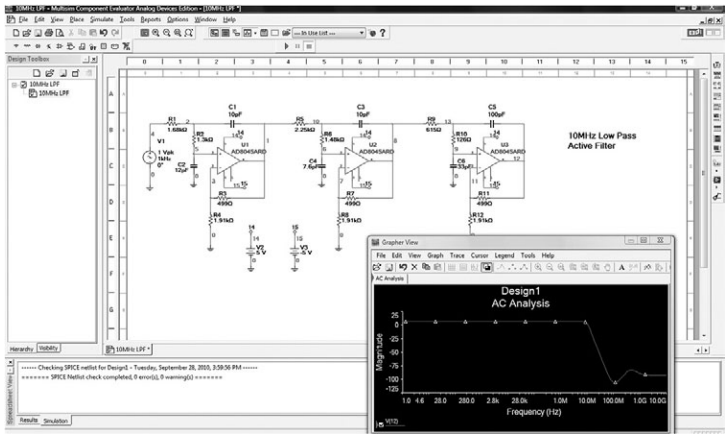
Tools

Multisim

NI Multisim™ Component Evaluator Analog Devices Edition is a free, downloadable version of National Instruments Multisim 11 circuit simulation software, tailored for evaluating ADI components. The software abstracts away the complexities of traditional SPICE simulation through intuitive analysis instruments and interactive circuit components for a highly graphical approach to design. It also combines a powerful mixed-mode simulation parser and an extensive collection of analyses. It offers a holistic approach to component evaluation. SPICE models, online example circuits, and data sheets are all connected through a single evaluation environment. Visit *www.analog.com/multisim.*

Features and Benefits

- Build simulated circuits with a library of Analog Devices operational amplifiers, switches, and voltage references
- Simulate better with SPICE parser improvements, updated BSIM models, support for advanced parameters, and enhanced digital simulation accuracy
- Improved design communication with on-page connectors and a new WYSIWYG net naming system

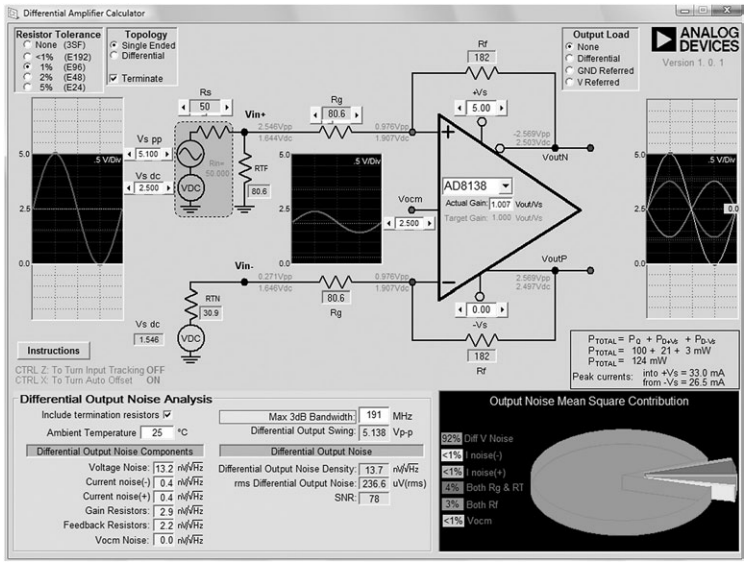


ADI DiffAmpCalc

ADI DiffAmpCalc™ performs all the required differential amplifier calculations, which reduces design risks and further speeds time to market. In addition, designers can quickly and easily calculate gain and component values of a differential amplifier circuit for terminated or unterminated loads, determine the input/output and VOCM voltage range, as well as calculate noise and power dissipation. The tool also prevents you from making mistakes by alerting you when a device parameter has been exceeded. Visit *www.analog.com/diffampcalc.*

Features and Benefits

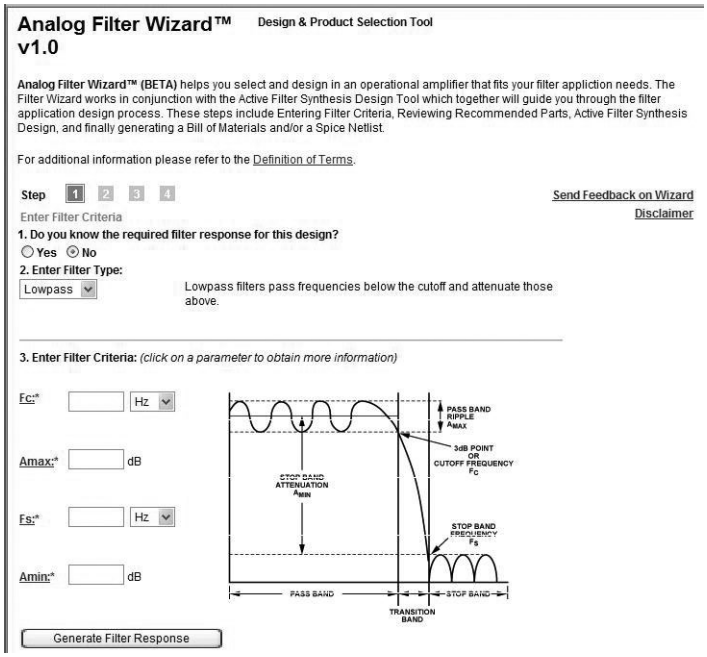
- Automate time-consuming calculations required to determine optimal levels for gain, termination resistors, power dissipation, noise output and input common-mode voltage range
- Create unlimited “what if” scenarios as data changes appear in real-time
- Intuitive GUI features an interactive dashboard.
- Use a “point and click” method for quickly and easily adding and changing data
- Supports ADI’s differential amplifier products including ADA4927, ADA4932, ADA4937, ADA4938, ADA4939, AD8132, AD8137, AD8138, AD8139, and ADA4930



Analog Filter Wizard

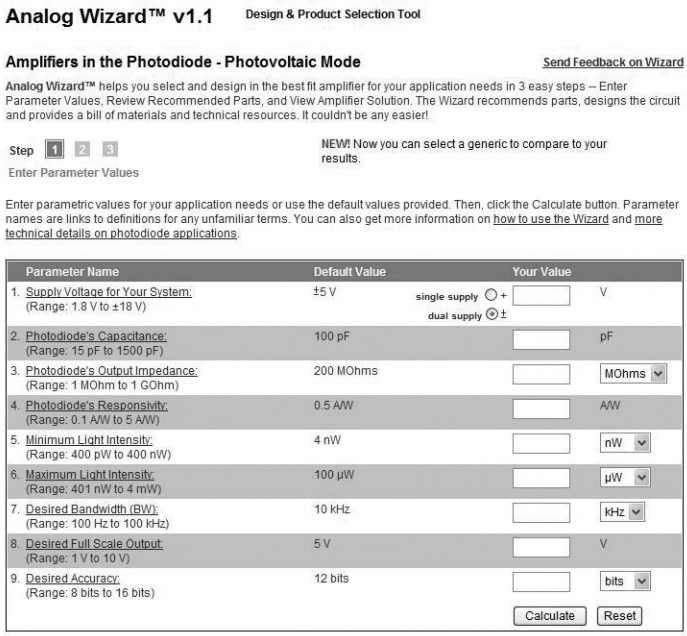
This tool helps you select and design in an operational amplifier that fits your filter appliction needs. The Filter Wizard works in conjunction with the Active Filter Synthesis Design Tool—together they will guide you through the filter application design process. The steps include entering filter criteria, reviewing recommended parts, active filter synthesis design, and finally generating a bill of materials and/or a SPICE netlist. Visit *www.analog.com/filteruserentry.*

Order active filter evaluation board for easy hardware implementation: *www.analog.com/eval-fltr.*



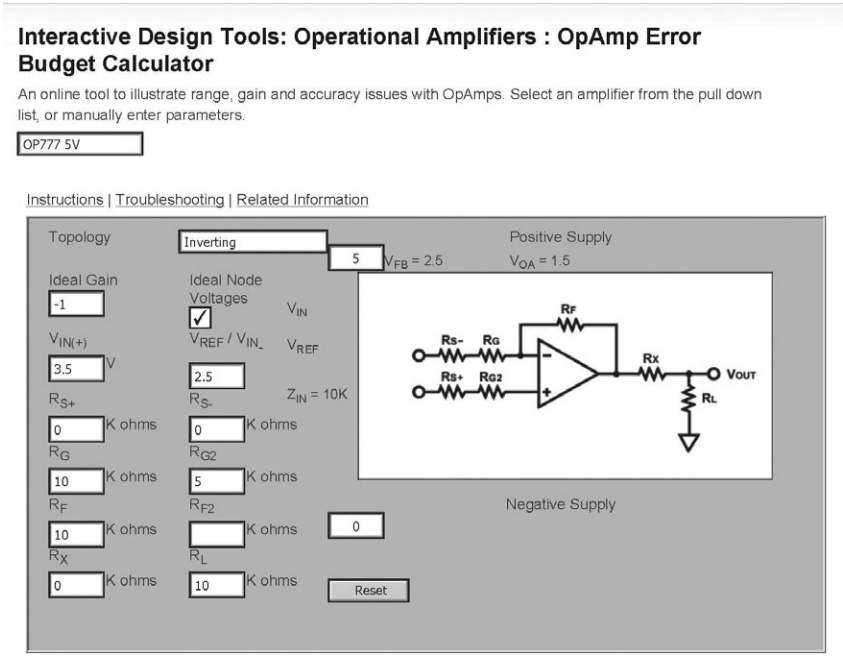
Analog Photodiode-Photovoltaic Wizard

This tool helps you select and design in the best fit amplifier for your application needs in three easy steps—enter parameter values, review recommended parts, and view amplifier solutions. The wizard recommends parts, designs the circuit, and provides a bill of materials and technical resources.



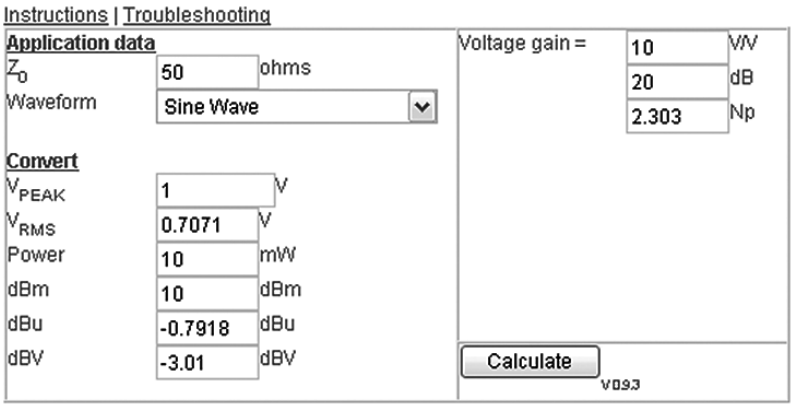
Op Amp Stability for Capacitive Loads

Driving capacitive loads can be challenging for op amps. Stability, bandwidth, and settling time are all concerns when capacitive loads are involved. This tool helps prevent and remedy any potential issues that might arise when driving capacitive loads. This tool is Web based.
Visit *www.analog.com/opamp_stability.*



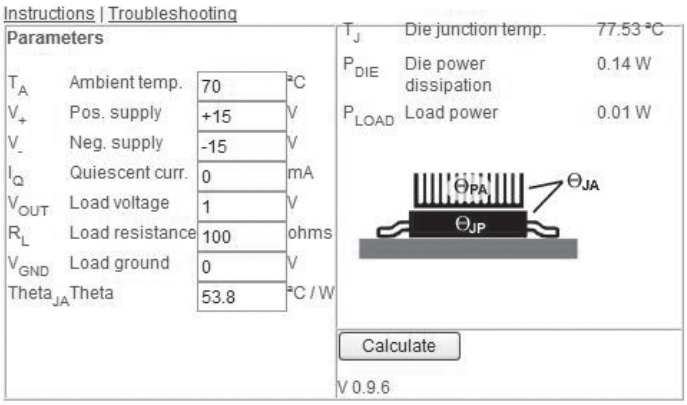
Vrms/dBm/dBu/dBV Calculator

A utility to convert between standard units of power measurement and signal strength, this calculator converts between dBm, dBu, dBV, Vpeak, and Vrms (ANSI T1.523-2001 definitions). dBm is a power ratio relative to 1 mW, dBu and dBV are voltage ratios, relative to 0.775 V and 1 V, respectively.
Visit *www.analog.com/vrms_dbm_dbu_dbv_calculator*.



Power Dissipation vs. Die Temperature Calculator

This is a calculator for estimating junction temperature from power dissipation and packaging/heatsink characteristics. It computes die power dissipation and temperature for a linearly regulated output from quantities specified under “Parameters.” It also computes power dissipated in an external load. Visit *www.analog.com/powerdis_vs_dietempcalculator.*



Evaluation Boards

Analog Devices provides a variety of amplifier evaluation boards for both high speed and precision amplifiers.

High speed evaluation boards: follow the ordering guide on each product page to order high speed op amps evaluation boards. All evaluation boards are “bare,” therefore, it is necessary to order the amplifier and the evaluation board.

Precision evaluation boards: unpopulated precision op amp evaluation boards are available to the user to evaluate precision amplifiers in multiple circuit configurations and application circuits. Op amps, resistors, capacitors, or any other components can be easily mounted on these blank boards.

For more information regarding layouts and schematics for board-specific packages, please refer to the following application notes:

- AN-692, *Application Note Universal Precision Op Amp Evaluation Board, www.analog.com/AN-692*
- AN-763, *Application Note Dual Universal Precision Op Amp Evaluation Board, www.analog.com/AN-763*
- AN-734, *Application Note Universal Precision Op Amp Evaluation Board in SC70 Package, www.analog.com/AN-734*
- AN-733, *Application Note Universal Precision Op Amp Evaluation Board in MSOP Package, www.analog.com/AN-733*
- AN-732, *Application Note Universal Precision Op Amp Evaluation Board in SOIC package, www.analog.com/AN-732*

SPICE Models

Analog Devices supplies SPICE models that closely duplicate data sheet test measurements. Each SPICE model can be found on the amplifier product page under “Tools, Software & Simulation Models.” SPICE models can also be found in the Analog Devices version and the full version of National Instruments Multisim, as well as many other circuit simulators.

Design Resources

Circuits from the Lab™ Reference Circuits

Analog Devices’ Circuits from the Lab™ reference circuits are engineered and tested for quick and easy system integration to help solve today’s analog, mixed-signal, and RF design challenges. These circuits represent easy-to-understand subsystem level building blocks intended for time-saving evaluation and easy integration.

All of our reference circuits have been thoroughly documented, and new circuits provide test data, design/layout guidelines, schematics, PCB layout files, a bill of materials, and a device driver (when applicable). Evaluation hardware is also available for most new circuits. Find operational amplifier circuits at *www.analog.com/circuits.*

ENGINEER ZONE®

EngineerZone is an online support community for engineers who are using Analog Devices amplifier products to ask questions, share knowledge and search for answers to their design questions. Collaborate with Analog Devices engineers and other designers in this open forum at *ez.analog.com.*

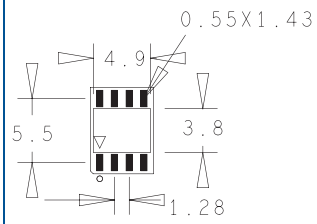
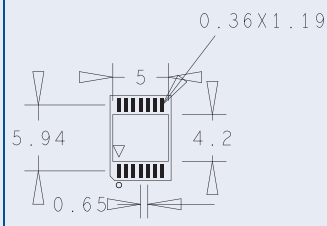
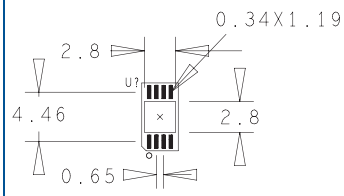
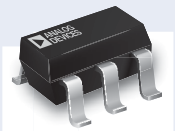
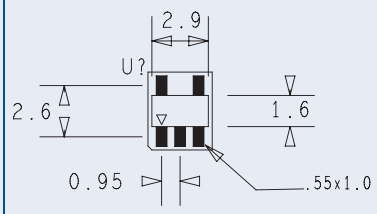
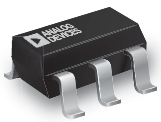
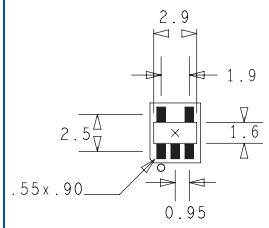
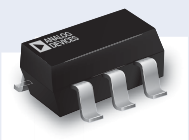
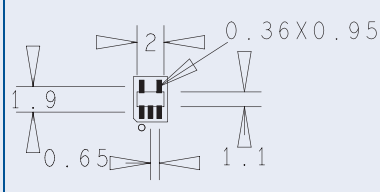
Amplifier Packaging

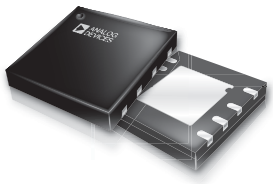
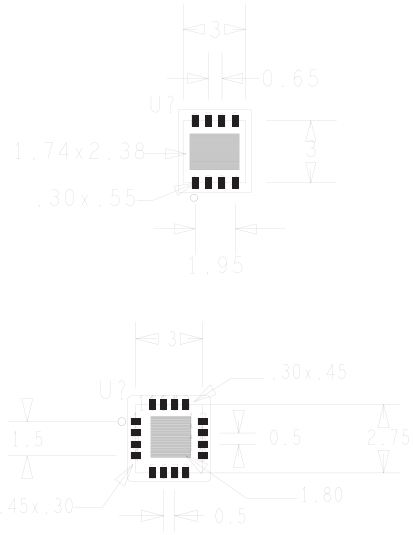
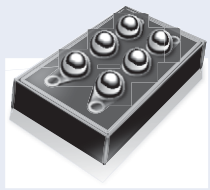
ADI offers a wide variety of plastic packages from through-hole to surface-mount applications. Many of these plastic packages provide cost-effective solutions to achieving greater board density (surface-mount packages) and high performance. Plastic packages are extensively used in many of today's applications.

Analog Devices offers molded plastic packages and the primary materials are a leadframe, die attach material, bond wire, mold compound, and a Pb-free finish. In order to provide plastic package solutions that do not sacrifice reliability or functionality, Analog Devices continues to improve on the materials used, whether focusing on leadframe composition for increased thermal conductivity, low stress mold compound used for large die applications, or low moisture absorption mold compounds for improved reliability.

Improvements in the small surface-mount packages include the introduction of the devices offered in small body size packages. The following table provides information on smaller plastic packages offered by Analog Devices.

For more information about ADI's packaging, please refer to: *www.analog.com/pcb_design_resources.*

Package Type	Package Dimensions	Package Characteristics	Package Footprint
Small outline integrated circuit (SOIC)	8-lead: 4.0 mm × 6.0 mm × 1.55 mm 14-lead: 8.65 mm × 6.0 mm × 1.55 mm 	• Surface-mount package • Solder plate Pb-free finish • Molded package • Package suffix—"R"	
Thin shrink small outline package (TSSOP)	8-lead: 3.0 mm × 6.4 mm × 1.2 mm 14-lead: 5.0 mm × 6.4 mm × 1.2 mm 	• Surface-mount package • Solder plate Pb-free finish • Molded package • Package suffix—"RU"	
Microsmall outline package (MSOP)	8-lead: 3.0 mm × 4.9 mm × 1.1 mm 10-lead: 3.0 mm × 4.9 mm × 1.1 mm 	• Surface-mount package • Solder plate Pb-free finish • Molded package • Package suffix—"RM"	
Small outline transistor package (SOT-23)	5-lead: 2.9 mm × 2.8 mm × 1.45 mm 6-lead: 2.9 mm × 2.8 mm × 1.45 mm 	• Surface-mount package • Solder plate Pb-free finish • Molded package • Package suffix—"RJ"	
Thin small outline transistor package (TSOT-23)	5-lead: 2.9 mm × 2.8 mm × 1.1 mm 	• Surface-mount package • Solder plate Pb-free finish • Molded package • Package suffix—"UJ"	
Thin shrink small outline transistor package (SC70)	5-lead: 2 mm × 2.1 mm × 1.1 mm 	• Surface-mount package • Solder plate Pb-free finish • Molded package • Package suffix—"KS"	

Package Type	Package Dimensions	Package Characteristics	Package Footprint
Lead frame chip scale package (LFCSP)	8-lead: 2 mm × 2 mm × 0.55 mm; 0.5 mm pitch 8-lead: 3 mm × 3 mm × 0.75 mm; 0.5 mm pitch 8-lead: 3 mm × 3 mm × 0.85 mm; 0.5 mm pitch 10-lead: 1.3 mm × 1.6 mm × 0.55 mm; 0.4 mm pitch 10-lead: 2 mm × 2 mm × 0.55 mm; 0.5 mm pitch 16-lead: 3 mm × 3 mm × 0.75 mm; 0.5 mm pitch 16-lead: 4 mm × 4 mm × 0.75 mm; 0.65 mm pitch 	• Surface-mount package • Leadless package • Solder plate Pb-free finish • Molded package • Exposed pad for thermal performance • Package suffix – “CP”	
Wafer level chip scale package (WLCSP)	6-ball: 0.905 mm × 1.385 mm × 0.6 mm; 0.4 mm pitch 8-ball: 1.42 mm × 1.42 mm × 0.595 mm; 0.5 mm pitch 9-ball: 1.21 mm × 1.22 mm × 0.6 mm; 0.4 mm pitch 14-ball: 1.46 mm × 2.96 mm × 0.595 mm; 0.5 mm pitch 	• Surface-mount package • Ball array • Solder ball Pb-free finish • Package suffix – “CB”