

Getting Started with iSim and iSim:PE

Introduction

Intersil provides a powerful web-based simulation tool called iSim™. This software package gives the user a web based tool for designing and simulating various circuits used in Power Management and Op-Amp applications. The simulation results provide a good baseline analysis of a device's in-circuit performance. To compliment iSim, Intersil's interactive simulation tool offers an offline, more robust, fully realized simulation package called iSim:PE (Personal Edition). This document details the steps for a first time user to download, install, and initialize the simulator on a personal computer. Although the steps documented were performed on a computer running the Windows® XP operating system, these steps should be similar on any computer that meets the system requirements of the installed software (see Figure 5).

iSim Access and Registration

The iSim simulation tool is accessible from Intersil's home web page at www.intersil.com under "iSim Online Design Simulation" or by going directly to the iSim home page at <http://www.intersil.com/iSim>. Figure 1 is a snap shot of the iSim landing page, first time users of this system will need to complete a brief registration. Those with existing accounts

can log in if they are not using the registered computer. Both the Login and Register links are on the upper right portion of the page next to the search window (refer to Figure 1).

Note: The presence of pop-up blockers in the browser interface may interfere with the registration process. If a pop-up blocker is installed, and the registration process is impeded, simply disable the pop-up blocker during the registration process and then enable it again after registration is complete.

Utilizing iSim Online

Once logged in, the browser will be directed back to the iSim home page, which has been modified as part of an all-system upgrade. The number of sub-categories under Power Management and Operational Amplifiers has been increased to help the user build more application specific designs. Select any of the applications and enter the desired input and output specifications in the Solution Selector fields. Then click the Search button, a list of devices that meet the specifications will be generated in a table of ICs which meet the initial conditions specified (see Figure 2). If no solutions were generated from the first sort, the user will be prompted to adjust their inputs. Then resubmit.

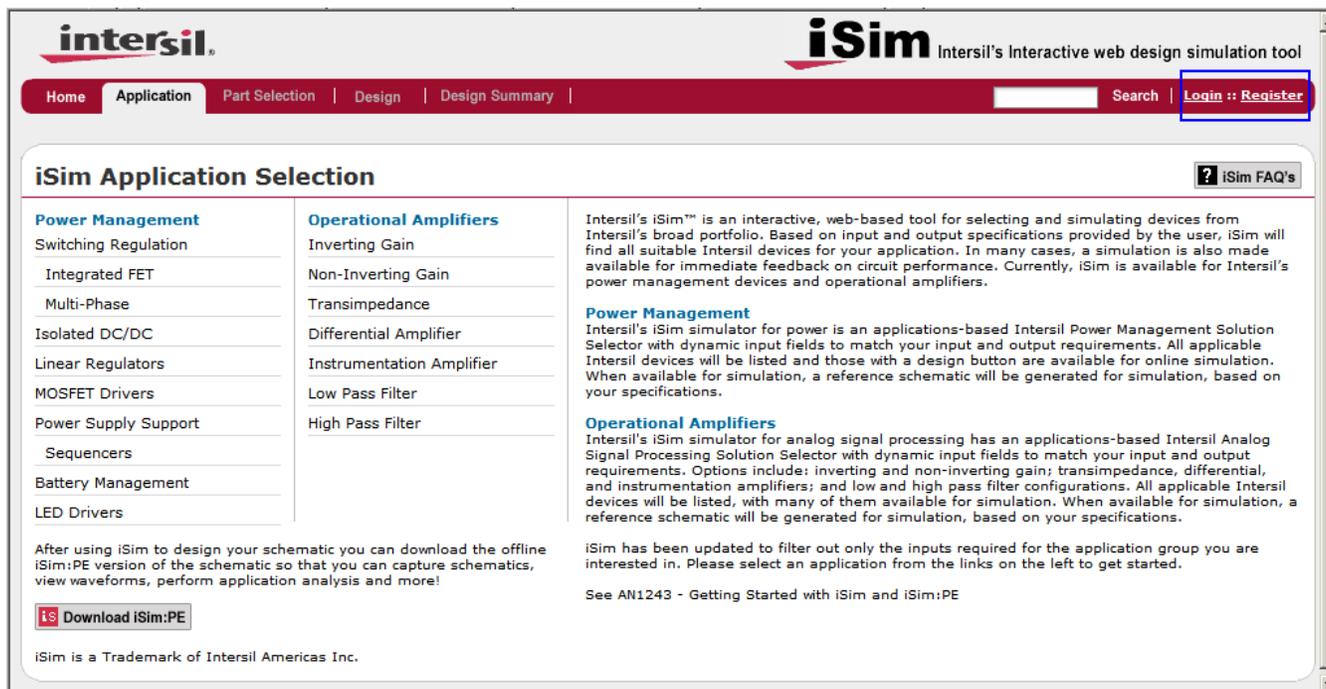


FIGURE 1. iSim HOME PAGE

iSim	Device	Description	Control Mode	UVLO Rising (V)	UVLO Falling (V)	VBIAS (max) (V)	No-Load Operating Current (mA)	PWM Outputs	Max Duty Cycle (%)	Package(s)
	ISL6401	Synchronizing Current Mode PWM for Subscriber Line Interface Circuits (SLICs)	Peak Current Mode	4.1	3.6	7	3.7	1	50	View All
	ISL6721	Flexible Single Ended Current Mode PWM Controller	Peak Current Mode	8.25	7.7	20	4.5	1	100	View All
	ISL6842	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	14.4	8.8	20	2.3	1	100	View All
	ISL6843	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	8.4	7.6	20	2.3	1	100	View All
	ISL6844	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	14.4	8.8	20	2.3	1	50	View All
	ISL6845	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	8.4	7.6	20	2.3	1	50	View All
	ISL6740	Flexible Double-Ended Voltage-Mode PWM Controller	Voltage Mode	7.25	6.75	20	5	2	100	View All
	ISL6740A	Flexible Double-Ended Voltage-Mode PWM Controller with Voltage Feed Forward	Voltage Mode	7.25	6.75	20	5	2	100	16 Ld TSSOP
	ISL6741	Flexible Double-Ended Peak-Current-Mode PWM Controller	Peak Current Mode	7.25	6.75	20	5	2	100	View All
	ISL6742	Advanced Double-Ended PWM Controller with Synchronous Rectifier Control and Average Current Limit	Voltage, Peak Current, or Average Current Mode	8.75	7	20	5	4	100	16 Ld QSQP

FIGURE 2. SORTABLE PRODUCT SELECTION TABLE

Click on the  icon next to a device number shown in the table of solutions in order to launch the online simulator iSim. The schematic for the selected reference design is automatically loaded. The simulator features a schematic that is interactive, for example the user can change the values of some components. In all cases, AC analysis in the form of a Bode Plot is available. Steady-State and Transient Response analyses are also available. New features added in the upgrade include:

1. Re-Design tab that allows you to change the input and output specifications without the necessity to start over.
2. Links to Samples, Evaluation Board (if available), downloadable BOM, and Intersil's iBuy Direct (see Figure 3).
3. Design summary page with schematic, user's note, simulation results, BOM, and a PDF link that will allow you to save and/or print (see Figure 4).

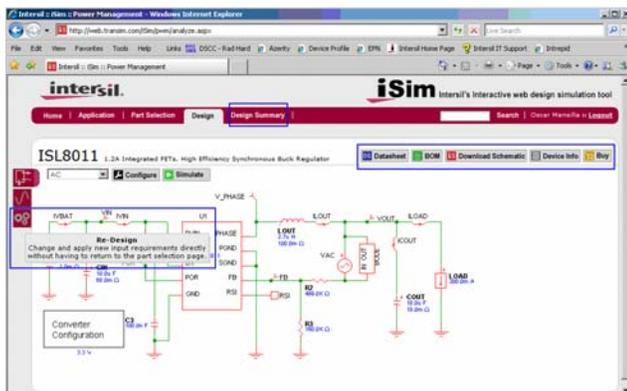


FIGURE 3. DESIGN SCHEMATIC PAGE

iSim:PE Download and Installation

As previously mentioned, iSim is a web-based tool, hosted on a remote server. Therefore the user's control over the schematic is somewhat restricted to keep the simulation in real time. However, the locally installed simulator iSim:PE offers a much more robust simulation environment. The link to download iSim:PE is located in the iSim home page and the new design summary page (See Figures 1 and 4).

Clicking on the icon opens a window that lists the system requirements for the software, as well as a short list of installation instructions (See Figure 5). The software downloaded is the installer executable. In the unlikely event that the simulator becomes corrupted during use, the user can reinstall the software from the local installer executable.

FIGURE 4. DESIGN SUMMARY PAGE



FIGURE 5. iSim:PE SYSTEM REQUIREMENTS

Pay close attention to the system requirements, as this tool will not properly install on systems running pre Windows 2000 or Windows NT operating systems. Also note the software will not install on non-Windows based platforms. Click on the download link again, and a standard download window pops up. Select Save and download the executable file. The file size is roughly 12MB, so download time should be short on most systems. Make sure to note the location of the download. Close the install window once the download is complete. Open Windows Explorer and navigate to the executable file. Double click the file to initiate the install wizard. The computer will not have to be restarted in order to complete the install. The first window contains the licensing agreement. The second window will prompt the user for a customer name and company name. The third window (See Figure 6) provides the user with a suggested file location. Either accept the default location (recommended), or choose a different location and click Next.

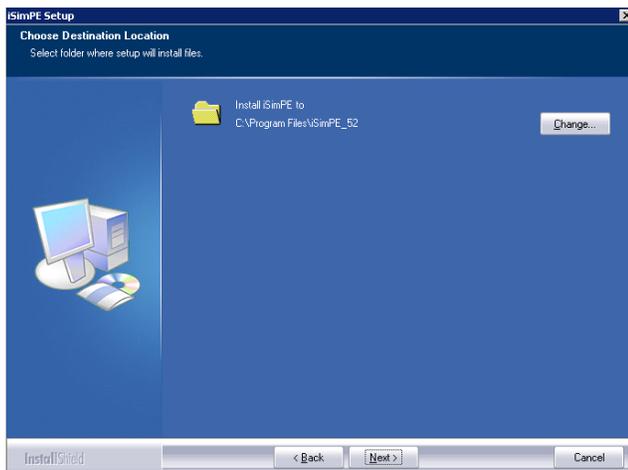


FIGURE 6. DEFAULT iSim:PE FILE CREATED AT INSTALL

At this point, the bulk of the installation takes place. Once the installation is complete, an iSim:PE icon should be located on the menu found under the Start button.

During the first activation of iSim:PE a window opens that refers to the file extension used for the schematics. The simulator uses a *.sxsch file extension for the schematics. This file extension is most likely not used by any other applications on the computer, and the user is asked if this file extension should always be associated with iSim:PE. Select yes, unless there are known conflicts such as the presence of SIMetrix/SIMPLIS® software on the same system. This is the software platform for iSim:PE, and the same file extension is used for both. In this special case, the user could use the automatic file extension association but must note that

SIMetrix/SIMPLIS® *.sxsch files will not be able to run in iSim:PE. Instead, the schematic files must be opened from within the iSim:PE Command Shell. Once the iSim:PE command shell window opens (Figure 7), iSim:PE is now successfully downloaded, installed, and initiated.

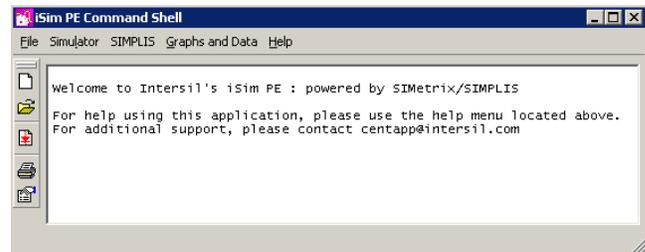


FIGURE 7. iSim:PE COMMAND SHELL

Schematic Download for iSim:PE

The link to download a schematic from iSim to iSim:PE is located on the Design Schematic page, in the tool bar on the upper right of the schematic (See Figure 3). It is only necessary to download iSim:PE once for use with any of the simulations, whether they are from the Power Management or Operational Amplifier side of iSim. The simulator package is the same for all models. Click on the link to download the schematic. When the download window opens, take notice of the download location for the schematic. Either use the prompted location, or choose a different location. Once the file is downloaded, close the download window. Open the iSim:PE command shell (if it is not already open), and select File > Open Schematic. Then select the schematic from the menu. It should be display in a new window. At this point, the user is ready to begin simulations. For more information on the use of the simulator itself, consult the Help menu on the Command Shell menu bar.

There is an important relationship between iSim online and iSim:PE. When a schematic is pulled down from iSim to iSim:PE, the initial conditions for some of the passive components are downloaded as well. The online simulation is in a quiescent or idle mode, and the device model assumes the circuit is powered up and ready for analysis. If a change is made to the schematic in iSim, it is possible that the initial conditions for the circuit change. Therefore it is necessary to capture that change for download to iSim:PE. To ensure that the model is properly encoded, it is necessary to execute the online simulation before the schematic is downloaded for use in iSim:PE.

Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation or any other use of the circuits, software, and information in the design of your product or system. Renesas Electronics disclaims any and all liability for any losses and damages incurred by you or third parties arising from the use of these circuits, software, or information.
2. Renesas Electronics hereby expressly disclaims any warranties against and liability for infringement or any other claims involving patents, copyrights, or other intellectual property rights of third parties, by or arising from the use of Renesas Electronics products or technical information described in this document, including but not limited to, the product data, drawings, charts, programs, algorithms, and application examples.
3. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
4. You shall not alter, modify, copy, or reverse engineer any Renesas Electronics product, whether in whole or in part. Renesas Electronics disclaims any and all liability for any losses or damages incurred by you or third parties arising from such alteration, modification, copying or reverse engineering.
5. Renesas Electronics products are classified according to the following two quality grades: "Standard" and "High Quality". The intended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below.
"Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; industrial robots; etc.
"High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control (traffic lights); large-scale communication equipment; key financial terminal systems; safety control equipment; etc.
Unless expressly designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not intended or authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems; surgical implantations; etc.), or may cause serious property damage (space system; undersea repeaters; nuclear power control systems; aircraft control systems; key plant systems; military equipment; etc.). Renesas Electronics disclaims any and all liability for any damages or losses incurred by you or any third parties arising from the use of any Renesas Electronics product that is inconsistent with any Renesas Electronics data sheet, user's manual or other Renesas Electronics document.
6. When using Renesas Electronics products, refer to the latest product information (data sheets, user's manuals, application notes, "General Notes for Handling and Using Semiconductor Devices" in the reliability handbook, etc.), and ensure that usage conditions are within the ranges specified by Renesas Electronics with respect to maximum ratings, operating power supply voltage range, heat dissipation characteristics, installation, etc. Renesas Electronics disclaims any and all liability for any malfunctions, failure or accident arising out of the use of Renesas Electronics products outside of such specified ranges.
7. Although Renesas Electronics endeavors to improve the quality and reliability of Renesas Electronics products, semiconductor products have specific characteristics, such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Unless designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not subject to radiation resistance design. You are responsible for implementing safety measures to guard against the possibility of bodily injury, injury or damage caused by fire, and/or danger to the public in the event of a failure or malfunction of Renesas Electronics products, such as safety design for hardware and software, including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult and impractical, you are responsible for evaluating the safety of the final products or systems manufactured by you.
8. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. You are responsible for carefully and sufficiently investigating applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive, and using Renesas Electronics products in compliance with all these applicable laws and regulations. Renesas Electronics disclaims any and all liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
9. Renesas Electronics products and technologies shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You shall comply with any applicable export control laws and regulations promulgated and administered by the governments of any countries asserting jurisdiction over the parties or transactions.
10. It is the responsibility of the buyer or distributor of Renesas Electronics products, or any other party who distributes, disposes of, or otherwise sells or transfers the product to a third party, to notify such third party in advance of the contents and conditions set forth in this document.
11. This document shall not be reprinted, reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
12. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products.
(Note 1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its directly or indirectly controlled subsidiaries.
(Note 2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

(Rev.4.0-1 November 2017)



SALES OFFICES

Renesas Electronics Corporation

<http://www.renesas.com>

Refer to "<http://www.renesas.com/>" for the latest and detailed information.

Renesas Electronics America Inc.
1001 Murphy Ranch Road, Milpitas, CA 95035, U.S.A.
Tel: +1-408-432-8888, Fax: +1-408-434-5351

Renesas Electronics Canada Limited
9251 Yonge Street, Suite 8309 Richmond Hill, Ontario Canada L4C 9T3
Tel: +1-905-237-2004

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K
Tel: +44-1628-651-700, Fax: +44-1628-651-804

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-6503-0, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
Room 1709 Quantum Plaza, No.27 ZhichunLu, Haidian District, Beijing, 100191 P. R. China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 301, Tower A, Central Towers, 555 Langao Road, Putuo District, Shanghai, 200333 P. R. China
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

Renesas Electronics Hong Kong Limited
Unit 1601-1611, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2265-6688, Fax: +852-2886-9022

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei 10543, Taiwan
Tel: +886-2-8175-9600, Fax: +886-2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre, Singapore 339949
Tel: +65-6213-0200, Fax: +65-6213-0300

Renesas Electronics Malaysia Sdn.Bhd.
Unit 1207, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics India Pvt. Ltd.
No.777C, 100 Feet Road, HAL 2nd Stage, Indiranagar, Bangalore 560 038, India
Tel: +91-80-67208700, Fax: +91-80-67208777

Renesas Electronics Korea Co., Ltd.
17F, KAMCO Yangjae Tower, 262, Gangnam-daero, Gangnam-gu, Seoul, 06265 Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5338