

Introduction

The ISL70444SEH features four low-power amplifiers optimized to provide maximum dynamic range. These op amps feature a unique combination of rail-to-rail operation on the input and output as well as a slew enhanced front-end that provides ultra fast slew rates. They also offer low power, low offset voltage, and low temperature drift, making it ideal for applications requiring both high DC accuracy and AC performance. Manufactured in Intersil's PR40 SOI Process, the ISL70444SEH is immune to latch-up.

The SPICE model for the ISL70444SEH Rad Hard Quad Op Amp, was developed to help system designers evaluate the operation of this IC, prior or in conjunction with proto-typing a system design. This model accurately simulates typical performance characteristics at room temperature (+25 °C), such as frequency analysis, noise analysis, and slew rate analysis. Behaviors not supported are the bias current cancellation circuit and some temperature analysis. Functionality has been tested on ORCAD 10.0 and CADENCE ORCAD 16.5. Other SPICE simulators may be used, however, the model may require translation.

Reference Documents

- ISL70444SEH Data Sheet; [FN8411](#)
- ISL70444SEH SMD [5962-13214](#)

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Project Files

The zip file: **ISL70444SEH.zip** contains the project file modelcreator.opj to be used in ORCAD simulator. The project file has the model definition file (.lib), symbol file (.olb) and the schematic page as shown in Figure 1. The simulation profile is set up for AC analysis and sweeps parameter RF for various gain configurations. Figures 2 through 9 show a comparison of the simulation results versus bench results for various tests and it can be seen that the model approximates the IC very well.

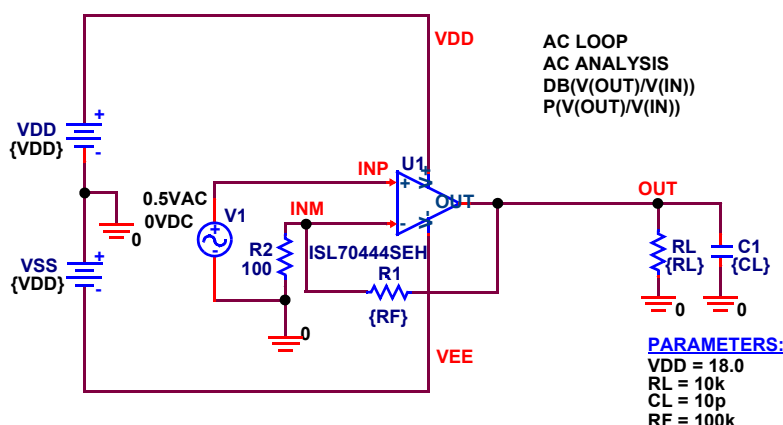


FIGURE 1. BASIC NON-INVERTING GAIN CONFIGURATION IN ORCAD SPICE FOR AC ANALYSIS

Simulation Performance Curves

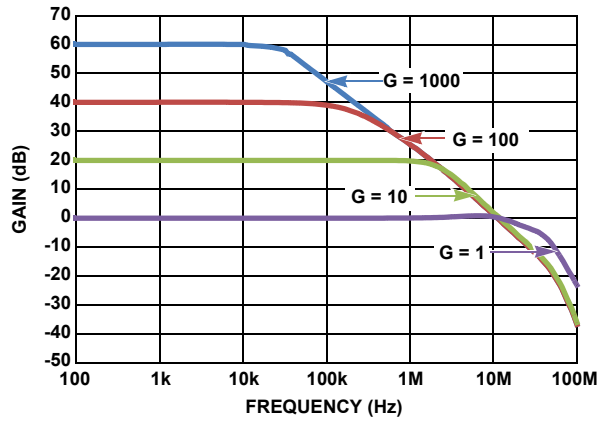
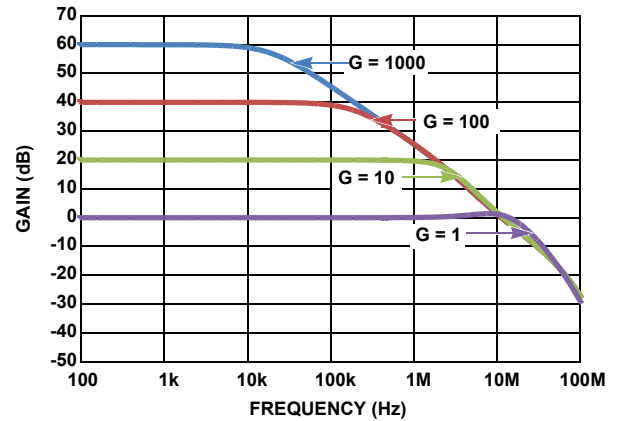
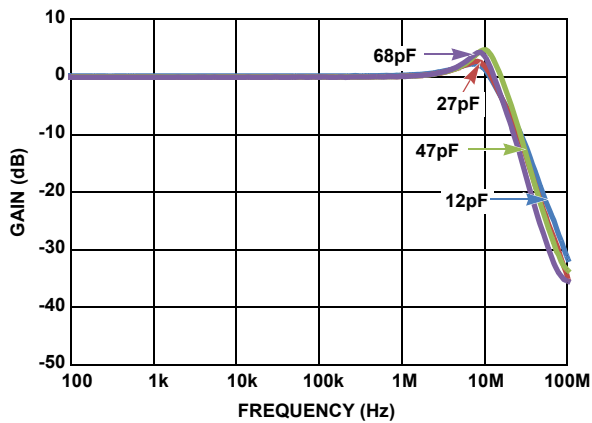
FIGURE 2. FREQUENCY RESPONSE vs GAIN, $V_S = \pm 18V$ FIGURE 3. SIMULATED FREQUENCY RESPONSE vs GAIN, $V_S = \pm 18V$ 

FIGURE 4. FREQUENCY RESPONSE vs CL

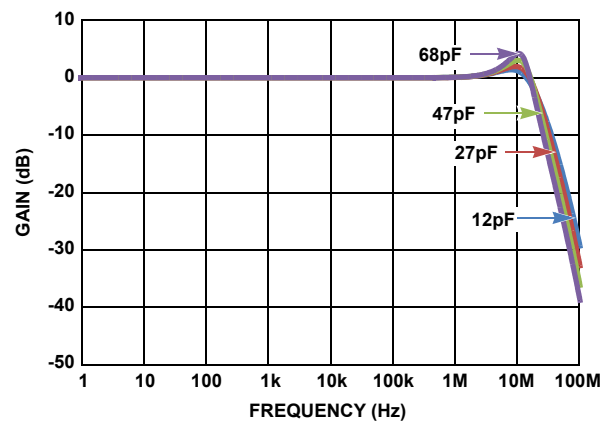


FIGURE 5. SIMULATED FREQUENCY RESPONSE vs CL

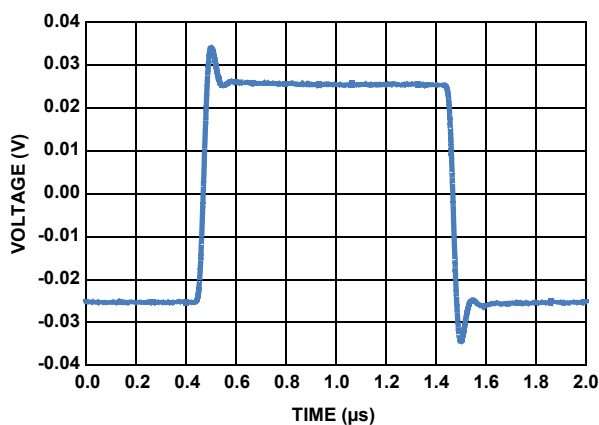


FIGURE 6. SMALL SIGNAL RESPONSE

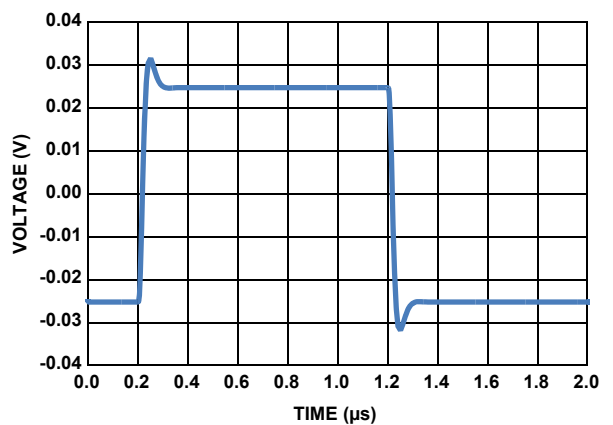


FIGURE 7. SIMULATED SMALL SIGNAL RESPONSE

Simulation Performance Curves (Continued)

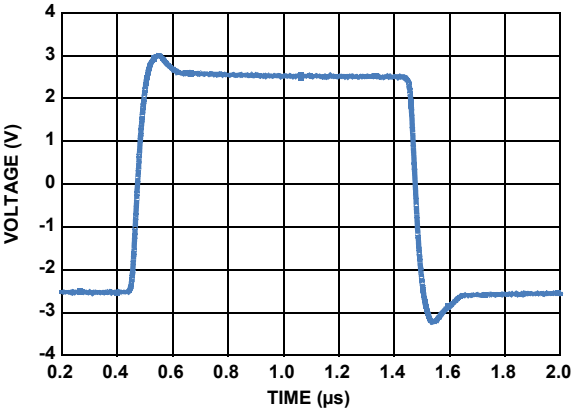


FIGURE 8. LARGE SIGNAL RESPONSE

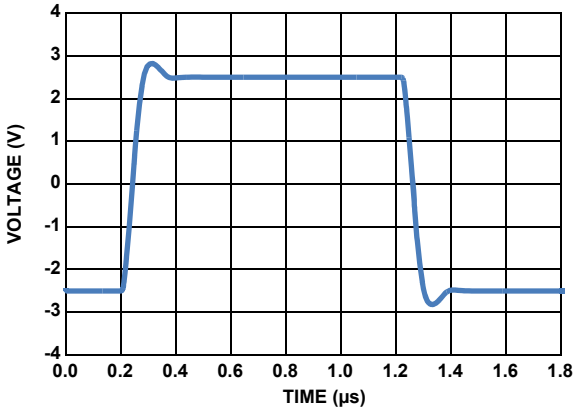


FIGURE 9. SIMULATED LARGE SIGNAL RESPONSE

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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