ISL28213/14MSOPEVAL2Z

ISL28213/14MSOPEVAL2Z Evaluation Board

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Introduction

The ISL28213/14MSOPEVAL2Z evaluation board is a design platform containing all the circuitry needed to characterize critical performance parameters of the ISL28213 and ISL28214 operational amplifiers, using a variety of user defined test circuits.

The ISL28213 and ISL28214 CMOS operational amplifiers feature low power consumption, low input bias current, and rail-to-rail input and output drive capability. They are designed to operate with a single lithium cell or two Ni_Cd batteries.

Reference Documents

- ISL28213/14MSOPEVAL2Z Evaluation Board User's Guide
- ISL28213 Data Sheet, FN6728
- ISL28214 Data Sheet, FN6800

Evaluation Board Key Features

The ISL28213/14MSOPEVAL2Z is designed to enable the IC to operate from a single supply, +2.4VDC to +5.5VDC or from split supplies, ±1.2VDC to ±2.75V. The board is configured for a dual op amp connected for differential input with a closed loop gain of 10. A single external reference voltage (VREF) pin and provisions for a user-selectable voltage divider - filter are included.

Power Supplies (Figure 1)

External power connections are made through the +V, -V, VREF and Ground connections on the evaluation board. For single supply operation, the -V and Ground pins are tied together to the power supply negative terminal. For split supplies, +V and -V terminals

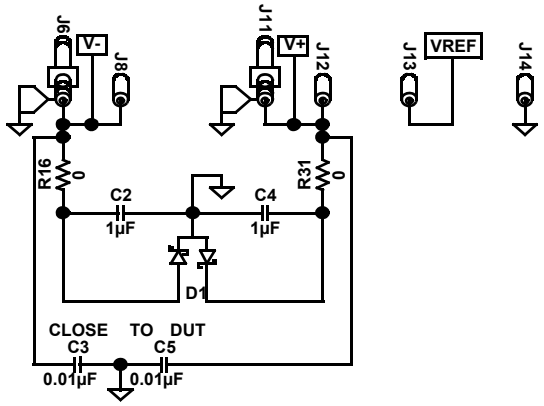

FIGURE 1. POWER SUPPLY CIRCUIT

connect to their respective power supply terminals. De-coupling capacitors C2 and C4 connect to their respective supplies through R_{16} and R_{31} 0Ω resistors. These resistors are 0Ω, but can be changed by the user to provide additional power supply filtering. Two additional capacitors, C3 and C5, are connected close to the DUT to filter out high frequency noise. Anti-reverse diode D1 protects the circuit in the case of accidental polarity reversal.

Amplifier Configuration

(Figure 2)

The schematic of 1/2 of the op-amp with the components supplied is shown in Figure 2. The circuit implements a differential input amp with a closed loop gain of 10. The circuit can operate from a single supply or from dual supplies. The VREF pin must be connected to ground to establish a ground referenced input for dual supply operation, or can be externally set to any reference level for single supply operation. VREF should not be left floating.

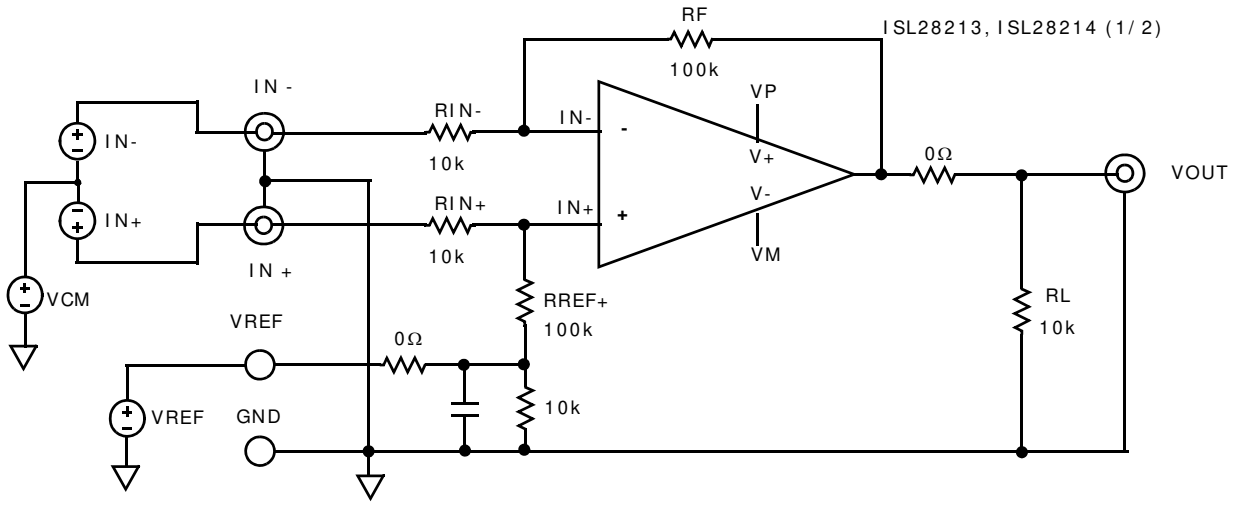

FIGURE 2. BASIC AMPLIFIER CONFIGURATION

User-Selectable Options

(Figures 3 and 4)

Component pads are included to enable a variety of user-selectable circuits to be added to the amplifier VREF, inputs, outputs, and the amplifier feedback loops. The inputs (see Figure 3) have additional resistor, capacitor, and jumper placements for loading and/or measurement of frequency sensitive parameters.

The outputs (see Figure 4) have a 10kΩ load resistor to ground and have additional resistor and capacitor placements for loading.

NOTE: Operational amplifiers are sensitive to output capacitance and may oscillate. In the event of oscillation, reduce output capacitance by using shorter cables, or add a resistor in series with the output.

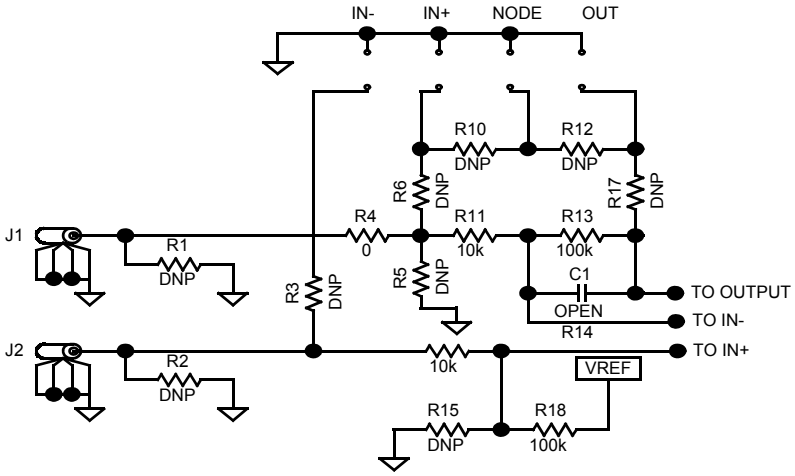

FIGURE 3. INPUT STAGE (1/2)

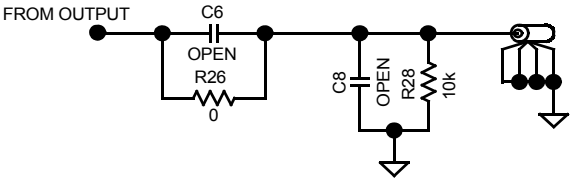

FIGURE 4. OUTPUT STAGE (1/2)

ISL28213/14MSOPEVAL2Z Components Parts List

DEVICE #	DESCRIPTION	COMMENTS
C2, C4	CAP-TANTALUM, SMD, 1.0µF, 50V, 10%, LOW ESR, ROHS	Power Supply Decoupling
C3, C5	CAP, SMD, 0603, 0.1µF, 25V, 10%, X7R, ROHS	Power Supply Decoupling
C1, C6-C10	CAP, SMD, 0603, DNP-PLACE HOLDER, ROHS	User Selectable Capacitors - not populated
D1	DIODE-SCHOTTKY BARRIER, SMD, SOT-23, 3P, 40V, ROHS	Reverse Power Protection
U1 (ISL28213FUZ)	ISL28213FUZ-T7, IC-RAIL-TO-RAIL OP AMP, MSOP, ROHS	
U1 (ISL28214FUZ)	ISL28214FUZ-T7, IC-RAIL-TO-RAIL OP AMP, MSOP, ROHS	
R30, R32, R34-R36	RESISTOR, SMD, 0603, 0.1%, MF, DNP-PLACE HOLDER	User Selectable Resistors - not populated
R4, R16, R25-R27, R31	RES, SMD, 0603, 0Ω, 1/10W, TF, ROHS	0Ω User Selectable Resistors
R11, R14, R21, R24, R28, R29	RES, SMD, 0603, 10k, 1/10W, 1%, TF, ROHS	Gain and Other User Selectable Resistors
R13, R18, R19, R23	RES, SMD, 0603, 100k, 1/10W, 1%, TF, ROHS	Gain Resistors

ISL28213/14MSOPEVAL2Z

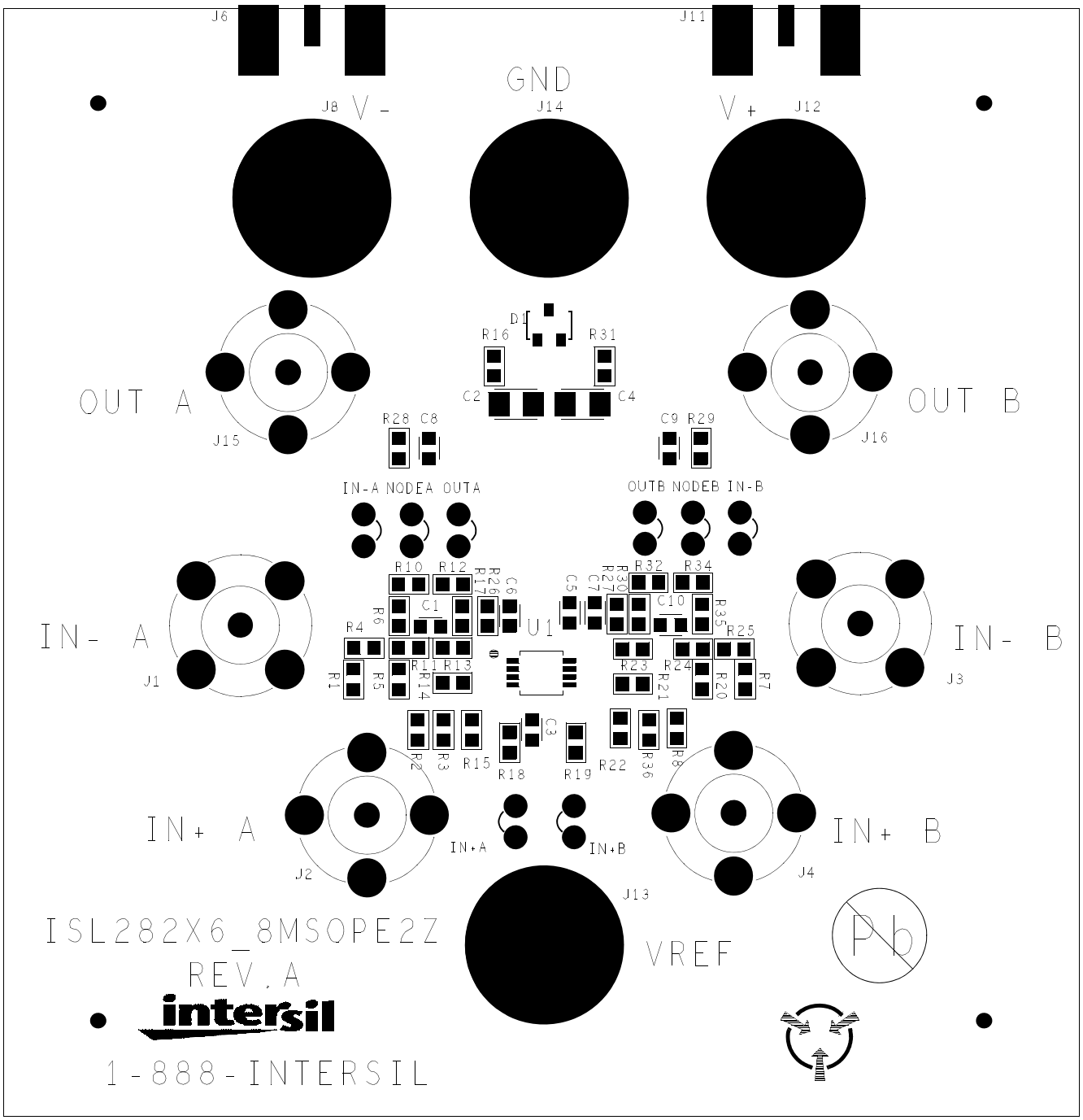

FIGURE 5. ISL28213/14MSOPEVAL2Z EVALUATION BOARD

ISL28213/14MSOPEVAL2Z Schematic Diagram

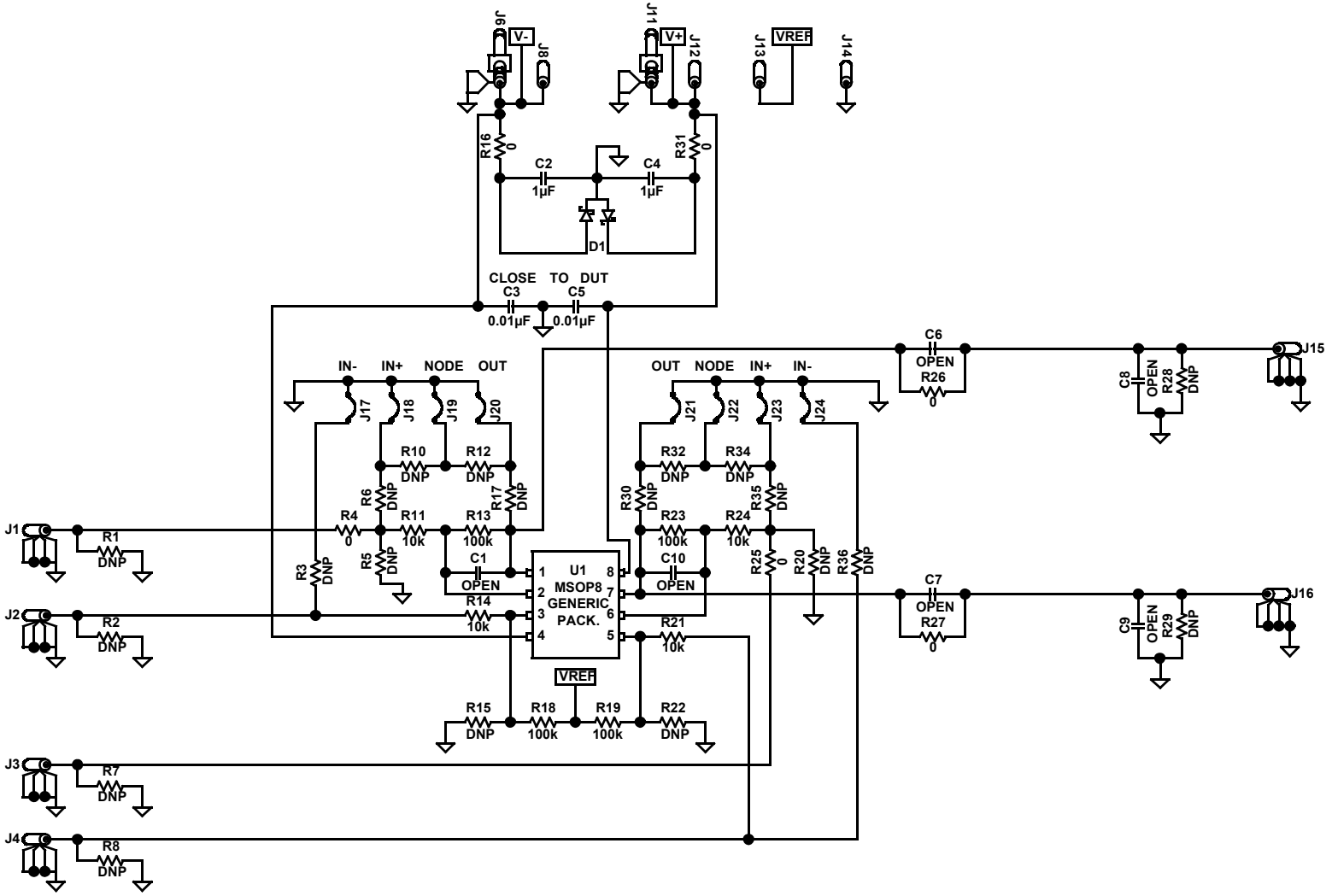

FIGURE 6.

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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

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