## Introduction

The ISL282x6EVAL1Z evaluation board is a design platform containing all the circuitry needed to characterize critical performance parameters of the ISL282x6 operational amplifiers in both MSOP-8 and SOIC-8 packages, using a variety of user defined test circuits.

The ISL28236 and ISL28246 high-speed operational amplifiers feature low power consumption, while ISL28256 and ISL28266 operational amplifiers feature ultra-low power consumption. All op amps have rail-to-rail output drive capability and are designed to operate with a single lithium cell or two Ni_Cd batteries.

## Reference Documents

- ISL28236 Data Sheet
- ISL28246 Data Sheet
- ISL28256 Data Sheet
- ISL28266 Data Sheet


## Evaluation Board Key Features

The ISL282x6EVAL1Z is designed to enable the IC to operate from a single supply, +2.4 VDC to +5.5 VDC or from split supplies, $\pm 1.2 \mathrm{VDC}$ to $\pm 2.75 \mathrm{~V}$. 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 $+\mathrm{V},-\mathrm{V}$, VREF and Ground connections on the evaluation board.


FIGURE 1. POWER SUPPLY CIRCUIT
User selectable SMA edge connectors are also provided for +V and -V . 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 connect to their respective power supply terminals. De-coupling capacitors $\mathrm{C}_{2}$ and $\mathrm{C}_{4}$ connect to their respective supplies through $\mathrm{R}_{16}$ and $R_{31} 0 \Omega$ resistors. These resistors are $0 \Omega$ but can be changed by the user to provide additional power supply filtering, or to reduce the voltage rate-of-rise to less than $\pm 1 \mathrm{~V} / \mu \mathrm{s}$. Two additional capacitors, $\mathrm{C}_{3}$ and $\mathrm{C}_{5}$ are connected close to the part to filter out high frequency noise.
Anti-reverse diode $D_{1}$ 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


FIGURE 2. BASIC AMPLIFIER CONFIGURATION
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.

## 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 (Figure 3) have additional resistor and capacitor, and jumper placements for loading and/or measurement of frequency sensitive parameters.

FIGURE 3. INPUT STAGE (1/2)


The outputs (see Figure 4) have a $10 \mathrm{k} \Omega$ 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 4. OUTPUT STAGE (1/2)

ISL282x6EVAL1Z Components Parts List

| DEVICE \# | DESCRIPTION | COMMENTS |
| :---: | :---: | :---: |
| C2, C4 | CAP-TANTALUM, SMD, D, 4.7 $\mu \mathrm{F}, 50 \mathrm{~V}, 10 \%$, LOW ESR, ROHS | Power supply decoupling |
| C3, C5 | CAP, SMD, 0603, $0.1 \mu \mathrm{~F}, 25 \mathrm{~V}, 10 \%$, X7R, ROHS | Power supply decoupling |
| C1, C6 thru 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 (ISL28236FUZ) | IC-5 MHz RRIO OP AMP, 8P, MSOP, ROHS |  |
| U1 (ISL28236FBZ) | IC-5 MHz RRIO OP AMP, 8P, SOIC, ROHS |  |
| U1 (ISL28246FUZ) | IC-5 MHz RRIO OP AMP, 8P, MSOP, ROHS |  |
| U1 (ISL28246FBZ) | IC-5 MHz RRIO OP AMP, 8P, SOIC, ROHS |  |
| U1 (ISL28256FUZ) | IC-39 4 A RRIO OP AMP, 8P, MSOP, ROHS |  |
| U1 (ISL28256FBZ) | IC-39 A RRIO OP AMP, 8P, SOIC, ROHS |  |
| U1 (ISL28266FUZ) | IC-39 4 A RRIO OP AMP, 8P, MSOP, ROHS |  |
| U1 (ISL28266FBZ) | IC-39 A R RIO OP AMP, 8P, SOIC, ROHS |  |
| R30, R32, R34 thru R36 | RESISTOR, SMD, 0603, 0.1\%, MF, DNP-PLACE HOLDER | User selectable resistors - not populated |
| R4, R16, R25 thru R27, R31 | RES, SMD, 0603, $0 \Omega, 1 / 10 \mathrm{~W}, \mathrm{TF}, \mathrm{ROHS}$ | $0 \Omega$ 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 |



FIGURE 5. ISL282x6EVAL1Z TOP VIEW (SOIC SHOWN)

## ISL282x6EVAL1Z Schematic Diagram



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