ISL28194EVAL1Z, ISL28195EVAL1Z Evaluation Board User's Guide

Introduction

The ISL28194EVAL1Z, ISL28195EVAL1Z evaluation board is a design platform containing all the circuitry needed to characterize critical performance parameters of the ISL28194 and ISL28195 operational amplifiers, using a variety of user defined test circuits.

The ISL28194 and ISL28195 micro-power operational amplifiers feature ultra-low power consumption, rail-to-rail input and output drive capability, and are designed to operate with two 1.5V Alkaline batteries.

Ordering Information

- ISL28194EVAL1Z
- ISL28195EVAL1Z

Reference Documents

- ISL28194, ISL28195 Data Sheet, FN6236

Evaluation Board Key Features

The ISL28194EVAL1Z, ISL28195EVAL1Z is designed to enable the IC to operate from a single supply, +1.8VDC to +5.5VDC or from split supplies, ±0.9VDC to ±2.75V. The board is configured for a single op amp connected for differential input with a closed loop gain of 10. It also contains 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- 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 connect to their respective power supply terminals. De-coupling capacitors C_1 and C_2 connect to ground through R_1 and R_{21} 0Ω resistors. Resistors R_{20} and R_{24} are 0Ω but can be changed by the user to provide additional power supply filtering, or to reduce the voltage rate-of-rise to less than ±1V/µs. Two additional capacitors, C_3 and C_4 are connected close to the part to filter out high frequency noise. Anti-reverse diodes D_1 and D_2 protect the circuit in the case of accidental polarity reversal.

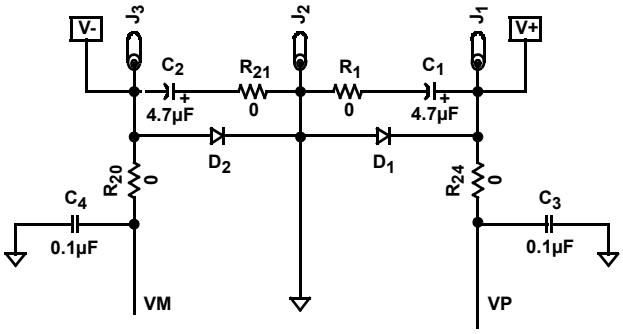


FIGURE 1. POWER SUPPLY CIRCUIT

Amplifier Configuration (Figure 2)

The schematic of the op amp with the components supplied is shown in Figure 2.

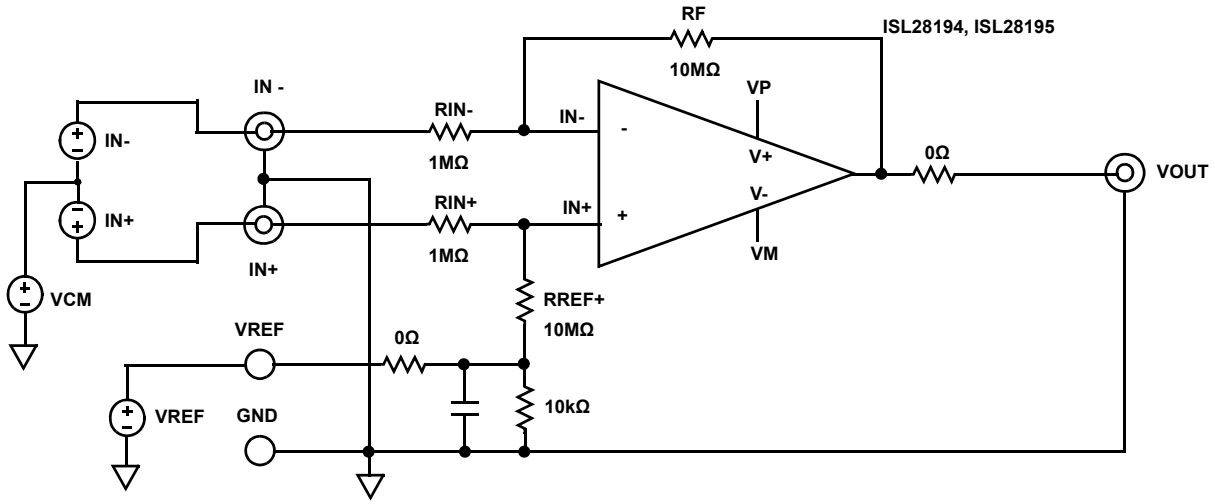


FIGURE 2. BASIC AMPLIFIER CONFIGURATION

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 inputs, the VREF input, outputs and the amplifier feedback loops.

A voltage divider and filter option (Figure 3) can be added to establish a power supply-tracking common mode reference at the VREF input. The inverting and non-inverting inputs have additional resistor placements for adding input attenuation, or to establish input DC offsets through the VREF pin.

The output (Figure 4) has additional resistor and capacitor placements for loading.

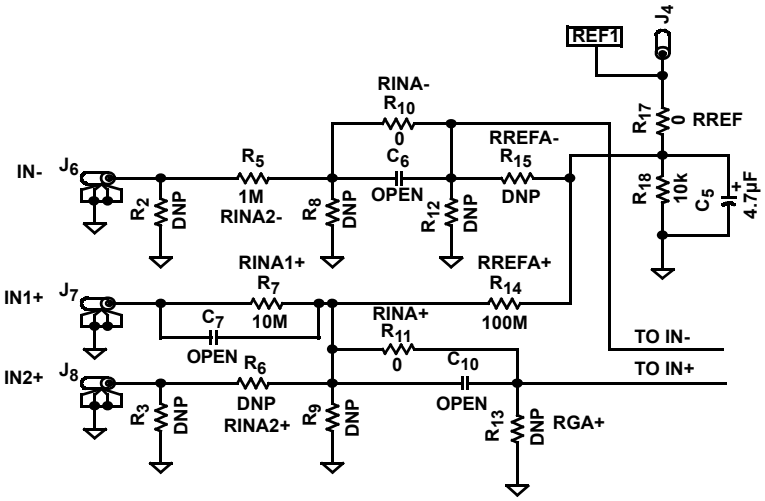


FIGURE 3. INPUT STAGE

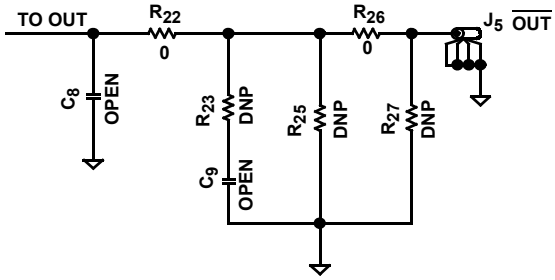
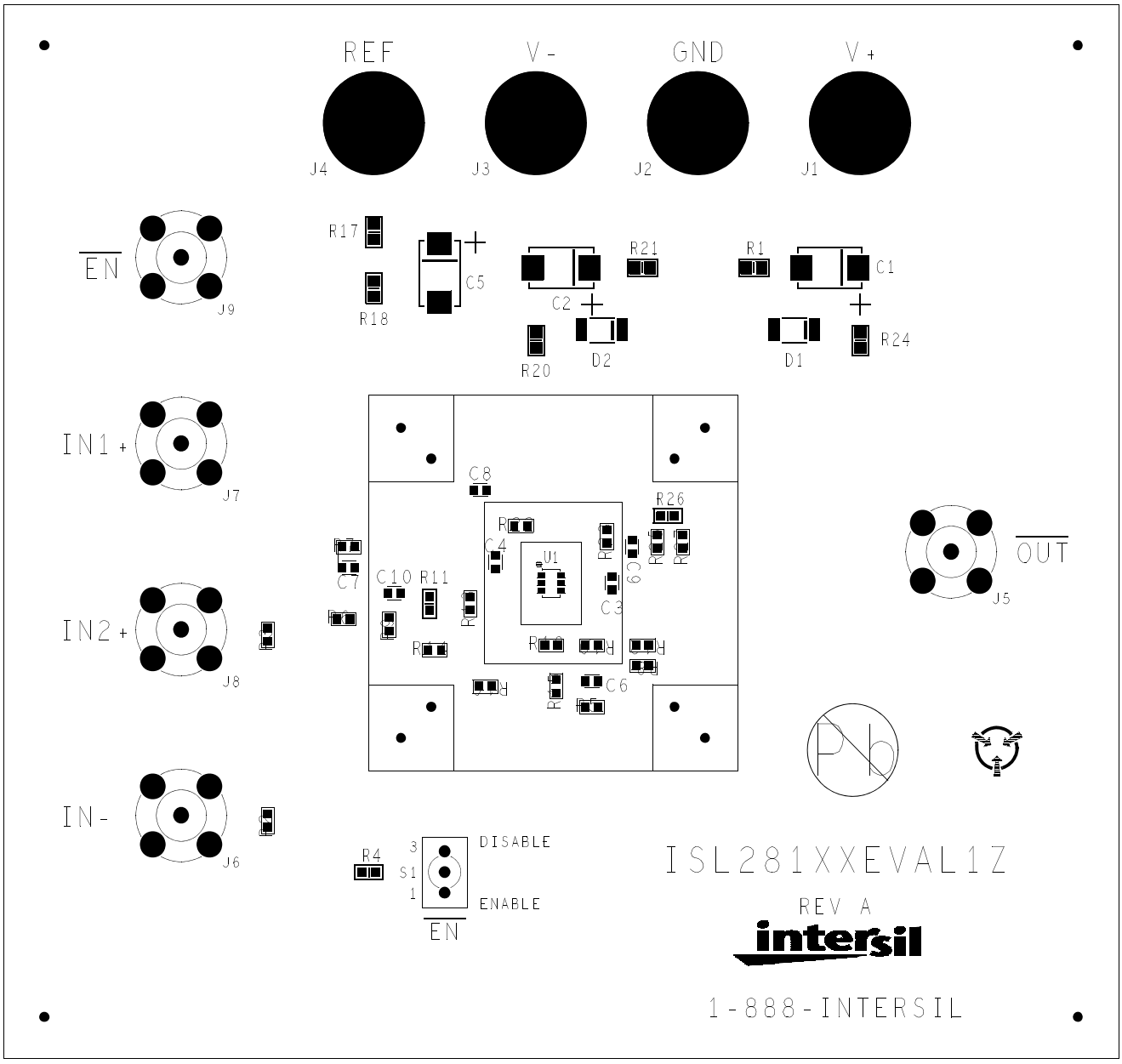


FIGURE 4. OUTPUT STAGE

ISL28194EVAL1Z, ISL28195EVAL1Z Components Parts List

DEVICE NUMBER	DESCRIPTION	COMMENTS
C1, C2, C5	CAP-TANTALUM, SMD, D, 4.7µF, 50V, 10%, LOW ESR, ROHS	Power supply decoupling
C3, C4	CAP, SMD, 0603, 0.1µF, 25V, 10%, X7R, ROHS	Power supply decoupling
C6 to C10	CAP, SMD, 0603, DNP-PLACE HOLDER, ROHS	User-selectable capacitors - not populated
D1, D2	DIODE-RECTIFIER, SMD, SOD-123, 2P, 40V, 0.5A, ROHS	Reverse power protection
U1 (ISL28194EVAL1Z)	ISL28194FHZ-T7, IC-RAIL-TO-RAIL OP AMP, SOT-23, ROHS	
U1 (ISL28195EVAL1Z)	ISL28195FHZ-T7, IC-RAIL-TO-RAIL OP AMP, SOT-23, ROHS	
R2, R3, R6, R8, R9, R12, R13, R15, R23, R25, R27	RESISTOR, SMD, 0603, 0.1%, MF, DNP-PLACE HOLDER	User-selectable resistors - not populated
R1, R5, R11, R17, R20, R21, R22, R24, R26	RES, SMD, 0603, 0Ω, 1/10W, TF, ROHS	0Ω user-selectable resistors
R4, R18	RES, SMD, 0603, 10k, 1/10W, 1%, TF, ROHS	Gain and other user-selectable resistors
R16	RES, SMD, 0603, 100k, 1/10W, 1%, TF, ROHS	Gain resistors
R7, R10	RES, SMD, 0603, 1M, 1/10W, 1%, TF, ROHS	Gain and other user-selectable resistors
R14, R19	RES, SMD, 0603, 10M, 1/10W, 1%, TF, ROHS	Gain resistors

ISL28194EVAL1Z, ISL28195EVAL1Z Top View



ISL28194EVAL1Z, ISL28195EVAL1Z Schematic Diagram