Voltage Reference Evaluation Board User's Guide

Introduction

This evaluation board is designed to evaluate the performance of various precision voltage reference devices. This evaluation board includes pads for 2 different voltage reference (V_{REF}) package types: 8 lead SOIC, and 3 lead SOT-23. Only one device type is mounted on the board for evaluation purposes (reference schematic on page 3).

The evaluation board includes voltage input test points (V_{IN} and GND1) for a power supply input. There are a pair of test points for the output as well (VOUT and GND2). The common circuitry for each reference includes a jumperable R-C damper network on the VOUT (LINK6), and the Link4 and Link5 sockets, which accept through-hole style resistors and capacitors for output load testing.

ISL21090-EVALZ Board

The evaluation board contains the ISL21090 ultra low noise voltage reference (U2), a 10µF input decoupling capacitor (C2), a 1nF compensation capacitor (LINK3), and a 0.1µF load capacitor on the output (LINK4).

The power supply leads attach to the VIN and GND1 inputs. The input voltage range is from 4.7V to 36V. The ISL21090 has an initial accuracy of 0.02% and a 7 ppm/°C output voltage temperature coefficient. The output is measured at test points TP3 and TP4 (VOUT, GND2).

The board is capable of accommodating an RC damper network to improve stability by reducing transient load ringing. The damper network is added by populating R1 with a 2.2kΩ resistor, C3 with a 10µF capacitor, and LINK6 with a shunt.

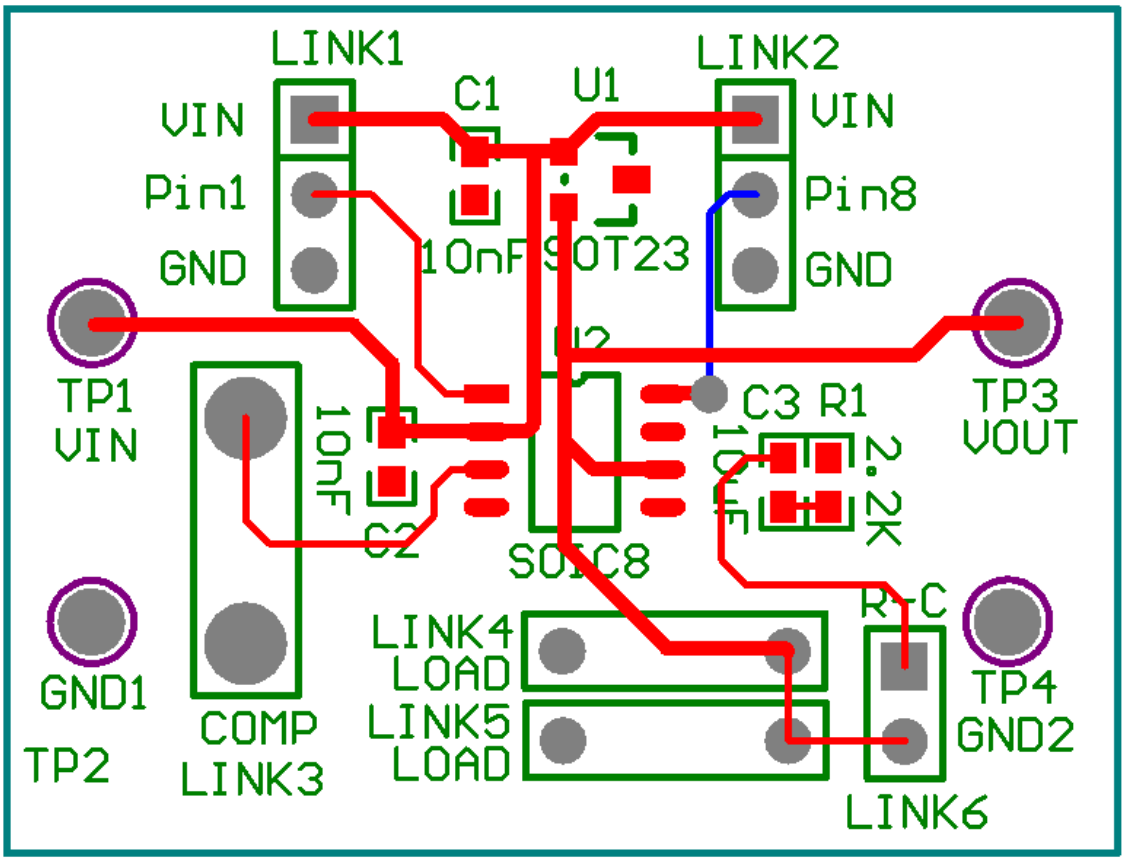

FIGURE 1. VOLTAGE REFERENCE EVALUATION BOARD

Components on the Board

TABLE 1. COMPONENTS PARTS LIST

DEVICE #	VALUE	DESCRIPTION
VOLTAGE REFERENCE SECTION		
C1	DNP	Bypass Capacitor
C2	10µF	Bypass Capacitor
C3	Open	Optional Damper Capacitor
R1	DNP	Optional Damper Resistor
U1	DNP	SOT-23 3-Pin Package
U2	ISL21090	SOIC 8-Pin Package

TABLE 2. JUMPER LIST

DEVICE #	VALUE	DESCRIPTION
VOLTAGE REFERENCE SECTION		
Link1	DNP	Pin1 state jumper
Link2	DNP	Pin8 state jumper
Link3	1nF	Pin3 compensation capacitor
Link4	0.1µF	Pin6 Load
Link5	Open	Pin6 Load
Link6	Open	R-C Jumper
TP3, TP1, TP2, TP4	VOUT, VIN, GND1, GND2	Test Point

Voltage Reference Evaluation Board Layout

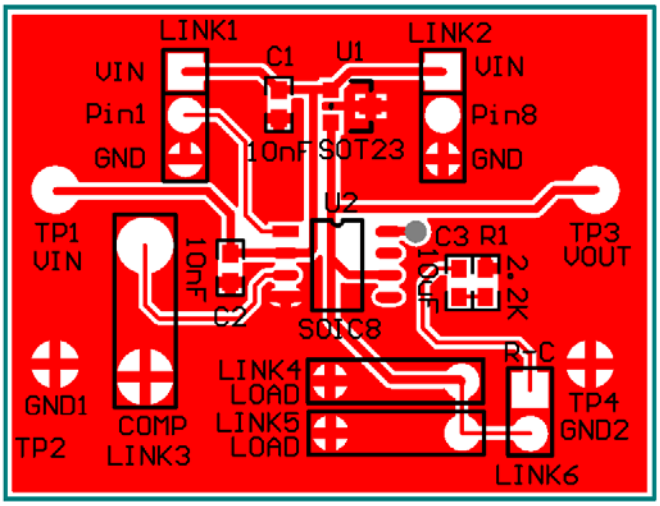

FIGURE 2. TOP COMPONENTS

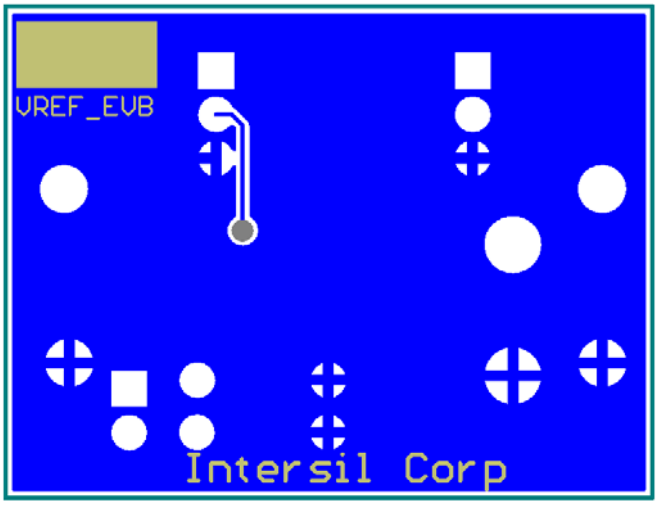

FIGURE 3. BOTTOM LAYER

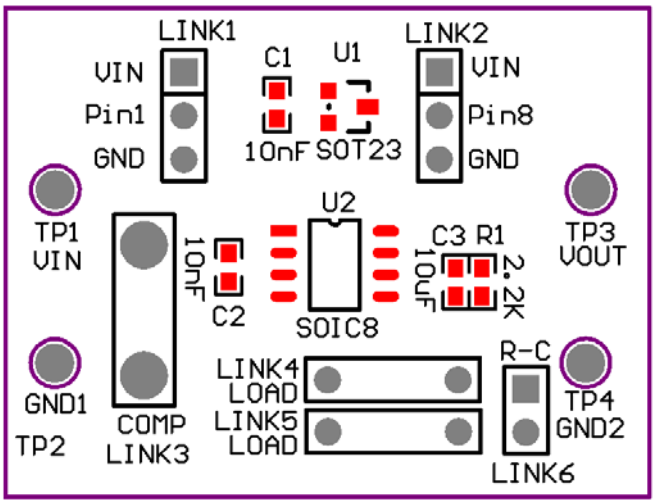

FIGURE 4. ASSEMBLY DRAWING

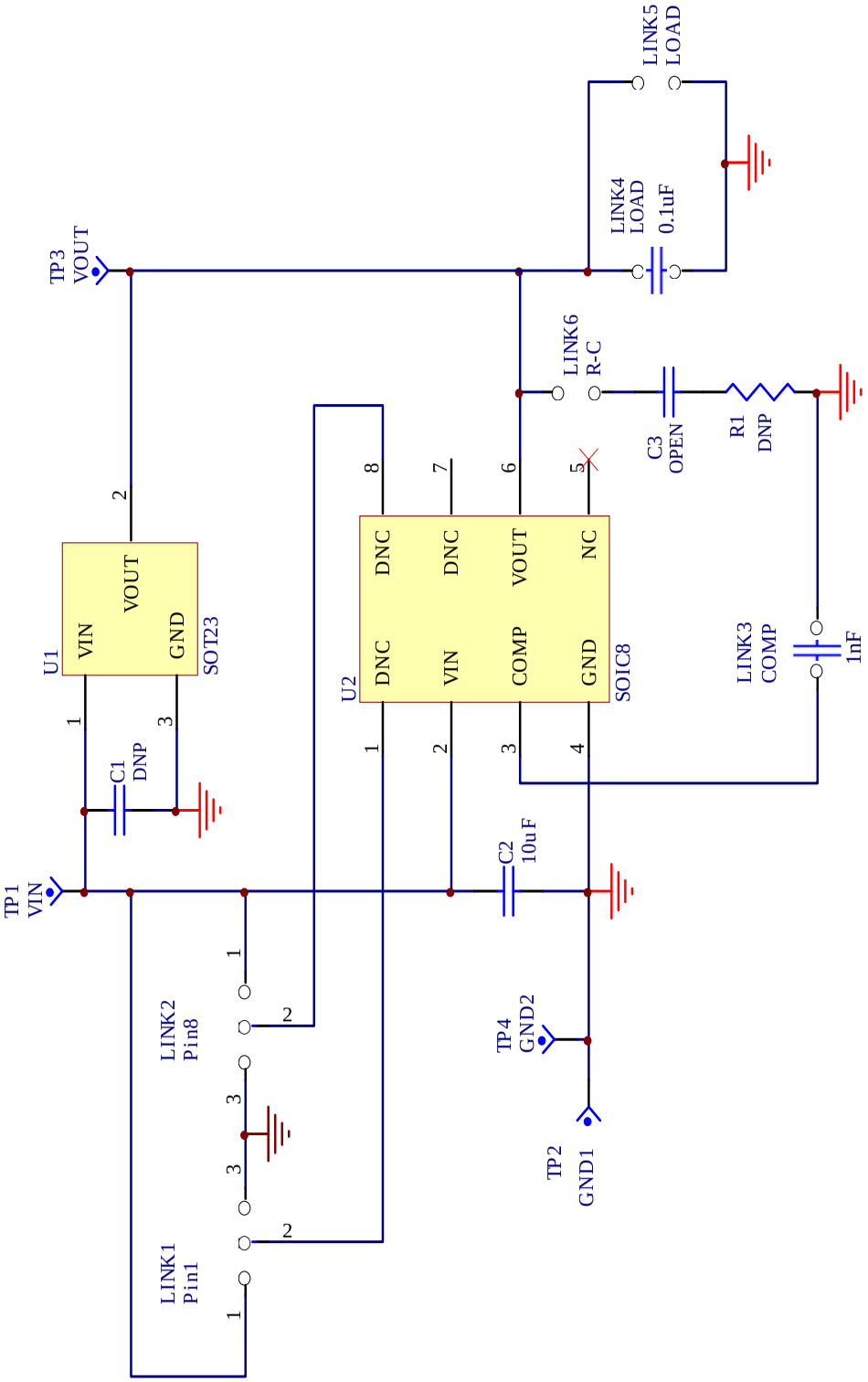

FIGURE 5. SCHEMATIC