

# 3A/4A Low Quiescent Current High Efficiency Synchronous Buck Regulator - Small Form Factor

## Description

The ISL8023\_24EVAL2Z kit is intended for use by individuals with requirements for Point-of-Load applications sourcing from 2.7V to 5.5V. The ISL8023\_24EVAL2Z simple smallest factor evaluation board is used for a quick and easy demonstration of the performance of the ISL8023, ISL8024 low quiescent high efficiency synchronous buck regulator.

The ISL8023 and ISL8024 are offered in a 3mmx3mm 16 Ld TQFN package with 1mm maximum height. The complete area that the converter occupies can be as small as 0.18in<sup>2</sup>.

## Key Features

- High Efficiency Synchronous Buck Regulator with up to 95% Efficiency
- 0.8% Reference Accuracy Over-Temperature/Load/Line
- Start-up with Pre-Biased Output
- Internal Soft-Start - 1ms or Adjustable
- Soft-Stop Output Discharge During Disabled
- Adjustable Frequency from 500kHz to 4MHz - Default at 1MHz
- External Synchronization up to 4MHz
- Negative OC protection

## Recommended Equipment

The following materials are recommended to perform testing:

- 0V to 10V Power Supply with at least 10A source current capability or 5V battery
- Electronic Loads capable of sinking current up to 7A
- Digital Multimeters (DMMs)
- 100MHz quad-trace oscilloscope
- Signal generator

## Quick Setup Guide

1. Ensure that the circuit is correctly connected to the supply and loads prior to applying any power.
2. Connect the bias supply to VIN, the plus terminal to VIN and the negative return to PGND.
3. Connect the output load to VOUT, the plus terminal to VO and the negative return to PGND.
4. Verify the output voltage is 1.8V for VO.

**TABLE 1. BILL OF MATERIALS**

PART NUMBER	QTY	REF DES	MANUFACTURER	DESCRIPTION
250R07C120JV4T	1	C8	Johanson-Tech	C Series High-Q Chip Cap
5000	2	VO, VIN	KEystone	Miniature Red Test Point 0.100 Pad 0.040 Thole
5001	2	P1, P2	KEystone	Miniature Black Test Point 0.100 Pad 0.040 Thole
FDV0530S-1R0M	1	L1	TOKO	LARGE CURRENT FIXED INDUCTOR
H1065-00226-6R3V20	4	C1-C4	GENERIC	Multilayer Cap
H1065-OPEN	3	C5-C7	GENERIC	Multilayer Cap
H2510-00R00-1/16W	1	R3	GENERIC	Thick Film Chip Resistor
H2510-01003-1/16W1	2	R2, R5	GENERIC	Thick Film Chip Resistor
H2510-02003-1/16W1	1	R1	GENERIC	Thick Film Chip Resistor
H2510-ROPEN-OPEN	1	R4	GENERIC	Thick Film Chip Resistor
ISL8023/24IRZ	1	U1	INTERSIL	3A/4A Low Quiescent Synchronous Buck Regulator

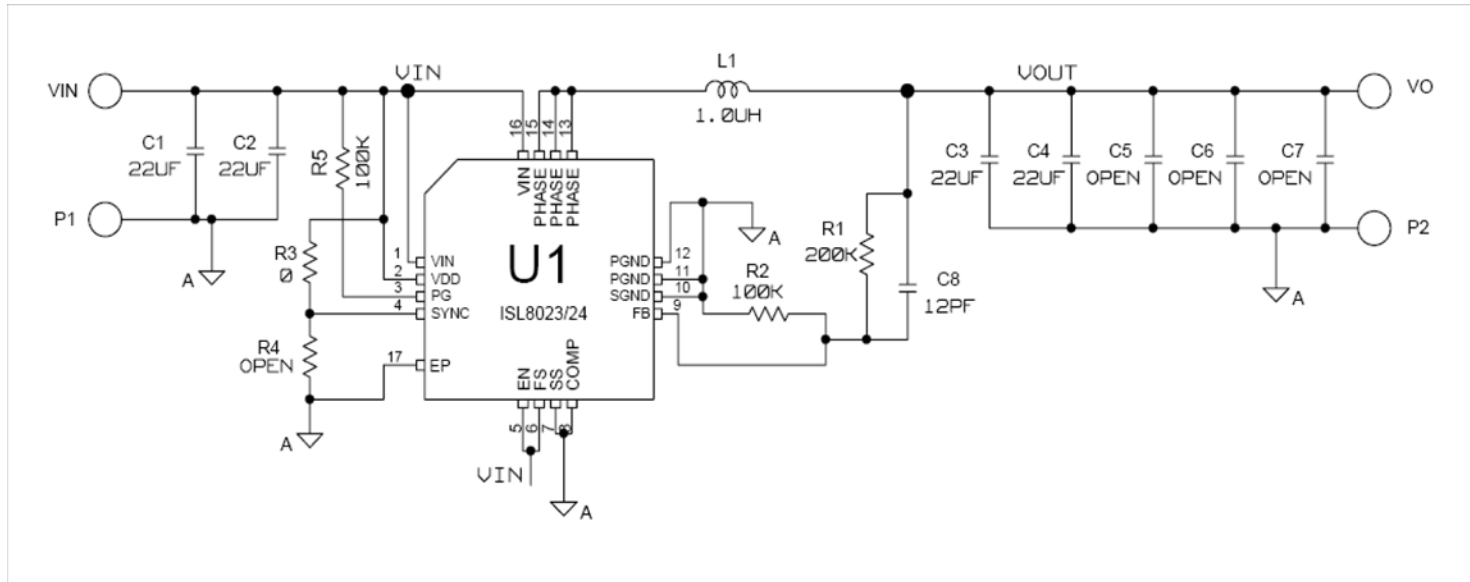


FIGURE 1. ISL8023\_24EVAL2Z SCHEMATIC

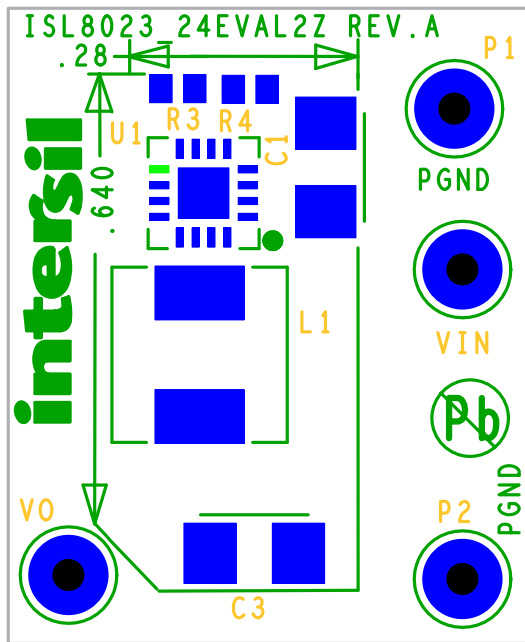


FIGURE 2. TOP COMPONENTS

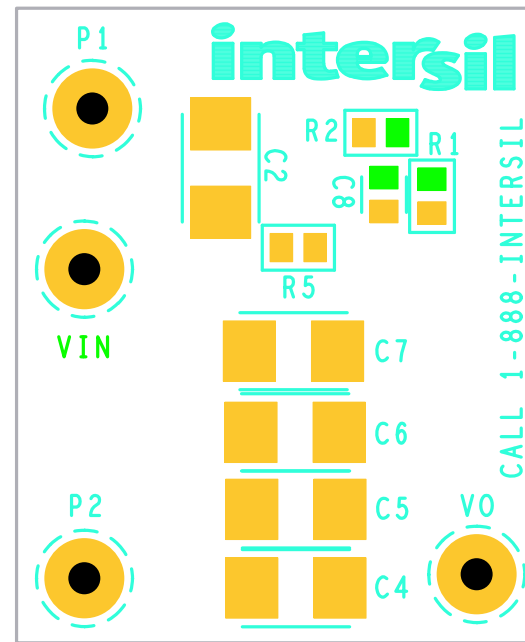


FIGURE 3. BOTTOM SILK SCREEN

Intersil Corporation reserves the right to make changes in circuit design, software and/or specifications at any time without notice. Accordingly, the reader is cautioned to verify that the Application Note or Technical Brief is current before proceeding.

For information regarding Intersil Corporation and its products, see [www.intersil.com](http://www.intersil.com)