

ISL8022EVAL2Z

Dual 2A/1.7A Low Quiescent Current 2.25MHz High Efficiency Synchronous Buck Regulator

AN1587
Rev 1.00
Aug 10, 2010

Description

The ISL8022EVAL2Z kit is intended for use by individuals with requirements for Point-of-Load applications sourcing from 2.8V to 5.5V. The ISL8022EVAL2Z evaluation board is used to demonstrate the performance of the ISL8022 low quiescent current mode converter.

The ISL8022 is offered in a 4mmx3mm 12 Ld DFN package with 1mm maximum height. The complete converter occupies less than 0.175in² area.

Key Features

- Dual 2A/1.7A High Efficiency Synchronous Buck Regulator with up to 97% Efficiency
- 180° Out-of-Phase
- Power-Goods (PG) Output with 1ms Delay
- 2.8V to 5.5V Supply Voltage
- 3% Output Accuracy Over-temperature/Load/Line
- Start-up with Pre-biased Output
- 40µA Quiescent Supply Current in PFM Mode
- Selectable Forced PWM Mode and PFM Mode
- External Synchronization up to 8MHz
- Typical 6.5µA Logic Controlled Shutdown Current
- 100% Maximum Duty Cycle for Lowest Dropout
- Internal Current Mode Compensation
- Peak Current Limiting, Hiccup Mode Short Circuit Protection and Over-temperature Protection
- Negative Current Detection and Protection

Recommended Equipment

The following materials are recommended to perform testing:

- 0V to 10V Power Supply with at least 3A source current capability or 5V battery
- Electronic Loads capable of sinking current up to 3A
- 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 P1.
3. Turn on the power supply.
4. Verify the output voltage is 2.5V for V_{OUT1} and 1.8V for V_{OUT2}.

TABLE 1. BILL OF MATERIALS

REFERENCE DESIGNATOR	DESCRIPTION	MFR	MFR PART
	PWB-PCB, ISL8022EVAL2Z, REVA, ROHS	TBD	ISL8022EVAL2ZREVAPCB
C2, C4	CAP, SMD, 0805, 22µF, 6.3V, 20%, X5R, ROHS	TDK	C2012X5R0J226M
C1, C8	CAPACITOR, SMD, 0805, 10µF, 6.3V, 10%, X5R	MURATA	GRM21BR60J106KE01L
C6, C7	CAP, SMD, 0805, DNP-PLACE HOLDER, ROHS		
C3, C5	CAP-RF HIQ, SMD, 0402, 10pF, 50V, 5%, COG, ROHS	JOHANSON TECH.	500R07S100JV4T
L1, L2	COIL-PWR INDUCTOR, WW, SMD, 4mm, 1.2µH, 30%, 2.7A, ROHS	TDK	VLCF4028T-1R2N2R7-2
U1	IC-2A/1.7A BUCK REGULATOR, 12P, DFN, 4X3, ROHS	INTERSIL	ISL8022IRZ
R1, R3, R6	RES, SMD, 0402, 100k, 1/16W, 1%, TF, ROHS	PANASONIC	ERJ2RKF1003
R5	RES, SMD, 0402, 200k, 1/16W, 1%, TF, ROHS	ROHM	MCR01MZPF2003
		YAGEO	RC0402FR-07200KL
		VISHAY/DALE	CRCW0402200KFKED
		VENKEL	CR0402-16W-2003FT
R2	RES, SMD, 0402, 316k, 1/16W, 1%, TF, ROHS	PANASONIC	ERJ-2RKF3163X
		VENKEL	CR0402-16W-3163FT
R9	RES, SMD, 0402, DNP, DNP, DNP, TF, ROHS		

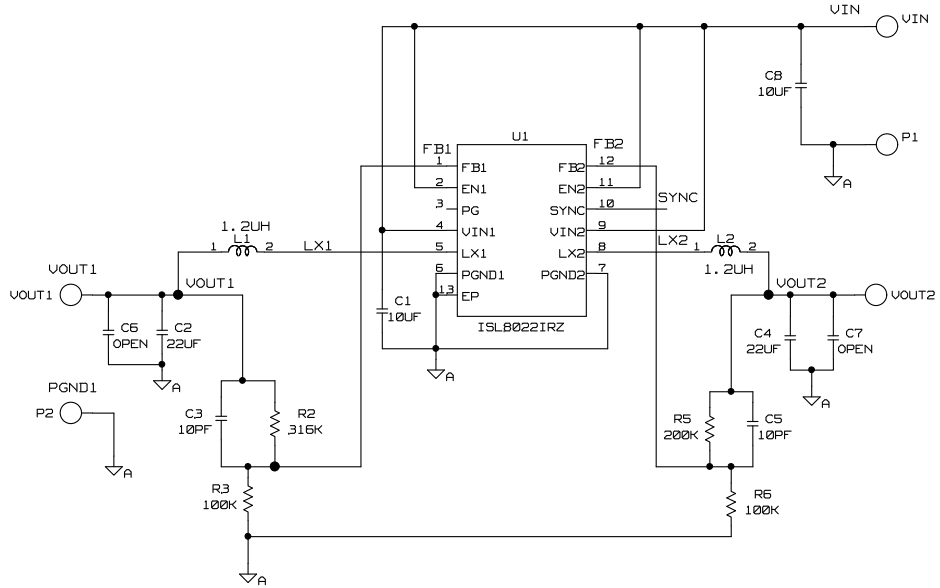


FIGURE 1. ISL8022EVAL2Z SCHEMATIC

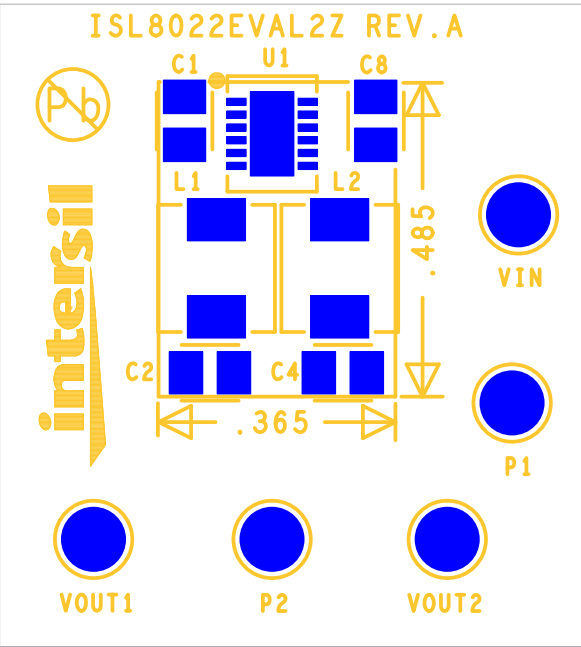
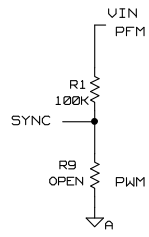


FIGURE 2. TOP COMPONENTS

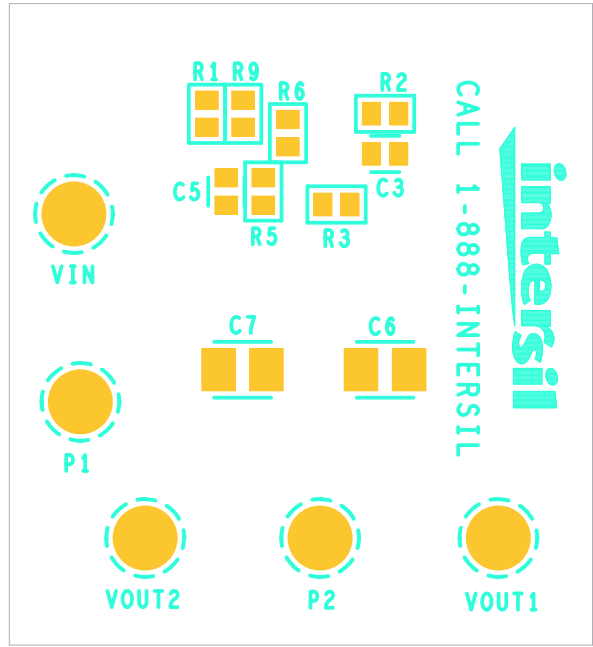


FIGURE 3. BOTTOM SILK SCREEN

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(Rev.4.0-1 November 2017)



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