PAM2312 EV Board User Guide

AE Department

1. Revision Information

Date	Revision	Description	Comment
2010/09	V1.0	Initial Release	

2. PAM2312 General Description

The PAM2312 is a step-down, current mode, DC/DC converter. At heavy load, the constant frequency PWM control performs excellent stability and transient response. To ensure the longest battery life in portable applications, the PAM2312 have a power-saving Pulse-skipping Modulation (PSM) mode and reduce the quiescent current under light load operation to save power.

The PAM2312 is supported with a range of input voltages from 2.5V to 5V, allowing the use of a single Li+/Li-polymer cell, 3-cell Alkaline/NiMH batteries, USB, and other standard power sources. The output voltage is adjustable from 0.6V to the input voltage, while the suffix part numbers PAM2312-XX indicate pre-set voltage ranges of 3.3V, 1.8V, 1.5V or 1.2V. All versions include internal power switch and synchronous rectifier for minimal external part count and high efficiency. During the shutdown, the input is disconnected from the output and the shutdown current is less than 0.1μA. Other key features include under-voltage lockout to prevent deep-battery discharge.

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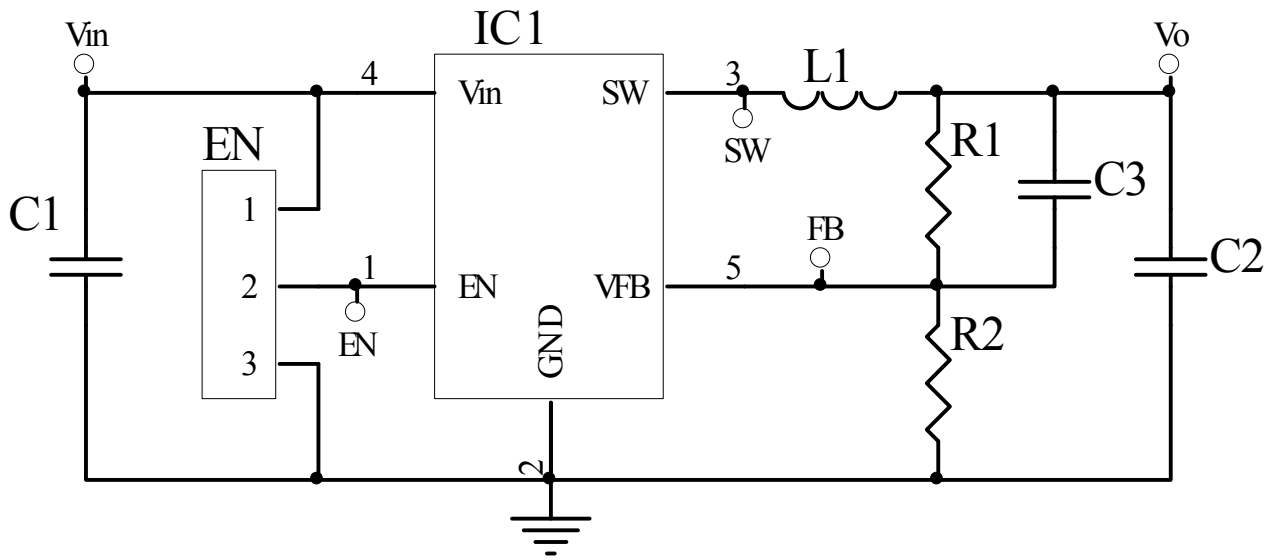
3. Key Features

- Efficiency up to 96%
- 40μA (typ) Quiescent Current
- Internal Synchronous Rectifier
- 1.5MHz Switching frequency to minimize inductor value
- Soft Start
- Under-Voltage Lockout
- Short Circuit Protection
- Up to 800mA output current
- Thermal Shutdown
- 5-pin Small SOT23-5 Package
- Pb-Free Package

4. EV Board Schematic



5. EVB PAM2312 EB05AA Description

PAM2312 EB05AA is an evaluation board for the PAM2312, a DC/DC converter.

The board is targeted to be used in providing a simple and convenient evaluation environment for the PAM2312. Requires parts, power supply jacks etc. on the board, which makes it easy to be evaluated.

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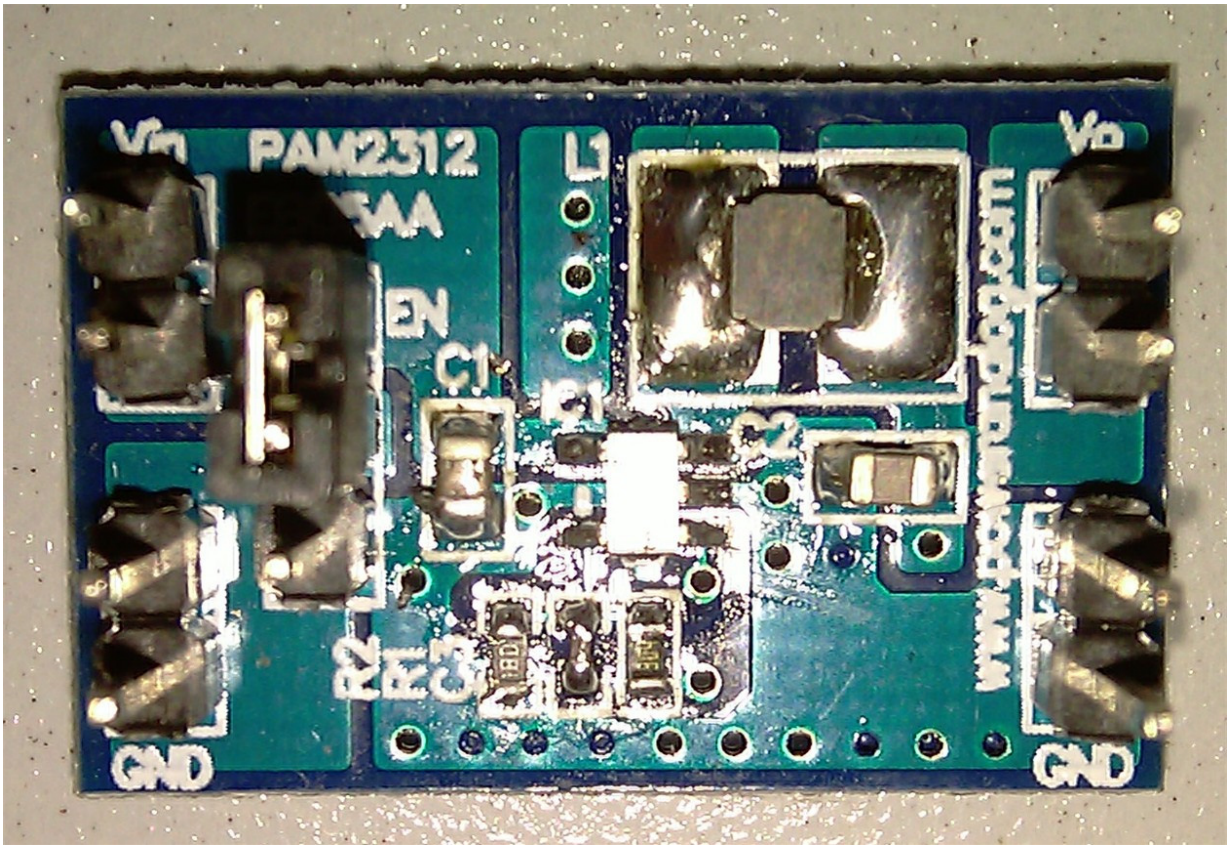
6. EV Board View

Top View



EV board operational sequence:

a. Connect power supply to V_{IN} and GND.

b. Connect load to VO and GND.

c. Connect EN up side to enable the chip.

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7. EV Board BOM List

Item	Value	Type	Rating	Description	Vender and Part No.
C1	10μF	X5R/X7R, Ceramic/0805	10V	Input coupling CAP	JMK212BJ106MA
C2	10μF	X5R/X7R, Ceramic/0805	10V	Input coupling CAP	JMK212BJ106MA
C3	100pF	NPO/COG, 0603	50V	Forward CAP	UMK105 CG101JV-F
L1	4.7μH	3.7mm*3.0mm	1.2A	Inductor	NR4012T 3R3M
IC1	PAM2312	SOT-23-5		Power management IC	PAM2312
PCB		PAM2312 EB05AA			

$V_{OUT} = (1+R1/R2) \times V_{REF}$ (V_{REF} = 0.6V)

Vo	R1	R2
1.2V	150k	150k
1.5V	225k	150k
1.8V	300k	150k
2.5V	475k	150k
3.3V	680k	150k

8. External Compnents Selection

Input & output Capacitors (C1, C2)

(1) For lower output ripple, low ESR is required.

(2) Low leakage current needed, 10uF, X5R/X7R ceramic recommend

Feed forward capacitor (C3)

(1) Lower the output ripple

(2) Low leakage current needed, 20-100pF, NPO/COG ceramic recommend

Output Voltage programmer resistors (R1, R2)

(1) For programmer output voltage

(2) For accurate output voltage, 1% tolerance is required.

Inductor (L1)

(1) Low DCR for good efficiency

(2) Inductor rated Current must higher than the output current

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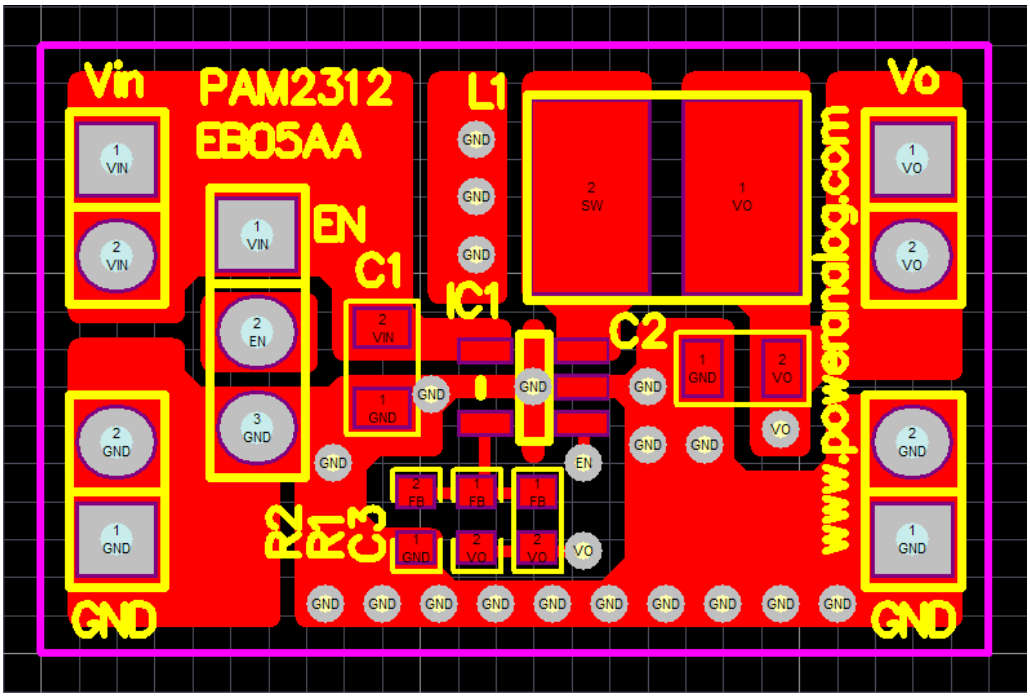
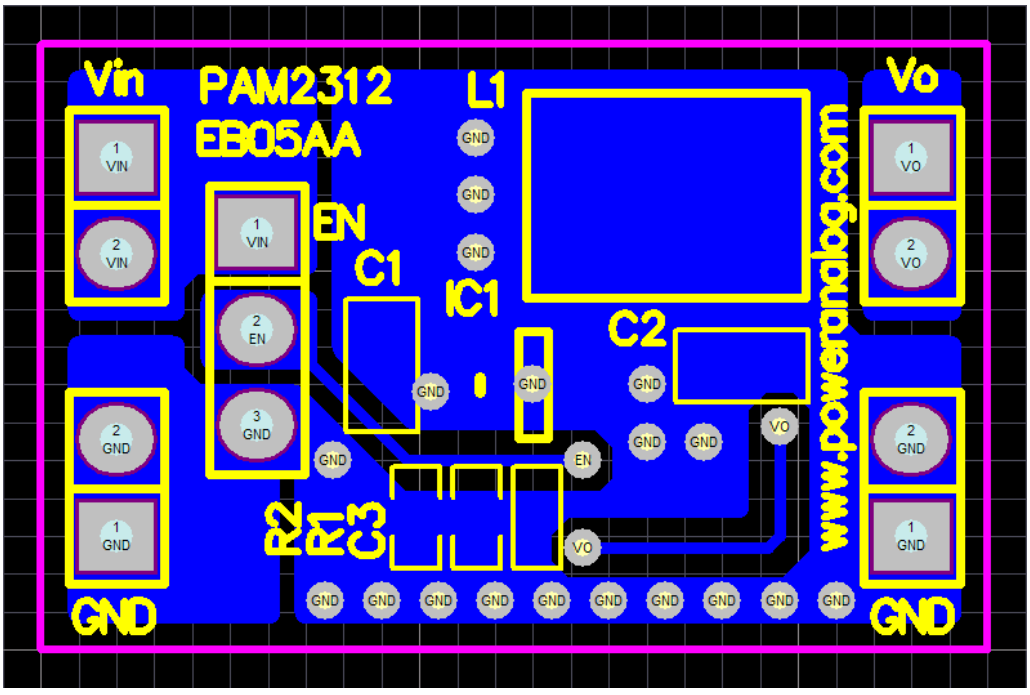
9. PCB Layout Example

Top Layer



Bottom Layer



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