

**PAM2320 PSOP8 EV Board User Guide**

AE Department

**1. Revision Information**

Date	Revision	Description	Comment
2010/05	V1.1	Initial Release	PAM2310 EB09AA
2011/06	V2.0	Optimize EVB	PAM2320 EB16AA

**2. PAM2320 General Description**

The PAM2320 is a 3A step-down DC-DC converter. At heavy load, the constant-frequency PWM control performs excellent stability and transient response. No external compensation components are required.

The PAM2320 supports a range of input voltages from 2.7V to 5.5V, allowing the use of adapter or DC-DC output 5V etc standard power source. The output voltage is adjustable from 0.6V to the input voltage. The PAM2320 employs internal power switch and synchronous rectifier to minimize external part count and realize high efficiency. During shutdown, the input is disconnected from the output and the shutdown current is less than 1 $\mu$ A. Other key features include over-temperature and short circuit protection.

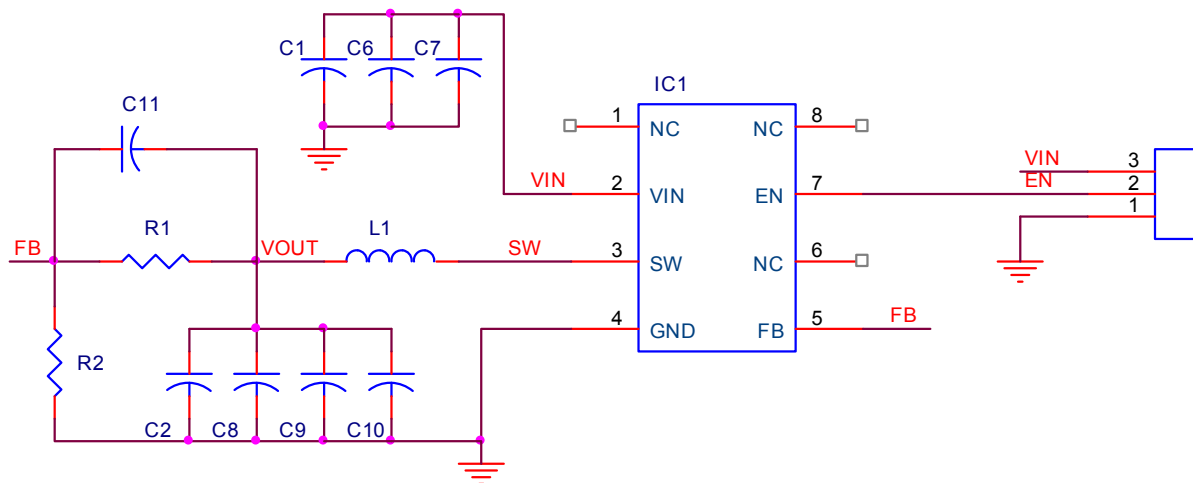
The PAM2320 delivers 3A maximum output current while consuming only 42 $\mu$ A of no-load quiescent current. Ultra-low  $R_{DS(ON)}$  integrated MOSFETs and 100% duty cycle operation make the PAM2320 an ideal choice for high output voltage, high current applications which require a low dropout threshold.

The PAM2320 is available in PSOP8 package.

### 3. Key Features

- Output Current: Up to 3A
- Output Voltage: 0.6V to  $V_{IN}$
- Input Voltage: 2.7V to 5.5V
- Efficiency up to 95%
- 42 $\mu$ A (Typ) No Load Quiescent Current
- Shutdown Current: <1 $\mu$ A
- 100% Duty Cycle LDO Operation
- 1.5MHz Switching Frequency
- Internal Soft Start
- No external Compensation Required
- Current Limit Protection
- Thermal Shutdown
- PSOP8 Package

### 4. EV Board Schematic

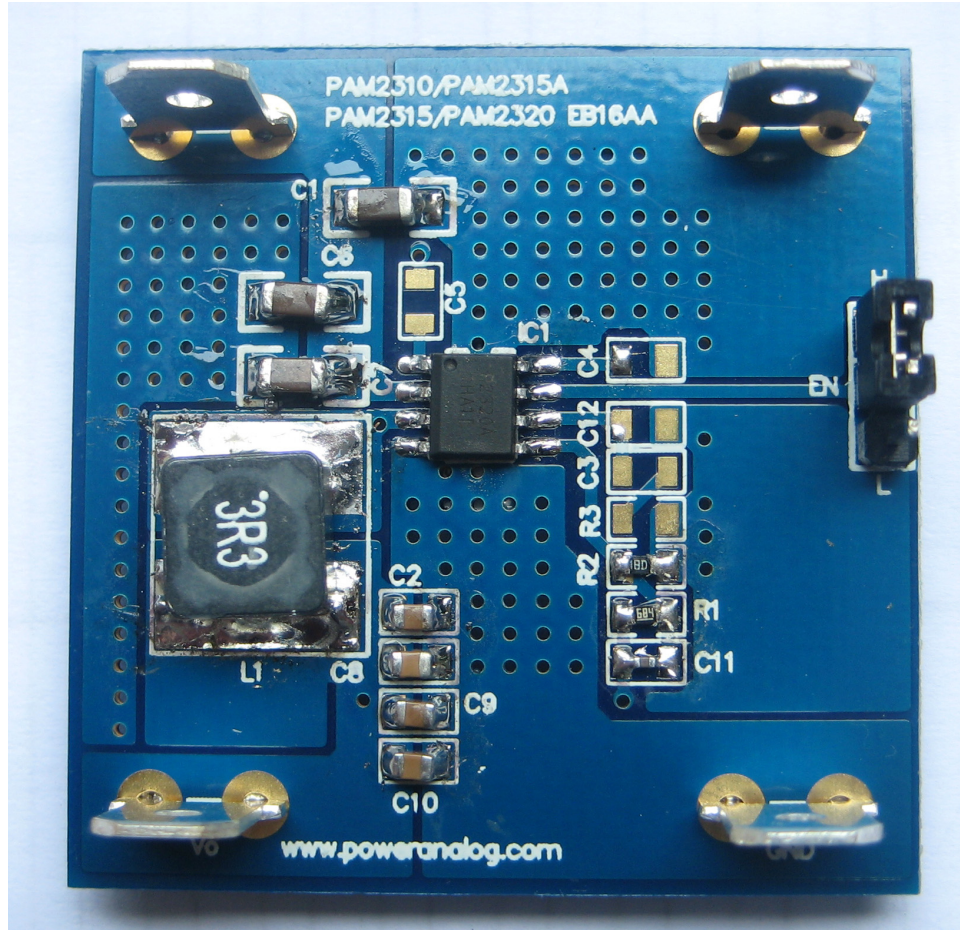


### 5. EVB PAM2320 EB16AA Description

PAM2320 EB16AA is an evaluation board for the PAM2320 PSOP8, a DC/DC converter. The board is targeted to be used in providing a simple and convenient evaluation environment for the PAM2320. Requires parts, power supply connectors etc. on the board, which makes it easy to be evaluated.

## 6. EV Board View

Top View



## 7. Resistor Select for Output Voltage Setting

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

Vo	R1	R2	L
1.2V	150k	150k	2.2μH
1.5V	225k	150k	2.2μH
1.8V	300k	150k	2.2μH
2.5V	475k	150k	2.2μH
3.3V	680k	150k	3.3μH

## 8. External Components Selection

### Input & output Capacitors (C1,C6,C7; C2,C8,C9,C10)

- (1) For lower output ripple, low ESR is required.
- (2) Low leakage current needed, X5R/X7R ceramic recommend, multiple capacitor parallel connection.

### Feed forward capacitor (C11)

- (1) Lower the output ripple.
- (2) Low leakage current needed, 100pF, COH/CH ceramic recommend.

### Output Voltage programmer resistors (R1, R2)

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

### Inductor (L1)

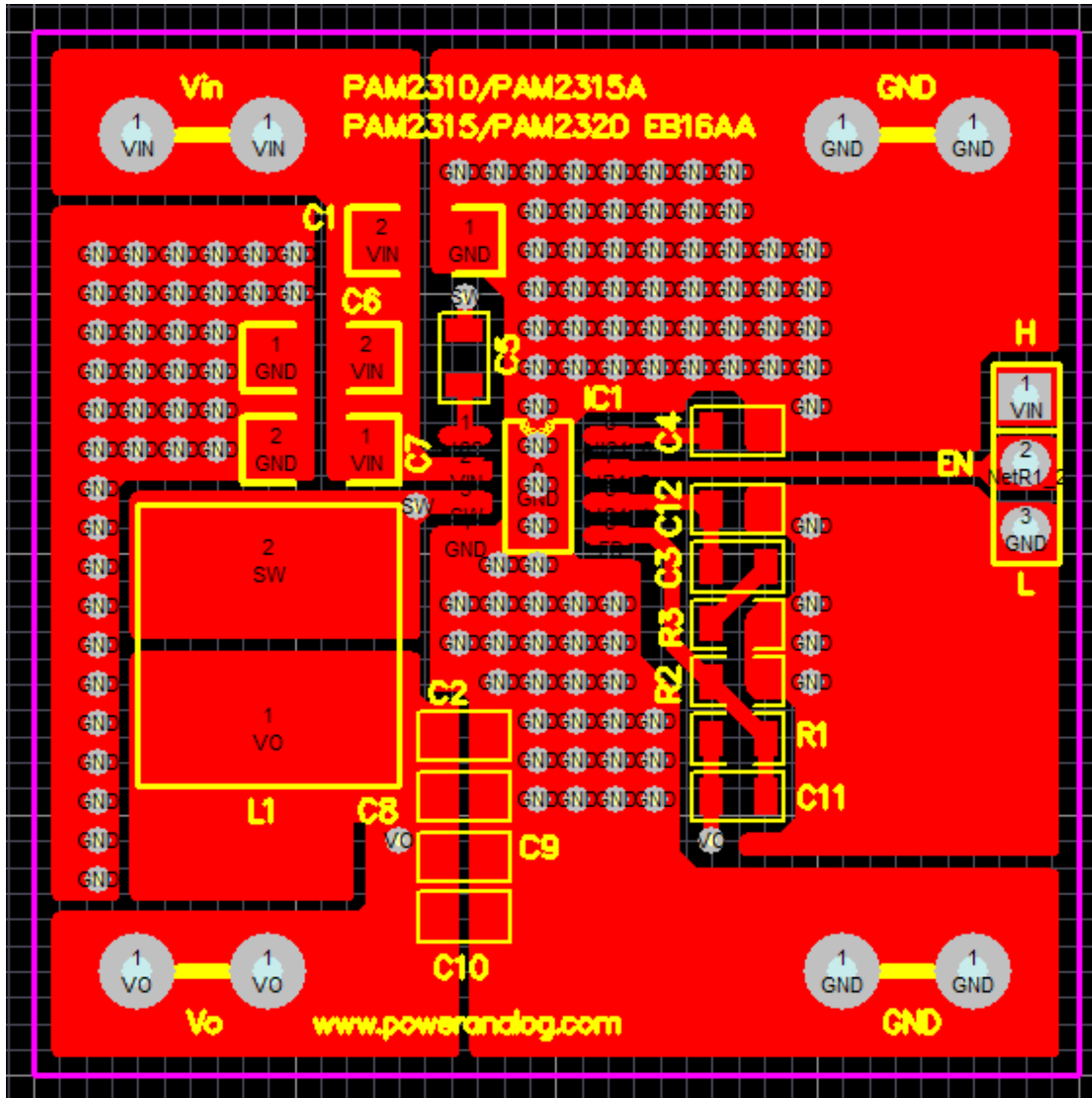
- (1) Low DCR for good efficiency.
- (2) Inductance saturate current must higher than the output current.

## 9. Evaluation Board BOM List

Item	Value	Type	Rating	Description	Vender and Part No.
C1, C6, C7	10 $\mu$ F	X5R/X7R, Ceramic/1206	25V	Input coupling CAP,	HR-TECH TMK316 BJ106KL-T
C2, C8, C9, C10	10 $\mu$ F	X5R/X7R, Ceramic/0805	10V	Output CAP	AIYO YUDEN EMK212ABJ106KD-T
C11	100pF	COH/CH, Ceramic/0402	50V	Feed forward CAP	TAIYO YUDEN UMK105CH101JV-F
L1	3.3 $\mu$ H		>4A	Inductor	WURTH 744777003 TAIYO YUDEN NRS8030T3R0NMGJ
R1	680K	0603	1%	Voltage set RES	
R2	150K	0603	1%		
IC1		PAM2320	PSOP-8		
PCB		PAM2320 EB16AA			

10. PCB Layout Example

Top Layer



**Bottom Layer**

