

2. AP3418 General Description

The AP3418 is a high efficiency step-down DC-DC voltage converter. The chip operation is optimized by peak-current mode architecture with built-in synchronous power MOSFET switchers. The oscillator and timing capacitors are all built-in providing an internal switching frequency of 1.5MHz that allows the use of small surface mount inductors and capacitors for portable product implementations.

Integrated Soft Start (SS), Under Voltage Lock Out (UVLO), Thermal Shutdown Detection (TSD) and Short Circuit Protection are designed to provide reliable product applications.

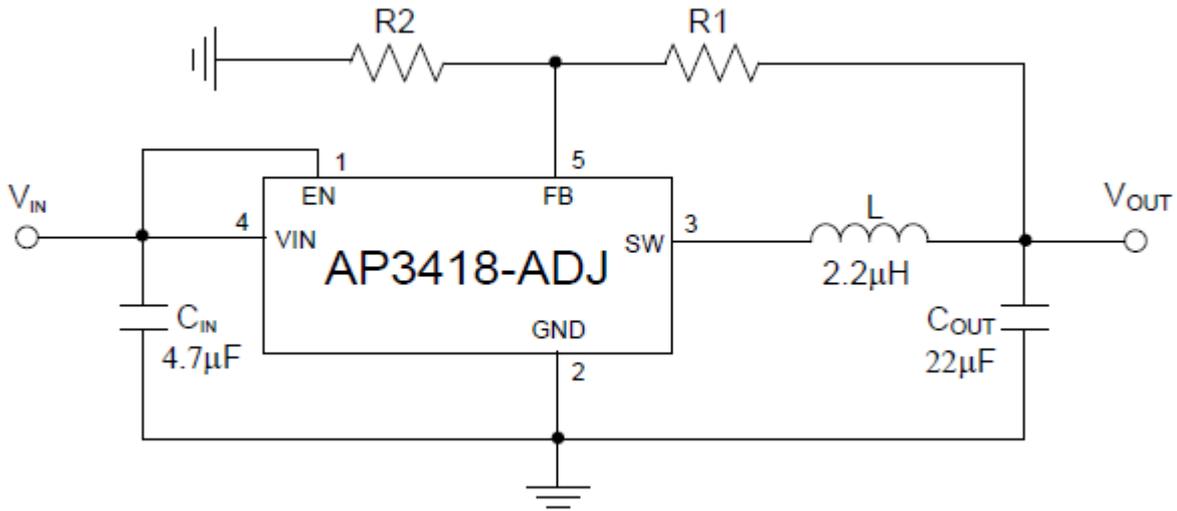
The device is available in adjustable output voltage version ranging from 0.6V to $0.9 \times V_{IN}$ when input voltage range is from 2.5V to 5.5V, and is able to deliver up to 1A. It is also available in fixed voltage versions of 1.2V, 1.8V and 3.3V without external feedback resistance.

The AP3418 is available in SOT-23-5 and DFN-2x2-6 packages.

3. Key Features

- High Efficiency Buck Power Converter
- Wide Input Voltage Range: 2.5V to 5.5V
- Adjustable Output Voltage: 0.6V to $0.9 \times V_{IN}$
- Low RDS(ON) Internal Switches: 200m Ω (VIN = 5V)
- Built-in Power Switches for Synchronous Rectification with High Efficiency
- Output Current: 1.0A
- Over Current Protection
- Feedback Voltage: 600mV
- 1.5MHz Constant Frequency Operation
- Thermal Shutdown Protection
- Low Dropout Operation at 100% Duty Cycle
- No Schottky Diode Required
- Input Over Voltage Protection
- Output Over Voltage Protection

4. EV Board Schematic



AP3418 SOT-23-5

5. EVB AP3418 Description

The boards are targeted to be used in providing a simple and convenient evaluation environment for the AP3418. Requires parts, power supply connectors etc. on the board, which makes it easy to be evaluated.

6. EV Board View



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Resistor select for output voltage setting

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

V _o	R1-1(R1)	R2(R2)	R3(null)	L1
3.3V	450k	100k	0 Ω	2.2uH
2.5V	320k	100k	0 Ω	2.2uH
1.8V	200k	100k	0 Ω	2.2uH
1.2V	100k	100k	0 Ω	2.2uH
1.0	66k	100k	0 Ω	2.2uH

7. External Components Selection

Input & output Capacitors (C_{2/3}(C₁), C_{4/5}(C₂))

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

Output Voltage programmer resistors (R_{1-1/1-2/1-3}(R₁), R₂(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

8. Evaluation board BOM list for AP3418 Rev2.0:

Item	Value	Type	Rating	Description	Description
C1	4.7uF	X5R/X7R, Ceramic/1206	10V	Input coupling CAP	TAIYO YUDEN EMK212ABJ106KD-T
C2	10uF	X5R/X7R, Ceramic/1206	10V	Output coupling CAP	TAIYO YUDEN EMK212ABJ106KD-T
L1	2.2uH		>3A	Inductor	CDMC6D28NP-2R2M
R1	100K	0805	1%	Voltage set RES*	
R2	100K	0805	1%		
C3	Floating				
IC1		AP3418	SOT-23-5		

*Note: The present value of R1/R2 are based on Vout=1.2V