

## 1. General Description

The AP3403 is a 2.0 MHz fixed frequency, current mode, PWM synchronous buck (step-down) DC-DC converter, capable of driving a 600mA load with high efficiency, excellent line and load regulation. The high efficiency is easily configured by using an inductor, resistors and capacitors as the external components. Current mode control provides fast transient response and cycle-by-cycle current limit.

The AP3403 employs complete protection to ensure system security. Including input Under Voltage Lock Out, programmable Soft Start, Over Temperature Protection and hiccup mode Short Circuit Protection.

This IC is available in U-DFN1616-6 package.

## 2. Key Features

- Input Voltage Range : 2.3V to 5.5V (Absolute maximum rating: 6.5V)
- Output Voltage Range : 0.7V to 5.5V (Note: As for 1.0V or less, input voltage range is limited.)
- Feedback Voltage Accuracy :  $\pm 9\text{mV}$  (VFB=0.6V)
- Temperature-Drift Coefficient of Feedback Voltage : Typ.  $\pm 100\text{ppm}/^\circ\text{C}$
- Oscillator Frequency : Typ. 2.0MHz
- Maximum Duty Cycle : 100%
- Built-in Driver ON Resistance : Typ. Pch.  $0.38\Omega$ , Nch.  $0.3\Omega$  (VIN=3.6V)
- Supply Current (at no load) : Typ.  $34\mu\text{A}$
- Standby Current : Max.  $5\mu\text{A}$
- UVLO Detector Threshold : Typ. 2.0V
- Soft-start Time : Typ.  $150\mu\text{s}$
- LX Current Limit Circuit : Typ. 1A
- Package : U-DFN1616-6

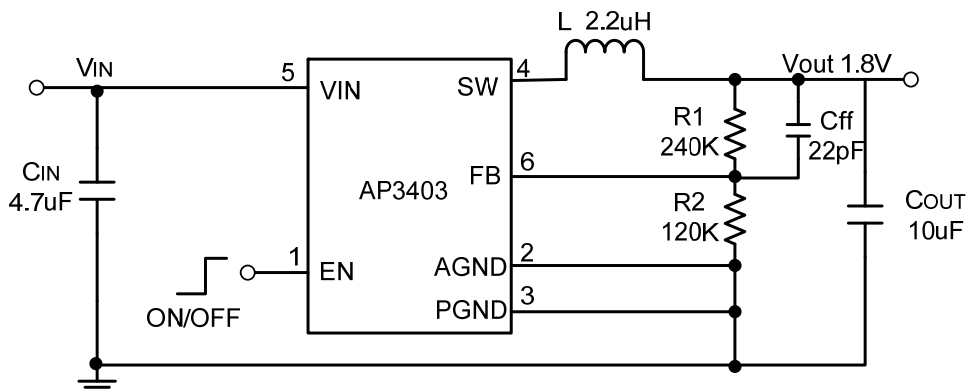
DO NOT DISTRIBUTE OR REPRODUCE WITHOUT PERMISSION FROM P.A.M

---

**Power Analog Microelectronics, Inc.**

Rev. V2.0  
April. 2014

### 3. EV Board Schematic



### 4. EVB AP3403 Description

AP3403 is an evaluation board for the AP3403, a DC/DC converter. The board is targeted to be used in providing a simple and convenient evaluation environment for the AP3403. Requires parts, power supply connectors etc. on the board, which makes it easy to be evaluated.

### 5. Recommended External Components

Symbol	Value	Components	Part Number
C <sub>IN</sub>	4.7uF	Ceramic Capacitor	C1005X5R0J475M (TDK)
			JMK105BBJ475MV (Taiyo Yuden)
			GRM155R60J475ME47 (Murata)
C <sub>OUT</sub>	10uF	Ceramic Capacitor	GRM155R60J106ME44 (Murata)
			JMK105CBJ106MV (Taiyo Yuden)
L	2.2uH	Inductor	LQM21PN2R2NGC (Murata)
			CIG21L2R2MNE (Samsung Electro-Mechanics)
	4.7uH		MIPSZ2012D2R2 L (FDK)
			CIG21L4R7MNE (Samsung Electro-Mechanics)
			MIPS2520D4R7 (FDK)

DO NOT DISTRIBUTE OR REPRODUCE WITHOUT PERMISSION FROM P.A.M

## 6. Inductance Select for Output Voltage Setting

Vo	1.0V	1.2V	1.5V	1.8V	2.5V	2.8V	3.3V
L	2.2uH	2.2uH	2.2uH	2.2uH	2.2uH	4.7uH	4.7uH

## 7. Resistor & Capacitor Select for Output Voltage Setting

The output voltage (VOUT) is adjustable by changing the R1 and R2 values as follows.

$$V_{OUT} = V_{FB} \times (R1 + R2) / R2 \quad (0.7V \leq V_{OUT} \leq 5.5V, V_{FB} = 0.6V)$$

Set Output Voltage(V)	Resistor(KΩ)		Capacitor(pF)
	R1	R2	C <sub>ff</sub>
V <sub>SET</sub>			
1.0	120	180	22
1.2	180	180	22
1.5	270	180	22
1.8	240	120	22
2.5	380	120	15
2.8	275	75	15
3.3	270	60	15

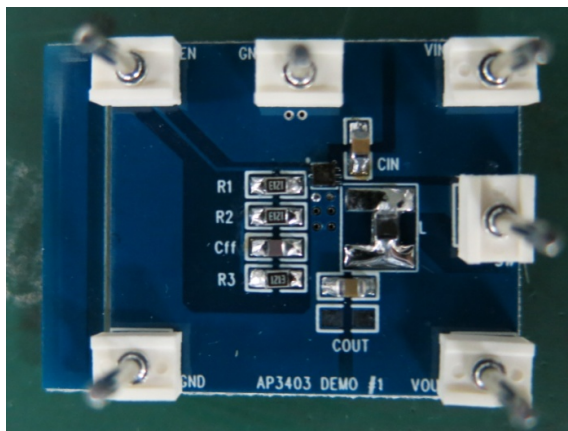
## 8. EV Board BOM List

V<sub>SET</sub>=1.8V

Item	Value	Type	Rating	Description
C <sub>IN</sub>	4.7uF	0805	25V	Input Capacitor
C <sub>OUT</sub>	10uF	0805	16V	Output Capacitor
C <sub>ff</sub>	22pF	0805	50V	Feed Forward Capacitor
L	2.2uH		>1A	Inductor
R1	121KΩ	0805	1%	Voltage Set Resistor
R2	121KΩ	0805	1%	
R3	121KΩ	0805	1%	
IC		AP3403	U-DFN1616-6	

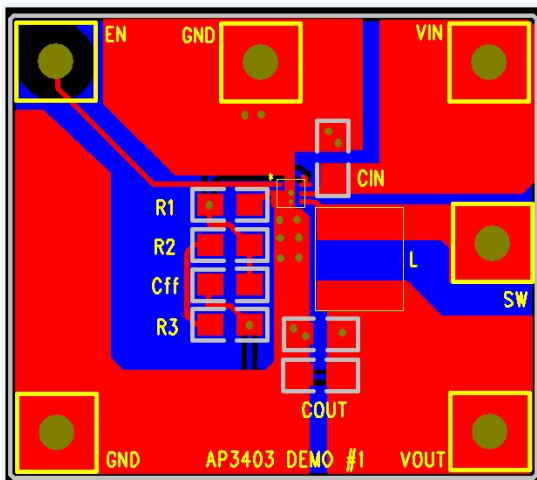
DO NOT DISTRIBUTE OR REPRODUCE WITHOUT PERMISSION FROM P.A.M

## 9. EV Board View

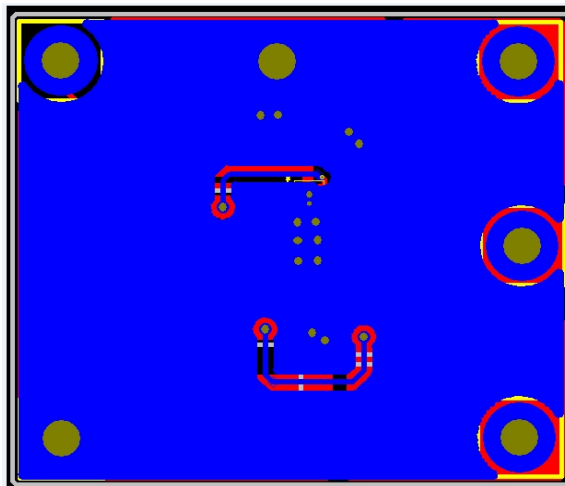


## 10. PCB Layout Example

Top Layer



Bottom Layer



DO NOT DISTRIBUTE OR REPRODUCE WITHOUT PERMISSION FROM P.A.M