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Application Note

AP1509 Application Information and Demo Board User Guide

1. Description

The AP1509 are a fully integrated step-down DC/DC converter, with the ability to drive 2A load without the need of additional driver components. The AP1509 operates at a switching frequency of 150KHZ enabling the use of small size filter components. As a result, board space is reduced and BOM costs are lowered.

2. EVM Schematic

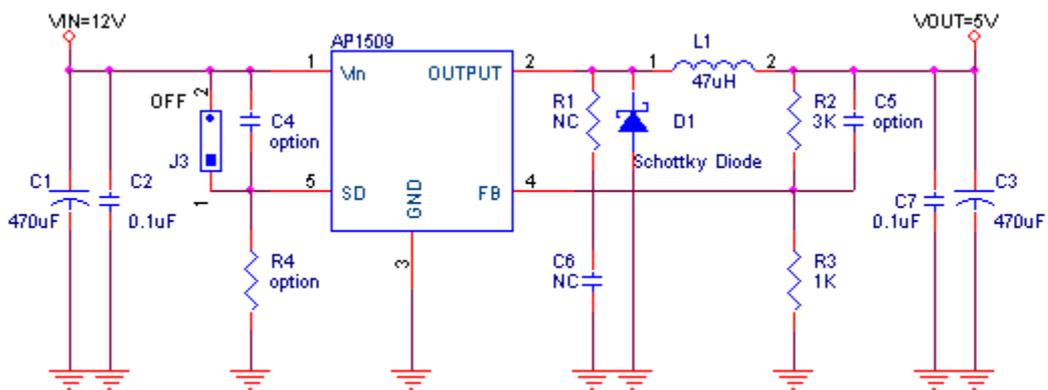


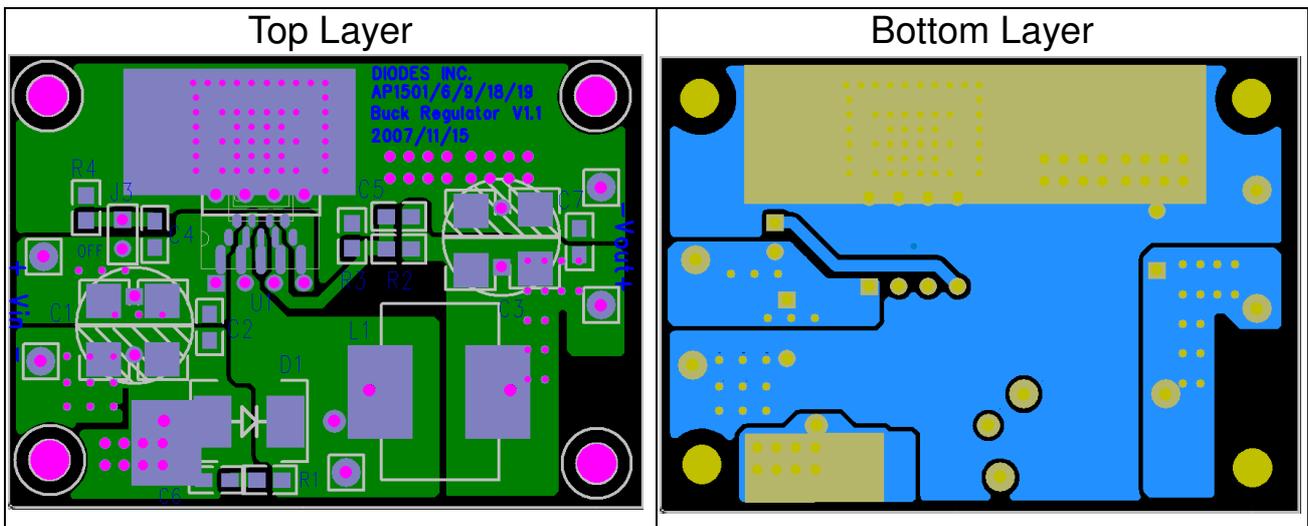
Figure 1. AP1509 schematic

$$V_{OUT} = V_{FB} * (1 + R2/R3)$$

$$V_{FB} = 1.23V$$

$$R3 = 1K \sim 3K$$

3. Board Layout



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4. Bill of Materials

Component Location	Qty	Value	Source	Part No.	Size
C1,C3	2	Aluminum Cap 470uF/25V	TEAPO		10X15
C2,C7	2	Cap MLCC 0.1uF/50V/X5R	TAIYO YUDEN	UMK212BJ104KG-T	C0805
L1	1	47uH/3A	Würth Electronics	7447 series	12X12X8mm
R4	1	Short	-	-	R0805
D1	1	Schottky diode 40V/3A	Diodes	B340	SMC
U1	1	150KHz, 2A PWM buck converter	Diodes	AP1509	SOP-8L
Vin, Vout	4	HEADER_1	-	-	2X2X13mm
PCB	1	AP1501/6/9/18/19 Buck Regulator V1.1	Diodes Inc.	TDB0007	2160X1540mil

The recommended components for adjustable output versions :

V _{OUT} (V)	R2(kΩ, 1%)	R3(kΩ, 1%)	L1(μH)
2.5	1	1	39
3.3	5	3	47
5	3	1	47
12	13	1.5	47

The recommended components for fixed output versions :

V _{OUT} (V)	R2(kΩ, 1%)	R3(kΩ, 1%)	L1(μH)
3.3	Short	NC	47
5	Short	NC	47
12	Short	NC	47

5. Vendors of peripheral components

Suggested Capacitors for C1 and C3 :

Vendor	Capacitance	Type	Series
TEAPO	Aluminum Cap 470uF/25V	DIP	

Suggested Capacitors for C2 and C7 :

Vendor	Capacitance	Type	Series
TAIYO YUDEN	Cap MLCC 0.1uF/50V/X5R	SMD	UMK212BJ104KG-T

Suggested Resistor :

Vendor	Type	Series
YAGEO	SMD	RC0805FR-SK

Suggested Inductor :

Vendor	Type	Series
Würth Electronics	SMD	7447 series

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