

Device Features

- Input voltage : 3.6V to 18V
- Output voltage : 0.8V to VCC
- Output current : up to 3A
- Duty ratio: 0% to 99% PWM control
- Oscillation frequency: 300KHz typical
- Soft-start like, Current limit and Enable function
- Thermal Shutdown function
- Built-in internal SW P-channel MOS
- SOP-8L and SOP-8L-DEP: Available in "Green" Molding Compound (No Br, Sb)
- Lead-Free Finish / RoHS Compliant

EVM Features

- Input voltage : 6V to 18V
- Output voltage : 5.0V
- Output current : up to 3A

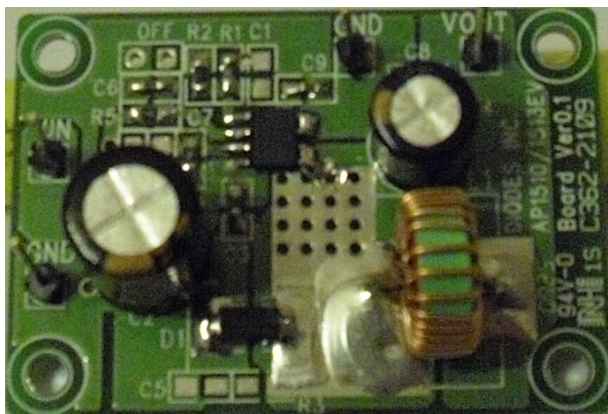
Description

AP1538 is a step-down switching regulator with PWM control. It provides low-ripple power, high efficiency, and excellent transient characteristics. The PWM control circuit is able to vary the duty ratio linearly from 0 up to 99%. This converter also contains an error amplifier circuit as well as a soft-start circuit that prevents overshoot at startup. An enable function, over current protection and short circuit protection are built-in, and when OCP or SCP happens, the operation frequency will be reduced from 300KHz to 50KHz. Also, an internal compensation block is built in to minimize external component count.

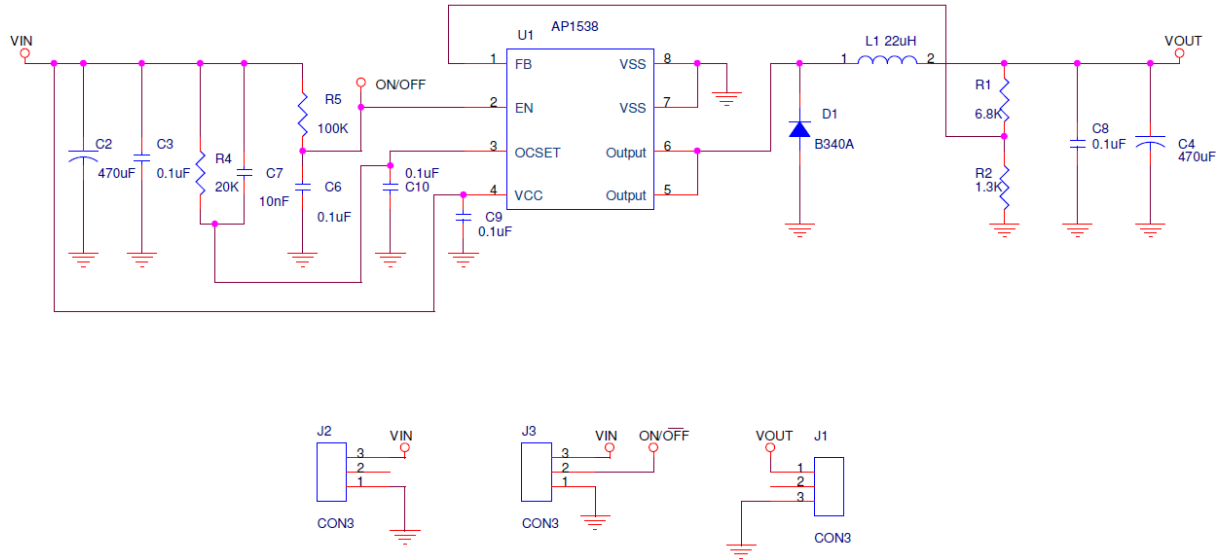
With an internal P-channel Power MOS, coupled with the SOP-8L and SOP-8L-DEP mini-packages, these step-down switching regulators can serve as ideal power supply units for portable devices. Since this converter can accommodate an input voltage up to 18V, it is also suitable for the operation via an AC adapter.

Ordering Information

Device	Package Code	Packaging	EVM Part Number
AP1538SG	S	SOP-8L	
AP1538SDPG	SDP	SOP-8L-DEP	

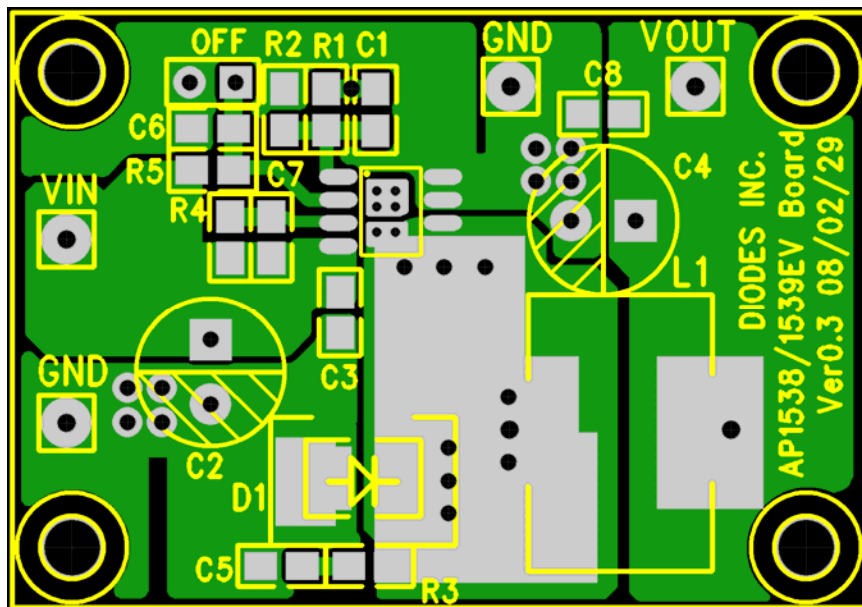


Schematic

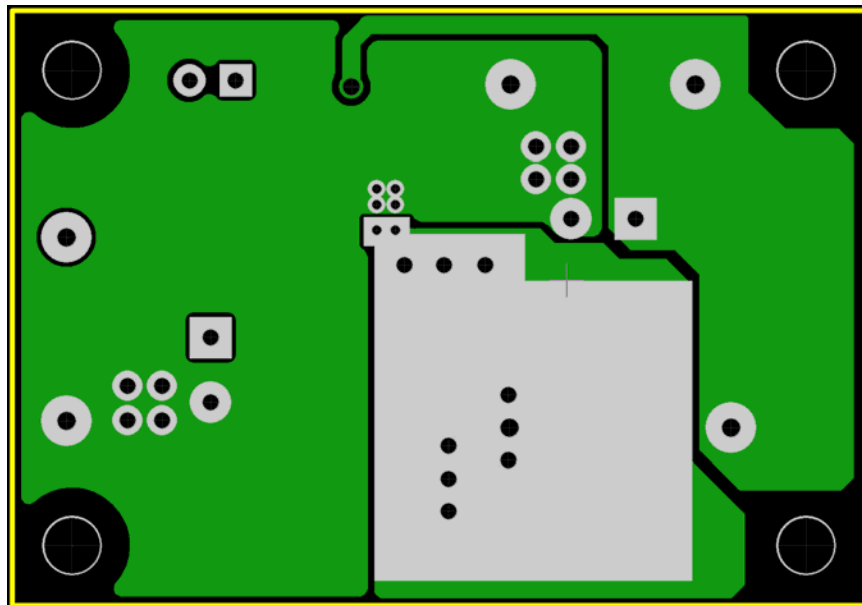


AP1538-EVM Schematic

PCB Layout



Top Layer Layout of AP1538-EVM



Bottom Layer Layout of AP1538-EVM

Bill of Material

Bill of Material for AP1538 EVM

Ref	Count	Size	Mfr	Part Number	Description
C1	1	0805	STD	STD	Not populated
C2	1	TH	STD	STD	470 μ F electrolytic capacitor
C3, C6, C9, C10	4	0805	STD	STD	0.1 μ F ceramic capacitor
C4	1	TH	STD	STD	470 μ F electrolytic capacitor
C5	1	0805	STD	STD	Not populated
C7	1	0805	STD	STD	0.01 μ F ceramic capacitor
C8	1	0805	STD	STD	0.1 μ F ceramic capacitor
R1	1	0805	STD	STD	6.8 k Ω resistor
R2	1	0603	STD	STD	1.3 k Ω resistor
R3	1	0603	STD	STD	Not populated
R4	1	0603	STD	STD	20 k Ω resistor
R5	1	0603	STD	STD	100 k Ω resistor
L1	1	TH			22 μ H inductor
D1	1	SMA	Diodes	B340A	3A/40V Schottky diode
U1	1	SOP8	Diodes	AP1538	3A/18V 300kHz Buck converter

I/O Terminals and Test Points

Terminals and Jumpers for AP1538 EVM

I/O and Test Points	Description	Comments
VIN, GND	Input and Ground	Connect to input power supply
VOUT, GND	Output and Ground	Connect to load
OFF	Enable jumper	Open to enable the operation; Place a shunt to disable the device

Quick Start Guide

1. Leave the Enable jumper open.
2. Connect a +12V power supply between the VIN and GND terminals. Make sure the power supply is turned off.
3. Connect an adjustable current or resistive load to the OUT and GND terminals.
4. Turn on the power supply. Measure the output voltage. Vout should be about 5V.
5. Increase the load current and monitor the output voltage.
6. Vary the input voltage between 6V and 18V and monitor the output voltage.