AP2014/A Evaluation Module

Synchronous PWM Controller

Device Features

- Synchronous Controller in 8-Pin Package
- Fixed Frequency Voltage Mode
- Internal 200kHz Oscillator (400kHz for AP2014A)
- Operating with single 5V or 12V supply
- Soft-Start Function
- 500mA Peak Output Drive Capability
- Protects the output when control FET is shorted
- SOP-8L Pb-Free package
- Lead-Free Finish/RoHS Compliant for Lead-Free and “Green” Products

Description

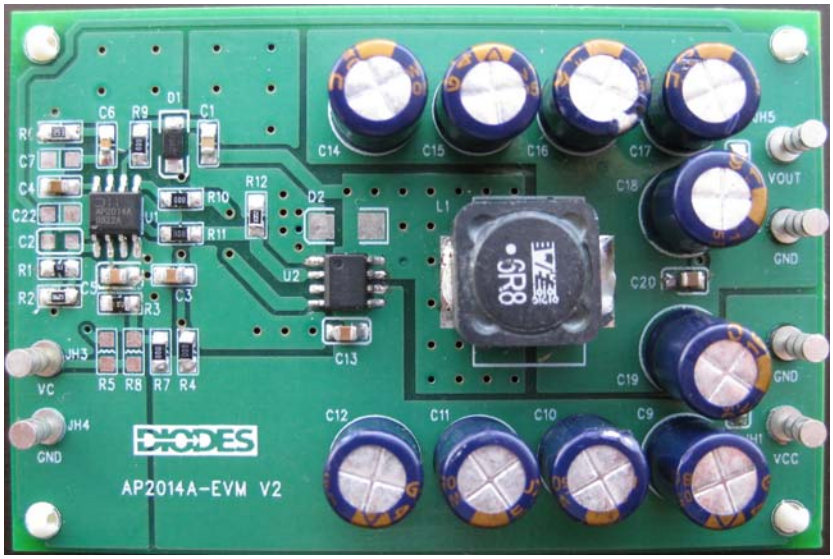
The AP2014 controller IC is designed to provide a low-cost synchronous Buck regulator for on-board DC/DC converter applications. The AP2014 together with dual N-channel MOSFETs provide a low cost solution for such applications. This device features an internal oscillator, under-voltage lockout for both Vcc and Vc supplies, an external programmable soft-start function as well as output under-voltage detection that latches off the device when an output short is detected.

EVM Features

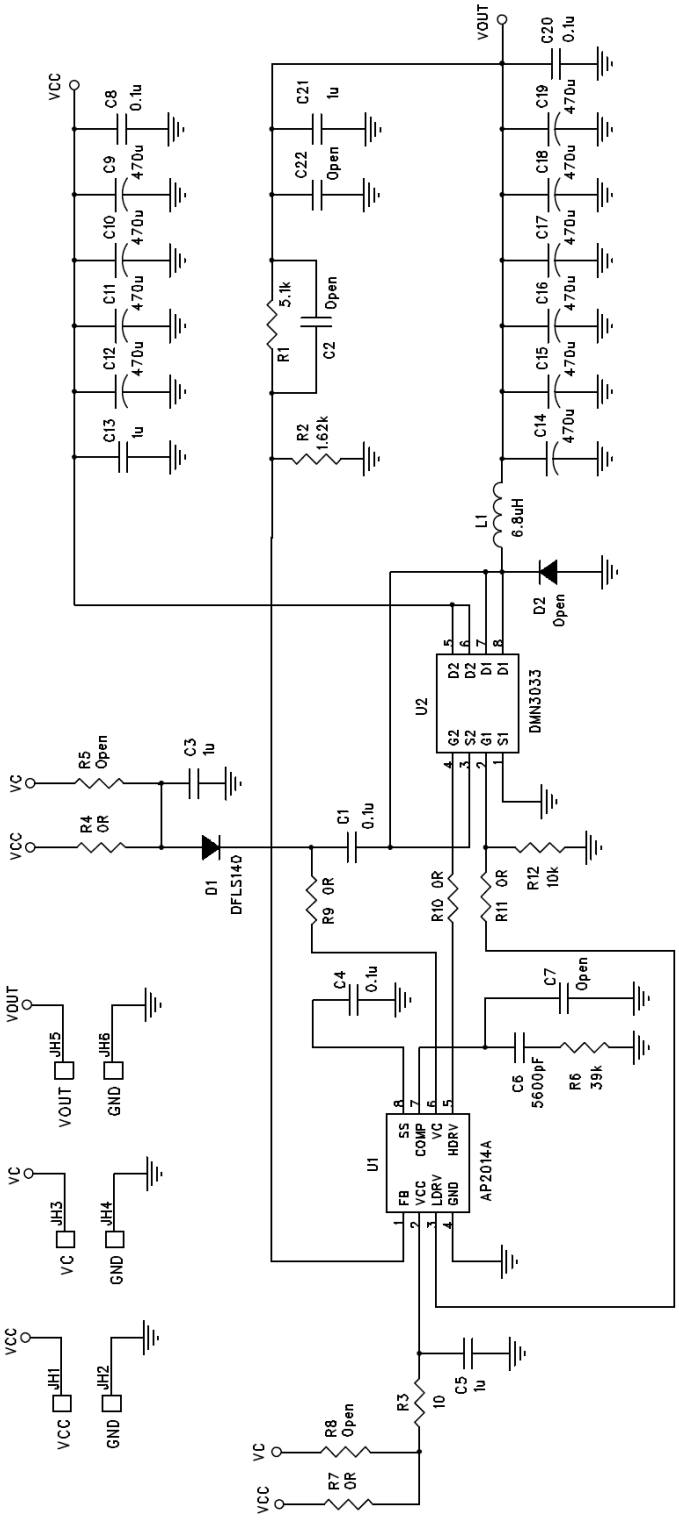
- Step-down (Buck) mode
- Input voltage : 12V
- Output voltage : 3.3V
- Output current: up to 4A

Ordering Information

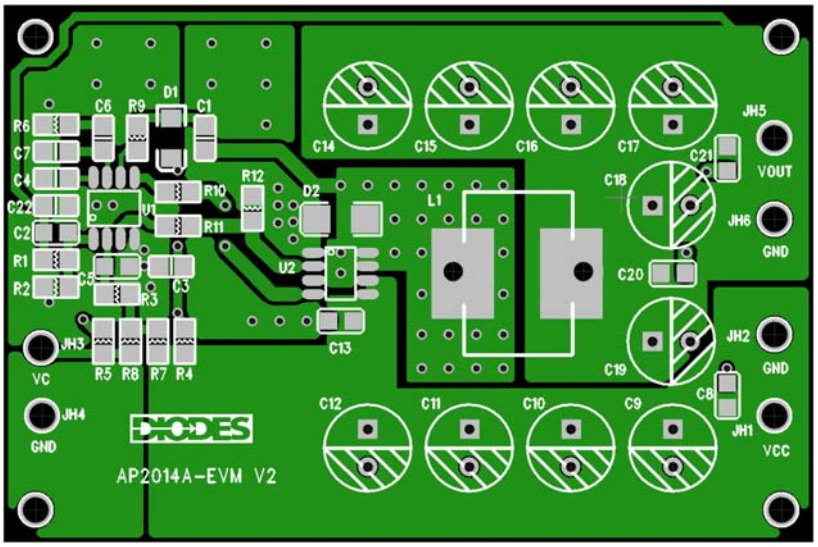
Device	Package Code	Packaging	EVM Part Number
AP2014A	S8	SOP-8L	AP2014A-EVM



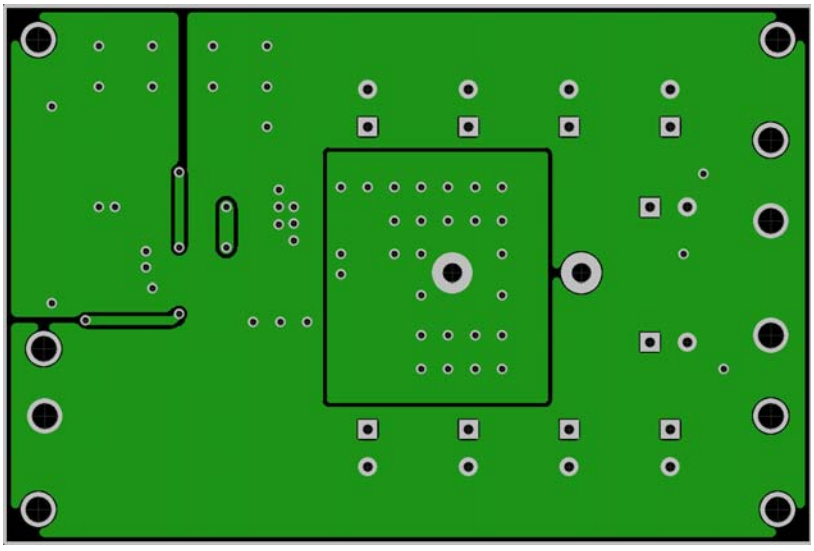
Schematic



PCB Layout



Top Layer Layout of AP2014A-EVM



Bottom Layer Layout of AP2014A-EVM

Bill of Material

Bill of Material for AP2014A EVM

Ref	Count	Size	Mfr	Part Number	Description
C1, C4, C8	3	0805	STD	STD	0.1 μF ceramic capacitor
C2, C7, C22	3	0805	STD	STD	Not soldered
C3, C5, C13	3	0805	STD	STD	1 μF ceramic capacitor
C6	1	0805	STD	STD	5600 pF ceramic capacitor
C9-12	4		STD		470 μF electrolytic capacitor
C14-19	6		STD		470 μF electrolytic capacitor
C20, C21	2	0805	STD	STD	1 μF ceramic capacitor
R1	1	0805	STD	STD	5.1 kΩ resistor
R2	1	0805	STD	STD	1.62 kΩ resistor
R3	1	0805	STD	STD	10 Ω resistor
R4, R5, R7, R8	4	0805	STD	STD	0 Ω resistor (jumper)
R6	1	0805	STD	STD	39 kΩ resistor
R9, R10, R11	3	0805	STD	STD	0 Ω resistor (jumper)
R12	1	0805	STD	STD	10 kΩ resistor
L1	1	12x12mm	Wurth		6.8 μH inductor
D1	1	SMA	Diodes	DFLS140	1A/40V Schottky diode
D2	1	SMB			Not soldered
U1	1	SOP8	Diodes	AP2014A	Synchronous PWM controller
U2	1	SOP8	Diodes	DMN3033	Dual NMOSFET

I/O Terminals and Test Points

Terminals and Jumpers for AP2014A EVM

I/O and Test Points	Description	Comments
JH1, JH2	Input and Ground	Connect to the input power supply
JH3, JH4	Control supply and Ground	Unused
JH4, JH6	Output and Ground	Connect to the load

Quick Start Guide

1. Connect a +12V power supply between the VCC (JH1) and GND (JH2) terminals. Make sure the power supply is turned off.
2. Connect an adjustable current or resistive load to the VOUT (JH5) and GND (JH6) terminals (up to 4A).
3. Turn on the power supply. Measure the output voltage. Vout should be about 3.3V.
4. Increase the load current and monitor the output voltage.