

## General Description

The AOZ1018 evaluation board is a fully assembled and tested circuit board built with the AOZ1018 buck regulator IC. It outputs a preset or adjustable voltage at up to 2A of continuous current. The evaluation board requires an input voltage from 4.5 V to 16 V. The output voltage is preset and can be adjusted from 0.8 V to  $V_{IN}-0.4V$

The AOZ1018-EVA circuit has features like current limit, short circuit protection, input under voltage lock out, internal soft start and thermal shut down. It operates at a fixed 500 kHz switching frequency. The current mode control and integrated internal MOSFET minimize component count, board area and total cost.

The AOZ1018 comes in SO-8 package and is rated over a  $-40^{\circ}C$  to  $+85^{\circ}C$  ambient temperature range.

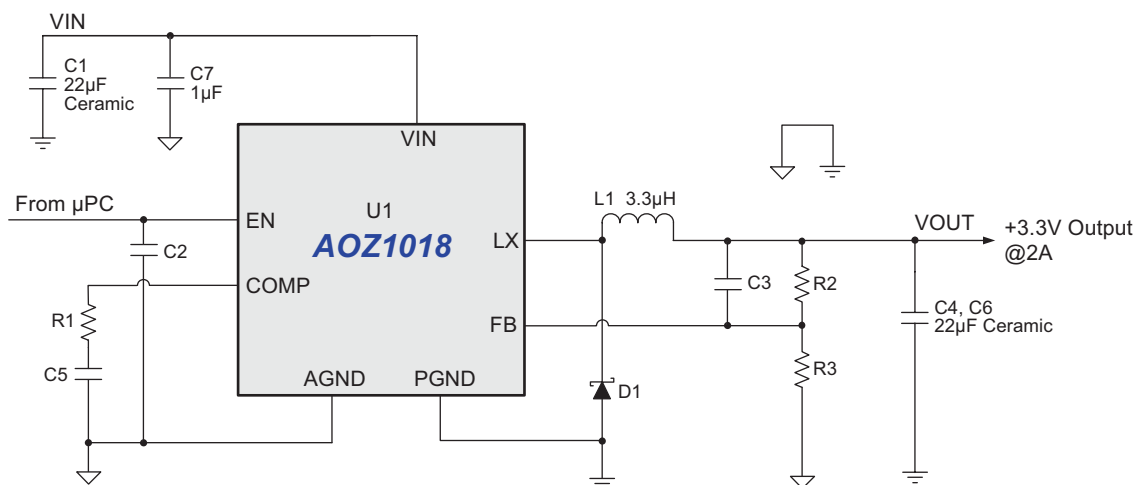
## Features

- 4.5V to 16V operating input voltage range
- Output voltage was preset to 3.3 V, adjustable to as low as 0.8V
- 2A continuous output current
- Fixed 500kHz PWM operation
- Internal soft start
- Cycle-by-cycle current limit
- Short-circuit protection
- Thermal shutdown

## Applications

- Point of load DC/DC conversion
- PCIe graphics cards
- Set top boxes
- DVD drives and HDD
- LCD panels
- Cable modems
- Telecom/networking/datacom equipment

## Evaluation Board Schematic



## Component List

Ref Designation	Value	Description	Manufacture Part Number	Manufacture
C1	22 $\mu$ F	Ceramic Cap, 22 $\mu$ F, 25V, 1210, X5R	GRM32ER61E226KE15L	Murata
C2	1000pF	Ceramic Cap, 1000pF, 50V, 0603, X7R	GRM188R71E102K	
C3	NU			
C4	22 $\mu$ F	Ceramic Cap, 22 $\mu$ F, 25V, 1210, X5R	GRM32ER61E226KE15L	
C5*	1000pF	Ceramic Cap, 1000pF, 50V, 0603, X7R	GRM188R71E102K	
C6	22 $\mu$ F	Ceramic Cap, 22 $\mu$ F, 25V, 1210, X5R	GRM32ER61E226KE15L	
C7	1 $\mu$ F	Ceramic Cap, 1 $\mu$ F, 25V, 0603, X5R	GRM188R61E105KA12D	
R1*	31.6k $\Omega$	Thick Film Res, 1%, 31.6k, 0603	CRCW060331K6FKTAP	DALE
R2*	31.6k $\Omega$	Thick Film Res, 1%, 31.6k, 0603	CRCW060331K6FKTAP	
R3	10k $\Omega$	Thick Film Res, 1%, 10k, 0603	CRCW060310K0FKTAP	
L1*	3.3 $\mu$ H	Inductor, 3.3 $\mu$ H, 2.9A	LQH55DN3R3M03	Murata
D1		Schottky Barrier Diode, 2A, 30V, SMA	B230A-FDICT-ND	DIODES
U1	AOZ1018AI	Buck regulator IC, 2A, 16V	AOZ1018AI	AOS

\*For evaluation board with different output voltage, these values might be different.

## Ordering Information

Part Number	Output Preset Voltage	IC package	Ambient Temperature Range
AOZ1018-EVA-8.0V	8 V	SO-8	-40°C to +85°C
AOZ1018-EVA-5.0V	5.0 V	SO-8	-40°C to +85°C
AOZ1018-EVA-3.3V	3.3 V	SO-8	-40°C to +85°C
AOZ1018-EVA-2.5V	2.5 V	SO-8	-40°C to +85°C
AOZ1018-EVA-1.8V	1.8 V	SO-8	-40°C to +85°C

PCB Layout (1" x 1.25")

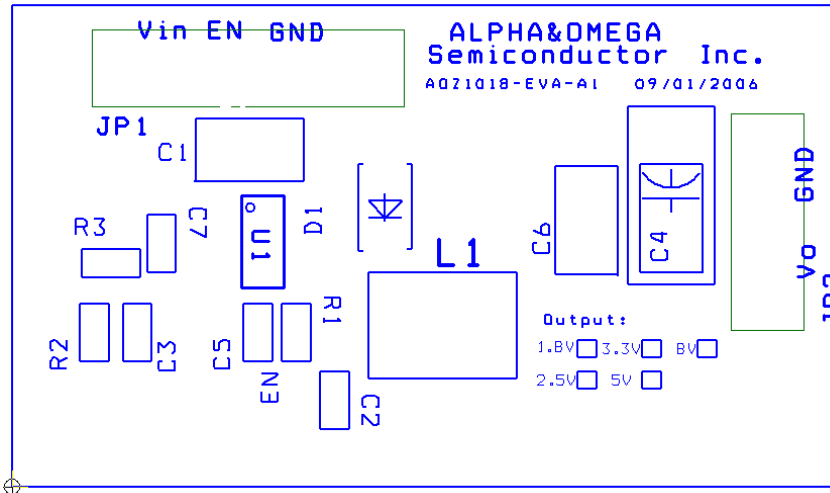


Figure 1. Top Silk Screen

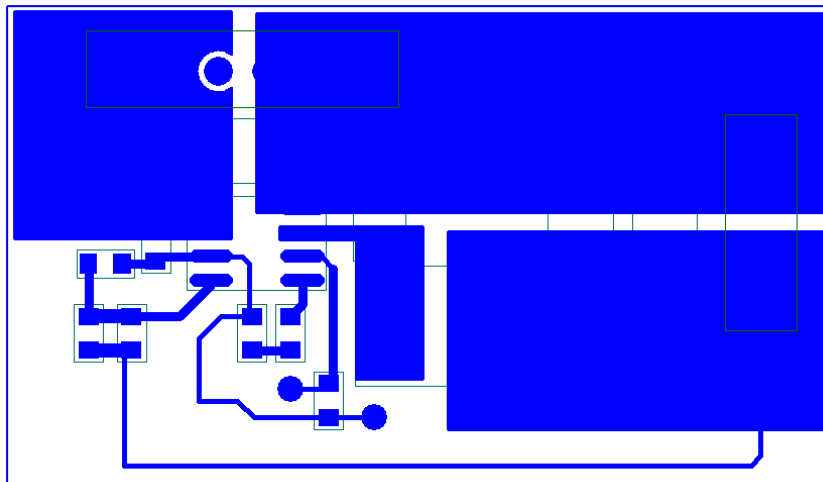


Figure 2. Top Layer

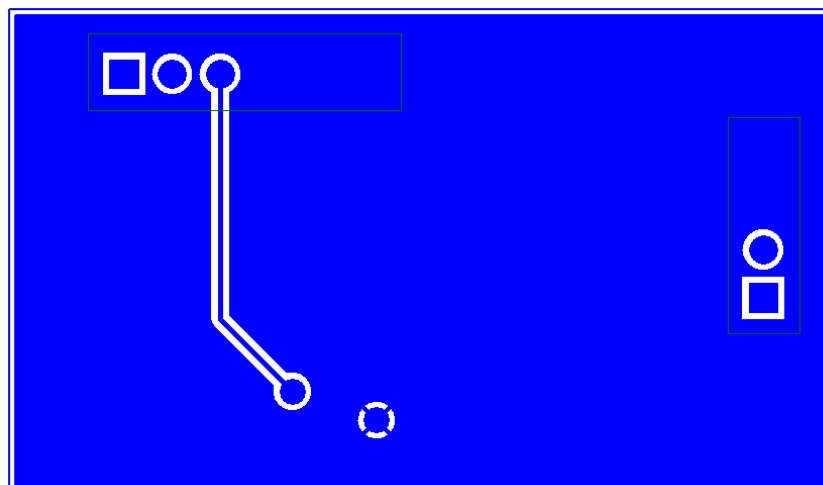


Figure 3. Bottom Layer

**BOM of 8V/2A AOZ1018 Regulator**

Ref Designation	Value	Description	Package	Manufactures
C1	22 $\mu$ F	Ceramic Cap, 25V, X7R/X7R	1210	Murata, AVX
C2	1000pF	Ceramic Cap, 50V, X7R	0603	
C3	NU		0603	
C4	22 $\mu$ F	Ceramic Cap, 25V, X7R/X5R	1210	
C5	820pF	Ceramic Cap, 50V, X7R	0603	
C6	22 $\mu$ F	Ceramic Cap, 25V, X7R/X5R	1210	
C7	1 $\mu$ F	Ceramic Cap, 25V, X5R	0603	
R1	80.6k $\Omega$	Thick Film Res, 1%	0603	DALE
R2	90.9k $\Omega$	Thick Film Res, 1%	0603	
R3	10k $\Omega$	Thick Film Res, 1%	0603	
L1	10 $\mu$ H	Inductor LQH55 series		Murata
D1		Schottky Barrier Diode, 2A, 30V, SMA	B230A-FDICT-ND	DIODES
U1	AOZ1018A	Buck regulator IC	SO-8	AOS

**BOM of 5V/2A AOZ1018 Regulator**

Ref Designation	Value	Description	Package	Manufactures
C1	22 $\mu$ F	Ceramic Cap, 25V, X7R/X5R	1210	Murata, AVX
C2	1000pF	Ceramic Cap, 50V, X7R	0603	
C3	NU		0603	
C4	22 $\mu$ F	Ceramic Cap, 25V, X7R/X5R	1210	
C5	1000pF	Ceramic Cap, 50V, X7R	0603	
C6	22 $\mu$ F	Ceramic Cap, 25V, X7R/X5R	1210	
C7	1 $\mu$ F	Ceramic Cap, 25V, X5R	0603	
R1	49.9k $\Omega$	Thick Film Res, 1%	0603	DALE
R2	52.3k $\Omega$	Thick Film Res, 1%	0603	
R3	10k $\Omega$	Thick Film Res, 1%	0603	
L1	4.7 $\mu$ H	Inductor LQH55 series		Murata
D1		Schottky Barrier Diode, 2A, 30V, SMA	B230A-FDICT-ND	DIODES
U1	AOZ1018A	Buck regulator IC	SO-8	AOS

**BOM of 3.3V/2A AOZ1018 Regulator**

Ref Designation	Value	Description	Package	Manufactures
C1	22 $\mu$ F	Ceramic Cap, 25V, X7R/X5R	1210	Murata, AVX
C2	1000pF	Ceramic Cap, 50V, X7R	0603	
C3	NU		0603	
C4	22 $\mu$ F	Ceramic Cap, 25V, X7R/X5R	1210	
C5	1000pF	Ceramic Cap, 50V, X7R	0603	
C6	22 $\mu$ F	Ceramic Cap, 25V, X7R/X5R	1210	
C7	1 $\mu$ F	Ceramic Cap, 25V, X5R	0603	
R1	31.6k $\Omega$	Thick Film Res, 1%	0603	DALE
R2	31.6k $\Omega$	Thick Film Res, 1%	0603	
R3	10k $\Omega$	Thick Film Res, 1%	0603	
L1	3.3 $\mu$ H	Inductor LQH55 series		Murata
D1		Schottky Barrier Diode, 2A, 30V, SMA	B230A-FDICT-ND	DIODES
U1	AOZ1018A	Buck regulator IC	SO-8	AOS

**BOM of 1.8V/2A AOZ1018 Regulator**

Ref Designation	Value	Description	Package	Manufactures
C1	22 $\mu$ F	Ceramic Cap, 25V, X7R/X5R	1210	Murata, AVX
C2	1000pF	Ceramic Cap, 50V, X7R	0603	
C3	NU		0603	
C4	22 $\mu$ F	Ceramic Cap, 25V, X7R/X5R	1210	
C5	1500pF	Ceramic Cap, 50V, X7R	0603	
C6	22 $\mu$ F	Ceramic Cap, 25V, X7R/X5R	1210	
C7	1 $\mu$ F	Ceramic Cap, 25V, X5R	0603	
R1	20k $\Omega$	Thick Film Res, 1%	0603	DALE
R2	12.4k $\Omega$	Thick Film Res, 1%	0603	
R3	10k $\Omega$	Thick Film Res, 1%	0603	
L1	2.2 $\mu$ H	Inductor LQH55 series		Murata
D1		Schottky Barrier Diode, 2A, 30V, SMA	B230A-FDICT-ND	DIODES
U1	AOZ1018A	Buck regulator IC	SO-8	AOS

## Quick Start Guide

1. Connect the terminals of load to +V<sub>OUT</sub> pins and GND pins. Set load current between 0A and 2A.
2. Connect the DC power supply to +V<sub>IN</sub> pin and GND pins. Set DC power supply voltage between 4.5V and 16V.
3. Connect EN pin to +V<sub>IN</sub> or any voltage source which is between 2.0V and 16V.
4. Turn on DC power supply and evaluation circuit will start.
5. Measure input voltage at the +V<sub>IN</sub> pin and GND pins to eliminate the effect of voltage drop on wire between DC power supply and the evaluation board.
6. Measure output voltage at the +V<sub>OUT</sub> pin and GND pins to eliminate the effect of voltage drop on wire between load and the evaluation board.
7. Use an oscilloscope to monitor input ripple voltage across input capacitor C1.
8. Use an oscilloscope to monitor output ripple voltage across output capacitor C4.