Advanced Monolithic Systems

AMS4154

2A OUTPUT PWM BUCK CONVERTER

RoHS compliant

FEATURES

- **Stable with low ESR Output Ceramic Capacitors**
- **Up to 99% On time**
- **2A Output Current**
- **Wide Operating Input Voltage Range 5.5V to 32V**
- **Fixed 330 kHz Frequency**
- **Thermal Shutdown**
- **Cycle-by-cycle Over Current Protection**
- **Under Voltage Lockout**
- **5V reference output**
- **Adjustable output from 0.6V**

APPLICATIONS

- **Battery Chargers**
- **Portable (Notebook) Computers**
- **Industrial power supply**
- **Point of regulation for high performance electronics**
- **Consumer Electronics**
- **Audio Power Amplifiers**
- **Distributed Power Systems**
- **Pre-Regulator for Linear Regulators**
- **LCD TVs and LCD monitors**
- **Automotive electronics**

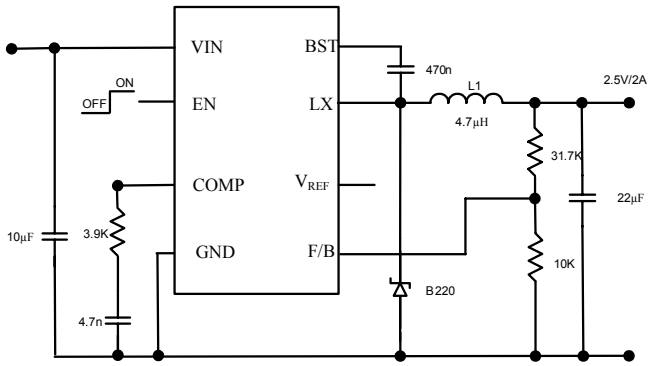
GENERAL DESCRIPTION

The AMS4154 is a step-down converter for high voltage applications. Current mode operation provides easier compensation and fast transient response. Internal cycle-by-cycle current limiting and thermal shutdown provides the necessary protection in faults situation. A 5V reference voltage is available that can supply up to 2mA current.

ORDERING INFORMATION

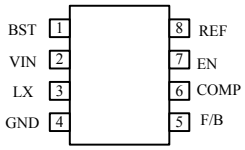
OUTPUT	PACKAGE TYPE	TEMP. RANGE
VOLTAGE	**8 Lead SOIC**	
Adjustable	AMS4154S	-25°C to 125°C

TYPICAL APPLICATION



PIN CONNECTIONS

8L SOIC
SO Package (S)



Top View

PIN DESCRIPTION

AMS4154		
PIN NUMBERS	NAME	DESCRIPTION
1	BST	Bootstrap. A capacitor is needed to drive the power switch's drive above the supply voltage. It is connected between LX and BST pins to form a floating supply across the power switch driver.
2	VIN	Supply Voltage. The AMS4154 operates from a+5.5V to +32V unregulated input. C1 is needed to prevent large voltage spikes from appearing at the input.
3	LX	Switch. This connects the inductor to VIN through the internal power switch.
4	GND	Ground. This pin is the ground for voltage reference and for the regulated output voltage. For this reason care must be taken in its layout.
5	FB	Feedback. An external resistor divider from the output to GND, tapped to the FB pin sets the output voltage.
6	COMP	Compensation. This node is the output of the transconductance error amplifier and the input to the current comparator. Frequency compensation is done at this node by connecting a series R-C to ground.
7	EN	Enable. A voltage greater than 2.5V enables operation. For complete low current shutdown the EN pin voltage needs to be less than 2.3V.
8	REF	5V reference voltage capable of supplying 1mA for other external circuits.

ABSOLUTE MAXIMUM RATINGS

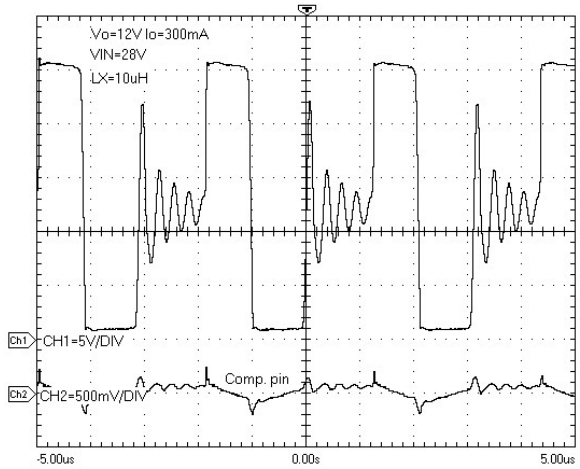
Input Supply Voltage	-0.3V to +34V	Junction Temperature	+150°C
SW Voltage	-1V to VIN + 0.3V	Storage Temperature	-65°C to +150°C
BS Voltage	V LX – 0.3V to V LX + 6V	Lead Temperature	260°C
All Other Pins	-0.3V to +6V		

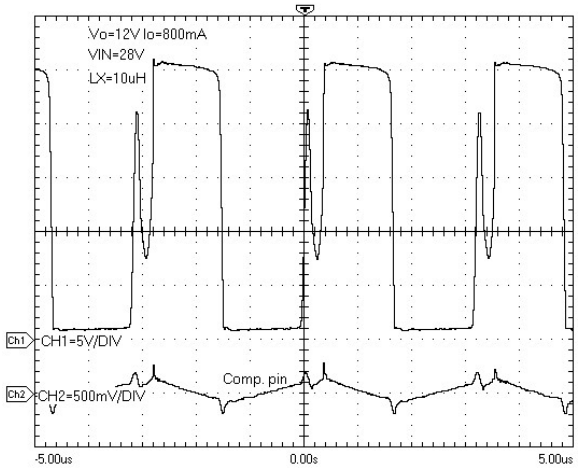
ELECTRICAL CHARACTERISTICS

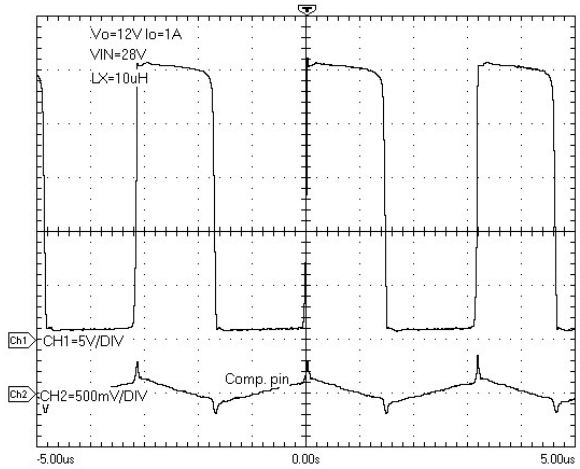
Electrical Characteristics at T_A= 25 °C and VIN=12V (unless otherwise noted).

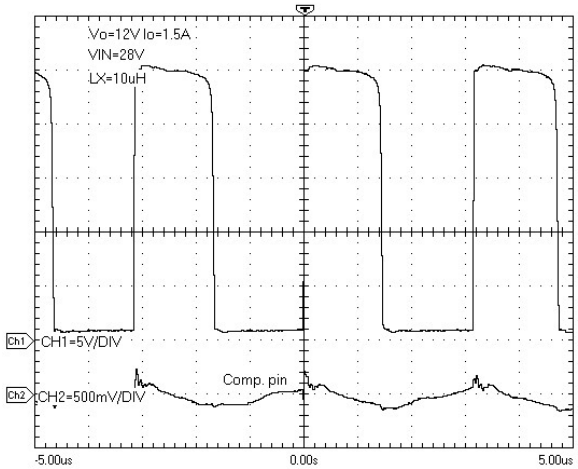
PARAMETER	TEST CONDITIONS	AMS4154 Min.	AMS4154 Typ.	AMS4154 Max.	Units
Feedback Voltage	$0.6V \le V_{IN} \le 32V$, $V_{COMP} < 2V$	0.588	0.600	0.612	V
Supply Current	V_{EN} = 5V, V_{FB} = 1.4V		1.0	1.2	mA
Shutdown Supply Current	V_{EN} = 0V		0.5	1	µA
Current Limit		2.5	3.6	4.9	A
Current Sense to COMP Transconductance			3.5		A/V
Oscillation Frequency		280	330	380	KHz
Maximum Duty Cycle	V_{FB} = 1.0V		90	99	%
Minimum Duty Cycle	V_{FB} = 1.5V		0		%
EN Threshold Voltage	V_{EN} Rising, Output ON	2.5	2.6	2.8	V
EN Threshold Voltage	V_{EN} Falling , Output OFF		2.2	2.3	V
EN Threshold Hysteresis			250		mV
Enable Current	V_{EN} = 0V		1.8		µA
Thermal Shutdown			160		ºC
5V REF Voltage	I_{REF} = 0	4.8	5.0	5.2	V
REF Load Regulation	ΔI_{REF} = 0 to 1mA		100		mV
REF Line Regulation	I_{REF} = 100µA, V_{IN} = 6.5 to 32V		30		mV

TYPICAL WAVEFORM



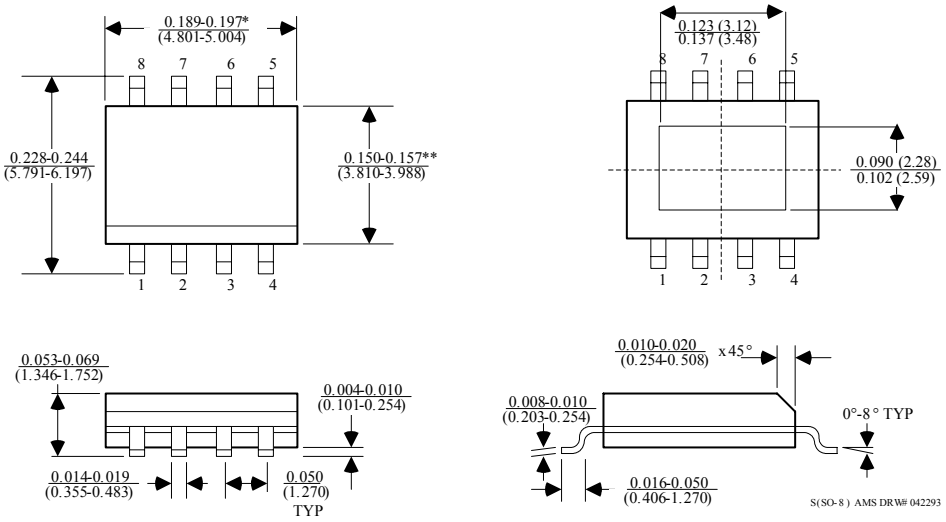


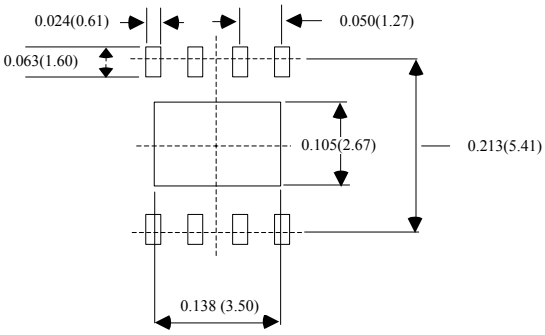




PACKAGE DIMENSIONS inches (millimeters) unless otherwise noted.

8 LEAD SOIC PLASTIC PACKAGE (S)





RECOMMENDED LAYOUT PATTERN

*DIMENSION DOES NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.006" (0.152mm) PER SIDE

**DIMENSION DOES NOT INCLUDE INTERLEAD FLASH. INTERLEAD FLASH SHALL NOT EXCEED 0.010" (0.254mm) PER SIDE