DESCRIPTION

The AMS1076 is a monolithic integrated step-down switch mode converter with an internal power MOSFET. It achieves 1A continuous output current over a wide input supply range with excellent load and line regulation.

Current mode operation provides fast transient response and eases loop stabilization.

Fault condition protection includes cycle-by-cycle current limiting and thermal shutdown.

The AMS1076 requires a minimum number of readily available standard external components. The AMS1076 is available in SOT23-6 packages.

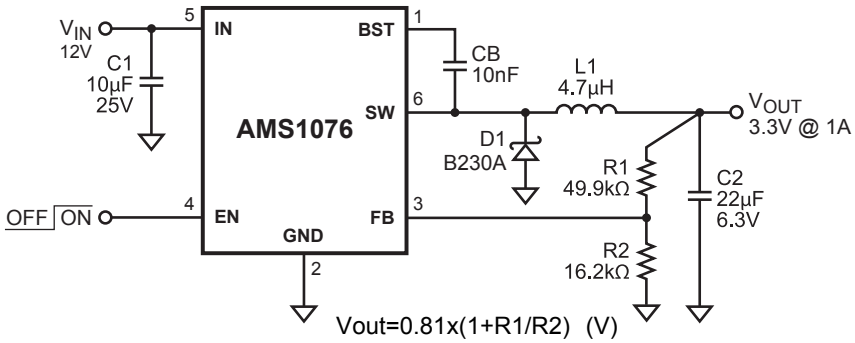
FEATURES

- 1A Output Current
- 0.45Ω Internal Power MOSFET Switch
- Stable with Low ESR Output Ceramic Capacitors
- Up to 92% Efficiency
- 0.1μA Shutdown Mode
- Fixed 1.4MHz Frequency
- Thermal Shutdown
- Cycle-by-Cycle Over Current Protection
- Wide 4.5V to 18V Operating Input Range
- Output Adjustable from 0.81V to 15V
- Available in SOT23-6 Packages

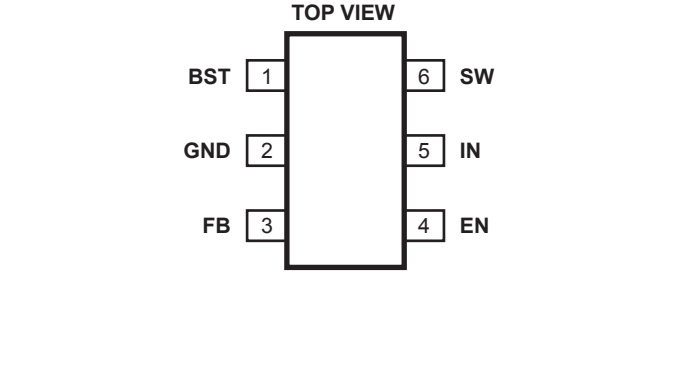
APPLICATIONS

- Hand Disk Drive
- xDSL Modems Cable
- Set-Top Box

TYPICAL APPLICATION



PACKAGE REFERENCE



SOT23-6

ABSOLUTE MAXIMUM RATINGS

Supply Voltage V_{IN} .....-0.3V~21V
V_{SW}.....-0.3V~Vin+0.3V
V_{BS} ..... V_{SW} ~ 6V
All Other Pins.....–0.3V ~ +6V
Lead Temperature .....260°C
Storage Temperature..... –65°C to +150°C

Recommended Operating Conditions

Supply Voltage V_{IN} .....4.5V to 18V
Output Voltage V_{OUT}..... 0.81 to 15V
Operation Temperature .....–40°C ~ +85°C

ELECTRICAL CHARACTERISTICS

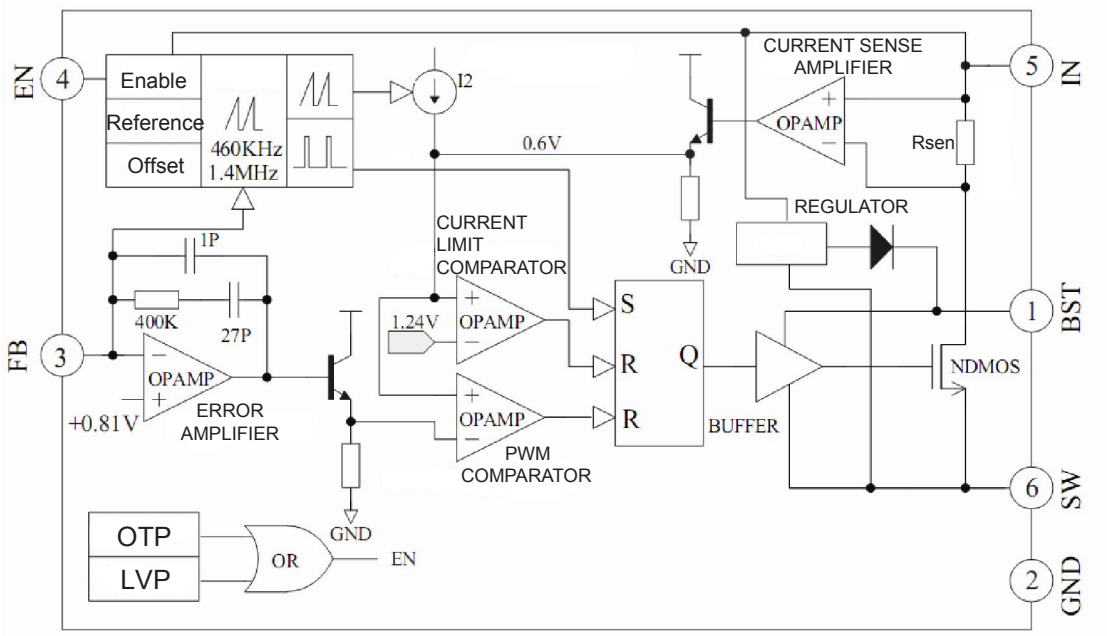
V_{IN} = 12V, T_A = +25°C, unless otherwise noted.

Parameters	Symbol	Condition	Min	Typ	Max	Units
Feedback Voltage	V_{FB}	4.5V ≤ V_{IN} ≤ 18V	0.790	0.810	0.830	V
Feedback Current	I_{FB}	V_{FB} = 0.8V		10		nA
		V_{FB} = 2V		2		µA
Switch-On Resistance	$R_{DS(ON)}$			0.45		Ω
Switch Leakage		V_{EN} = 0V, V_{SW} = 0V			10	µA
Current Limit				1.8		A
Oscillator Frequency	f_{SW}		1.2	1.4	1.7	MHz
Fold-back Frequency		V_{FB} = 0V		460		KHz
Maximum Duty Cycle		V_{FB} = 0.6V		87		%
Minimum On-Time	t_{ON}			100		ns
Under Voltage Lockout Threshold Rising			2.5	2.8	3.1	V
Under Voltage Lockout Threshold Hysteresis				150		mV
EN Input Low Voltage					0.4	V
En Input High Voltage			1.2			V
EN Input Current		V_{EN} = 2V		2.1		µA
		V_{EN} = 0V		0.1		
Supply Current (Shutdown)		V_{EN} = 0V		0.1	1	µA
Supply Current (Quiescent)		V_{EN} = 2V, V_{FB} = 1V		0.8	1	mA
Thermal Shutdown				160		°C

PIN FUNCTIONS

Pin #	Name	Description
1	BST	Bootstrap. This capacitor is needed to drive the power switch's gate above the supply voltage. It is connected between SW and BS pins to form a floating supply across the power switch driver.
2	GND	Ground. This pin is the voltage reference for the regulated output voltage. For this reason care must be taken in its layout. This node should be placed outside of the D1 to C1 ground path to prevent switching current spikes from inducing voltage noise into the part.
3	FB	Feedback. An external resistor divider from the output to GND, tapped to the FB pin sets the output voltage. To prevent current limit run away during a short circuit fault condition the frequency foldback comparator lowers the oscillator frequency when the FB voltage is below 250mV.
4	EN	On/Off Control Input. Pull above 1.2V to turn the device on.
5	IN	Supply Voltage. The AMS1076 operates from a +4.5V to +18V unregulated input. C1 is needed to prevent large voltage spikes from appearing at the input.
6	SW	Switch Output.

Functional Block Diagram



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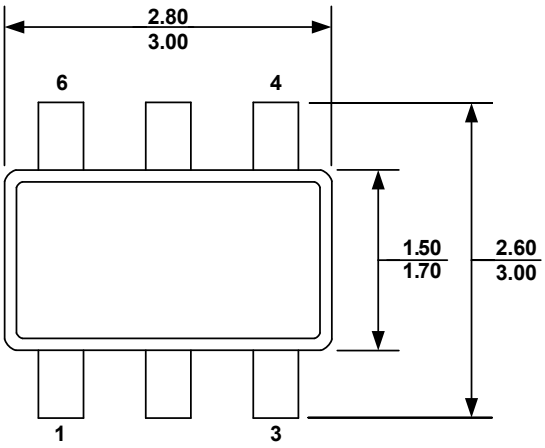
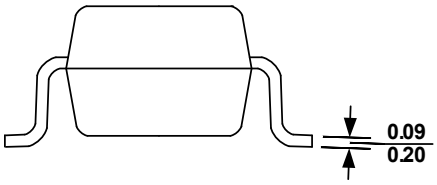
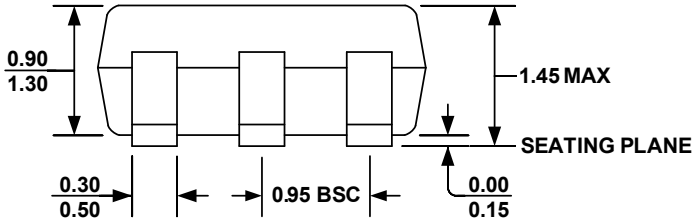


TOP VIEW



SIDE VIEW



FRONT VIEW

NOTE:
ALL DIMENSIONS ARE IN MILLIMETERS .