Features

- Up to 95% Efficiency
- Low voltage start-up：1.3V
- Shut-down current: < 1μA
- Input voltage：1.3V～3.0V
- Output voltage：3V
- Low switch on resistance R_{DS}(ON), Internal switch: 0.4Ω
- 2MHz fixed frequency switching
- Automatic PWM/PFM mode switching
- High switch on current: 1A
- Thermal Protection
- Low profile SOT-23-3 package (lead-free packaging is now available)

Applications

- Digital cameras and MP3
- Palmtop computers / PDAs
- Cellular phones
- Wireless handsets and DSL modems
- PC cards
- Portable media players

Description

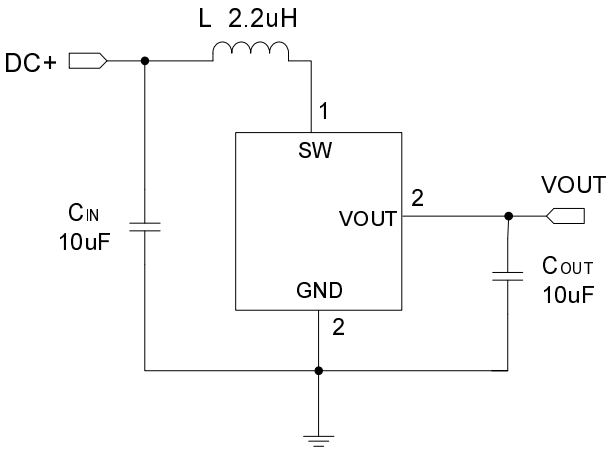
The AP8106 is high efficiency synchronous, PWM step-up DC/DC converters optimized to provide a high efficient solution to medium power systems. The devices work under the input voltage between 1.3V and 3.0V with a 2MHz fixed frequency switching. These features minimize overall solution footprint by allowing the use of tiny, low profile inductors and ceramic capacitors. Automatic PWM/PFM mode switching at light load saves power and improves efficiency.

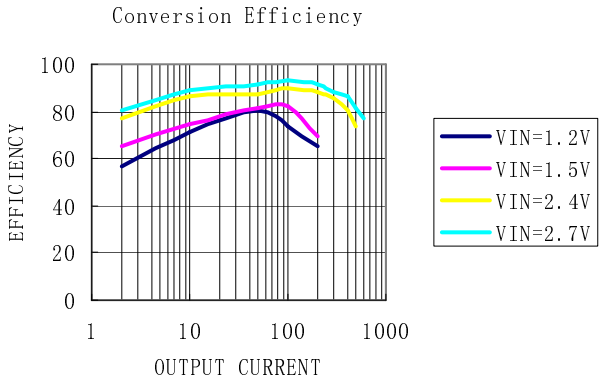
The AP8106 is capable of supplying an output voltage at 3 V, the internal synchronous switch is desired to provide high efficiency without Schottky.

The devices also featured providing up to 260mA from a single AA cell input or up to 600mA from a 2-cell AA with a 3V output.

The AP8106 is capable of supplying an output industry standard SOT-23-3 power packages (or upon request).

Typical Application

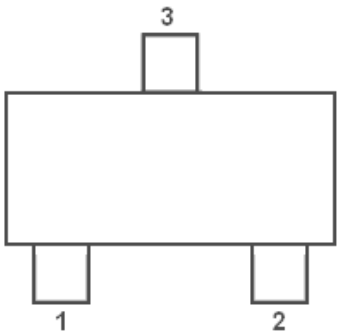




Absolute Maximum Ratings

- Power Dissipation.....Internally limited
- V_{IN} .....- 0.3 V ～ + 6 V
- V_{OUT}.....3.0 V
- V_{SW} .....- 0.3 V ～ + 6 V
- Operating Temperature Range .....- 30℃ ～ + 85℃
- Lead Temperature (Soldering 10 sec.) .....+ 300℃
- Storage Temperature Range .....- 65℃ ～ + 125℃

Pin Assignment



PIN NUMBER SOT-23-3	PIN NAME	FUNCTION
1	SW	Switch Output
2	GND	Ground
3	VOUT	Output

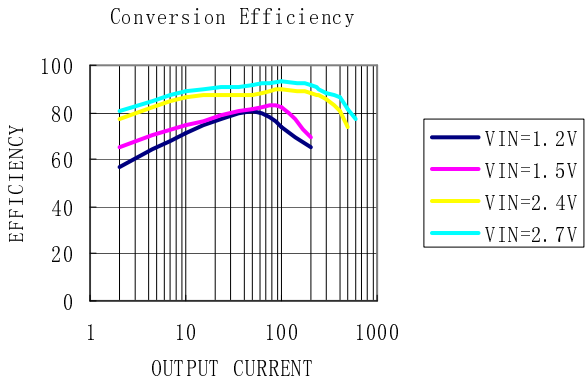
Electrical Characteristics

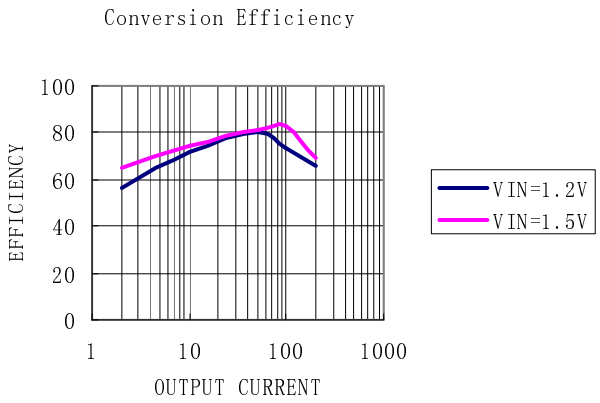
Operating Conditions: TA=25℃, V_{IN}=1.2V, V_{OUT}=3V unless otherwise specified.

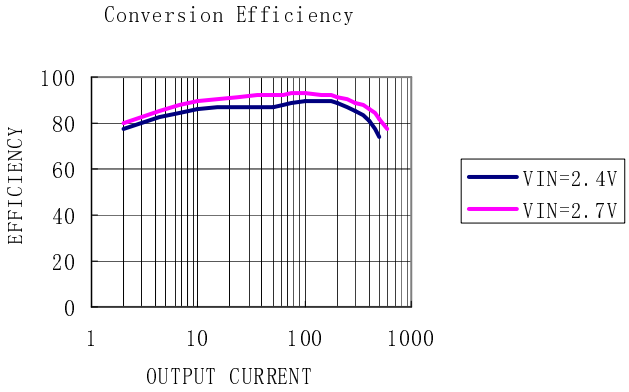
PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Output Voltage Range (Adj.)		2.5	3.0	3.2	V
Minimum Start-Up Voltage	I_{LOAD} = 1mA		1.3	1.4	V
Minimum Operating Voltage			0.6	0.75	V
Switching Frequency			2		MHz
Max Duty Cycle		80	87		%
Current Limit Delay to Output			40		ns
Feedback Voltage		0.095	0.1	0.105	V
NMOS Switch Leakage	V_{SW} = 5V		0.1	5	μA
PMOS Switch Leakage	V_{SW} = 0V		0.1	5	μA
NMOS Switch On Resistance	V_{OUT} = 3V		0.25		Ω
PMOS Switch On Resistance	V_{OUT} = 3V		0.45		Ω
NMOS Current Limit		700	950		mA
Quiescent Current (Active)	Measured On V_{OUT}, No switching		300	500	μA

Typical Performance Characteristics

V_{OUT}=3V







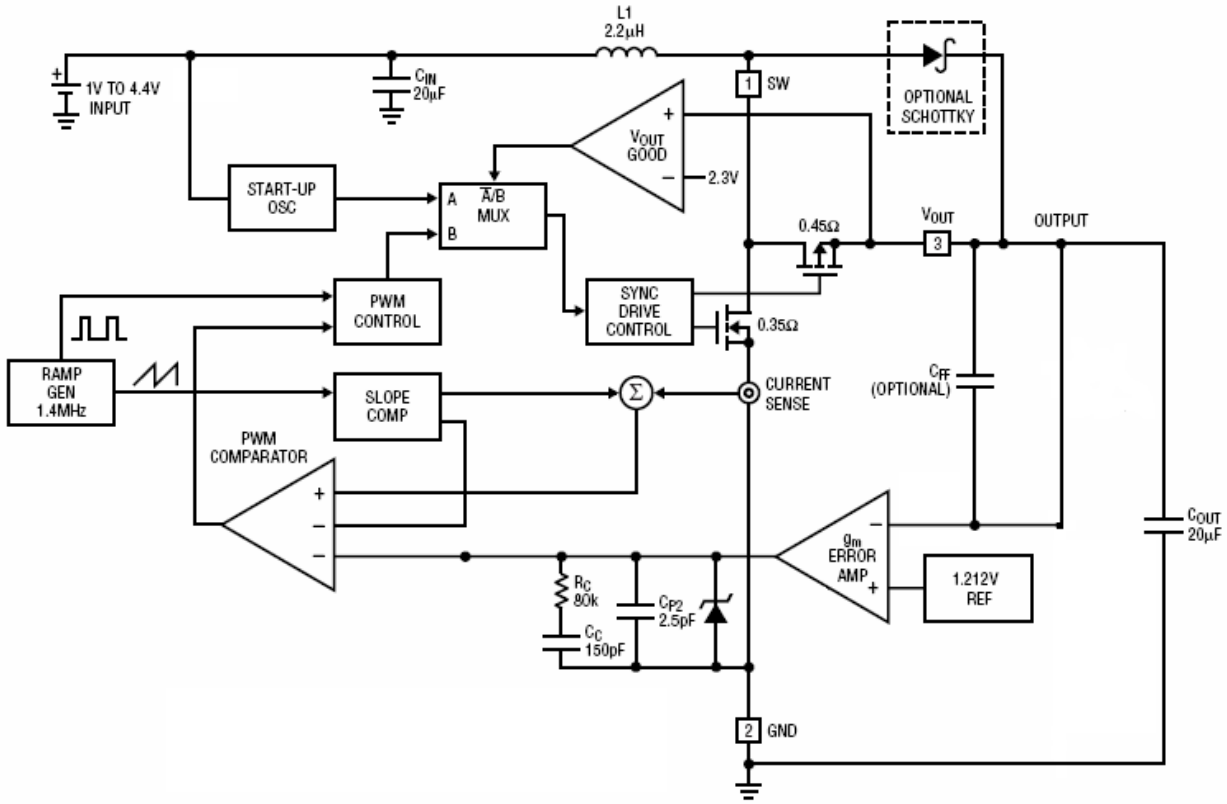
Application Information

SW (Pin 1): Switch Pin. Connect inductor between SW and V_{IN}. Keep these PCB trace lengths as short and wide as possible to reduce EMI and voltage overshoot.

GND (Pin 2): Signal and Power Ground. Provide a short direct PCB path between GND and the (–) side of the output capacitor(s).

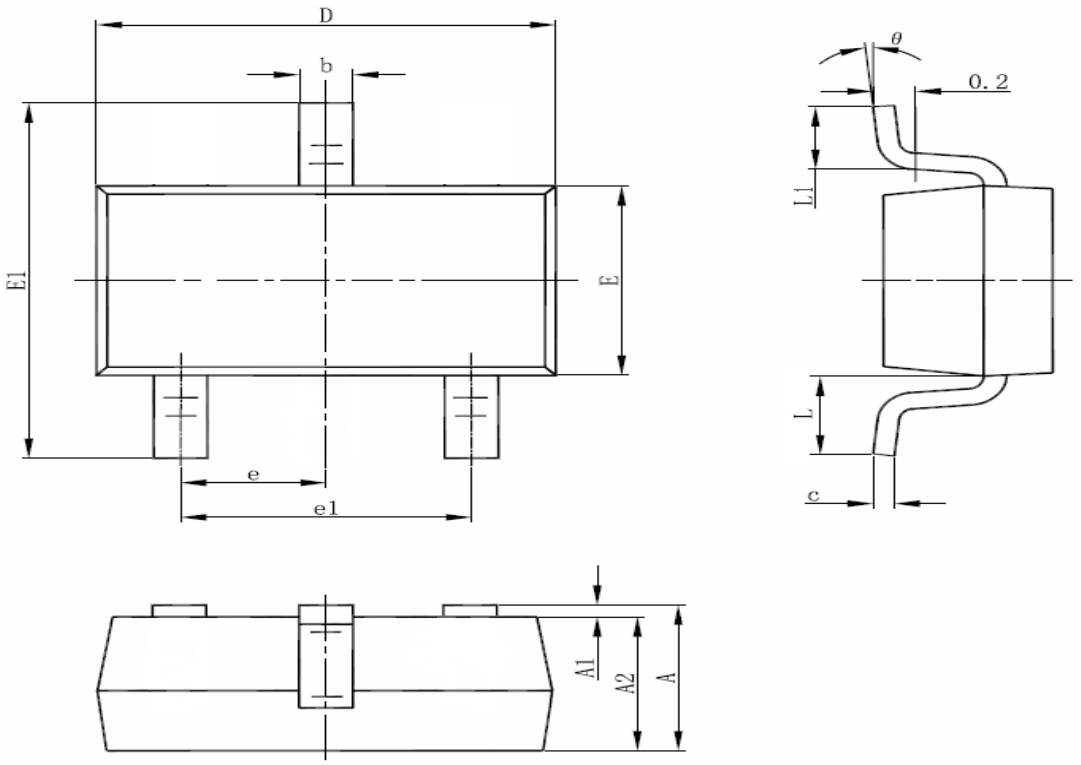
VOUT (Pin 3): Output Voltage Sense Input and Drain of the Internal Synchronous Rectifier MOSFET. Bias is derived from VOUT. PCB trace length from VOUT to the output filter capacitor(s) should be as short and wide as possible.

Functional Diagram



Packaging Information

SOT-23-3 Package Outline Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.700(REF)		0.028(REF)	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°