

Synchronous Step-Down Regulator in ThinSot

General Description

The KZW6388 is a high-efficiency monolithic synchronous buck regulator using a constant frequency, current mode architecture. The device is available in an adjustable version and fixed output voltages of 1.5V and 1.8V. Supply current during operation is only 20 μ A and drops to ≤ 1 μ A is shutdown. The 2.5V to 5.5V input voltage range makes the KF3406 ideally suited for single Li-Ion battery-powered applications. 100% duty cycle provides low dropout operation, extending battery life in portable systems. Automatic Burst Mode operation increases efficiency at light loads, further extending battery life.

Switching frequency is internally set at 1.5MHz, allowing the use of small surface mount inductors and capacitors.

The internal synchronous switch increases efficiency and eliminates the need for an external Schottky diode. Low output voltages are easily supported with the 0.6V feedback reference voltage. The KF3406 is available in a low profile (1mm) Thin SOT package.

Ordering Information

HY1102 X X X X

Package Type:

L: SOT-23-5
T: SOT-23-5L

Output Voltage:

15: 1.5V
16: 1.6V
...
50: 5.0V

Input Voltage Type:

A: Adjust Type
F: Fixation Type

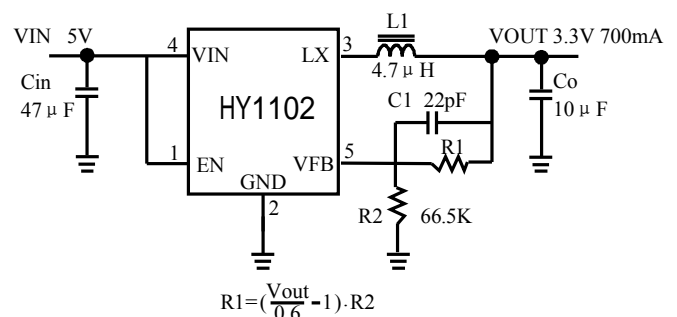
Features

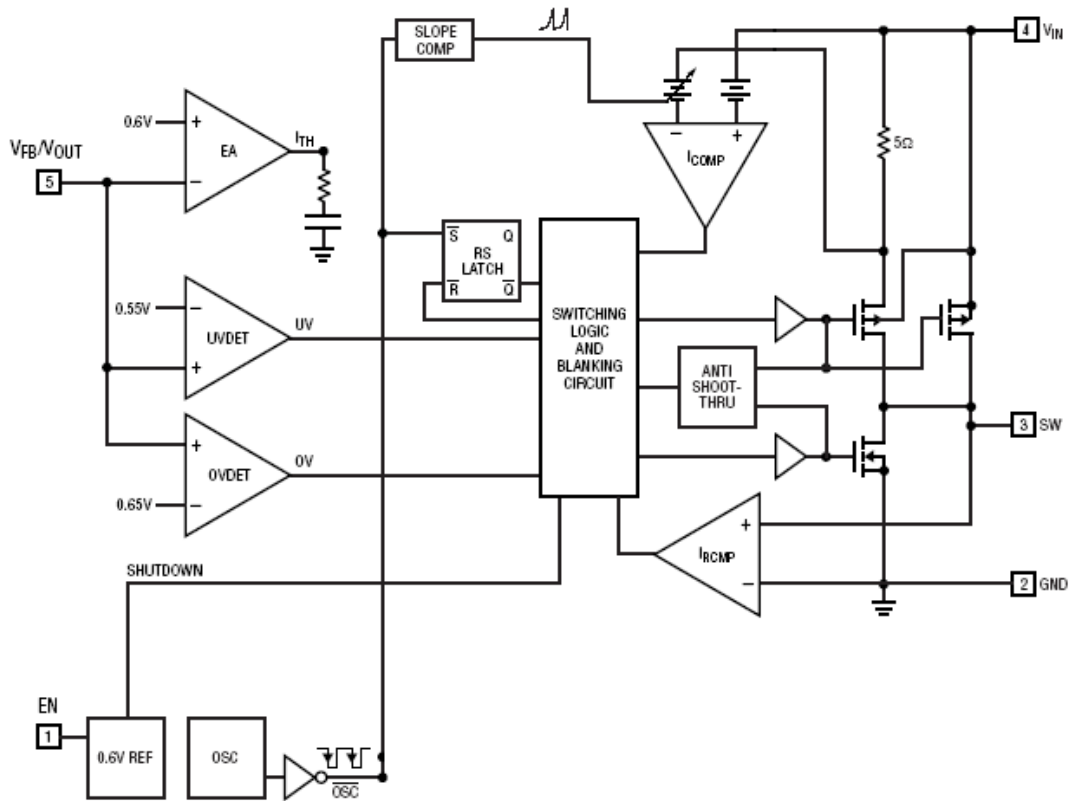
- High Efficiency: Up to 96%
- Very Low Quiescent Current: Only 20 μ A During Operation
- 600mA Output Current
- 2.5V to 5.5V Input Voltage Range
- 1.5MHz Constant Frequency Operation
- No Schottky Diode required
- Low Dropout Operation: 100% Duty Cycle
- 0.6V Reference allows low output voltages
- Shutdown mode draws ≤ 1 μ A supply current
- Current mode operation for excellent line and load transient response
- Over temperature protected
- Low profile (1mm) Thin SOT package.

Applications

- Cellular telephones
- Personal information appliances
- Wireless and DSL modems
- Digital still cameras
- MP3 players
- Portable instruments

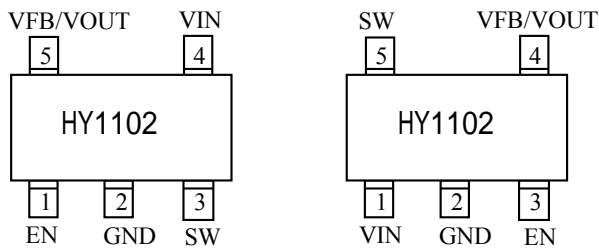
Typical Applications





Pin Assignment

| PIN NUMBER SOT-23- 5 | PIN NUMBER SOT-23- 5L | PIN NAME | FUNCTION |
|-------------------------|--------------------------|-----------------------------------|-----------------------------|
| 1 | 3 | EN | ON/OFF Control(High Enable) |
| 2 | 2 | GND | Ground |
| 3 | 5 | SW | Switch Output |
| 4 | 1 | V _{IN} | Input |
| 5 | 4 | V _{out} /V _{FB} | Output/Feedback |



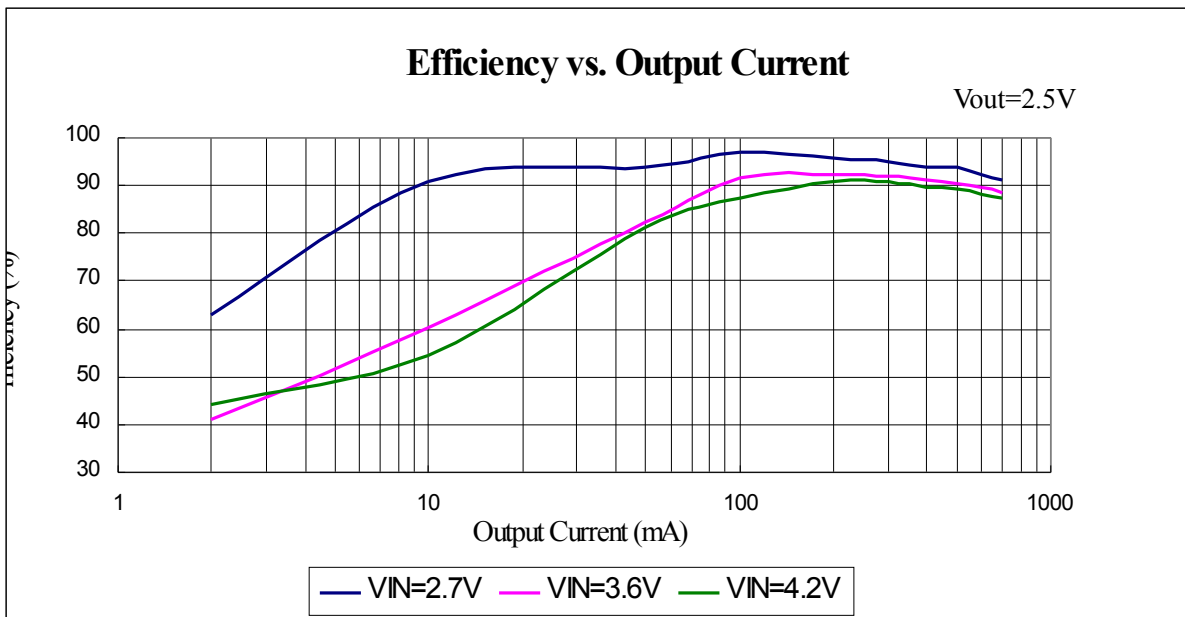
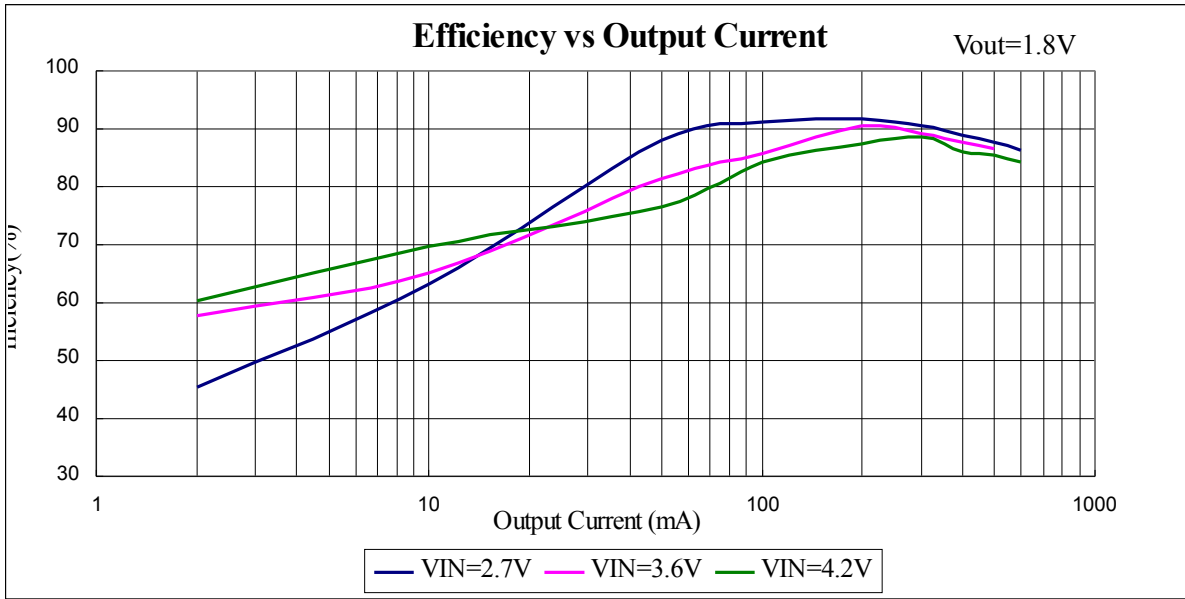
Absolute Maximum Ratings

| | | | |
|--|----------------------------------|--|----------------|
| Input Supply Voltage..... | -0.3V to 6V | Peak SW Sink and Source Current..... | 1.3A |
| RUN.V _{FB} Voltages..... | -0.3V to V _{IN} | Operating Temperature Range..... | -40°C to -85°C |
| SW Voltage..... | -0.3V to (V _{IN} +0.3V) | Junction Temperature(Note3)..... | 30°C |
| P-Channel Switch Source Current(DC)..... | 800mA | Storage Temperature Rang..... | -65°C to 150°C |
| N-Channel Sink Source Current(DC)..... | 800mA | Lead Temperature(Soldering,10sec)..... | 300°C |

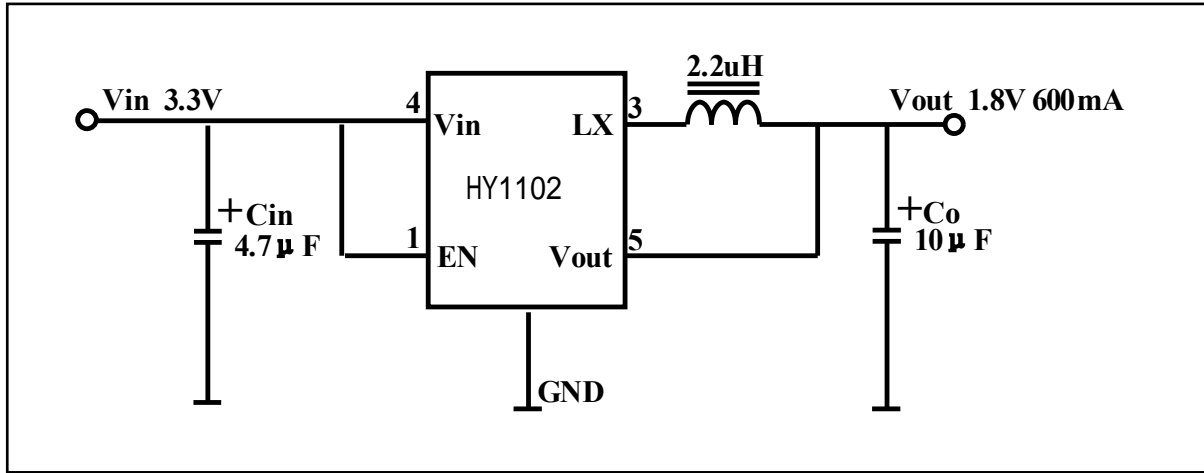
Electronic Characteristics

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS |
|----------------------|--------------------------------------|---|--------|------|--------|-------|
| V _{OUT} | Output Voltage | I _{OUT} = 100mA | 1.75 | 1.80 | 1.85 | V |
| V _{IN} | Input Voltage Range | | 2.5 | | 5.5 | V |
| V _{FB} | Regulated Voltage | T _A = 25°C | 0.5880 | 0.6 | 0.6120 | V |
| | | 0°C ≤ T _A ≤ 85°C | 0.5865 | 0.6 | 0.6135 | V |
| | | -40°C ≤ T _A ≤ 85°C | 0.5850 | 0.6 | 0.6150 | V |
| I _{FB} | Feedback Current | | | | ±30 | nA |
| ΔV _{FB} | V _{REF} | V _{IN} = 2.5V ~ 5.5V | | 0.04 | 0.4 | %/V |
| F _{OSC} | Oscillator Frequency | V _{FB} = 0.6V or V _{OUT} = 100% | 1.2 | 1.5 | 1.8 | MHz |
| I _Q | Quiescent Current | V _{FB} = 0.5V or V _{OUT} = 90%, I _{LOAD} = 0A | | 230 | 300 | μA |
| I _S | Shutdown Current | V _{EN} = 0V, V _{IN} = 4.2V | | 0.1 | 1 | μA |
| I _{PK} | Peak Inductor Current | V _{IN} = 3V, V _{FB} = 0.5V or V _{OUT} = 90%, Duty Cycle < 35% | 0.75 | 1 | 1.25 | A |
| R _{PFET} | R _{DS(ON)} of P-Channel FET | I _{SW} = 100mA | | 0.4 | 0.5 | Ω |
| R _{NFET} | R _{DS(ON)} of N-Channel FET | I _{SW} = -100mA | | 0.35 | 0.45 | Ω |
| EFFI | Efficiency | When connected to ext. components V _{IN} = EN = 3.0V, I _{OUT} = 100mA | | 92 | | % |
| ΔV _{OUT} | V _{OUT} Line Regulation | V _{IN} = 2.5V ~ 5.5V | | 0.04 | 0.4 | %/V |
| V _{LOADREG} | V _{OUT} Load Regulation | | | 0.5 | | % |

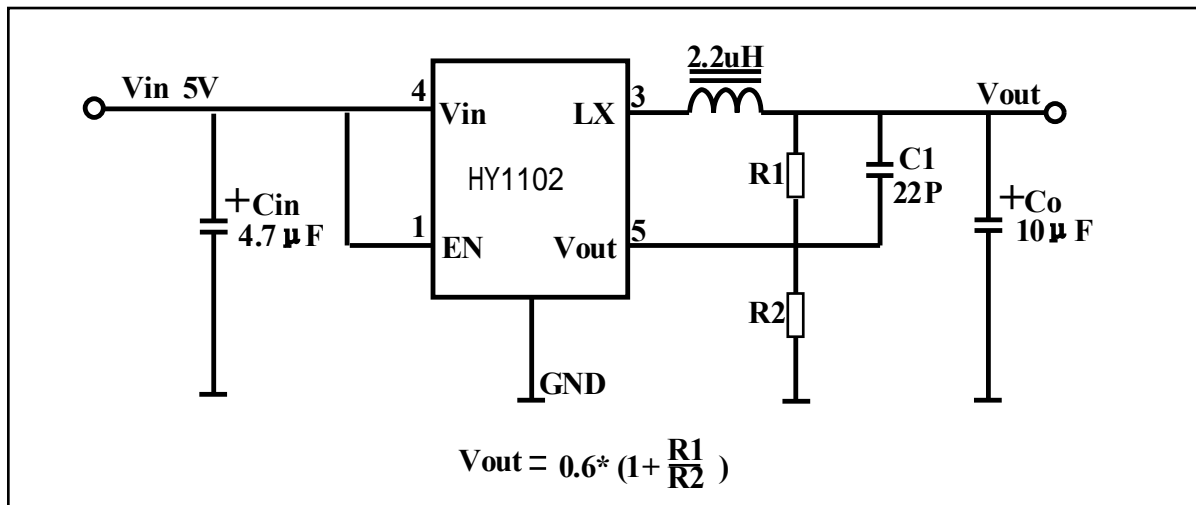
Typical Performance Characteristics



1、Fixation Output:



2、Adjust Output:



Package Information

