

Low Input Voltage Step-up Converter with Low Quiescent Current

Description

The MT5070 family devices provide a power-supply solution for products powered by either a single, two or three-cell Alkaline, NiCd or NiMH, or one-cell Li-Ion or Li-polymer battery. Available output current depends on the input-to-output voltage ratio. The step-up converter is based on current-mode pulse-width-modulation (PWM) control using synchronous rectification to obtain maximum efficiency with the minimum quiescent current. The output voltage is programmable using an external resistor divider, or is fixed 2.7V/3.3V/5.0V internally on the chip. The converter can be switched off to minimize battery drain in shutdown. In shutdown, the MT5070 connects the battery input to the output, allowing the input battery to be used as a backup or real-time clock supply when the converter is off. The devices are offered in a small 6-pin SOT23-6 package.

Features

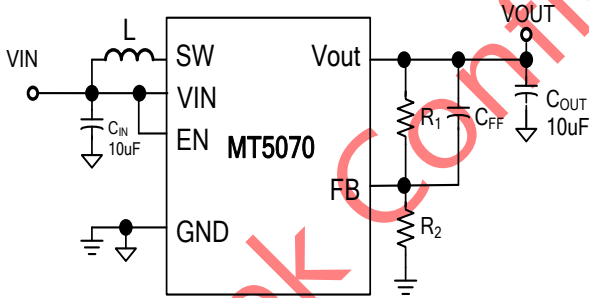
- Up to 92% Efficiency
- 12µA Quiescent Current
- Startup with 0.9V Minimum Input Voltage
- Operating Input Voltage from 0.9V to 5V
- Maximum Switch Current 450mA
- $V_{IN} \geq V_{OUT}$  Pass-Through Operation with the Fixed  $V_{OUT}$  Parts
- $V_{OUT}$  Pulled to  $V_{IN}$  in Shutdown
- Adjustable Output Voltage from 2.5V to 5.5V
- Fixed 2.7V, 3.3V and 5.0V Output Voltage
- Input Under-voltage Lockout
- Pb-Free (ROHS compliant)
- Small 6-pin SOT23\_6L Package

Applications

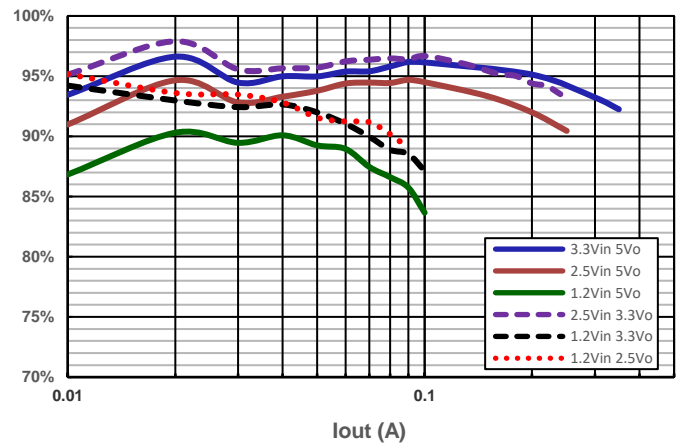
- Battery Powered Applications:
  - 1 to 3 Cell Alkaline, NiCd or NiMH
  - 1 cell Li-Ion
- Solar or Fuel Cell Powered Applications
- Consumer and Portable Medical Products
- Personal Care Products

Typical Application

Adjustable Output Typical Application Circuit



Efficiency



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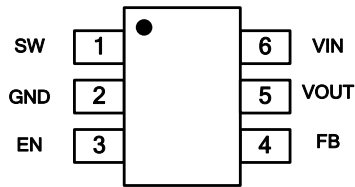
**Ordering Information**

Part No.	Marking	Temp. Range	Package	Remark	MOQ
MT5070NSCR	5070 YWWXX	-40°C ~+85°C	SOT 23 6L	Adjustable VOUT Synchronous Rectifier VOUT=VIN in Shutdown	3000/Tape & Reel
MT5070FSCR	5070F YWWXX	-40°C ~+85°C	SOT 23 6L	Fixed 2.7V VOUT Synchronous Rectifier VOUT=VIN in Shutdown	3000/Tape & Reel
MT5070SSCR	5070S YWWXX	-40°C ~+85°C	SOT 23 6L	Fixed 3.3V VOUT Synchronous Rectifier VOUT=VIN in Shutdown	3000/Tape & Reel
MT5070MSBR	5070M YWWXX	-40°C ~+85°C	SOT 23 6L	Fixed 5.0V VOUT Synchronous Rectifier VOUT=VIN in Shutdown	3000/Tape & Reel

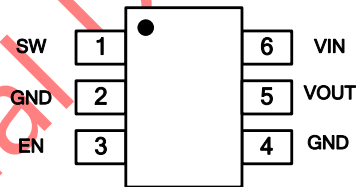
Note: Y: Year, WW: Week, XX: Control Code

**Pin Configuration**

Adjustable VOUT Top View



Fixed 2.7V/3.3V/5V VOUT Top View



**Pin Description**

PIN NAME	Adjustable VOUT PIN NO.	Fixed VOUT PIN NO.	DESCRIPTION
SW	1	1	Inductor Connection. NCH MOSFET switch drain and synchronous Rectifier PCH MOSFET switch drain.
GND	2	2, 4	Control circuit and power switches ground.
EN	3	3	Enable input (1: enabled, 0: disabled). Must be actively tied high or low. When EN is low, the MT5070 both NCH and PCH switches are turned off.
FB	4	-	Adjustable VOUT Feedback Input. Set the output voltage through a resistor-divider network.
VOUT	5	5	Step-up converter output voltage. Bootstrapped supply for the device. Output sense point for fixed VOUT.
VIN	6	6	Step-up converter input voltage.