

96% Efficient 800kHz Synchronous Step-up Converter With 6.6A Switches

DESCRIPTION

The MT5036 devices provide a power supply solution for products powered by either a one-cell Li-Ion or Li-polymer battery. The converter generates a stable output voltage that is either adjusted by an external resistor divider or fixed internally on the chip. It provides highly efficient power conversion and is capable of delivering output currents up to 3A at 5V with a supply voltage down to 3V. The maximum peak current in the step-up switch is limited to a value of 6.6A.

The MT5036 operates at 800kHz switching frequency and enters pulse-skip-mode (PSM) operation at light load currents to maintain high efficiency over the entire load current range. The PSM mode extends the battery life by reducing the quiescent current to 120µA (typ) during light load operation. A low-EMI mode is implemented to reduce ringing when the converter enters the discontinuous conduction mode. The converter can be disabled to minimize battery drain. During shutdown, the load is completely disconnected from the battery.

FEATURES

- **96% Efficient Synchronous Step-up Converter with 3A Output Current From 3V Input**
- **Wide V_{IN} Range From 2.5V to 5.5V**
- **Fixed and Adjustable Output Voltage**
- **Built-in Output Over-voltage Protection**
- **Light-Load Pulse Skip Mode with 120 µ A Quiescent Current**
- **Low Battery Comparator**
- **Low EMI-Converter (Integrated Anti-ringing Switch)**
- **Load Disconnect During Shutdown**
- **Thermal Shutdown and Overload Protection**
- **Pb-Free (ROHS compliant)**
- **Available in a Small 4 mm x 4 mm QFN-16**

APPLICATIONS

- **Tablet PC and Notebook**
- **Power Bank**
- **USB Charging Port (5V)**
- **DC/DC Micro Modules**

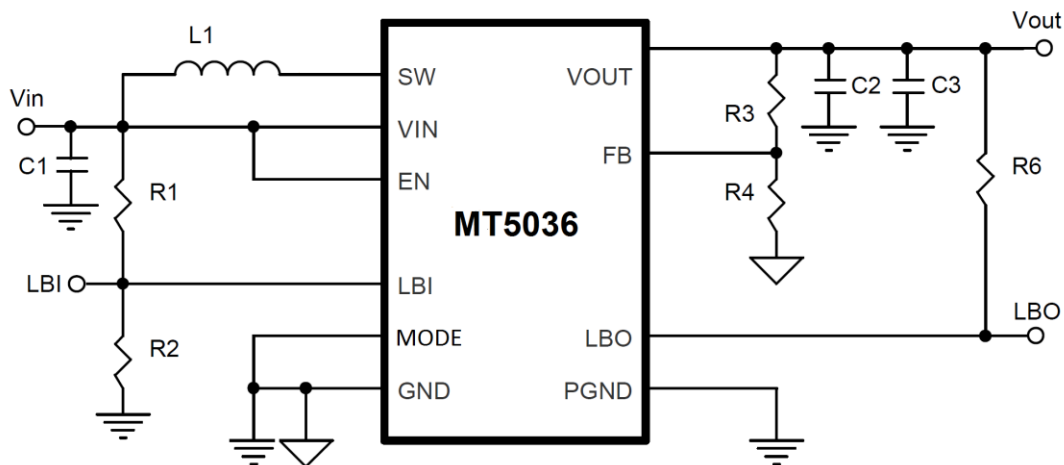


Figure 1. MT5036 Typical Operating Circuit

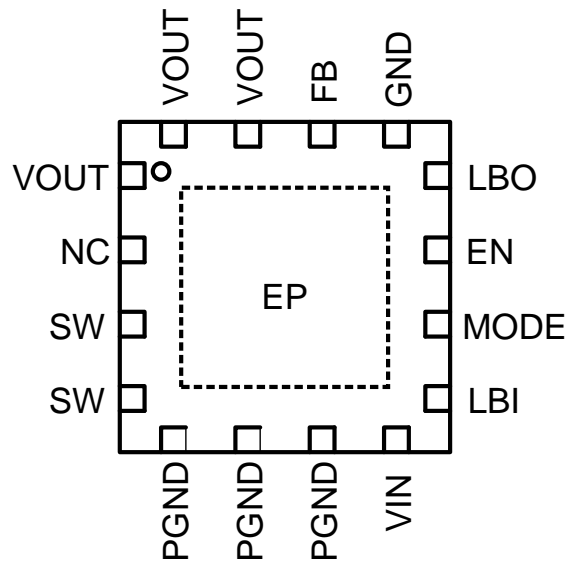
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Ordering Information

Part No.	Marking	Temp. Range	Package	Remark
MT5036NQBR	MT5036 YWWXX	-40°C ~+85°C	QFN16L 4x4	

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

Pin Configuration



MT5036 (TOP View)

Pin Description

NAME	PIN NO.	DESCRIPTION
EN	11	Enable input. (1: V _{BAT} enabled, 0: GND disabled)
FB	14	Voltage feedback of adjustable versions. Connect FB to GND and set fixed 5.15V output voltage.
GND	13	Analog Ground pin. Connect GND to PGND under EP.
LBI	9	0.5V Threshold Low battery comparator input (comparator enabled with EN)
LBO	12	Low battery comparator output (open drain). When VLBI≤0.5V, LBO is pulled low. When VLBI>0.5V, LBO is Hi=Z state.
NC	2	Not connected
MODE	10	Enable/disable pulse skip mode (1: V _{BAT} disabled, 0: GND enabled)
SW	3, 4	Step-up and rectifying switch input
PGND	5, 6, 7	Power Ground pin.
V _{IN}	8	Input Supply voltage
VOUT	1, 15, 16	Step-up convert output
EP		Exposed pad must be soldered to achieve appropriate power dissipation. Connect EP to GND.