

# MB39C326

## 6MHz Synchronous Buck Boost DC/DC Converter



### Description

The Fujitsu MB39C326 6MHz Synchronous Buck Boost DC/DC Converter is designed to power the radio frequency power amplifiers (RFPAs) in mobile handsets or other mobile devices that use a single-cell Li-ion battery. The DC/DC converter switches at a higher frequency (6MHz) than conventional converters on the market. The higher switching frequency is more efficient and permits the use of a smaller inductor, reducing the overall board space of the power management circuits by as much as half.

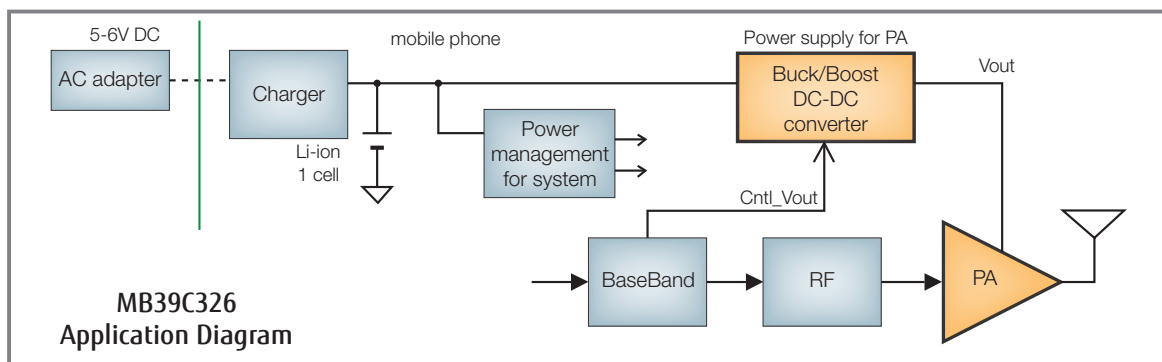
The buck-boost functionality of the Fujitsu MB39C326 helps prolong battery life and efficiency. By switching automatically between a buck operation (stepping down the voltage) when the battery is fully charged and a boost operation (stepping up the voltage) as the battery is discharged, the MB39C326 maximizes the overall operating voltage from the lithium battery while providing a stable power supply to the power amplifier.

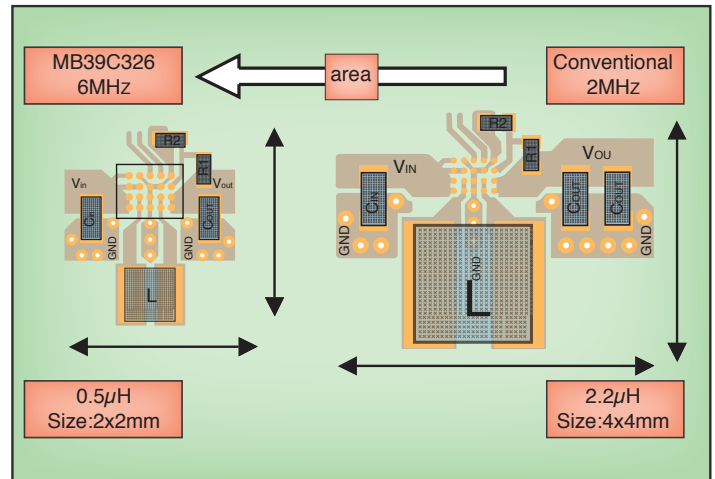
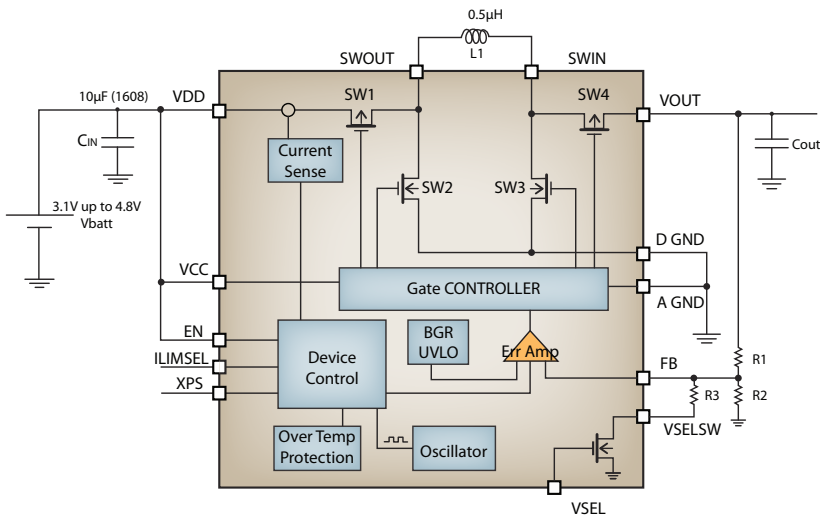
The result is a more consistent voltage level and a device that can operate for longer on a single charge.

The Fujitsu MB39C326 provides up to 800mA of output current over an input voltage range of 2.5V to 4.8V. The device features a built-in internal field-effect transistor (FET), over-temperature protection, and an input-under-voltage lockout. The MB39C326 is available in a 20-pin, 0.4mm-ball-pitch, 2.15mmx1.94mm WL-CSP (wafer-level chip size) package.

### Application

- Radio frequency power amplifiers (RFPAs) powered by a single-cell Li-ion battery
- Mobile phones
- PDAs and handheld mobile devices
- PC cards and USB dongles with RF transceivers
- Medical handheld devices





MB39C326 Block Diagram

## Advantages of the MB39C326

### 6MHz switching frequency allows for a smaller inductor and reduced board space

Compared to conventional DC/DC converters that have switching frequencies between 2 to 3MHz or lower, the Fujitsu 6MHz Synchronous Buck Boost DC/DC Converter allows for a smaller size inductor, reducing the overall surface area occupied by the power supply by as much as half. This is critical for mobile devices where space is at a premium.

### Automatic buck-boost operations prolong Li-ion battery life and efficiency

When a Li-ion battery is fully charged, it starts with a high operating voltage. As the battery is discharged, its operating voltage declines to the point where the battery can no longer provide sufficient voltage to power its host device, even if some charge remains. The Fujitsu MB39C326 6MHz Synchronous Buck Boost DC/DC Converter can extend the usable life of a battery by boosting (stepping up) the output voltage level to provide sufficient power to continue operation. This extends battery life by more efficiently using the remaining charge in the battery.

## High-efficiency power supply

The MB39C326 features a new, high-efficiency controller designed using a low-gate charge-process technology that reduces switching loss and power consumption. In combination with the buck-boost function, the controller greatly enhances the overall efficiency of the DC/DC converter.

## Key Features

- 6MHz PWM operation, allowing for a 0.5µH small form inductor
- Automatic transition between buck mode and boost mode
- Built-in internal field-effect transistor (FET)
- Input voltage range: 2.5V to 4.8V
- Adjustable output voltage range: 0.4V to 4.5V
- Input current limit: 2A
- Output current of 800mA
- Over-temperature protection
- Input under-voltage lock out
- Package: 20pin 0.4mm-ball-pitch 2.15mm × 1.94mm WL-CSP (wafer-level chip-size package)
- Operating temperature range of -40° ~ +85°

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