

30V 500KHz 4A Fast-PWM Synchronous Step-Down Converter

Description

The MT3905 is a fully integrated high efficiency synchronous step-down converter which requires minimum number of external components. It offers very compact solution with up to 4A continuous output current over a wide input range.

The MT3905 employs proprietary Constant On-Time (COT) control scheme providing superior transient response and maintaining constant switching frequency under the continuous conduction mode operation. The internal ramp compensation network allows stable operation with ultra-low equivalent series resistance (ESR) output ceramic capacitors without using external compensation network. An error amplifier in the control loop provides excellent line and load regulation.

The MT3905 integrates extensive protection functions include: UVLO, OCP, OVP and thermal shutdown. Input under-voltage lockout is internally set as 3.8V.

The unique ultrasonic pulse-skipping mode (MT3905U) maintains the switching frequency above 25kHz, which eliminates noise in audio applications. Other features include pulse skipping mode (MT3905N), which maximizes efficiency in light-load applications.

The converter is available in a small 8pin SOP8-EP and DFN14L 4x3 package.

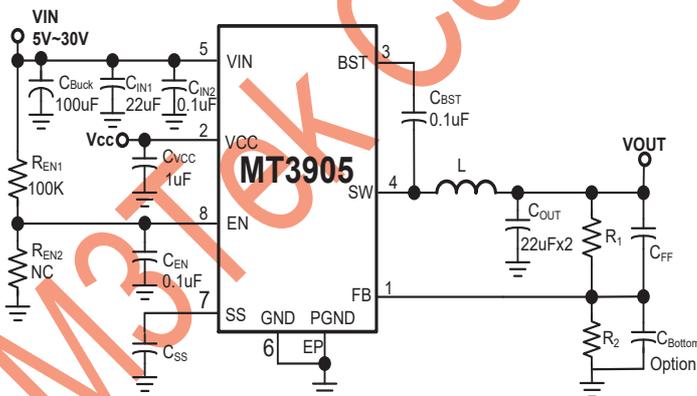
Features

- 4V to 30V Input Voltage Range with Surge Up to 36V
- 2% 0.8V Feedback Voltage Accuracy
- 4A continuous output current (5A Peak)
- Support 100% duty cycle Low Dropout Operation
- Stable operation with output low ESR ceramic capacitors
- Fast PWM Constant On Time (COT) control scheme with superior transient performance
- 500kHz Switching frequency with 2 Type Light Load Mode Control Schemes: MT3905U Ultrasonic Pulse Skip Mode (25kHz Min); MT3905N Pulse Skip Mode
- Integrated 40mΩ and 40mΩ High Side and Low Side Switches
- Accurate EN Threshold for the External Programmable VIN UVLO
- Low quiescent current
- Thermal Shutdown with Auto recovery.
- Hiccup mode 8 times then latch-off Over Current protection (MT3905H only Hiccup mode)
- Available in an 8-pin SOP8-EP and DFN14L 4x3 Package

Applications

- Laptop Computer
- Tablet PC
- Networking Systems
- Personal Video Recorders
- Flat Panel Television and Monitors
- Distributed Power Systems

Typical Application Diagram



Efficiency

