

28V 6A 560kHz Fast-PWM Synchronous Step-Down Converter

DESCRIPTION

The MT3906 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 6A continuous output current over a wide input range.

The MT3906 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. MT3906 has a MODE pin to select the desirable mode of light load operation. To attain high efficiency at light load, PFM mode and UAM mode could be selected. UAM mode will not allow the part to go below audible frequency (below 25kHz switching frequency). Force PWM mode is also available to support tight output voltage ripple requirement. The MT3906 integrates extensive protection functions including Input under-voltage lockout (UVLO), thermal shutdown, output over-voltage protection (OVP), cycle by-cycle current limiting, and Hiccup short-circuit protection. An open drain power good signal indicates the output within its regulation voltage range. The converter is available in small 16 pin 3mmx3mm FC-QFN and 20pin 4mmx4mm QFN package.

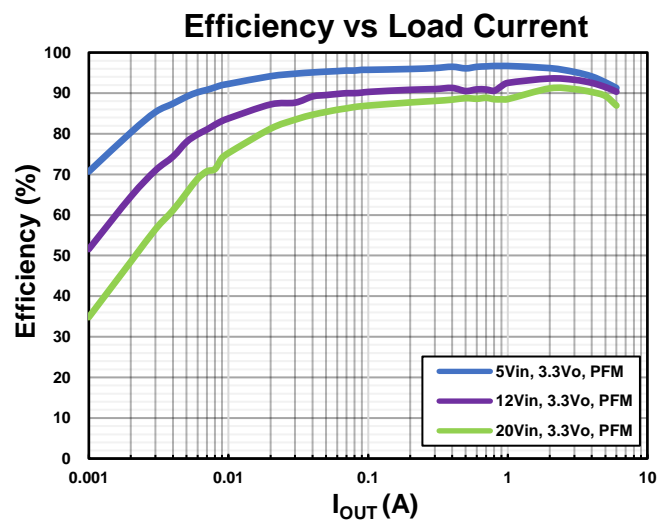
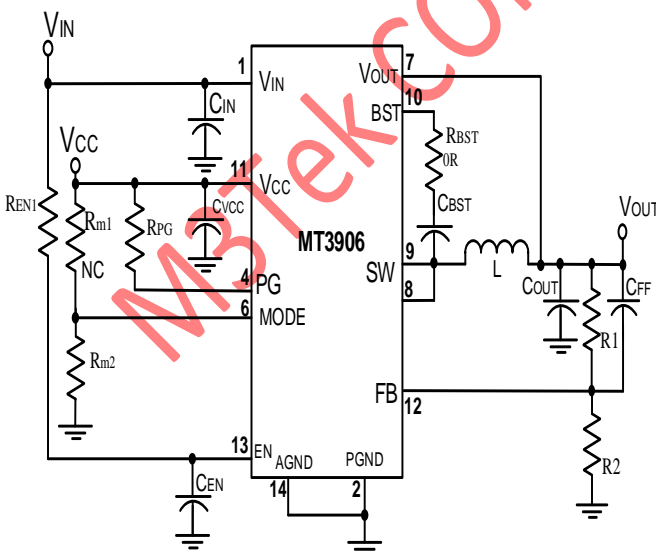
FEATURES

- Input Voltage Range from 4.2V to 28V
- Output Voltage Range from 0.6V to 28V
- Support Near 100% duty cycle Low Dropout Operation
- 1% 0.6V Feedback Voltage Accuracy
- 6A continuous output current
- Selectable 3 Light Load Operation Modes: PFM, Ultrasonic Mode (UAM) and Forced PWM
- Stable operation with output low ESR ceramic capacitors
- 560kHz Switching frequency
- Integrated 22mΩ and 12mΩ HS/LS-Switches
- Low quiescent current
- Output Discharging Function in Shutdown
- Thermal Shutdown
- Short Circuit Hiccup Mode Protection:
- Small 3mmx3mm 16 lead FC-QFN package and 4mmx4mm 20 lead QFN package

APPLICATIONS

- USB Type-A or C and PD Dongle and Docking Station
- Tablet PC
- Networking Systems
- Flat Panel Television and Monitors
- Distributed Power Systems

TYPICAL APPLICATIONS



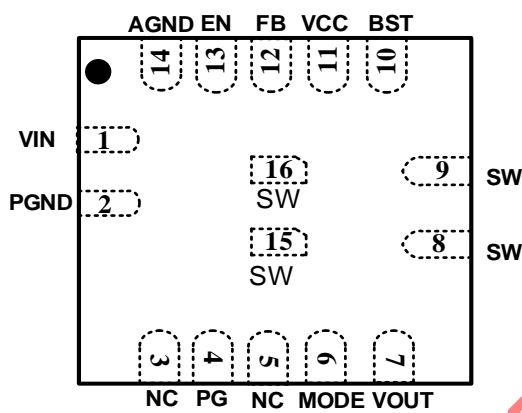
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Ordering Information

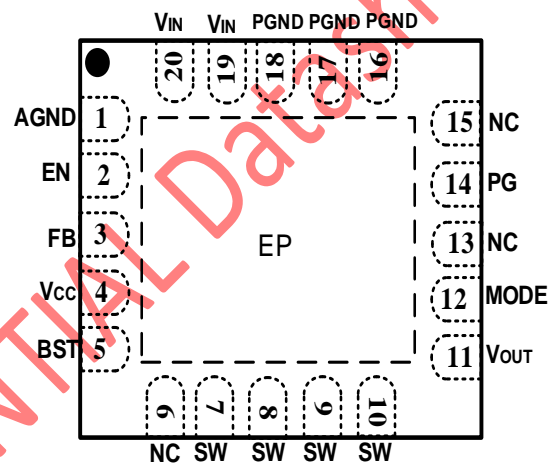
Part No.	Marking	Temp. Range	Remark	Package	MOQ
MT3906MFAR	3906M YWWxx	-40°C ~+85°C	Hiccup Short Circuit Protection	FC- QFN3X3_16L	5,000/Reel
MT3906MQDR	MT3906M YWWxx	-40°C ~+85°C	Hiccup Short Circuit Protection	QFN4X4_20L	5,000/Reel

Note: Y: Year, WW: Week, xx: Manufacture Control Code

Pin Configuration



FC-QFN3x3_16L TOP VIEW



QFN4x4_20L TOP VIEW

M3TEK CONFIDENTIAL Datasheet