5V Input 2A 2.5MHz Synchronous Step-Down Converter for 1-Cell Li-Ion Application

DESCRIPTION

The MT3182 is a 2.5MHz, 2A constant on-time (COT) controlled synchronous step-down converter. It can operate with input voltage from 2.5V to 6V and provide output range from 0.6V to input level, thanks to its 100% duty cycle operation. The constant on-time control scheme simplifies loop compensation and offers excellent load transient response. MT3182 consumes extremely low 15μA quiescent current hence achieves superior light load efficiency. The high gain error amplifier in the control loop provides excellent load and line regulation. Proprietary adaptive on-time helps MT3182 to achieve nearly constant switching frequency across load range with COT PFM mode. MT3182 has cycle-by-cycle current limit and hiccup mode to protect over-load or short circuit fault conditions.

MT3182 is available in low profile 5 leads SOT23 package and 6 leads DFN 2mmx2mm package.

FEATURES

- Wide Input Range from 2.5V to 6V
- Optimized Light Load Operation for 1-cell Li-Ion Battery Application
- Proprietary Fast Transient Constant On Time Architecture Stable with low ESR Ceramic Output Capacitors
- +/- 1% 0.6V Feedback Voltage
- 2.5MHz Switching Frequency
- 15μA Low Quiescent Current
- 2A Continuous
- Up to 95% Efficiency
- 100% Duty Cycle Operation
- Built-in 130mΩ/100mΩ(DFN 2mmx2mm) or 140mΩ/120mΩ(SOT235) Power Switches
- Internal 1msec Soft-Start
- Cycle-by-cycle Current Limit Protection
- Over-Load and Short Circuit Hiccup Mode
- Open Drain Power Good Indication Option
- Output Discharge 50Ω
- Thermal Shutdown Protection
- Available in Small SOT23_5L and DFN2x2_6L Package
- Pb-Free RoHS Compliant

APPLICATIONS

- Solid-State and Hard Disk Drives
- WiFi RF Modules
- DC/DC Micro Modules
- Smart Phone and Tablets
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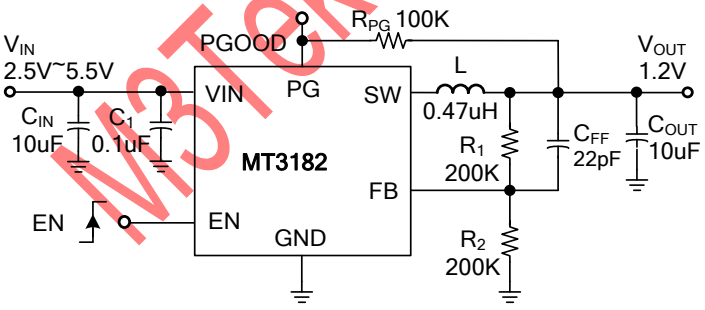
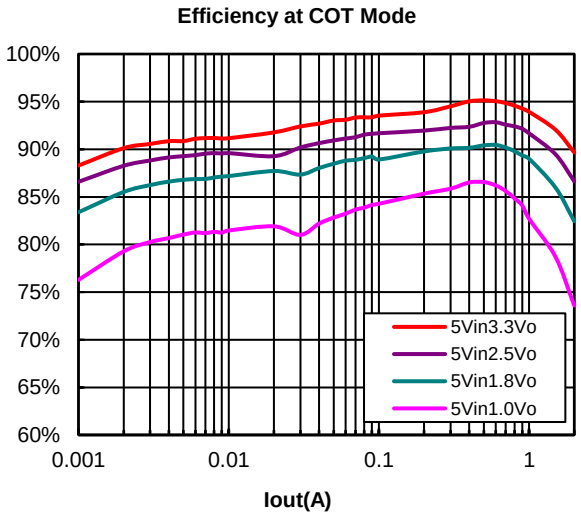
Typical Applications



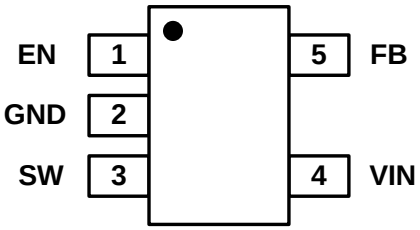


Ordering Information

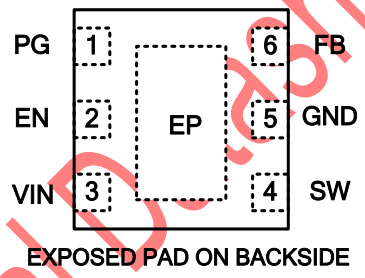
Part No.	Marking	Temp. Range	Remark	Package	MOQ
MT3182NSBR	3182 YWWxx	-40°C ~+85°C	Adjustable Vout	SOT23_5L	3000/Tape & Reel
MT3182NDER	3182 YWxx	-40°C ~+85°C	Adjustable Vout	DFN2x2_6L	3000/Tape & Reel

Note: Y: Year, W: Week, x: Manufacture Code

Pin Configuration



SOT23_5L



DFN2x2_6L

Pin Description

SOT23_5 Pin No.	DFN2x2_6 Pin No.	Symbol	Description
1	2	EN	• Drive EN above 1.05V to turn on the converter • Drive EN below 0.4V to turn off the converter and discharge output
2	5	GND	Ground
3	4	SW	Power Switch Node
4	3	VIN	Input Supply Voltage
5	6	FB	Voltage Feedback Input. Connect a resistor divider between output and FB to program the output voltage. VFB is regulated to 0.6V.
-	1	PG	Power Good Open-drain Output. Connect a 100kΩ pull-up resistor to V_{IN} or V_{OUT}.