5V Input 2.5A/3A 1.5MHz Synchronous Step-Down DC/DC Converter

DESCRIPTION

The MT3103 is a 1.5MHz, 2.5A/3A 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. MT3103 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 MT3103 to achieve nearly constant switching frequency across load range. MT3103 has cycle-by-cycle current limit and hiccup mode to protect over-load or short circuit fault conditions.

MT3103 is available in low profile SOT23_5L, SOT23_6L and 8 leads DFN 2mm x 2mm packages.

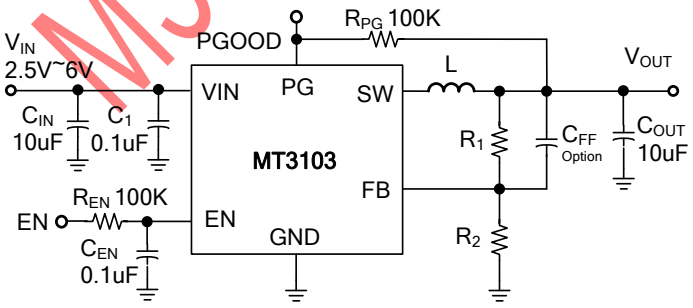
FEATURES

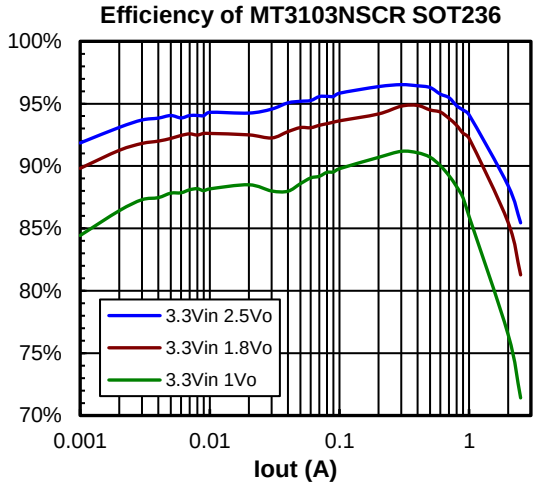
- Wide Input Range from 2.5V to 6V
- MT3103NSCR: 2.5A Continuous Output Current
  3A Peak Output Current
- MT3103NDAR: 3A Continuous Output Current
- Proprietary Fast Transient Constant On Time Architecture Stable with low ESR Ceramic Output Capacitors
- +/- 2% 0.6V Feedback Voltage
- 1.5MHz Switching Frequency
- 15μA Low Quiescent Current
- 1.21V Accurate Enable Threshold
- Up to 95% Efficiency
- 100% Duty Cycle Operation
- MT3103NSCR: Built-in 94mΩ/76mΩ Power Switches
- MT3103NDAR: Built-in 90mΩ/60mΩ Power Switches
- Internal 1msec Soft-Start
- Cycle-by-cycle Current Limit Protection
- Over-Load and Short Circuit Hiccup Mode
- Open Drain Power Good Indication
- Output Discharge
- Thermal Shutdown Protection
- Available in Small SOT23_5L, SOT23_6L and DFN2x2_8L
- Pb-Free RoHS Compliant

APPLICATIONS

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

Typical Applications





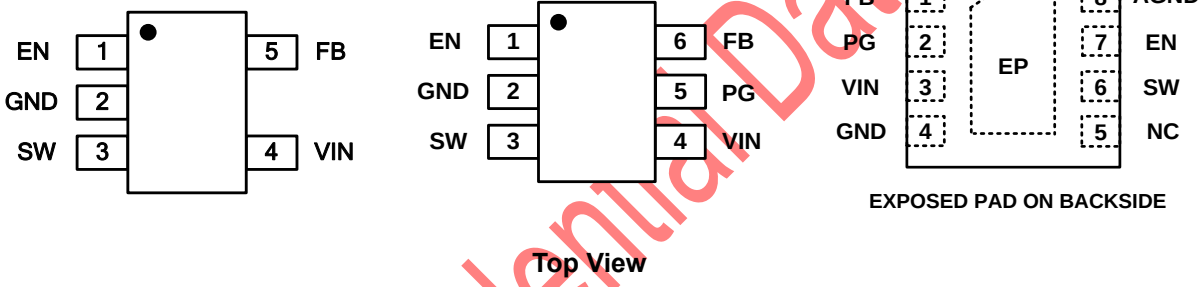
5V Input 2.5A/3A 1.5MHz Synchronous Step-Down DC/DC Converter

Ordering Information

Part No.	Marking	Temp. Range	Remark	Package	MOQ
MT3103ASBR	3103A YWWxx	-40°C ~+85°C	Adjustable Vout Forced PWM	SOT23_5L	3000/Tape & Reel
MT3103NSCR	3103 YWWxx	-40°C ~+85°C	Adjustable Vout	SOT23_6L	3000/Tape & Reel
MT3103NDAR	3103 YWxx	-40°C ~+85°C	Adjustable Vout	DFN2x2_8L	3000/Tape & Reel
MT3103ADAR	103A YWxx	-40°C ~+85°C	Adjustable Vout Forced PWM	DFN2x2_8L	3000/Tape & Reel

Note: Y: Year, W: Week, (W): Ignorable, xx: Manufacture Code

Pin Configuration



Top View

Pin Description

SOT235 Pin No.	OT236 Pin No.	DFN2x2_8L Pin No.	Symbol	Description
1	1	7	EN	Regulator Enable Control Input with accurate 1.21V enable threshold which can be used to build precision R-C turn-on delay and input under-voltage lockout. Don't float this pin. This pin has a pull-down resistor of typically 1MΩ to GND. • Drive EN above 1.21V to turn on the converter • Drive EN below 1.11V to turn off the converter and discharge output
2	2	4, EP	GND	Ground
3	3	6	SW	Power Switch Node
4	4	3	VIN	Input Supply Voltage
-	5	2	PG	Power Good Open-drain Output. Connect a 100kΩ pull-up resistor to V_{IN} or V_{OUT}.
5	6	1	FB	Voltage Feedback Input. Connect a resistor divider between output and FB to program the output voltage. VFB is regulated to 0.6V.
-		8	AGND	Analog Ground