

5V Input 2A 2.5MHz Synchronous Step-Down Converter

DESCRIPTION

The MT3102 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. MT3102 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 MT3102 to achieve nearly constant switching frequency across load range, as for operation mode:

- MT3102 is COT PFM mode.
- MT3102A is COT Forced PWM mode.

MT3102 has cycle-by-cycle current limit and hiccup mode to protect over-load or short circuit fault conditions.

MT3102 is available in low profile 5 leads SOT23, 6 leads DFN 1.5mm x 1.5mm, DFN 1.5mm x 1mm and SOT23 packages.

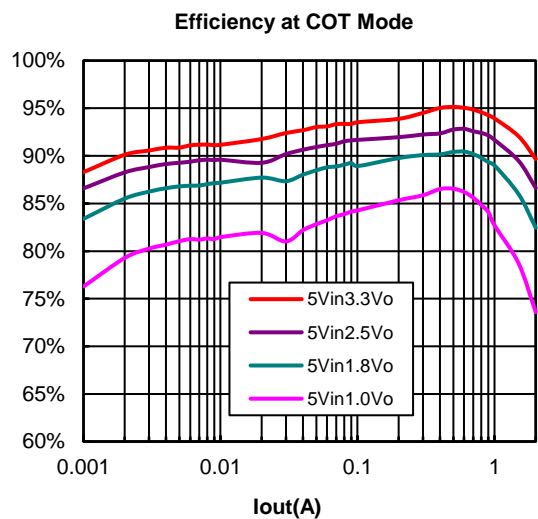
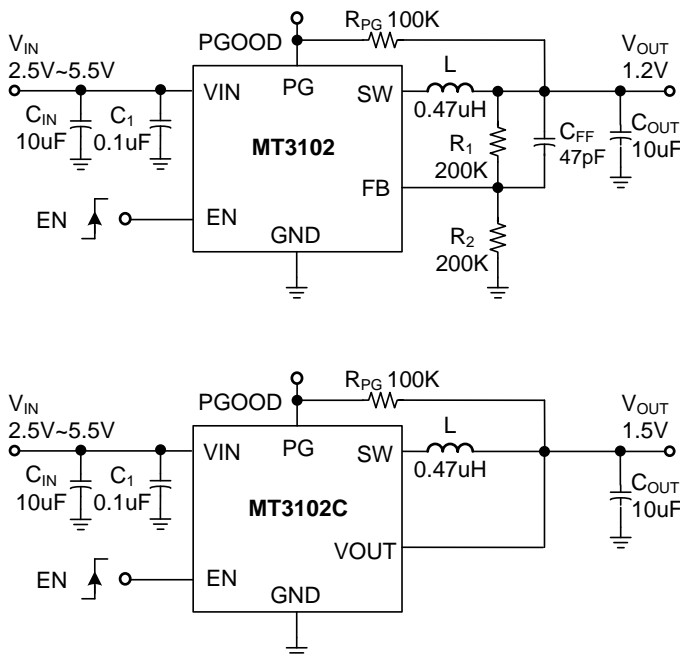
FEATURES

- Wide Input Range from 2.5V to 6V
- Proprietary Fast Transient Constant On Time Architecture Stable with low ESR Ceramic Output Capacitors
- +/- 2%, 0.6V Feedback Voltage/Fixed VOUT
- 2.5MHz Switching Frequency
- 15µA Low Quiescent Current
- 2A Continuous
- 1.21V Accurate Enable Threshold
- Up to 95% Efficiency
- 100% Duty Cycle Operation
- Built-in 110mΩ/90mΩ 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
- Thermal Shutdown Protection
- Available in Small SOT23_5L, SOT23_6L, DFN1.5x1.5_6L and DFN1.5x1_6L Package
- Pb-Free RoHS Compliant

APPLICATIONS

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

Typical Applications



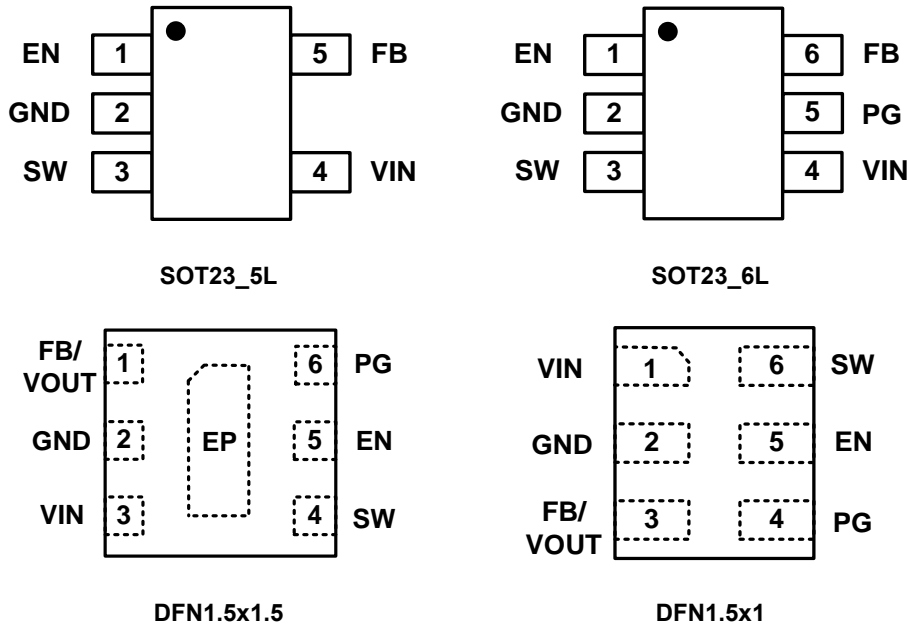
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Ordering Information

Part No.	Marking	Temp. Range	Remark	Package	MOQ
MT3102NSBR	3102 YWWxx	-40°C ~+85°C	Adjustable Vout	SOT23_5L	3000/Tape & Reel
MT3102ASBR	3102A YWWxx	-40°C ~+85°C	Adjustable Vout Forced PWM	SOT23_5L	3000/Tape & Reel
MT3102NSCR	3102 YWWxx	-40°C ~+85°C	Adjustable Vout	SOT23_6L	3000/Tape & Reel
MT3102ASCR	3102A YWWxx	-40°C ~+85°C	Adjustable Vout Forced PWM	SOT23_6L	3000/Tape & Reel
MT3102NGAR	3102 YWxx	-40°C ~+85°C	Adjustable Vout	DFN1.5x1.5_6L	3000/Tape & Reel
MT3102T105GAR	102T YWxx	-40°C ~+85°C	Fixed 1.05V	DFN1.5x1.5_6L	3000/Tape & Reel
MT3102C15GAR	102C YWxx	-40°C ~+85°C	Fixed 1.5V	DFN1.5x1.5_6L	3000/Tape & Reel
MT3102D18GAR	102D YWxx	-40°C ~+85°C	Fixed 1.8V	DFN1.5x1.5_6L	3000/Tape & Reel
MT3102V22GAR	102V YWxx	-40°C ~+85°C	Fixed 2.2V	DFN1.5x1.5_6L	3000/Tape & Reel
MT3102NDGR	ENYW	-40°C ~+85°C	Adjustable Vout	DFN1.5x1_6L	3000/Tape & Reel
MT3102ADGR	FNYW	-40°C ~+85°C	Adjustable Vout Forced PWM	DFN1.5x1_6L	3000/Tape & Reel
MT3102T105DGR	ETYW	-40°C ~+85°C	Fixed 1.05V	DFN1.5x1_6L	3000/Tape & Reel
MT3102C15DGR	ECYW	-40°C ~+85°C	Fixed 1.5V	DFN1.5x1_6L	3000/Tape & Reel
MT3102D18DGR	EDYW	-40°C ~+85°C	Fixed 1.8V	DFN1.5x1_6L	3000/Tape & Reel
MT3102V22DGR	EVYW	-40°C ~+85°C	Fixed 2.2V	DFN1.5x1_6L	3000/Tape & Reel

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

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Pin Configuration



Top View

Pin Description

SOT23_5 Pin No.	SOT23_6 Pin No.	DFN1.5x1.5 Pin No	DFN1.5x1 Pin No.	Symbol	Description
1	1	5	5	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. This pin has a pull-down resistor of typically 1MΩ to GND. <ul style="list-style-type: none"> • 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	2, EP	2	GND	Ground
3	3	4	6	SW	Power Switch Node
4	4	3	1	VIN	Input Supply Voltage
-	5	6	4	PG	Power Good Open-drain Output. Connect a 100kΩ pull-up resistor to V _{IN} or V _{OUT} .
5	6	1	3	FB	Voltage Feedback Input. Connect a resistor divider between output and FB to program the output voltage. VFB is regulated to 0.6V.
-	-	1	3	VOUT	Output Voltage Feedback Input for Fixed VOUT Revision