

24V 650kHz 3A Fast-PWM Synchronous Step-Down Converter

Description

The MT3683 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 3A continuous output current over a wide input range.

The MT3683 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 MT3683 integrates extensive protection functions include: UVLO, OCP, UVP and thermal shutdown. The converter is available in a small 6pin SOT23 package.

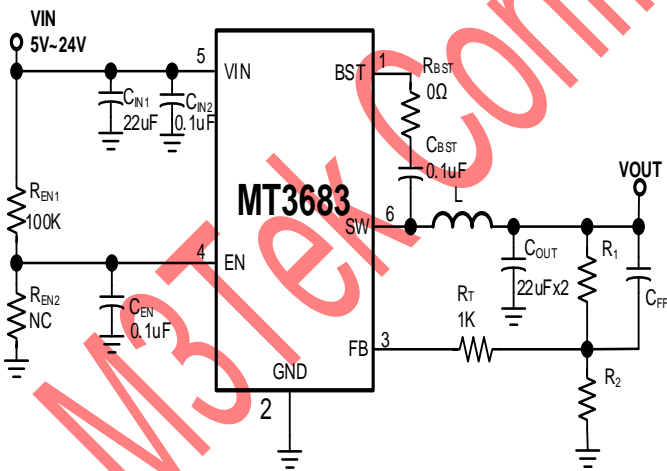
Features

- Input Voltage Range from 4.3V to 24V
- 28V Input Transient Tolerance
- Output Voltage Adjustable from 0.6V to 24V
- 3A continuous output current
- Support 100% duty cycle Low Dropout Operation
- Stable operation with output low ESR ceramic capacitors
- Fast PWM COT control with superior transient performance
- 650kHz Switching frequency
- Internal 800us Soft-start
- Integrated 85mΩ/ 60mΩ HS/LS Power Switches
- Accurate EN UVLO threshold
- High Efficiency Operation at light load MT3683N
- Thermal Shutdown with Auto recovery.
- Hiccup mode at short circuit protection
- Available in a 6-pin SOT23 Package

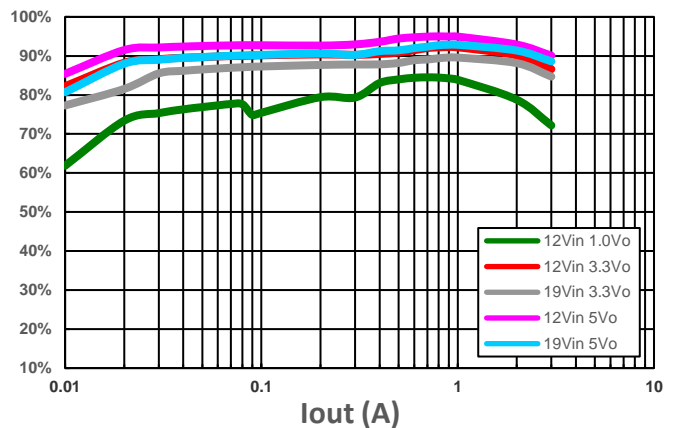
Applications

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

Typical Application



Efficiency

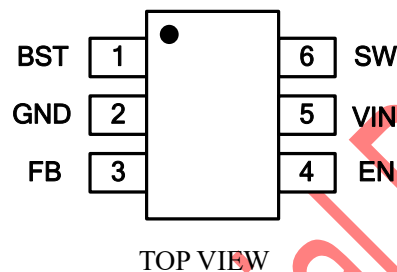


Ordering Information

Part No.	Marking	Temp. Range	Package	MOQ
MT3683NSCR (Pulse Skip Mode)	3683 YWWxx	-40°C ~+85°C	SOT23_6L	3000/Tape & Reel
MT3683ASCR (Forced-PWM Mode)	3683A YWWxx	-40°C ~+85°C	SOT23_6L	3000/Tape & Reel

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

Pin Configuration



Pin Descriptions

Pin NO.	Pin Name	DESCRIPTION
1	BST	Bootstrap. A 0.1uF ceramic capacitor connected between SW and BST pins is required to form a floating supply for the high-side switch driver.
2	GND	Power ground
3	FB	Feedback. An external resistor divider from the output to GND, tapped to the FB pin, sets the output voltage
4	EN	Enable pin. MT3683 is shut down when this pin is low and active when this pin is high. The hysteretic enable threshold voltage is 1.26V going up and 1.15V going down. Connect EN with VIN through a pull-up resistor or a resistive voltage divider for automatic startup. An external resistor divider from VIN can be used to program a VIN threshold below to stop the MT3683 operation. There is an internal 1000kΩ (typical) pull down resistor from EN to AGND.
5	VIN	Supply Voltage. The VIN pin supplies power for internal MOSFET and regulator. The MT3683 operates from a 4.3V to 24V input rail. An input capacitor is needed to decouple the input rail.
6	SW	Switch Output. Connect this pin to the inductor and bootstrap capacitor. SW node should be kept small on the PCB for good performance and low EMI.