Dual 1.5A 1.5MHz Synchronous Buck Converter

❖ GENERAL DESCRIPTION

The MA6001 is a dual high-efficiency Pulse-Width-Modulated (PWM) step-down DC-DC converter. It is capable of delivering 1.5A output current over a wide input voltage range from 2.5V to 5.5V, the MA6001 is ideally suited for portable electronic devices that are powered from 1-cell Li-ion battery or from other power sources within the range such as cellular phones, PDAs and other handheld devices.

Two operational modes are available: PWM/Low-Dropout auto-switch and shutdown modes. Internal synchronous rectifier with low $R_{DS(ON)}$ dramatically reduces conduction loss at PWM mode. No external Schottky diode is required in practical application.

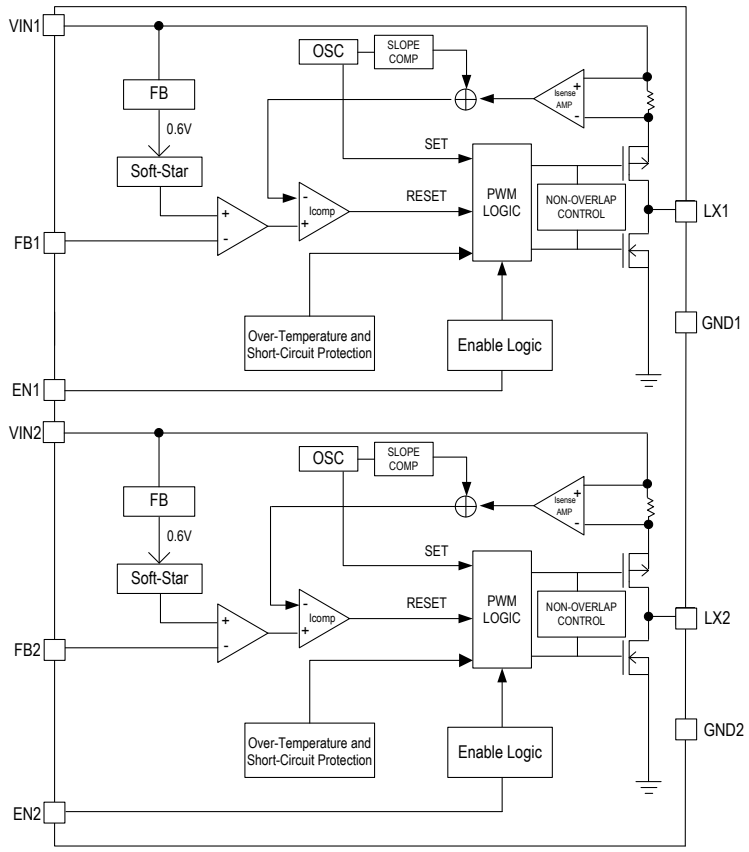
The MA6001 enters Low-Dropout mode when normal PWM cannot provide regulated output voltage by continuously turning on the upper PMOS. The MA6001 enter shutdown mode and consumes less than 0.1μA when EN pin is pulled low.

The switching ripple is easily smoothed-out by small package filtering elements due to a fixed operation frequency of 1.5MHz. This along with small TDFN-12L (3x3) package provides small PCB area application. Other features include soft start, lower internal reference voltage with 2% accuracy, over temperature protection, and over current protection.

❖ FEATURES

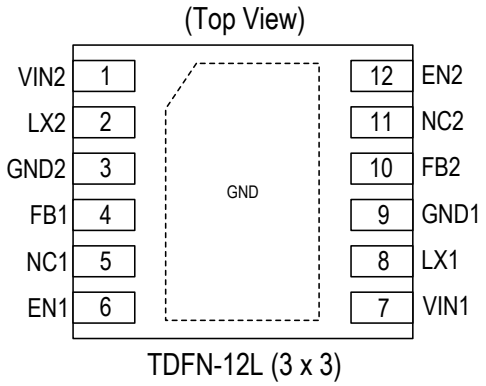
- 2.5V to 5.5V input voltage range
- Output Adjustable from 0.6V to VIN
- 170/130mΩ Internal Power MOSFET Switch
- Stable with Low ESR Output Ceramic Capacitors
- Up to 95% Efficiency
- Less than 1μA Shutdown Current
- 1.5Mhz Switching Frequency
- Thermal Shutdown Protection
- Current limit and short circuit protections.
- Available in TDFN-12L 3x3 Pb-Free Package
- Build-in soft start function

❖ BLOCK DIAGRAM



❖ PIN ASSIGNMENT

The package of MA6001 is TDFN-12L (3×3); the pin assignment is given by:



Name	Description
VIN2	Power Input of Channel 2.
LX2	Pin for Switching of Channel 2.
GND1,2	Ground. The exposed pad must be soldered to a large PCB and connected to GND for maximum power dissipation.
FB1	Feedback of Channel 1.
NC1, NC2	No Connection Pin.
EN1	Chip Enable of Channel 1 (Active High). VEN1 ≦ VIN1.
VIN1	Power Input of Channel 1.
LX1	Pin for Switching of Channel 1.
FB2	Feedback of Channel 2.
EN2	Chip Enable of Channel 2 (Active High). VEN2 ≦ VIN2.