

600mA* PWM/VFM Step-down DC/DC Converter with Synchronous Rectifier

The RP507K001B is low supply current CMOS-based PWM/VFM step-down DC/DC converters with synchronous rectifier. The RP507K001B is PWM/VFM auto switching control in which mode automatically switches to high-efficiency VFM mode in low output current. The output voltage is adjustable with external divider resistors. The RP507K001B includes a soft start circuit, an under-voltage lockout circuit (UVLO), thermal shutdown circuit, and an auto-discharge circuit. By simply using an inductor, capacitors and resistors as external components, a high-efficiency step-down DC/DC converter can be easily configured. A small size inductor (2.0 x 1.2mm, 2.2μH), a small size input capacitor (1.0 x 0.5mm, 4.7μF) and output capacitor (1.0 x 0.5mm, 10μF) can be used. A 1.6mm x 1.6mm DFN(PLP)1616-6D package is available.

FEATURES

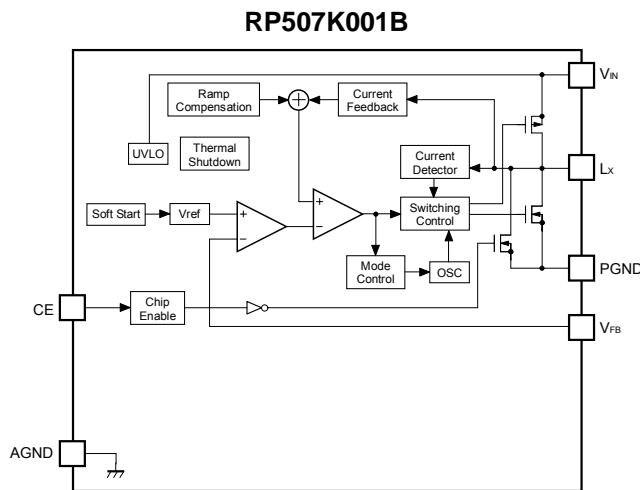
- Supply Current (I_{DD}) Typ. 34μA (No switching, VFM)
- Standby Current ($I_{standby}$) Typ. 0μA (CE="L")
- Input Voltage Range (V_{IN}) 2.3V to 5.5V
($V_{SET} \geq 1.0V$, Absolute maximum rating: 6.5V)
- Output Voltage Range (V_{OUT}) 0.7V to 5.5V (Externally adjustable)**
(Feedback Voltage : 0.6V)
- Feedback Voltage Accuracy $\pm 9mV$
- Output Current (I_{OUT}) 600mA*

- Oscillator Frequency (f_{osc}) 2MHz
- Oscillator Maximum Duty Cycle (Maxduty) ··· Min. 100%
- UVLO Detect Voltage (V_{UVLO}) Typ. 2.0V
- Soft Start Time (t_{start}) Typ. 0.15ms
- Thermal Shutdown Circuit Stops at 140°C.
- Coil-current Limit Circuit Current limit Typ. 1A
- Auto-discharge Function
- Package DFN(PLP)1616-6D

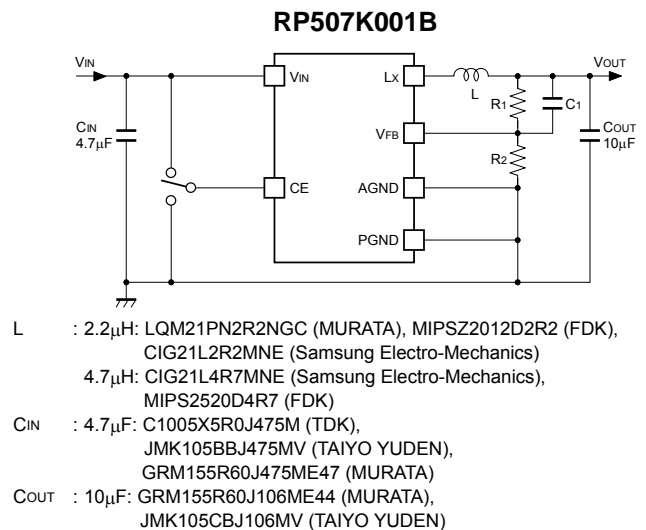
*) This is an approximate value, because output current depends on conditions and external parts.

***) When the output voltage is less than 1.0V, there are a little restrictions. For details, please refer to the datasheet.

BLOCK DIAGRAM



TYPICAL APPLICATION

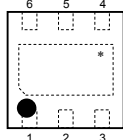


SELECTION GUIDE

Halogen Free	Package	Q'ty per Reel	Part No.
H/F	DFN(PLP)1616-6D	5,000 pcs	RP507K001B-TR

PACKAGE (Top View)

DFN(PLP)1616-6D



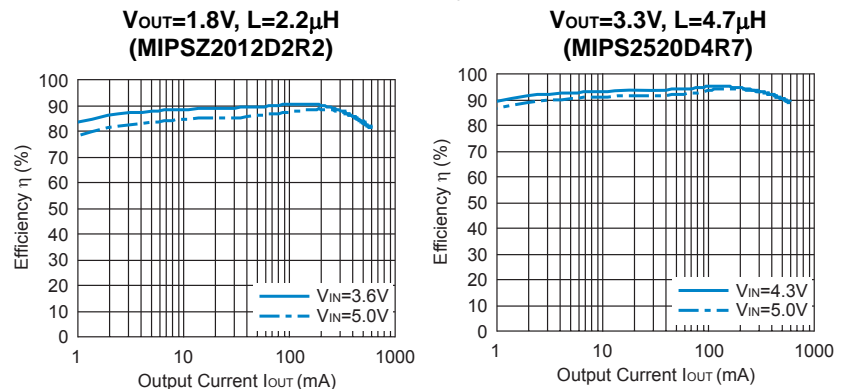
1	CE
2	AGND**
3	PGND**
4	LX
5	VIN
6	VFB

*) The tab is substrate level (GND).

**) No.2 pin and No.3 pin must be wired together when it is mounted on board.

TYPICAL CHARACTERISTICS

RP507K001B Efficiency vs. Output Current



APPLICATIONS

- Power source for hand-held communication equipment, cameras, laptop PCs, mobile phone, smart phone.
- Power source for Li-ion battery-used equipment.



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