

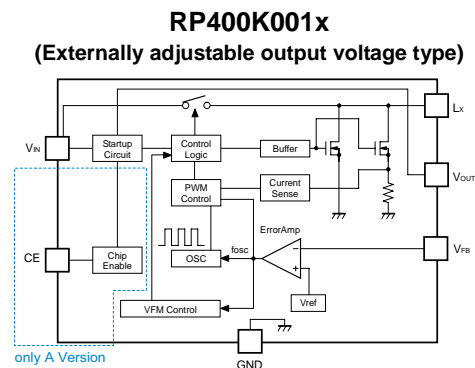
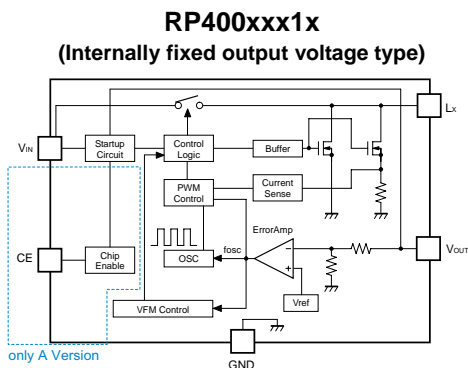
## Current Mode PWM/VFM Step-up DC/DC Converter

The RP400x Series are CMOS-based automatic switch PWM- or VFM-controlled step-up DC/DC converters. RP400x includes a soft start circuit. By simply using an inductor, a capacitor, a diode, and (resistors) as external components, a high-efficiency step-up DC/DC converter can be easily configured. Due to current mode PWM control, the RP400x provides a fast response and high efficiency. Ceramic output capacitors can be used. The output voltage can be selected from the internally fixed or the externally adjustable. The RP400x has an anti-ringing switch that prevents inductor current from ringing in PWM discontinuous mode. RP400x switches automatically to VFM control in low output current, keeping high efficiency. In addition to SOT-23-5 package, a 1.8mm x 2.0mm square DFN(PLP)1820-6 package is also available.

### FEATURES

- Supply Current ( $I_{DD1}$ )..... Typ. 300 $\mu$ A (RP400x301,  $V_{IN}=V_{OUT}=\text{SET } V_{OUT} \times 0.95$ )
- Supply Current ( $I_{DD2}$ )..... Typ. 160 $\mu$ A ( $V_{IN}=5V$ , In non-switching)
- Standby Current ( $I_{standby}$ )..... Max. 3 $\mu$ A (In standby, only A Version)
- Input Voltage Range ( $V_{IN}$ )..... 0.9V to 5.5V
- Start-up Voltage ( $V_{start}$ )..... Max. 0.9V
- Output Voltage Range ( $V_{OUT}$ )..... 1.8V to 5.0 V (internally fixed) (xx1)  
Externally adjustable (Feedback voltage of 0.6V) (001)
- Output Voltage Accuracy.....  $\pm 2\%$
- Oscillator Frequency ( $f_{osc}$ )..... 700kHz
- Oscillator Maximum Duty Cycle (Maxduty) .. Typ. 88%
- Soft Start Time ( $t_{start}$ )..... Typ. 0.7ms
- Anti-ringing Switch ..... Internal EMI Suppression
- Packages ..... DFN(PLP)1820-6, SOT-23-5

### BLOCK DIAGRAMS



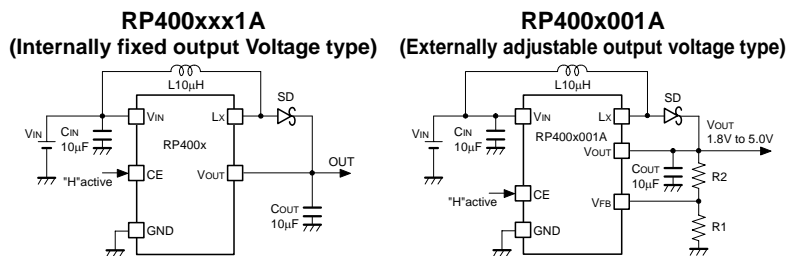
### SELECTION GUIDES

Package	Quantity per Reel	Part No.
DFN(PLP)1820-6	5,000 pcs	RP400K xx1* -TR
SOT-23-5	3,000 pcs	RP400N xx1* -TR-F

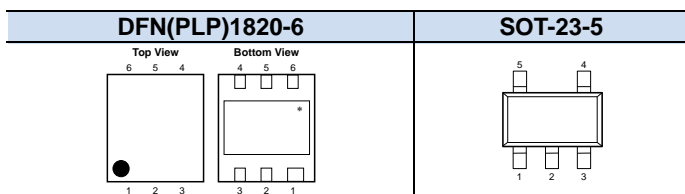
xx: Specify the output voltage within the range 1.8V (18) to 5.0V (50) in 0.1V steps.  
For the externally adjustable output voltage type, (00).

\*: Select from (A) With CE pin or (B) Without CE pin.

### TYPICAL APPLICATIONS



### PACKAGES



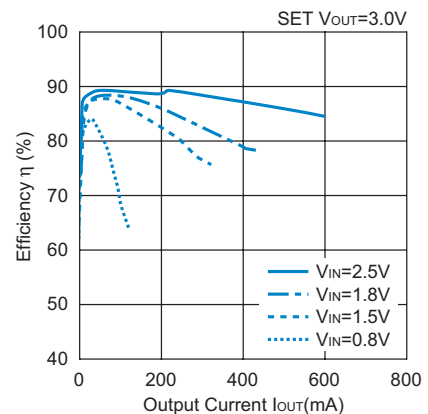
	xx1A	001A	xx1B	001B
1	$V_{IN}$	$V_{IN}$	$V_{IN}$	$V_{IN}$
2	CE	CE	NC	NC
3	GND	GND	GND	GND
4	Lx	Lx	Lx	Lx
5	NC	VFB	NC	VFB
6	VOUT	VOUT	VOUT	VOUT

\*) The tab is substrate level (GND).

	xx1A	xx1B
1	CE	NC
2	GND	GND
3	$V_{IN}$	$V_{IN}$
4	VOUT	VOUT
5	Lx	Lx

### TYPICAL CHARACTERISTIC

RP400x001A Efficiency vs. Output Current



### APPLICATIONS

- MP3 players and PDA
- Digital cameras
- LCD bias power supply
- Personal medical equipment
- Wireless Handset
- GPS



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Ricoh continually strives to promote customer satisfaction, and shares the achievements of its management quality improvement program with people and society.



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Ricoh completed the organization of the Lead-free production for all of our products. After Apr. 1, 2006, we will ship out the lead free products only. Thus, all products that will be shipped from now on comply with RoHS Directive.