

400mA*PWM Step-down DC/DC Converter with Switch Function

The R5220x Series are CMOS-based PWM step-down DC/DC converters with synchronous rectifier. R5220x also has the function of switching to the LDO regulator. By switching with the MODE pin, the device can be used as an LDO regulator (Output Current 50mA) in the smaller output current range, while it can be used as a DC/DC converter (Output Current 400mA*) under high load conditions. (The polarity of the MODE pin is selectable.) The DC/DC converter contains an under-voltage lockout circuit (UVLO), a soft start circuit, and a latch type protection circuit. By simply using an inductor and a capacitor, a high-efficiency DC/DC converter can be easily configured.

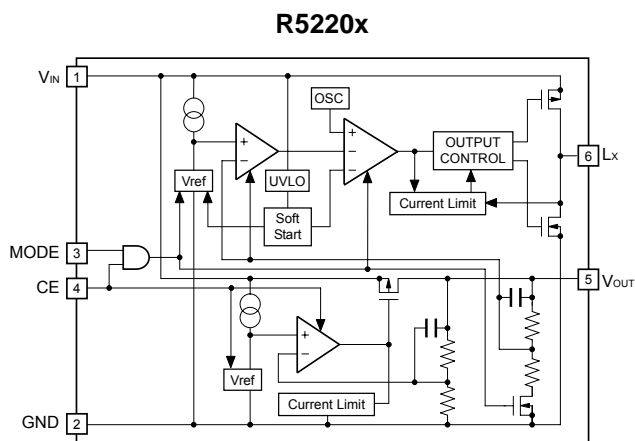
FEATURES

- Supply Current (DC/DC mode) (I_{SS1}) Typ. 350 μ A ($V_{IN}=3.6$ V)
- Supply Current (VR mode) (I_{SS2}) Typ. 5 μ A ($V_{IN}=VR$ SET $V_{OUT}+1$ V)
- Standby Current (I_{SS1}) Typ. 0.1 μ A ($V_{IN}=DC/DC$ SET $V_{OUT}+1$, in standby)
- Input Voltage Range (V_{IN}) 2.8V to 5.5V (Absolute maximum rating: 6.5V)
- Output Voltage Range (V_{OUT}) 1.0V to 3.3V (internally fixed)
- Output Voltage Accuracy $\pm 2\%$ ($V_{OUT} \geq 1.5$ V)
- UVLO Detect Voltage (V_{UVLO}) Typ. 2.35V

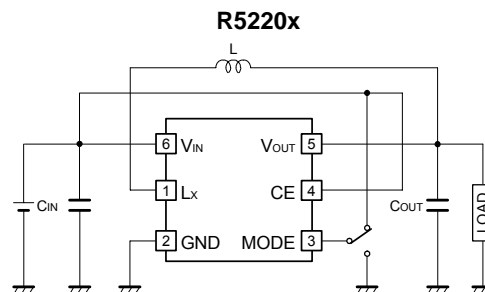
- Oscillator Frequency (f_{osc}) (DC/DC section) 1.2MHz
- Fold-back Protection Circuit (VR section) Current limit Typ. 60mA
- Soft Start Time (t_{start}) (DC/DC section) Typ. 0.2ms
- Coil-current Limit Circuit (DC/DC section) Current limit Typ. 800mA
- Latch Type Protection Circuit (DC/DC section) Delay time for protection Typ. 3ms
- Packages DFN(PLP)2514-6, SON-6
- Ceramic capacitors can be used. $C_{IN}=C_{OUT}=10\mu$ F or more

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

BLOCK DIAGRAM



TYPICAL APPLICATION



L : 4.7 μ H (VLP5610T-4R7MR90 : TDK)
 C_{IN} , $C_{OUT}=10\mu$ F (C2012JB0J106K : TDK)

SELECTION GUIDES

Halogen Free	Package	Q'ty per Reel	Part No.
H/F	DFN(PLP)2514-6	5,000 pcs	R5220Kxx\$*-TR
H/F	SON-6	3,000 pcs	R5220Dxx\$*-TR-FE

xx : Specify the output voltage within the range of 1.0V (10) to 3.3V (33) in 0.1V steps. Alternatively, specify a combination of output voltage using serial numbers.

- \$: Select from (1) Standard code products, (2) optional code products. (For optional code products, visit our Website to check.)
- * : Select the polarity of the MODE pin from (A) "H" : DC/DC, "L" : VR or (B) "H" : VR, "L" : DC/DC.

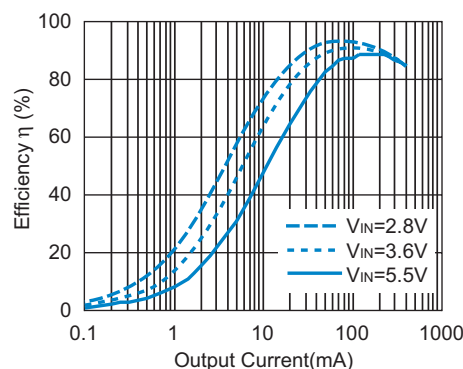
PACKAGES (Top View)

DFN(PLP)2514-6	SON-6
1 Lx	1 Lx
2 GND	2 GND
3 MODE	3 MODE
4 CE	4 CE
5 VOUT	5 VOUT
6 VIN	6 VIN

*) The tab and tab suspension leads on back side are substrate level (GND).

TYPICAL CHARACTERISTIC

R5220x181A DC/DC Efficiency vs. Output Current



APPLICATIONS

- Power source for battery-powered equipment
- Power source for hand-held communication equipment, cameras, and VCRs



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■ Ricoh awarded ISO 14001 certification.

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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.