

The RP901K Series are CMOS-based PWM/VFM step-down DC/DC converters equipped with voltage regulator and voltage detector.

The DC/DC converter can be selected from two control types - fixed PWM control or PWM/VFM auto switching control in which mode automatically switches to high-efficiency VFM mode in low output current. RP901K was developed for applications that require multiple power supplies such as storage devices. It integrates an 800mA* output current step-down DC/DC converter, a 600mA output current LDO regulator, and a voltage detector with a built-in delay circuit into a small package. The regulator can be started after soft start of the DC/DC converter by sequence control.

FEATURES

- Supply Current (I_{DD1})..... Typ. 460 μ A ($V_{IN}=V_{CE}=5.5V, V_{OUT1}=0V$)
- Supply Current (I_{DD2})..... Typ. 170 μ A ($V_{IN}=V_{CE}=5.5V, V_{OUT1}=5.5V, B/C$ Version)
- Standby Current ($I_{standby}$)..... Max. 5 μ A ($V_{IN}=5.5V, CE="L"$)
- Input Voltage Range (V_{IN})..... 4.5V to 5.5V

(DC/DC Section)

- DC/DC Output Voltage Range (V_{OUT1})... 1.2V to 1.8V (internally fixed)
- DC/DC Output Voltage Accuracy..... $\pm 2\%$
- Oscillator Frequency (f_{osc})..... 1.2MHz
- UVLO Detect Voltage (V_{UVLO})..... Typ. 3.5V
- Soft Start Time (t_{start})..... Typ. 1ms
- Coil-current Limit Circuit..... Current limit Typ. 1.4A
- Reset Protection Circuit..... Delay time for protection Typ. 0.1ms (B/C Version)

(VR Section)

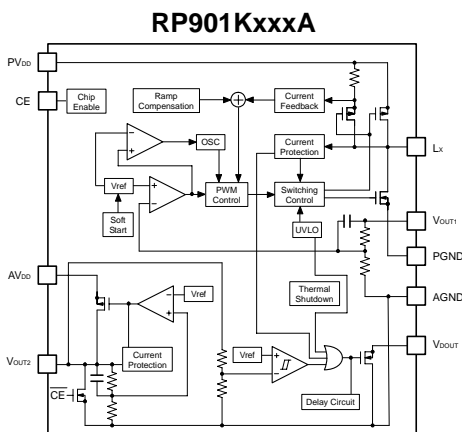
- VR Output Voltage Range (V_{OUT2})..... 2.5V to 3.3V (internally fixed)
- VR Output Voltage Accuracy..... $\pm 1\%$
- Fold-back Protection Circuit..... Current limit Typ. 70mA
- Start-up Time..... Typ. 2ms after DC/DC soft start period (A/B Version)
Typ. 50 μ s after DC/DC UVLO released (C Version)

(VD Section)

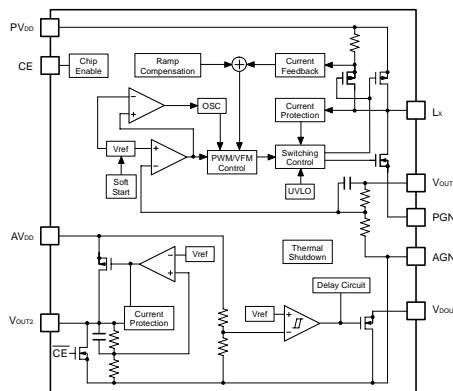
- VD Detector Threshold Range ($-V_{DET}$)... 2.0V to 3.0V (internally fixed)
(A Version, VR Output voltage monitoring)
3.0V to 5.0V (internally fixed)
(B/C Version, Input voltage monitoring)
- VD Detector Threshold Accuracy..... $\pm 2\%$
- VD Output Delay Time..... Typ. 50ms
- Thermal Shutdown Circuit..... Stops at 165 $^{\circ}$ C
- Package..... DFN(PLP)2527-10

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

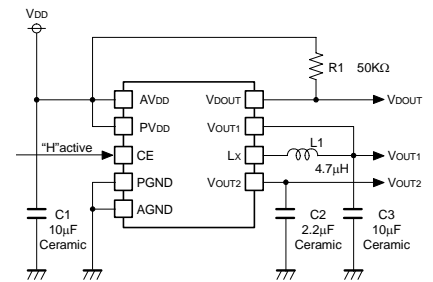
BLOCK DIAGRAMS



RP901KxxxB/C



TYPICAL APPLICATION



L1 4.7 μ H (VLF4014AT-4R7M1R1 : TDK)

SELECTION GUIDE

Halogen Free	Package	Q'ty per Reel	Part No.
H/F	DFN(PLP)2527-10	5,000 pcs	RP901Kxxx*-TR

xxx: Specify a combination of output voltage and detector threshold using serial numbers.

PACKAGE

DFN(PLP)2527-10

Top View

Bottom View

1 2 3 4 5

6 7 8 9 10

1 2 3 4 5

6 7 8 9 10

1	CE	6	PVDD**
2	VOUT	7	NC
3	AGND**	8	VOUT1
4	PGND**	9	AVDD**
5	Lx	10	VOUT2

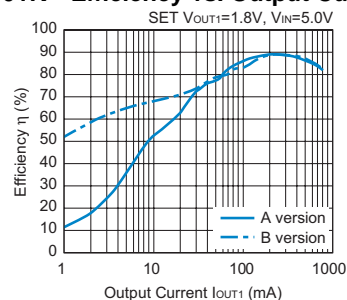
*) The tab is substrate level (GND).

**) No.3 pin and No.4 pin, No.6 pin and No.9 pin must be wired each other when it is mounted on board.

- * : Select from (A) Fixed PWM, without delay time for protection, VR starts after DC/DC soft start period, and VD monitoring VR output voltage, (B) PWM/VFM auto switching control, with delay time for protection, VR starts after DC/DC soft start period, and VD monitoring VR input voltage or (C) PWM/VFM auto switching control, with delay time for protection, VR starts after DC/DC UVLO released, and VD monitoring VR input voltage.

TYPICAL CHARACTERISTIC

RP901K Efficiency vs. Output Current



APPLICATIONS

- Power source for hand-held equipment, DVD and CD drives

- Power source for battery-powered equipment



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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.