

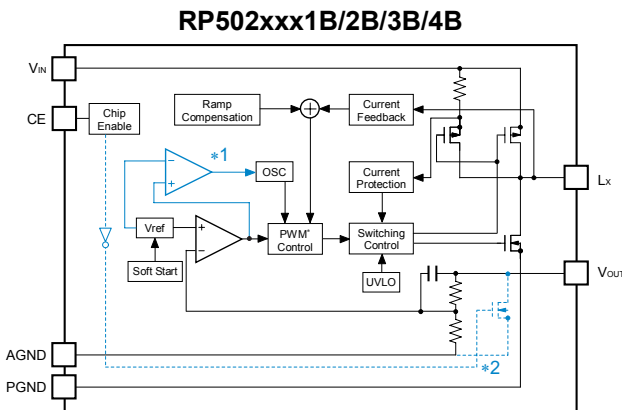
The RP502x Series are low supply current CMOS-based PWM/VFM step-down DC/DC converters with synchronous rectifier. RP502x can be selected from two control types - fixed PWM control or PWM/VFM auto switching control in which mode automatically switches to high-efficiency VFM mode in low output current. RP502x includes a soft start circuit, an under-voltage lockout circuit (UVLO), and a latch protection circuit. By simply using an inductor and capacitors as external components, a high-efficiency step-down DC/DC converter can be easily configured. The small inductor (1.0μH/2.2μH) and small output capacitor (4.7μF) can be used by the switching of 3.3MHz.

FEATURES

- Supply Current (I_{DD1}) Typ. 750μA (Switching)
- Supply Current (I_{DD2}) Typ. 180μA (No switching, VFM)
- Supply Current (I_{DD2}) Typ. 750μA (No switching, PWM)
- Standby Current (I_{standby}) Typ. 0μA (CE="L")
- Input Voltage Range (V_{IN}) 2.5V to 5.5V (Absolute maximum rating: 6.0V)
- Output Voltage Range (V_{OUT}) 0.8V to 3.3V (Internally fixed)
- Output Voltage Accuracy ± 1.5%
- Output Current (I_{OUT}) 600mA*
- Oscillator Frequency (f_{osc}) 3.3MHz
- Oscillator Maximum Duty Cycle (Maxduty) Min. 100%
- UVLO Detect Voltage (V_{UVLO}) Typ. 2.2V
- Soft Start Time (t_{start}) Typ. 0.12ms
- Coil-current Limit Circuit Current limit Typ. 900mA
- Latch Protection Circuit Delay time for protection Typ. 1.5ms
- Auto-discharge Function xx3, xx4 Version
- Packages WLCSP-6-P2, DFN1616-6

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

BLOCK DIAGRAM

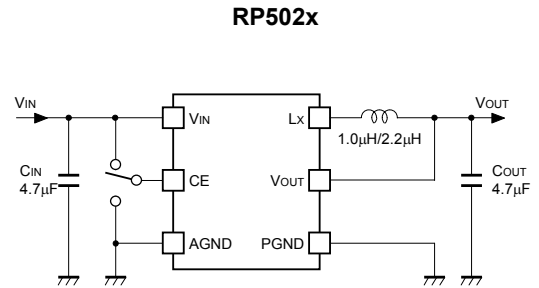


*) RP502xxx2B/4B is fixed PWM control.

*1) only RP502xxx1B/3B

*2) only RP502xxx3B/4B

TYPICAL APPLICATION



L: 1.0μH MIPS2520D1R0 (FDK) / 2.2μH NR3010T2R2M (TAIYO YUDEN)

SELECTION GUIDES

Halogen Free	Package	Q'ty per Reel	Part No.
H/F	WLCSP-6-P2	5,000 pcs	RP502Zxx*B-E2-F
H/F	DFN1616-6	5,000 pcs	RP502Lxx*B-TR

- xx : Specify the output voltage within the range of 0.8V (08) to 3.3V (33) in 0.1V steps.
- * : Select from (1) PWM/VFM auto switching control, without auto-discharge function, (2) fixed PWM control, without auto-discharge function, (3) PWM/VFM auto switching control, with auto-discharge function, or (4) fixed PWM control, with auto-discharge function.

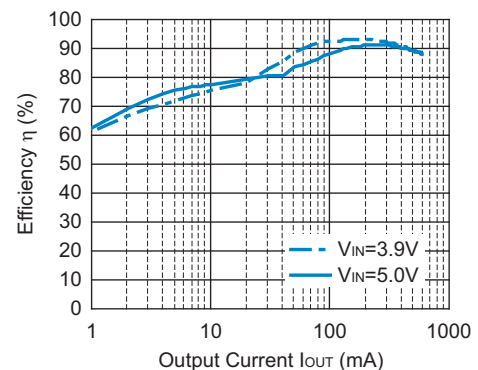
PACKAGES

WLCSP-6-P2		DFN1616-6	
1	V _{OUT}	1	CE
2	PGND	2	AGND
3	L _x	3	V _{IN}
4	V _{IN}	4	L _x
5	AGND	5	PGND
6	CE	6	V _{OUT}

*) The tab is substrate level (GND).

TYPICAL CHARACTERISTIC

RP502x291B/293B (PWM/VFM auto switching control)
Efficiency vs. Output Current



APPLICATIONS

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



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