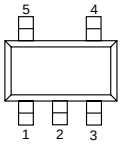
PWM CONTROL & PWM/PFM CONTROL STEP-DOWN SWITCHING REGULATOR-CONTROLLERS ► NEW S-8520/8521 Series

The S-8520/8521 Series consists of CMOS step-down switching regulator-controllers with PWM-control (S-8520) and PWM/PFM-switched control (S-8521).
The S-8520 Series provides low-ripple power, high-efficiency, and excellent transient characteristics thanks to a PWM control circuit capable of varying the duty ratio linearly from 0% up to 100%. The series also contains an error amplifier circuit as well as a soft-start circuit that prevents overshoot at startup.
The S-8521 Series works with either PWM control or PFM control, and can switch from one to the other. It normally operates using PWM control with a duty ratio of 25% to 100%, but under a light load, it automatically switches to PFM control with a duty ratio of 25%. This series ensures high efficiency over a wide range of conditions, from standby mode to operation of peripheral equipment.
They serve as ideal power supply units for portable devices when coupled with the SOT-23-5 minipackage, providing such outstanding features as low current consumption.
Moreover, oscillation frequency, a 300kHz type (E, F Series) is also available.

■ PIN CONFIGURATIONS

SOT-23-5
Top view



Pin No.	Pin Name	Function
1	ON/$\overline{OFF}$	Power-off terminal "H" : Normal operation (Step-down operation) "L" : Step-down operation stopped (All circuit deactivated)
2	V_{SS}	GND pin
3	V_{OUT}	Output voltage monitering terminal
4	EXT	Connection terminal for external transistor
5	V_{IN}	IC power supply terminal

■ FEATURES

- Low current consumption:
  In operation : 60 µA max. (A & B Series)
  21 µA max. (C & D Series)
  100µA max. (E & F Series)
  When powered off : 0.5 µA max.
- Input voltage : 2.5V to 16V (B & D & F Series)
  2.5V to 10V (A & C & E Series)
- Output voltage : Selectable between 1.5V and 6.0V in steps of 0.1V.
- Duty ratio : 0% to 100% PWM control (S-8520)
  25% to 100% PWM/PFM-switched control (S-8521)
- The only peripheral components that can be used with this IC are a Pch power MOS FET or PNP transistor, a coil, a diode, and capacitors. (If a PNP transistor is used, a base resistance and a capacitor will also be required.)
- Oscillation frequency: 180 kHz type. (A & B Series), 60 kHz type. (C & D Series), or 300 kHz type. (E & F Series).
- Soft-start function: 8 msec type. (A & B Series) or 12 msec type (C & D Series) or 4.5 msec type (E & F Series).
- With power-off function.
- With a built-in overload protection circuit. Overload detection time: 4 msec type. (A Series) or 14 msec type. (C Series) or 2.6 msec type (E & F Series).

■ APPLICATIONS

- On-board power supplies of battery devices for portable telephones, electronic notebooks, PCAs, and the like.
- Power supplies for audio equipment, including portable CD players and headphone stereo equipment.
- Fixed voltage power supply for cameras, video equipment and communications equipment.
- Power supplies for microcomputers.
- Conversion from four NiH or NiCd cells or two lithium-ion cells to 3.3V/3V.
- Conversion of AC adapter input to 5V/3V.

■ PRODUCT LIST

A, B Series (Oscillation frequency 180kHz)

Item Output Voltage (V)	S-8520AXXMC Series	S-8521AXXMC Series	S-8520BXXMC Series	S-8521BXXMC Series
2.5	S-8520A25MC-AVK-T2	S-8521A25MC-AXK-T2	S-8520B25MC-ARK-T2	S-8521B25MC-ATK-T2
3.0	S-8520A30MC-AVP-T2	S-8521A30MC-AXP-T2	S-8520B30MC-ARP-T2	S-8521B30MC-ATP-T2
3.3	S-8520A33MC-AVS-T2	S-8521A33MC-AXS-T2	S-8520B33MC-ARS-T2	S-8521B33MC-ATS-T2
5.0	S-8520A50MC-AWJ-T2	S-8521A50MC-AYJ-T2	S-8520B50MC-ASJ-T2	S-8521B50MC-AUJ-T2

C, D Series (Oscillation frequency 60kHz)

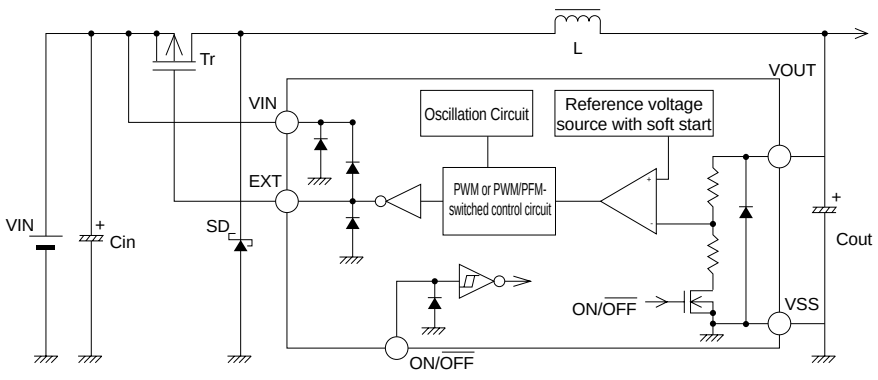
Item Output Voltage (V)	S-8520CXXMC Series	S-8521CXXMC Series	S-8520DXXMC Series	S-8521DXXMC Series
2.5	S-8520C25MC-BRK-T2	S-8521C25MC-BTK-T2	S-8520D25MC-BVK-T2	S-8521D25MC-BXK-T2
3.0	S-8520C30MC-BRP-T2	S-8521C30MC-BTP-T2	S-8520D30MC-BVP-T2	S-8521D30MC-BXP-T2
3.3	S-8520C33MC-BRS-T2	S-8521C33MC-BTS-T2	S-8520D33MC-BVS-T2	S-8521D33MC-BXS-T2
5.0	S-8520C50MC-BSJ-T2	S-8521C50MC-BUJ-T2	S-8520D50MC-BWJ-T2	S-8521D50MC-BYJ-T2

E, F Series (Oscillation frequency 300kHz)

Item Output Voltage (V)	S-8520EXXMC Series	S-8521EXXMC Series	S-8520FXXMC Series	S-8521FXXMC Series
3.0	S-8520E30MC-BJP-T2	S-8521E30MC-BLP-T2	S-8520F30MC-BNP-T2	S-8521F30MC-BPP-T2
3.3	S-8520E33MC-BJS-T2	S-8521E33MC-BLS-T2	S-8520F33MC-BNS-T2	S-8521F33MC-BPS-T2
5.0	S-8520E50MC-BKJ-T2	S-8521E50MC-BMJ-T2	S-8520F50MC-BOJ-T2	S-8521F50MC-BQJ-T2

Some products described here in are under development.
Please contact us for Samples.

■ BLOCK DIAGRAM



Note : The diode inside the IC is a parasitic diode