PM6680A: 3 output power controller for industrial applications

Dual adjustable step-down controller plus LDO

STMicroelectronics' PM6680A represents the best integrated solution for providing the two main output voltages necessary for the FPGA and MCU system power. This device provides two switching controllers with adjustable outputs and an LDO capable of supplying constant 5V auxiliary voltage.

The PM6680A belongs to a new product family designed to support power management in industrial applications.

The advanced BCD technology not only supports high performance and ultra-low power consumption, but also reduces costs.

It comes in a compact VFQFPN 32-pin, 5mm x 5mm package, ideal for space-saving design requirements.

Key features

- Constant ON time (COT) topology which allows very fast load transients
- Adjustable output voltages from 0.9V to 5V/3.3V (Ch1/2)
- 5V LDO delivering 200mA peak current
- No R_{SENSE} current sensing with low side $R_{DS(on)}$ MOSFET
- Soft OFF for gradual output discharge
- Selectable minimum frequency (33kHz) in pulse-skip mode
- 5mW maximum quiescent power
- Independent power good signals
- Output voltage ripple compensation
- Housed in VFQFPN 32

Main applications

- Embedded computer systems
- FPGA and MCU-based systems
- Industrial applications on 24V bus
- High performance and high density DC/DC modules

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The PM6680A is a dual pulse-width modulation (PWM) controller configured for step-down (buck) topologies. It provides extremely high efficiency conversion (up to 95%), through a lossless current sensing technique, and high DC output accuracy in a wide input voltage range, covering the 5V, 12V and 24V bus.

The constant ON time architecture allows the PM6680A to convert the 36V input voltage to a 1.2V-2.5V output voltage, the typical core and I/O voltage range required by embedded systems based on FPGA and MCU.

For portable equipment, efficiency and battery life can be further increased by means of an internal MOSFET that disables the LDO 5V output and the IC is supplied directly by the external 5V bus.

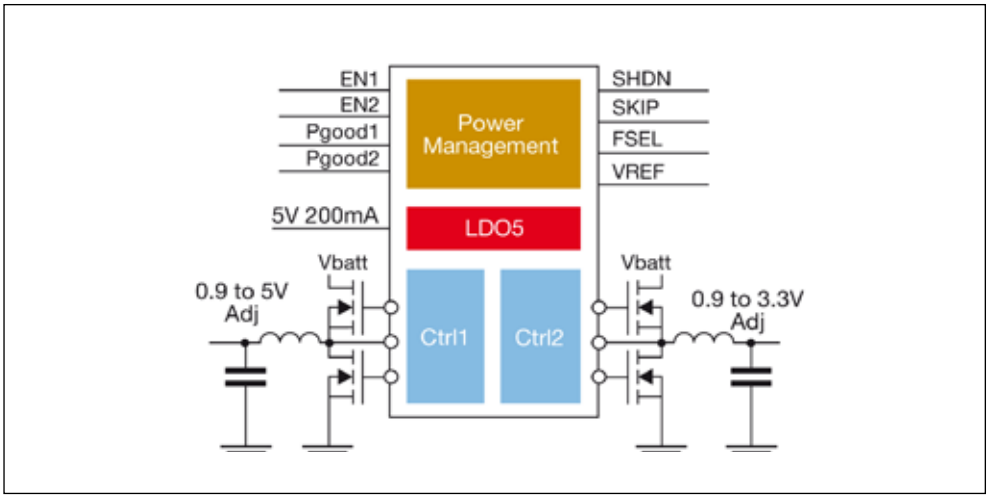
An embedded integrator control loop compensates the DC voltage error caused by the output ripple.

In light load conditions, a pulse-skip technique increases efficiency with minimum impact on the output regulation accuracy. During pulse-skip mode, a minimum switching frequency of 33kHz is available to prevent audio noise issues.

The PM6680A also provides selectable switching frequencies for the 2 adjustable output voltages:

- 200kHz / 300kHz,
- 300kHz / 400kHz, or
- 400kHz / 500kHz.

Available in a compact VFQFPN 32-pin, 5mm x 5mm package, the PM6680A is ideal for space-saving design requirements.



PM6680A internal main blocks

Industrial power management solutions

Part number	Number of outputs	Main applications	Regulated switching	Regulated LDO	LDO current	IC supply voltage	Output accuracy	Switching frequency	Package
PM6680A	3	Embedded system	Adj from 0.9V	Fixed 5V	200mA pk	5.5V to 36V	±1%	200kHz to 500kHz	VFQFPN 32pin 5X5
PM6670A			1.5V, 1.8V or adj	Fixed Vddq/2	2A pk			200kHz to 1MHz	VFQFPN 24pin 4X4
PM6675A			Adj from 0.6V	Adj from 0.6V					

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Full product information at www.st.com

Order code: FLPM6680A1006