High-Efficiency Point of Load Regulators

Fairchild's high-efficiency PoL regulator family helps system designers meet tough energy standards and improve battery life while reducing total cost of ownership.

The FAN23xx synchronous buck regulator family enables end-user applications to achieve greater than 96% efficiency over a very wide load range. This is achieved through multiple optimizations.
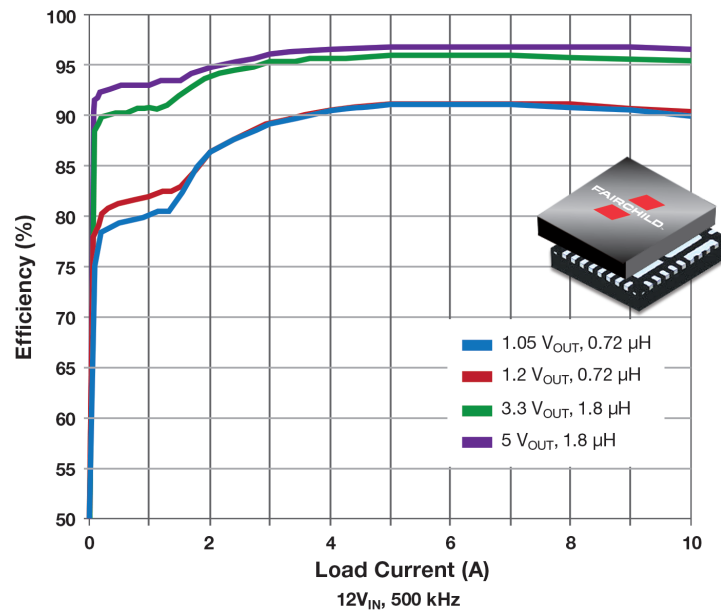
Additional optimizations help improve thermal performance and system robustness:

- Fine-tuned gate driver circuitry with optimized gate drive current and dead times for each specific part number, achieving two percent higher efficiency compared to other solutions

- Constant on-time architecture with pulse frequency modulation (PFM) for highest light load efficiency

FAN2310 Efficiency vs. V_{OUT}

Legend:
- 1.05 V_{OUT}, 0.72 µH
- 1.2 V_{OUT}, 0.72 µH
- 3.3 V_{OUT}, 1.8 µH
- 5 V_{OUT}, 1.8 µH

Load Current (A) — $12V_{IN}$, 500 kHz

Products

4.5V to 18V Family
FAN2306/06M/10/15A
External 5V bias required
V_{IN} range 4.5V to 18V
FAN23SV06/06P/SV10M/SV15MA/SV20MA for single supply operation
12V typ operation
V_{IN} range 7V to 18V
FAN23SV04TA for single supply operation
12V operation
V_{IN} range 7V to 18V
Tracking operation for DDR Termination (VTT)
4.5V to 24V Family
FAN2356/60/65A
External 5V bias required
V_{IN} range 4.5V to 24V
FAN23SV56/SV60/SV65A/SV70A for single supply operation
12V and 19 V typ operation
V_{IN} range 7V to 24V

Features

- 4A, 6A, 10A, 15A and 20A devices
- Single, small footprint (5 mm x 5.5 mm PQFN-34L) compatibility for all devices
- Minimizes external component count for reduced bill of materials (BOM) cost and improved system reliability
- Constant on-time controller with PFM mode
- Compatible with all output capacitor types (MLCC, POSCAP, etc.)

Applications

- Servers and desktop computers
- Game consoles
- Telecommunications
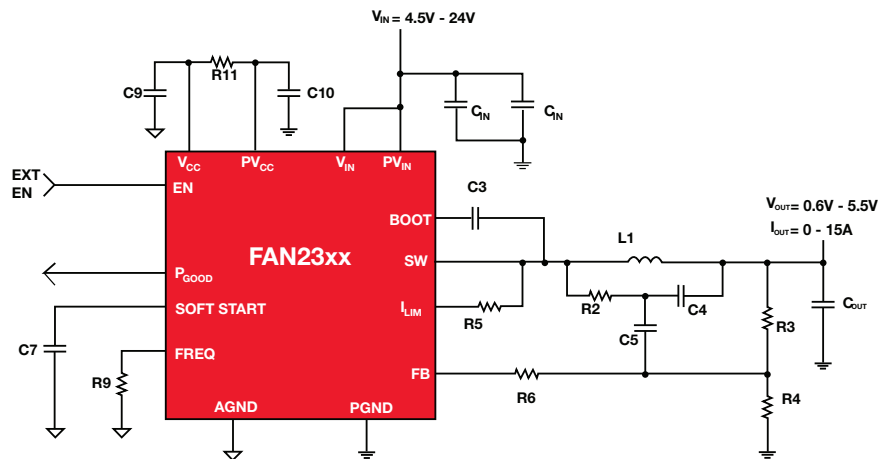- Storage
- Base stations
- Notebooks

High-Efficiency Point of Load Regulators

25V-Rated Devices

Part Number	Load Current Rating (A)	V_{IN} Range (V)	5V Bias Required	PFM	Ultrasonic Mode	Tracking
FAN23SV04TA	4	7 to 18	—	—	✔	✔
FAN2306A	6	4.5 to 18	✔	✔	✔	—
FAN2306MA	6	4.5 to 18	✔	✔	—	—
FAN23SV06A	6	7 to 18	—	✔	✔	—
FAN23SV06PA	6	7 to 18	—	—	—	—
FAN2310A	10	4.5 to 18	✔	✔	✔	—
FAN23SV10MA	10	7 to 18	—	✔	—	—
FAN2315A	15	4.5 to 18	✔	✔	✔	—
FAN23SV15MA	15	7 to 18	—	✔	—	—
FAN23SV20MA	20	7 to 18	—	✔	—	—

30V-Rated Devices

Part Number	Load Current Rating (A)	V_{IN} Range (V)	5V Bias Required	PFM	Ultrasonic Mode	Tracking
FAN2356A	6	4.5 to 24	✔	✔	✔	—
FAN23SV56A	6	7 to 24	—	✔	✔	—
FAN2360A	10	4.5 to 24	✔	✔	✔	—
FAN23SV60A	10	7 to 24	—	✔	✔	—
FAN2365A	15	4.5 to 24	✔	✔	✔	—
FAN23SV65A	15	7 to 24	—	✔	✔	—
FAN23SV70A	20	7 to 24	—	✔	✔	—

Typical application with V_{IN} = 12V and 19V

For more information on the high-efficiency PoL regulator solutions, visit **fairchildsemi.com/polregulators**

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PB4000-001B