

DC-to-DC Switching Regulator IC Solutions



Analog Devices has introduced three new families of dc-to-dc converters that represent the most efficient and versatile power IC solutions in the industry.



Introduction

Analog Devices, Inc., introduces several new families of highly efficient and reliable switching regulators with optimized levels of functional integration that minimize the power consumption in your performance driven applications, such as wireless infrastructure, medical instrumentation, automatic test equipment, and many more. These new products range from three-phase controllers to fully integrated controller, driver, and FET devices. By leveraging ADI's best-in-class design practices, these parts have been specifically engineered and manufactured to meet the most demanding and stringent of designs. In addition to superior performance, these parts are extremely flexible and can be applied in a number of different configurations to meet your individual requirements. Features such as margining and tracking have been integrated into several product variants to enhance the monitoring and control capabilities of the overall system. These new families of power management parts extend ADI's existing and growing portfolio of power products and further reinforces our position as the world leader in signal processing and system wide integration.

DC-to-DC Switching Regulators (Step-Up, Step-Down, PoL, SEPIC)

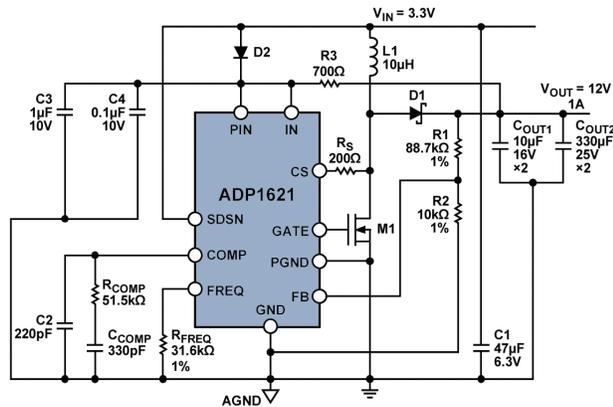
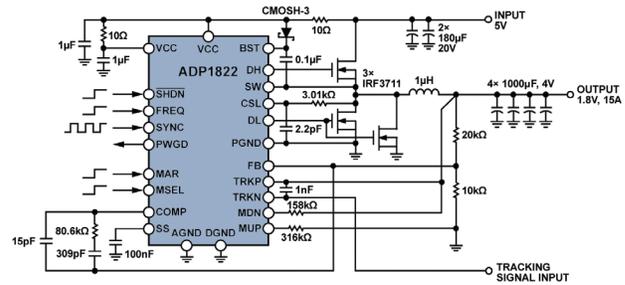
Part Number	Function	V _{IN} (V)	V _{OUT} (V)	Efficiency (%)	Max SW Current (A)	I _{OUT} (A)	IQ (mA)	SWF (MHz)	Package	Temperature (°C)	Price @ 1k (\$U.S.)
ADP1610/ ADP1611	Step-up internal SW	2.5 to 5.5	Adj up to 12/20	—	1.2	0.3	0.6	0.7 to 1.2	8-lead MSOP	-40 to +85	1.25/1.35
ADP1621	Step-up, SEPIC	3 to 5.5	To 30 without current sense R	92	—	—	3	0.1 to 1.5	10-lead MSOP	-40 to +85	1.75
ADP1111	Step-up	2 to 30	12, 3.3, 5, Adjustable	—	1.2	0.1	0.5	0.07	8-lead PDIP, 8-lead SOIC	0 to +70	2.06
ADP1821	Step-down	1 to 24	0.6 to 85% of V _{IN}	—	20	—	2	0.3, 0.6, or up to 1.2	16-lead QSOP	-40 to +85	1.50
ADP1822	Step-down with margining and track	1 to 24	0.6 to 85% of V _{IN}	—	20	—	2	0.3, 0.6, or up to 1.2	24-lead QSOP	-40 to +85	1.80
ADP1823	Dual step-down	3 to 20	0.6 to 85% of V _{IN}	—	20	—	4	0.3, 0.6, or up to 1.2	32-lead LFCSP	-40 to +85	2.10
ADP1864	Step-down	3.15 to 14	Down to 0.8	—	5	—	300	0.55	6-TSOT	-40 to +85	1.05
ADP2105/ ADP2106/ ADP2107	Step-down internal SW	2.7 to 5.5	1.5, 1.8, 2.5, 3.3, adjustable	95	2.9	1, 1.5, 2	0.035	1.2	16-lead LFCSP	-40 to +85	1.95/ 2.00/ 2.05
ADP3051	Step-down	2.7 to 5.5	Adjustable, 0.8 to 5	—	1	0.5	0.3	0.55	8-lead MSOP	-40 to +85	2.62
ADP3050	Step-down	3.6 to 30	3.3, 5, adjustable	—	1.5	1	1.5	0.2	8-lead SOIC	-40 to +85	1.78
ADP3182	Step-down	10 to 14	0.8 to 5	—	—	Up to 100	—	Up to 1	20-lead QSOP	0 to +85	1.19

MOSFET Drivers (High-Side, Low-Side)

Part Number	Function	Package	Application	Price @ 1k (\$U.S.)
ADP3110A	Synchronous, 12 V MOSFET driver with output disable	8-lead SOIC	Desktop CPU sync converter	0.57
ADP3120A	Synchronous, 12 V MOSFET driver with output disable	8-lead SOIC, 8-lead LFCSP	Desktop CPU sync converter	0.55
ADP3118	Synchronous, 12 V MOSFET driver with output disable	8-lead SOIC	Desktop CPU sync converter	0.60
ADP3419	Synchronous, high voltage MOSFET driver with low-side shutdown	10-lead MSOP	Mobile CPU sync converter	0.72

ADP1822: High Efficiency DC-to-DC Buck with On-Board Tracking and Margining

The ADP1822 is a versatile, synchronous PWM step-down controller. It drives an all n-channel power stage to regulate an output voltage as low as 0.6 V with up to a 20 A load current. The extended feature set on the ADP1822 integrates sequencing and margining needs which reduces the overall BOM in a system. The ADP1822's regulated output can track another power supply and be dynamically adjusted up or down with the controller's margining-control inputs, making it ideal for high reliability applications. It is well-suited for a wide range of high power applications, such as DSP power and processor core power in telecom, medical imaging, high performance servers, and industrial applications. Other features such as soft start, enable, and power good make it an excellent choice for full system management. The safety features include undervoltage lockout, current limit, and thermal protection. For additional information on the ADP1822, go to www.analog.com/ADP1822.

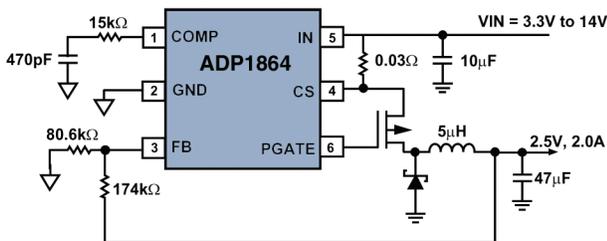
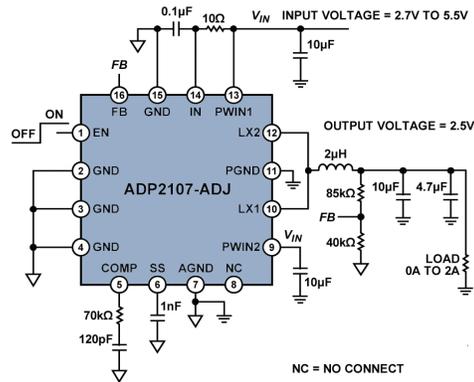


ADP1621: Flexible and Easy to Use DC-to-DC Boost

The ADP1621 is a flexible boost controller configurable in boost, flyback, SEPIC, and forward topologies either isolated or nonisolated. It drives an n-channel MOSFET to convert input voltage to a higher output voltage. The ADP1621 is a fixed frequency, pulse-width modulation (PWM) current mode step-up controller. The ADP1621 reduces BOM by eliminating the need for a current sense power resistor by measuring the voltage drop across the on resistance of the n-channel MOSFET. This will work for voltages up to 30 V and above this a sense resistor can be added between the source of the MOSFET and the CS pin to improve accuracy. The switching frequency is set using an external resistor. For additional information on the ADP1621, go to www.analog.com/ADP1621.

ADP2105/ADP2106/ADP2107: 2A, Compact, High Efficiency, Step-Down DC-to-DC Switching Regulator with Internal FETs

The ADP2105/ADP2106/ADP2107 are low quiescent, current synchronous step-down, dc-to-dc converters in a compact 4 mm × 4 mm LFCSP package. At medium to high load currents, these devices use current-mode, constant-frequency pulse-width modulation (PWM) control scheme for excellent stability. To ensure the longest battery life in portable applications, the ADP2105/ADP2106/ADP2107 has quiescent current of 25 µA and uses a power-saving pulse frequency modulation (PFM) control scheme that reduces switching frequency under light load conditions. For additional information on the ADP2105/ADP2106/ADP2107, go to www.analog.com/ADP2105, www.analog.com/ADP2106, or www.analog.com/ADP2107.



ADP1864: Low Cost DC-to-DC Buck in a Tiny TSOT Package

The ADP1864 constant frequency, current-mode, step-down dc-to-dc controller offers a 40% cost savings over competing ICs. The device is well-suited for cost-conscious designers of 2 A to 5 A distributed power systems who are looking to reduce the cost of their power supplies without sacrificing performance. The device's 14 V input range provides greater design flexibility, and it is suited for low cost, 12 V power supply wall bricks or systems requiring more than 10 V input voltages. On-board reference accuracy is 3× better than the closest competing devices, and its load line regulation of only 1 mV/A is 2× that of competing devices. For additional information on the ADP1864, go to www.analog.com/ADP1864.

Power Product Spotlights

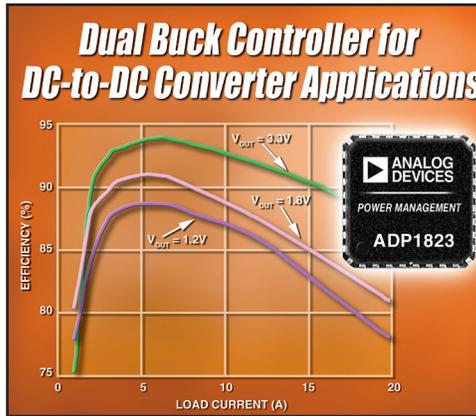
ADP1821/ADP1822

- Peak efficiency: >95%
- Accuracy: $\pm 0.85\%$ at 0°C to 70°C
- Shutdown current: 10 μA
- Pin-selectable 300 kHz or 600 kHz operation or sync to 1 MHz
- On-chip tracking and margining (ADP1822 only)
- 5 mm \times 5 mm, 32-lead LFCSP



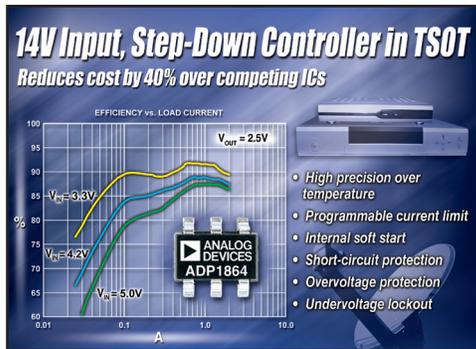
ADP1823

- Dual output down to 0.6 V
- Interleaved switching reduces input caps
- All n-channel power stage
- Over 20 A drive capability
- Undervoltage lockout and thermal overload protection safety features
- 32-lead LFCSP



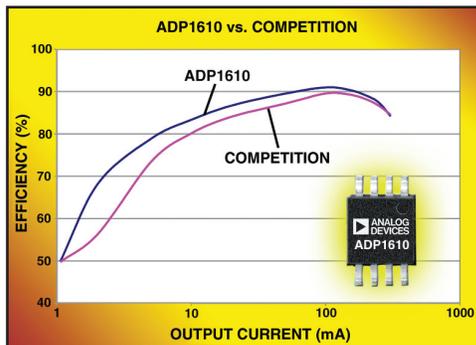
ADP1864

- Reference voltage: 1.25%, 0.8 V
- Programmable current limit
- Internal soft start
- Thermal overload protection
- Overvoltage protection
- Undervoltage lockout
- Shutdown current: 7 μA



ADP1610

- Adjustable output voltage up to 12 V
- Current mode control
- Integrated 1.2 A power switch
- Adjustable soft start
- 8-lead MSOP



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