

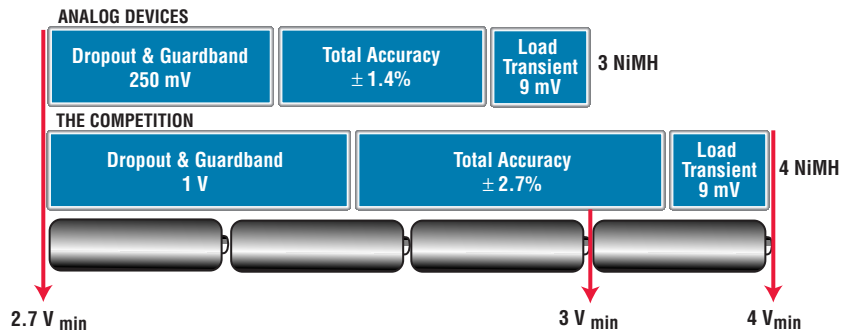
**THE anyCAP™ FAMILY OF  
LOW DROPOUT REGULATORS  
MORE POWER TO THE PORTABLE WORLD**



### 30% MORE POWER, LESS SPACE

Today's increasingly portable world is calling for new ways to regulate voltage while meeting space and high-volume cost demands. The answer: Analog Devices' line of anyCAP™ low dropout regulators (LDOs), delivering high accuracy, low dropout and stability with, yes, any type of output capacitor, including MLCC. The result is maximum design flexibility, minimum footprint and true system-level benefits that include longer battery life, increased time between charges and the opportunity to use a smaller battery stack. Housed in the smallest thermally-enhanced package sizes available – incorporating proprietary leadframe design – anyCAP LDOs dissipate up to 30% more power, while considerably shrinking system size.

### BETTER HEADROOM MANAGEMENT = SMALLER BATTERY STACKS

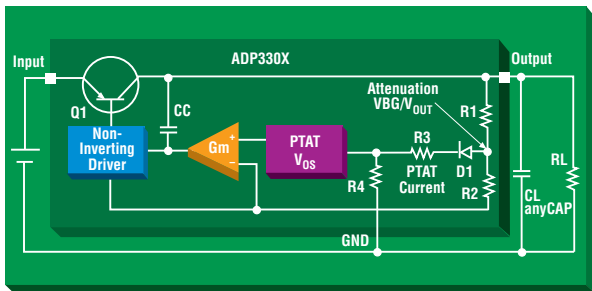


In a cellular phone that operates off three fully discharged NiMH batteries, anyCAP LDOs provide an accurate output of 2.7 V from a 3.0 V  $\pm 10\%$  input. The competition requires a fourth NiMH battery to obtain the same minimum output voltage. (Note: The ADP3300 is capable of achieving total accuracy of 1.4% with  $V_{IN} - V_{OUT} = 50 \text{ mV} + V_{DROPOUT}$ .)

### anyCAP: A PATENTED, NEW TOPOLOGY

As shown below, the new anyCAP LDO uses a single loop for regulation and reference functions. This single loop is controlled by a very high gain error amplifier. A unique

non-inverting driver between the error amplifier and the pass transistor is designed specifically to enable the frequency compensation to include the load capacitor in a pole-splitting arrangement, achieving reduced sensitivity to the value, type and ESR of the load capacitance. The anyCAP LDOs represent just one way Analog Devices is helping designers of portable equipment manage power more efficiently. For a complete product listing of power management products from Analog Devices, see the back cover.



The anyCAP patented control loop.

Part Number	$V_{IN}$ (V)	$V_{OUT}$ (V)	Nominal $V_{Dropout}$ (V) @ $I_{OUT}$	Nominal $I_{OUT}$ (mA)	Max. $I_Q$ @ Shutdown @ 25°C ( $\mu\text{A}$ )	Total Output Voltage Accuracy Over Temp	Temperature Range	Package Options
<b>Precision anyCAP LDOs</b>								
ADP3300	3 V to 16 V	2.7 V, 3 V, 3.2 V, 3.3 V, 5 V	0.08	50	1	1.4%	-40°C to +85°C	SOT-23
ADP3301	3 V to 12 V	2.7 V, 3 V, 3.2 V, 3.3 V, 5 V	0.1	100	1	1.4%	-20°C to +85°C	SO-8
ADP3302*	3 V to 12 V	2.7 V, 3 V, 3.2 V, 3.3 V, 5 V	0.12	100	1	1.4%	-20°C to +85°C	SO-8
ADP3303	3.2 V to 12 V	2.7 V, 3 V, 3.2 V, 3.3 V, 5 V	0.18	200	1	1.4%	-20°C to +85°C	SO-8
ADP3307	3 V to 12 V	2.7 V, 3 V, 3.3 V	0.12	100	1	1.5%	-20°C to +85°C	SOT-23
<b>Multiple Output anyCAP LDOs</b>								
ADP3302	3 V to 12 V	2.7 V, 3 V, 3.2 V, 3.3 V, 5 V	0.12	100	1	1.4%	-20°C to +85°C	SO-8
<b>anyCAP in SOT-23 Package</b>								
ADP3300	3 V to 16 V	2.7 V, 3 V, 3.2 V, 3.3 V, 5 V	0.08	50	1	1.4%	-40°C to +85°C	SOT-23
ADP3307	3 V to 12 V	2.7 V, 3 V, 3.3 V	0.12	100	1	1.5%	-20°C to +85°C	SOT-23
<b>Low Dropout Regulator Controller</b>								
ADP3310	2.5 V to 15 V	2.8 V, 3 V, 3.3 V, 5 V	0.07	1	1	1.5%	-40°C to +85°C	SO-8

\*Dual

## GO AS LOW AS ZERO ESR

Most LDOs place strict requirements on the range of ESR values for the output capacitor because they are difficult to stabilize due to the uncertainty of load capacitance and resistance. Moreover, the ESR value required to keep conventional LDOs stable changes depending on load and temperature. These ESR limitations make designing with other LDOs more risky and more difficult due to unclear specifications based on typical ESR values.

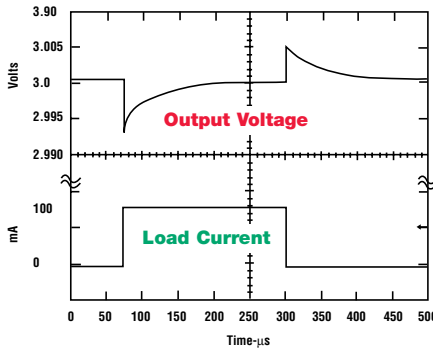
Analog Devices' anyCAP LDOs have no restraints on minimum ESR. The innovative design enables stability even with an MLCC and capacitor values as low as 0.47  $\mu\text{F}$ . The very high regulator gain also leads to excellent line and load regulation with  $\pm 1.4\%$  overall accuracy – best in the industry.

## MORE ADVANCED FEATURES

With additional features such as a dropout detector, optional noise reduction, current and thermal limiting and a low shutdown current, designers have even more ways to improve their portable designs. Priced to fit tight budgets, the anyCAP LDOs come in a variety of output voltages – as well as output current options.

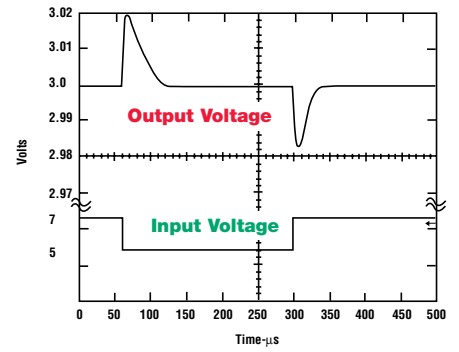
## ALL THE PERFORMANCE

### LOAD TRANSIENT



- Load = 1 mA-100 mA
- Output Cap. = 0.47  $\mu\text{F}$  Multilayer Ceramic
- Overshoot = 6 mV
- ADP3307

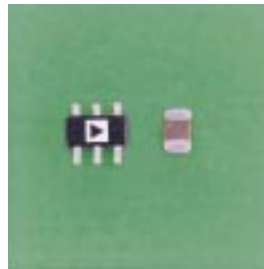
### LINE TRANSIENT



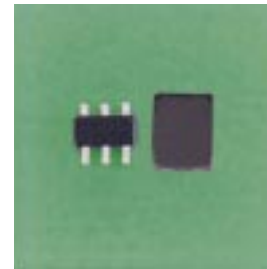
- Load = 50 mA
- Output Cap. = 0.47  $\mu\text{F}$  Multilayer Ceramic
- Line Variation = 5 V  $\rightarrow$  7 V
- ADP3307

## ...IN HALF THE SPACE

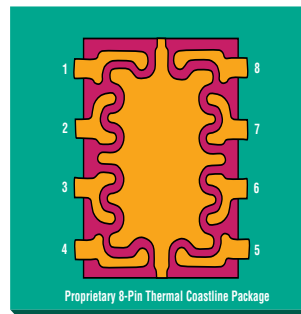
Analog Devices' anyCAP LDOs provide outstanding line and load stability with a wide variety of capacitors, saving you plenty of real estate compared to other solutions. To match the performance of an anyCAP LDO and a 0.47  $\mu\text{F}$  MLCC, for instance, other LDOs need a much bigger Surface Mount Tantalum capacitor, which more than doubles the required real estate.



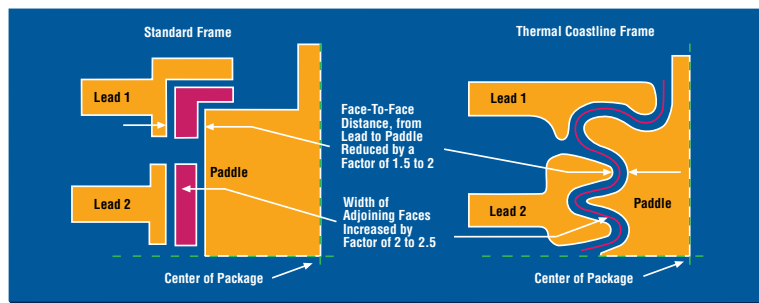
The anyCAP LDOs only need 0.47  $\mu\text{F}$  MLCC



Other LDOs require 2 to 5  $\mu\text{F}$  Tantalum



Unique to anyCAP LDOs, patented Thermal Coastline packages uniformly reduce the resistance of the dominant component of the thermal path with no fused pins and no extra copper-plane on the PCB, while dissipating up to 30% more power. (Note: The Thermal Coastline advantage is available in SO-8 packages only.)



**APPLYING 30 YEARS OF SIGNAL PROCESSING EXPERTISE  
TO A RANGE OF POWER MANAGEMENT SOLUTIONS**

Analog Devices brings three decades of industry-leading analog expertise in converters, amplifiers, references and a myriad of other linear integrated circuits to a whole new line of power management ICs. With the best in application support, the company is a complete system solution provider, dedicated to offering the smallest, most accurate and efficient power management devices.

**FOR SAMPLES AND TECHNICAL INFORMATION CALL 1-800-ANALOGD (262-5643)**

**LDOs**

Part Number	Faxcode	Description
ADM663A	1559	Tri-Mode: +3.3 V, +5 V, Adjustable Micropower Linear Voltage Regulator
ADM666A	1559	Tri-Mode: +3.3 V, +5 V, Adjustable Micropower Linear Voltage Regulator with Low Battery Detector
ADP667	1917	+5 V Fixed, Adjustable Low Dropout Linear Voltage Regulator
ADP3367	1913	+5 V Fixed, Adjustable Low Dropout Linear Voltage Regulator, (Improved ADP667)
ADP3300	2042	High Accuracy anyCAP™ 50 mA Low Dropout Linear Regulator, SOT-23
ADP3301	2013	High Accuracy anyCAP™ 100 mA Low Dropout Linear Regulator
ADP3302	2014	High Precision anyCAP™ Dual Low Dropout Linear Regulator
ADP3303	2043	High Accuracy anyCAP™ 200 mA Low Dropout Linear Regulator
ADP3307	2300	High Accuracy anyCAP™ 100 mA Low Dropout Linear Regulator, SOT-23
ADP3308	2301	LP2980 Replacement
ADP3309	2423	LP2981 Replacement
ADP3310	2120	Precision Voltage Regulator Controller

**Battery Chargers**

Part Number	Faxcode	Description
ADP3810	2069	Secondary Side, Off-Line Battery Charger Controller for Li-Ion Batteries
ADP3811	2069	Secondary Side, Off-Line Battery Charger Controller for NiCad and NiMH Batteries
ADP3820	2139	Lithium-Ion Linear Battery Charger
ADP3801/02	2200	High Accuracy Li-Ion Buck Battery Charger

**Switching Regulators**

Part Number	Faxcode	Description
ADP1073	2015	Single Cell Micropower DC-DC Converter; Adjustable and Fixed 3.3 V, 5 V, 12 V,
ADP1108	2017	Micropower DC-DC Converter; Adjustable and Fixed 3.3 V, 5 V, 12 V
ADP1109/A	2018/2364	Micropower, Low Cost, Fixed 3.3 V, 5 V, 12 V and Adjustable DC to DC Converter
ADP1110	2019	Single Cell Micropower, Step-Up/Step-Down Switching Regulator; Adjustable and Fixed 3.3 V, 5 V, 12 V,
ADP1111	2020	Micropower, Step-Up/Step-Down Switching Regulator; Adjustable and Fixed 3.3 V, 5 V, 12 V
ADP1173	2016	Micropower DC-DC Converter
ADP1147	2022	High Efficiency Step-Down Switching Regulator Controller
ADP1148	2023	High Efficiency, Synchronous Step-Down Switching Regulator Controller
ADP3000	2028	Micropower, Step-Up/Step-Down High Frequency Switching Regulator; Adjustable and Fixed 3.3 V, 5 V, 12 V
ADP3152/53	2422	VRM 8.2 Compliant DC-DC Converter for Pentium II

**Charge Pumps**

Part Number	Faxcode	Description
ADM660	1934	CMOS Switched-Capacitor Voltage Converter
ADM8660	1934	CMOS Switched-Capacitor Voltage Converter with Low Power Shutdown
ADP3603	1982	Switched-Capacitor Voltage Converter with Regulated Output, I <sub>o</sub> = 50 mA
ADP3604	2051	Switched-Capacitor Voltage Converter with Regulated Output, I <sub>o</sub> = 120 mA
ADP3605	2198	High Frequency Switched-Capacitor Voltage Converter with Regulated Output, I <sub>o</sub> = 120 mA

**LET THE POWER, SPACE AND PRICE SAVINGS BEGIN**

For immediate delivery of LDO samples and technical information – or to find out more about Analog Devices’ entire power management line – call 1-800-ANALOGD (262-5643). For data sheets, dial AnalogFax® at 1-800-446-6212, or visit us on the Worldwide Web at [www.analog.com](http://www.analog.com).



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