Power Management for Precision Analog

Introduction

Texas Instruments (TI) makes high-performance precision analog devices, including precision data converters and operational amplifiers. To preserve signal accuracy and integrity, these devices require power supplies with high-bandwidth power-supply ripple rejection (PSRR), very low internal noise and high efficiency. The following low-dropout linear regulators (LDOs) and DC/DC converters are just some of TI's ideal solutions for powering precision analog applications.

Low-Noise, High-PSRR LDOs

TPS7A3xxx/TPS7A4xxx

The negative-voltage TPS7A3001 LDO, when paired with the positive-voltage TPS7A4901 LDO, provides designers with a total solution for powering precision analog applications. These LDOs feature ultra-high PSRR performance with output noise as low as 16 μV_{rms} and are designed to power noise-sensitive applications such as op amps, ADCs, DACs and other high-performance analog circuitry. TI offers another version of these LDOs, the TPS7A3301/4801, which have an output current of 1 A.
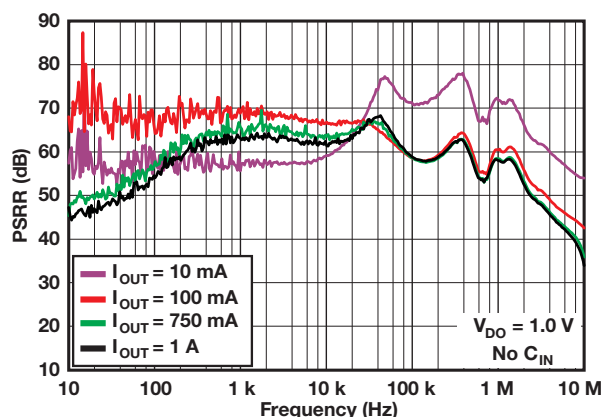
TPS7A8001

The TPS7A8001 is an LDO that offers very high PSRR at the output. This LDO uses an advanced BiCMOS process and a pMOSFET pass device to achieve very low noise and excellent transient response.

ADC and Op Amp Powered by Low-Noise LDOs
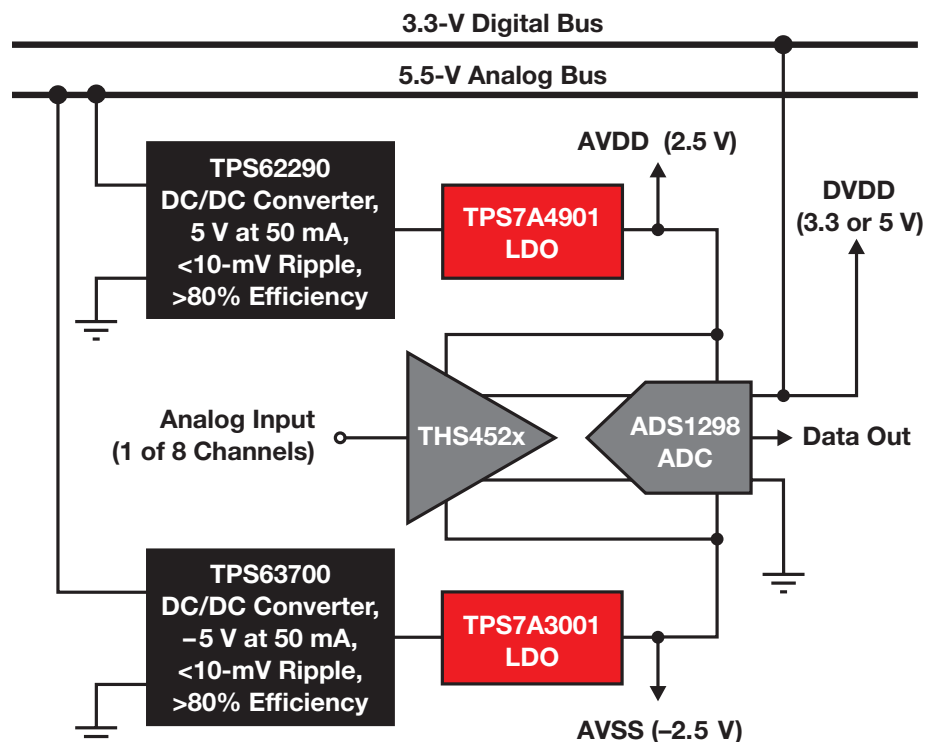
TPS7A8001 Wide-Bandwidth PSRR

Visit www.ti.com/ldo

High-Efficiency DC/DC Converters

TPS63700

The TPS63700 is a high-efficiency inverting DC/DC converter generating a negative V_{OUT} down to –15 V with an I_{OUT} of up to 360 mA. The TPS63700 can be directly powered from a Li-Ion battery or a 3-cell NiMH/NiCd battery.

TPS62290

The TPS62290 is a highly efficient synchronous step-down DC/DC converter optimized for battery-powered portable applications. It provides an I_{OUT} of up to 1 A from a single Li-Ion cell.

LDOs and Converters for Precision Analog

Device	Type	V$_{IN}$ (min) (V)	V$_{IN}$ (max) (V)	V$_{OUT}$ (min) (V)	V$_{OUT}$ (max) (V)	I$_{OUT}$ (max) (mA)	PSRR
TPS7A3001	LDO	−36	−3	−33	−1.2	−200	72 dB at 120 Hz
TPS7A3301	LDO	−36	−3	−34	−1.2	1000	65 dB at 1 kHz
TPS7A4901	LDO	3	36	1.2	33	150	72 dB at 120 Hz
TPS7A4801	LDO	3	36	1.2	34	1000	63 dB at 1 kHz
TPS7A8001	LDO	2.2	6.5	0.8	6	1000	63 dB at 1 kHz; 57 dB at 100 kHz
TPS65130/1	DC/DC converter	2.7	5.5	−15	15	200 (typ)	—
TPS63700	DC/DC converter	2.7	5.5	−15	−2	360	—
TPS62065	DC/DC converter	2.9	6	0.8	6	2000	—
TPS62290	DC/DC converter	2.3	6	0.6	6	1000	—
TPS62150	DC/DC converter	3	17	1.2	16	1000	—
TPS62140	DC/DC converter	3	17	1.2	16	2000	—
TPS54160	DC/DC converter	3.5	60	0.8	58	1500	—
TPS54060	DC/DC converter	3.5	60	0.8	58	500	—

*Preview products are listed in **bold blue***

TI's Reference Design for Noise-Sensitive and Precision Applications

20-mV Input Ripple

LDO Output Ripple
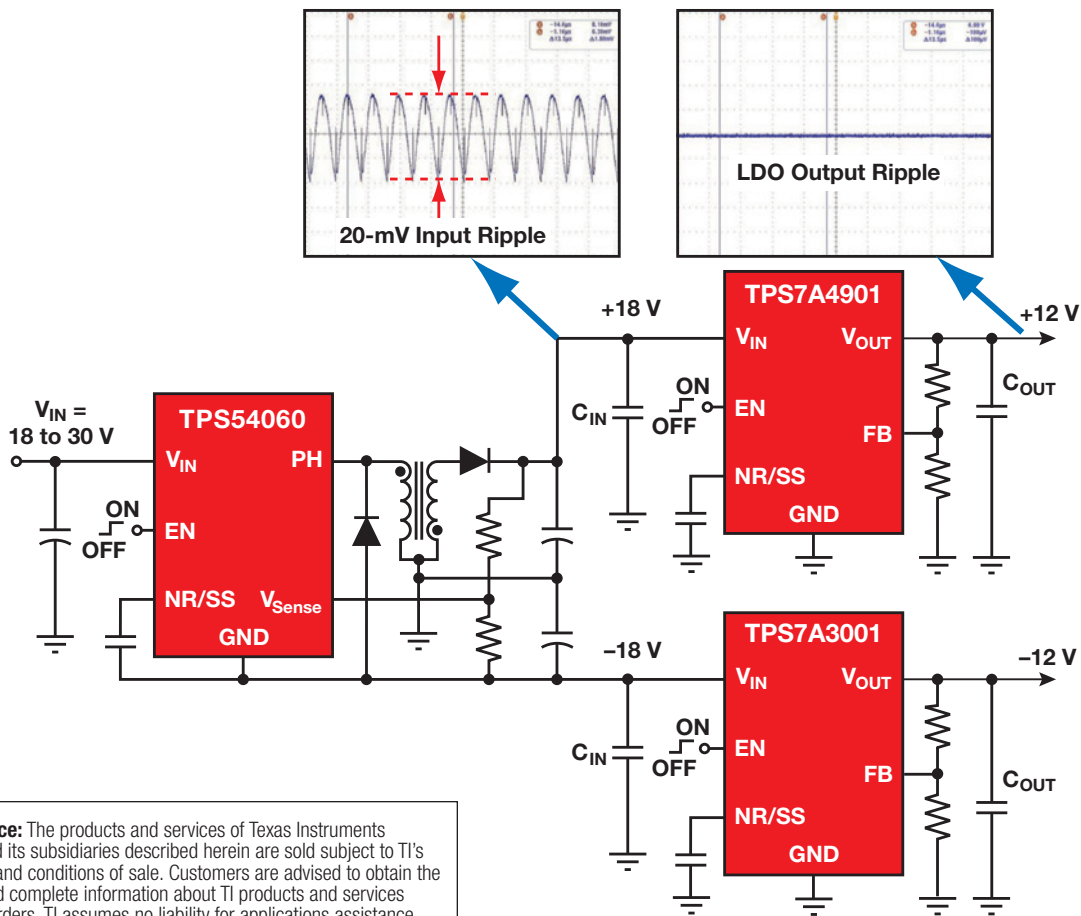
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