

LOW DROPOUT (LDO) LINEAR REGULATORS *SELECTION GUIDE*



Introduction

Analog Devices' Power by Linear™ product group produces a broad line of high performance low dropout (LDO) linear regulators. These LDOs offer very low dropout, fast transient response, excellent line and load regulation, and feature a very wide input voltage range from 0.9 V to 80 V. Output currents range from 100 mA to 10 A, with positive, negative and multiple outputs. Many devices offer output voltage operation <0.8 V and some feature operation down to as low as 0 V even with single-supply operation. Many are stable with ceramic output capacitors. These devices can be designed into virtually any end application and market segment.

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Multi-Channel LDOs

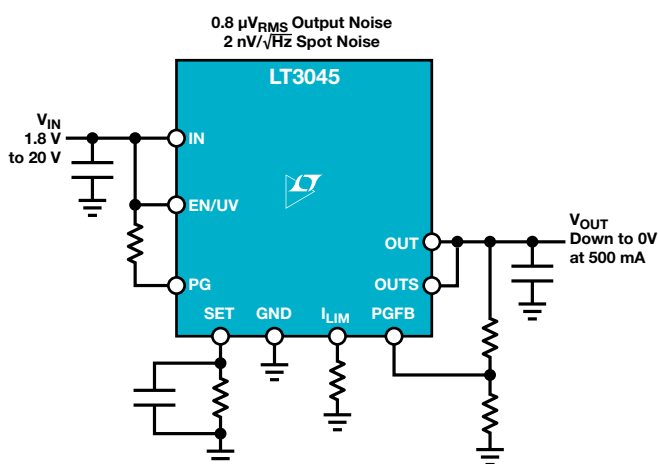
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Radiation-Hardened LDOs

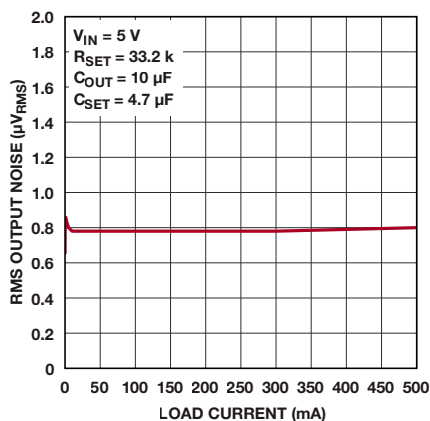
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UltraLow Noise (<2 μV_{RMS}) Positive Linear Regulators

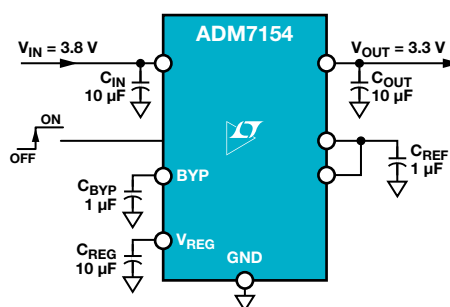
LT3045/LT3045-1: 20 V, 500 mA, Ultralow Noise, Ultrahigh PSRR Linear Regulator



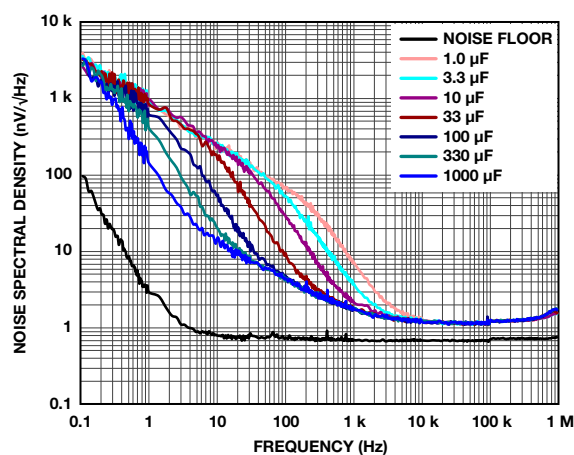
Integrated RMS Output Noise (10 Hz to 100 kHz)



ADM7154: 600 mA, Ultralow Noise, High PSRR, RF Linear Regulator



Noise Spectral Density for Various Values of C_{BYP}



UltraLow Noise (<2 μV_{RMS}) Linear Regulators

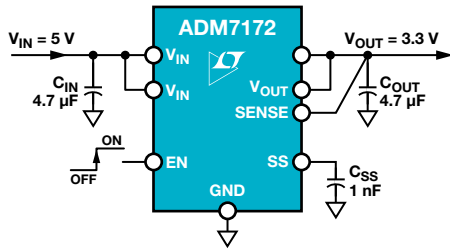
Part Number	I_{OUT} (A)	V_{IN} Range (V)	V_{OUT} Range (V)	RMS Noise (μV_{RMS})	Noise Density, 10 kHz ($\text{nV}/\sqrt{\text{Hz}}$)	Typ PSRR at 1 MHz, (dB)	Dropout Voltage (mV)	Quiescent Current (mA)	Package Options (mm)
LT3042	0.2	1.8 to 20	0 to 15	0.8*	2	79	350	1.9	3 × 3 DFN-10, MSOP-10E
LT3045/LT3045-1	0.5	1.8 to 20	0 to 15	0.8*	2	76	260	2.2	3 × 3 DFN-10, MSOP-12E
ADM7154 ADM7155	0.6	2.3 to 5.5	1.2 to 3.3 Fixed/ 1.2 to 3.4 Adj	0.9**	1.5	58	120	4	3 × 3 LFCSP-8, SOIC-8
ADM7150 ADM7151	0.8	4.5 to 16	1.8 to 5 Fixed/ 1.5 to 5.1 Adj	1.0**	1.7	62	600	4.3	3 × 3 LFCSP-8, SOIC-8
ADP7156 ADP7157	1.2	2.3 to 5.5	1.2 to 3.3 Fixed/ 1.2 to 3.3 Adj	0.9**	1.7	60/55	120	4	3 × 3 LFCSP-10, SOIC-8
ADP7158 ADP7159	2	2.3 to 5.5	1.2 to 3.3 Fixed/ 1.2 to 3.3 Adj	0.9**	1.7	50/45	200	4	3 × 3 LFCSP-10, SOIC-8

* 10 Hz to 100 kHz

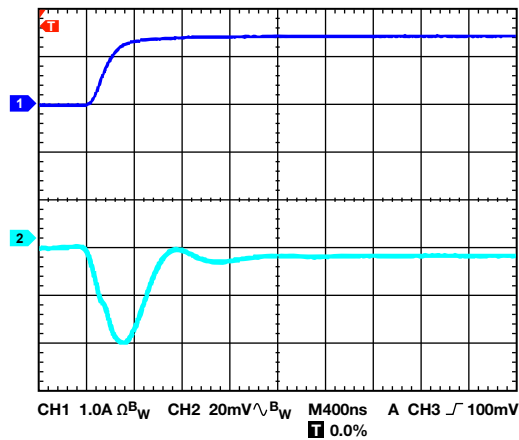
** 100 Hz to 100 kHz

Low Noise ($<10 \mu\text{V}_{\text{RMS}}$) Low Power Positive Linear Regulators

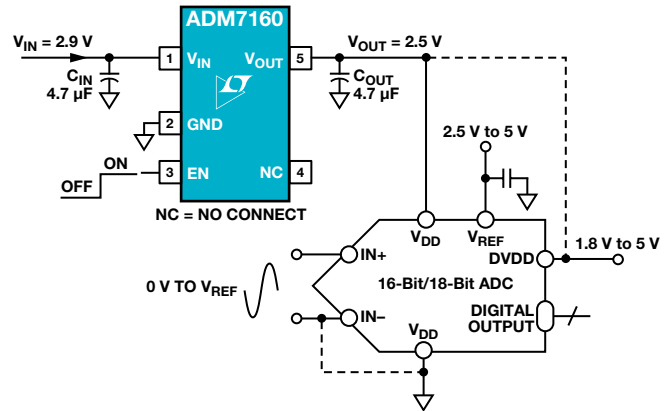
ADM7172: 6.5 V, 2 A, Ultralow Noise, High PSRR, Fast Transient Response CMOS LDO



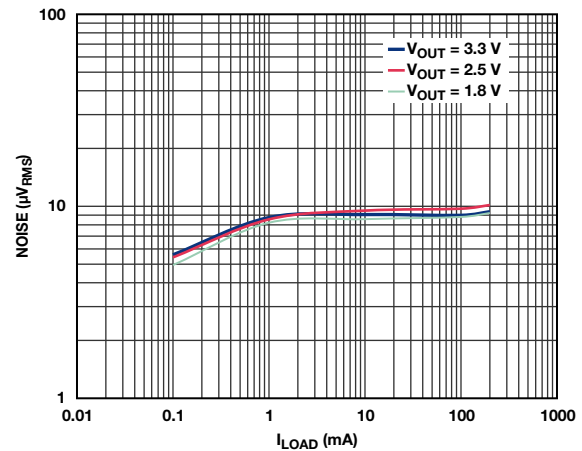
Transient Response (Trace 2), 1 mA to 1.5 A Load Step in 400 ns (Trace 1)



ADM7160: 600 mA, Ultralow Noise, High PSRR, RF Linear Regulator



RMS Noise vs Load Current, 10 Hz to 100 kHz



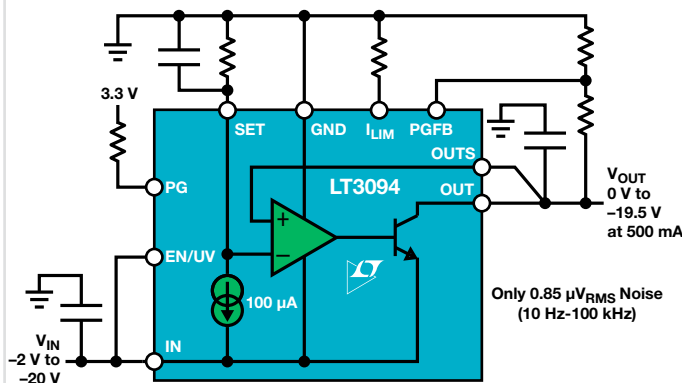
Low Noise ($<10 \mu\text{V}_{\text{RMS}}$) Low Power Positive Linear Regulators

Part Number	I_{OUT} (A)	V_{IN} Range (V)	V_{OUT} Range (V)	RMS Noise (μV_{RMS})*	Noise Density _{10 kHz} (nV/ $\sqrt{\text{Hz}}$)	Typ PSRR at 1 MHz, (dB)	Dropout Voltage (mV)	Quiescent Current	Package Options (mm)
ADM7160	0.2	2.2 to 5.5	1.1 to 3.3	9	25	46	150	10 μA	2 × 2 LFCSP-6, TSOT-5
ADM7170	0.5	2.3 to 6.5	1.2 to 5	5 [^]	12	60	42	700 μA	3 × 3 LFCSP-8
ADM7171	1	2.3 to 6.5	1.2 to 5	5 [^]	12	60	42	700 μA	3 × 3 LFCSP-8
ADM7172	2	2.3 to 6.5	1.2 to 5	5 [^]	12	60	42	700 μA	3 × 3 LFCSP-8
ADP1764	4	1.1 to 1.98	Fixed	3 [^]	5	36	47	5 mA	3 × 3 LFCSP-16
ADP1765	5	1.1 to 1.98	Fixed	3 [^]	5	33	59	5 mA	3 × 3 LFCSP-16

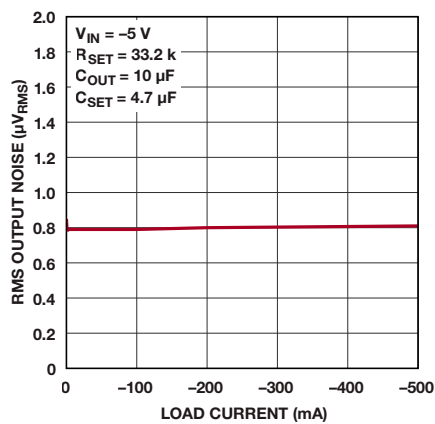
*100 Hz to 100 kHz

Low Noise Negative Linear Regulators

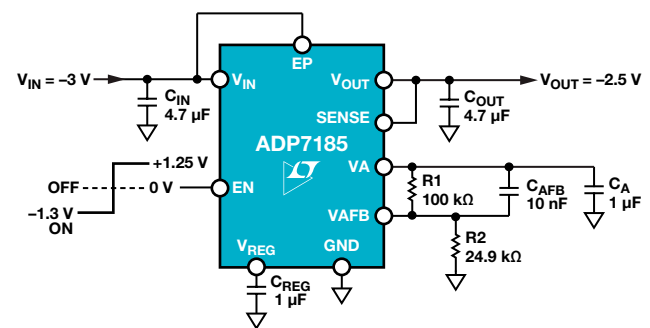
LT3094: -20 V, -500 mA UltraHigh PSRR, UltraLow Noise Linear Regulator



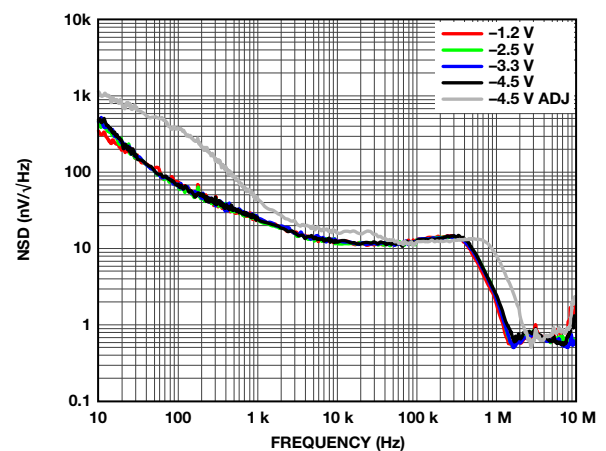
Integrated RMS Output Noise (10 Hz to 100 kHz)



ADP7185: -500 mA, Ultralow Noise, High PSRR, Low Dropout Linear Regulator



Noise Spectral Density (NSD) vs Frequency at Various Output Voltages



Low Noise Negative Linear Regulators

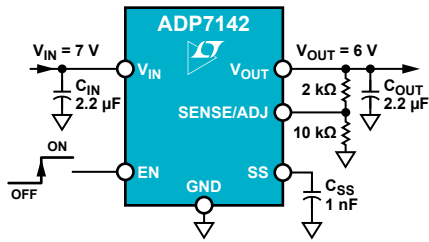
Part Number	I_{OUT} (A)	V_{IN} Range (V)	V_{OUT} Range (V)	RMS Noise (μV_{RMS})	Dropout Voltage (mV)	Quiescent Current	Package Options (mm)
ADP7182	0.2	-2.7 to -28	-1.22 to -27	18**	185	650 μA	2 × 2 LFCSP-6, 3 × 3 LFCSP-8, TSOT-5
LT1964	0.2	-1.9 to -20	-1.22 to -20	30*	340	30 μA	3 × 3 DFN-8 SOT-23
ADP7183	0.3	-2.0 to -5.5	-0.5 to -5	4 (Indep of V_{OUT})**	130	600 μA	2 × 2 LFCSP-8
ADP7185	0.5	-2.0 to -5.5	-0.5 to -5	4 (Indep of V_{OUT})**	190	600 μA	2 × 2 LFCSP-8
LT3094	0.5	-2 to -20	0 to -19.5	0.8*	235	2.35 mA	3 × 3 DFN-12 MSOP-12E
LT1175	0.5	-4.3 to -20	-3.8 to -20	No Spec	500	45 μA	DDPAK-5, N-8, SOIC-8, SOT-223, TO-220
LT3090	0.6	-1.5 to -36	0 to -32	18*	300	1 mA	3 × 3 DFN-10, MSOP-12E, DDPAK-7, TO-220, TSSOP-16
LT3091	1.5	-1.5 to -36	0 to -32	18*	300	1 mA	3 × 3 DFN-10, 4 × 3 DFN-14, DDPAK-7, TO-220, TSSOP-16
LT1185	3	-4.2 to -35	-2.37 to -35	No Spec	670	2.5 mA	DDPAK-5 TO-220

*10 Hz to 100 kHz

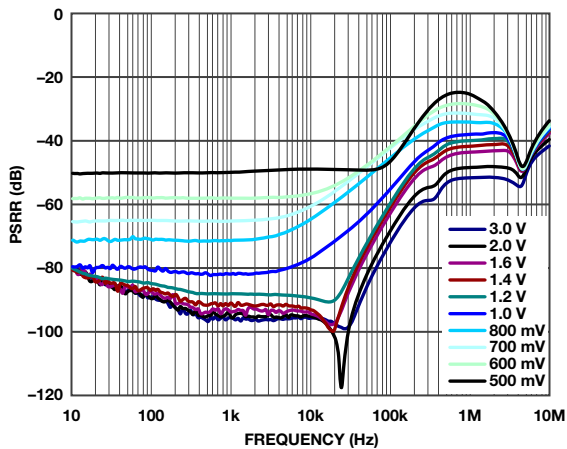
**100 Hz to 100 kHz

Positive Linear Regulators

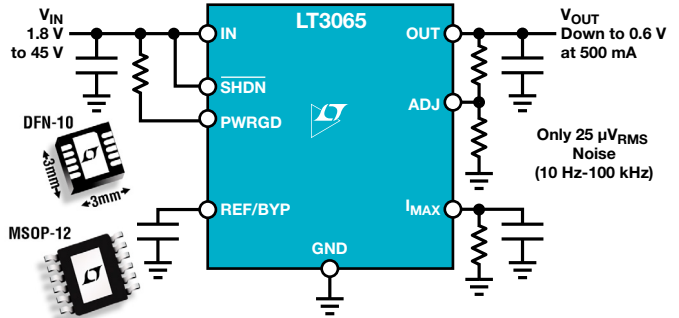
ADP7142: 40 V, 200 mA, Low Noise, CMOS LDO Linear Regulator



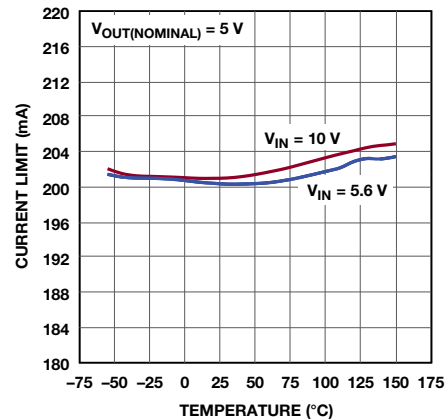
Power Supply Rejection Ratio (PSRR) vs Frequency, $V_{OUT} = 3.3$ V, for Various Headroom Voltages



LT3065: 45 V_{IN}, 500 mA Low Noise, Linear Regulator with Programmable Current Limit and Power Good



Precision Current Limit, $R_{IMAX} = 1.5$ k



Positive Linear Regulators

Part Number	I_{OUT} (A)	V_{IN} Range (V)	V_{OUT} Range (V)	RMS Noise (μV_{RMS})	Dropout Voltage (mV)	Quiescent Current	Package Options (mm)
LT3014/LT3014B	0.2	3 to 80	Adj (1.22 to 60)	115/150*	350	7 μA	3 \times 3 DFN-8, SOT-23
LT3010/LT3010B LT3011	0.5	3 to 80	Adj (1.275 to 60), 5 Adj (1.24 to 60)	100*	300	30 μA 45 μA	MSOP-8E 3 \times 3 DFN-10, MSOP-12E
LT1761	0.1	1.8 to 20	Adj (1.22 to 19.5), Fixed	20*	300	20 μA	TSOT-5
LT3050	0.1	1.6 to 45	0.6 to 44.5	30*	340	45 μA	2 \times 3 DFN-12, MSOP-12E
LT3060	0.1	1.6 to 45	0.6 to 44.5	30*	300	40 μA	2 \times 2 DFN-8, TSOT-8
LT3061^	0.1	1.6 to 45	0.6 to 44.5	30*	250	45 μA	2 \times 3 DFN-8, MSOP-8E
LT1762	0.15	1.8 to 20	Adj (1.22 to 19.5), Fixed	20*	270	25 μA	MSOP-8
LT1121/LT1121A/ LT1121HV	0.15	4.2 to 30/36	3.75 to 29/35, Fixed	N/A	420	30 μA	SOT-223, SOIC-8 TO-92, PDIP-8
ADP7142	0.2	2.7 to 40	Adj (1.2 to 39)	11**	200	50 μA	2 \times 2 LFCSP-6, SOIC-8E, TSOT-5
ADP7118	0.2	2.7 to 20	Adj (1.22 to 19) Fixed 1.2 to 5	11**	200	50 μA	2 \times 2 LFCSP-6, SOIC-8, TSOT-5
ADP7112	0.2	2.7 to 20	Adj (1.22 to 19) Fixed 1.2 to 5	11**	200	50 μA	1 \times 1.2 WLCSP-6
LT3062	0.2	1.6 to 45	0.6 to 44.5	30*	300	45 μA	2 \times 2 DFN-8, MSOP-8E
LT3063^	0.2	1.6 to 45	0.6 to 44.5	30*	300	45 μA	2 \times 3 DFN-8, MSOP-8E
LT3012/LT3012B LT3013	0.25	4 to 80	Adj (1.24 to 60)	100*	400	40 μA 65 μA	4 \times 3 DFN-12, TSSOP-16

Positive Linear Regulators

Positive Linear Regulators (continued)

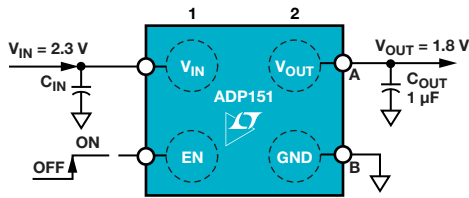
Part Number	I_{OUT} (A)	V_{IN} Range (V)	V_{OUT} Range (V)	RMS Noise (μV_{RMS})	Dropout Voltage (mV)	Quiescent Current	Package Options (mm)
LT1521	0.3	4.3 to 20	Adj (3.75 to 19), Fixed	N/A	500	12 μA	SOT-223 SOIC-8 MSOP-8
LT1962	0.3	1.8 to 20	Adj (1.22 to 19.5), Fixed	20*	270	30 μA	MSOP-8
ADP7102	0.3	3.3 to 20	Adj (1.22 to 19) Fixed 1.5 to 9	15**	200	750 μA	3 \times 3 LFCSP-8, SOIC-8
ADP170, ADP172	0.3	1.6 to 3.6	Fixed	30	66	23 μA	TSOT-5
LT1763	0.5	1.8 to 20	Adj (1.22 to 19.5), Fixed	20*	300	30 μA	3 \times 4 DFN-12 SOIC-8
ADP7104	0.5	3.3 to 20	Adj (1.22 to 19) Fixed 1.5 to 10	15**	350	900 μA	3 \times 3 LFCSP-8, SOIC-8
ADP7105	0.5	3.3 to 20	Adj (1.22 to 19) Fixed 1.8, 3.3, 5	15**	350	900 μA	3 \times 3 LFCSP-8, SOIC-8
LT3055	0.5	2 to 45	0.6 to 44.5	25*	350	65 μA	3 \times 4 DFN-16, MSOP-16E
LT3065	0.5	2 to 45	0.6 to 44.5	25*	300	55 μA	3 \times 3 DFN-10, MSOP-12E
LT3066^	0.5	2 to 45	0.6 to 44.5	25*	300	64 μA	3 \times 4 DFN-12, MSOP-12E
LT1129	0.7	4.2 to 30	Adj (3.75 to 29), Fixed	93*	400	50 μA	SOT-223 SOIC-8 DD-Pak TO-220 TSSOP-20
LT1117	0.8	2.5 to 15	Adj (1.25 to 14), Fixed	N/A	1200	5 μA	SOT-223 DD-Pak
LT1118	-0.4/0.8	3 to 15	Adj (1.225 to 14), Fixed	N/A	1000	600 μA	SOT-223 SOIC-8
LT1965	1.1	1.8 to 20	Adj (1.2 to 19.5), Fixed	40*	310	500 μA	3 \times 3 DFN-8 MSOP-8E DD-Pak TO-220
LT1963/LT1963A	1.5	2.1 to 20	Adj (1.21 to 19.5), Fixed	40*	340	1 mA	SOT-223 SOIC-8 DD-Pak TO-220 TSSOP-16E
LT1086	1.5	2.6 to 25	Adj (1.25 to 23.5), Fixed	0.003 % of V_{OUT}^{***}	1300	5 mA	DD-Pak TO-220
LT1764/A	3	2.7 to 20	Adj (1.21 to 19.5), Fixed	40*	340	1 mA	DD-Pak TO-220 TSSOP-16E
LT1085	3	2.6 to 30	Adj (1.25 to 28.5), Fixed	0.003 % of V_{OUT}^{***}	1300	5 mA	DD-Pak TO-220
LT1529	3	3.9 to 15	Adj (3.75 to 14), 3.3, 5	N/A	600	50 μA	DD-Pak TO-220
LT1587	3	2.7 to 7	Adj (1.25 to 5.5), Fixed	0.003 % of V_{OUT}^{***}	1200	8 mA	DD-Pak TO-220
LT1585/LT1585A	4.6/5	2.7 to 7	Adj (1.25 to 5.5), Fixed	0.003 % of V_{OUT}^{***}	1100/1200	8 mA	DD-Pak TO-220
LT1084	5	2.6 to 30	Adj (1.25 to 28.5), Fixed	0.003 % of V_{OUT}^{***}	1300	5 mA	DD-Pak TO-220 TO-3P
LT1584	7	2.5 to 7	Adj (1.25 to 5.5), Fixed	0.003 % of V_{OUT}^{***}	1250	8 mA	TO-220
LT1580	7	1.8 to 6	Adj (1.25 to 5.4), 2.5	N/A	540	10 mA	DD-Pak TO-220
LT1581	10	1.7 to 6	Adj (1.25 to 5.5), 2.5	N/A	430	10 mA	TO-220

^ Active Output Discharge
* 10 Hz to 100 kHz

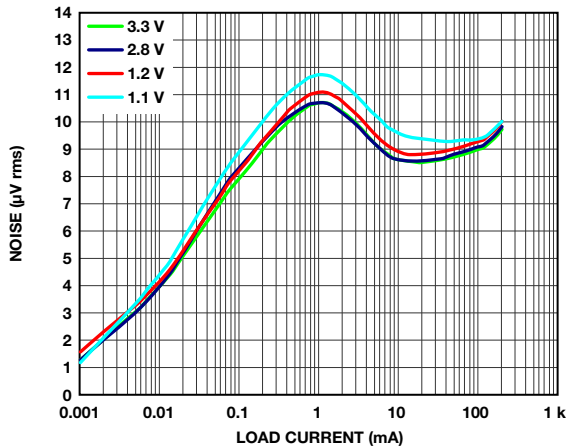
** 100 Hz to 100 kHz
*** 10 Hz to 10 kHz

Chip Scale Package Linear Regulators

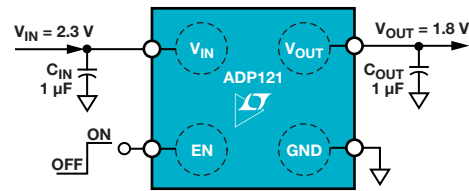
ADP151: Ultralow Noise, 200 mA CMOS Linear Regulator



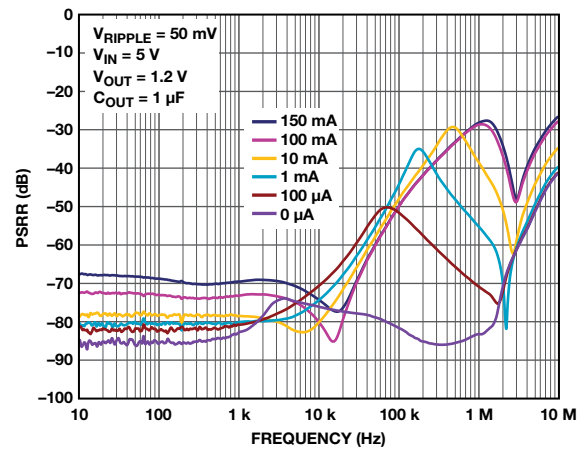
Output Noise vs Load Current and Output Voltage, $V_{IN} = 5\text{ V}$, $C_{OUT} = 1\text{ }\mu\text{F}$



ADP121: 150 mA, Low Quiescent Current, CMOS Linear Regulator in 5-Lead TSOT or 4-Ball WLCSP



Power Supply Rejection Ratio vs Frequency



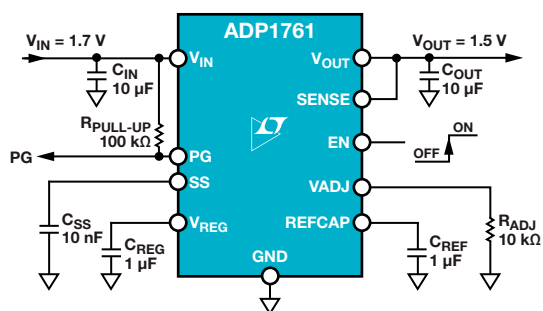
Chip Scale Package Linear Regulators

Part Number	I_{OUT} Range (A)	V_{IN} Range (V)	V_{OUT} Range (V)	RMS Noise (μV_{RMS}) [*]	Dropout Voltage (mV)	Quiescent Current (μA)	Package Options (mm)
ADP160 to ADP166	0.15	2.2 to 5.5	Fixed	80	150	42	1 × 1 WLCSP-4, 2 × 2 LFCSP-6, TSOT-4
ADP150	0.15	2.2 to 5.5	Fixed	9	105	10	0.8 × 0.8 WLCSP-4 TSOT-5, 2 × 2 LFCSP-6
ADP7112	0.2	3.3 to 20	Fixed	11	200	50	1 × 1.2 WLCSP, 2 × 2 LFCSP-6, TSOT-5, SOIC-8
ADP7118	0.2	3.3 to 20	Fixed	11	200	50	1 × 1.2 WLCSP, 2 × 2 LFCSP-6, TSOT-5, SOIC-8
ADP151	0.2	2.2 to 5.5	Fixed	9	105	10	0.8 × 0.8 WLCSP-4 TSOT-5, 2 × 2 LFCSP-6
ADM7160	0.2	2.2 to 5.5	Fixed	9	105	10	0.8 × 0.8 WLCSP-4 TSOT-5, 2 × 2 LFCSP-6
ADP120 to ADP125	0.15 to 0.5	2.3 to 5.5	Fixed	25~40	60	11	0.8 × 0.8 WLCSP-4 TSOT-5, 2 × 2 LFCSP-6
ADP172	0.3	1.6 to 3.6	Fixed	30	66	23	WLCSP-4
ADP220 to ADP225	0.2 to 0.3	2.5 to 5.5	Fixed	27	150	60	1 × 1.5 WLCSP, 2 × 2 LFCSP-8

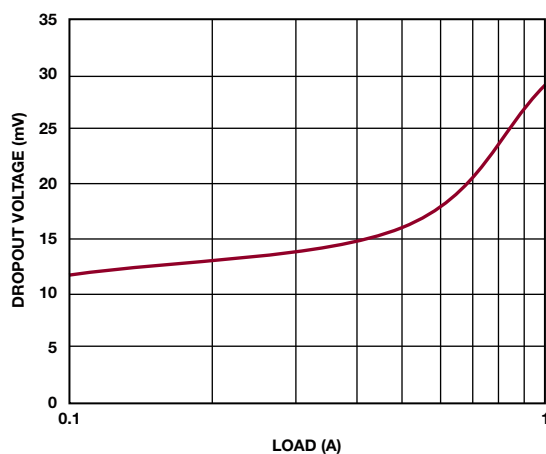
^{*}10 Hz to 100 kHz

Very Low Dropout Low V_{IN} (VLDO) Linear Regulators

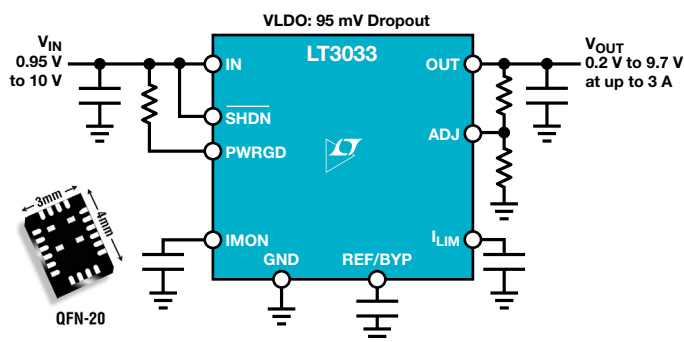
ADP1761: 1 A, Low V_{IN} , Low Noise, CMOS Linear Regulator



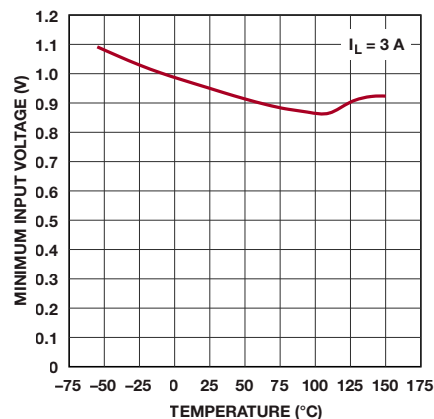
Dropout Voltage vs Load Current, $V_{OUT} = 1.3\text{ V}$



LT3033: 3 A, 0.95 V to 10 V Very Low Dropout Linear Regulator



Minimum Input Voltage vs Temperature



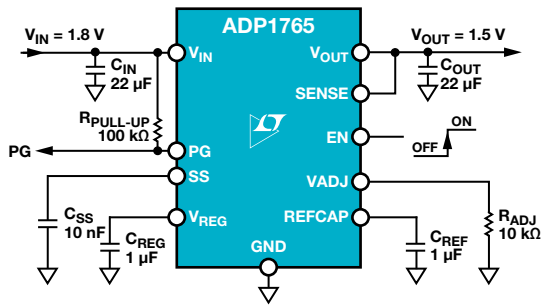
Very Low Dropout Low V_{IN} (VLDO) Linear Regulators

Part Number	I_{OUT} (A)	V_{IN} Range (V)	V_{OUT} Range (V)	RMS Noise (μV_{RMS})*	Dropout Voltage (mV)	Quiescent Current	Package Options (mm)
LT3020	0.1	0.9 to 10	Adj (0.9 to 9.5), Fixed	245	150	120 μA	3 × 3 DFN-8 MSOP-8
LTC1844	0.15	1.6 to 6.5	Adj (1.25 to 6), Fixed	60	110	35 μA	TSOT-5
LTC3025	0.3	0.9 to 5.5	Adj (0.4 to 3.6), Fixed	80	45	54 μA	2 × 2 DFN-6
LTC3035	0.3	1.7 to 5.5	Adj (0.4 to 3.6)	150	50	100 μA	2 × 2 DFN-6
LT3021	0.5	0.9 to 10	Adj (0.9 to 9.5), Fixed	300	160	120 μA	5 × 5 DFN-16 SOIC-8
LTC3025-x	0.5	0.9 to 5.5	Adj (0.4 to 3.6), Fixed	80	80	54 μA	2 × 2 DFN-6
LT3022	1	0.95 to 10	Adj (0.2 to 9.5), Fixed	165	150	400 μA	3 × 5 DFN-16 TSSOP-16E
ADP1761	1	1.1 to 1.98	Adj (0.5 to 1.5), Fixed	12	50	7.3 mA	3 × 3 LFCSP
LTC3026	1.5	1.14 to 5.5	Adj (0.4 to 2.6)	110	100	400 μA	3 × 3 DFN-10 MSOP-10E
ADP1762	2	1.1 to 1.98	Adj (0.5 to 1.5), Fixed	12	62	9.4 mA	3 × 3 LFCSP
ADP1763	3	1.1 to 1.98	Adj (0.5 to 1.5), Fixed	12	95	12 mA	3 × 3 LFCSP
LT3033	3	0.95 to 10	0.2 to 9.7	60	95	1.9 mA	3 × 4 QFN-20
ADP1764	4	1.1 to 1.98	Adj (0.5 to 1.5), Fixed	3	47	5 mA	3 × 3 LFCSP
ADP1765	5	1.1 to 1.98	Adj (0.5 to 1.5), Fixed	3	59	5 mA	3 × 3 LFCSP
LT3070	5	0.9 to 3.0 V_{BIAS} : 2.2 to 3.6	Adj (0.8 to 18)	25	85	1.1 mA	4 × 5 QFN-28
LT3071	5	0.9 to 3.0 V_{BIAS} : 2.2 to 3.6	Adj (0.8 to 1.8)	25	85	1.1 mA	4 × 5 QFN-28

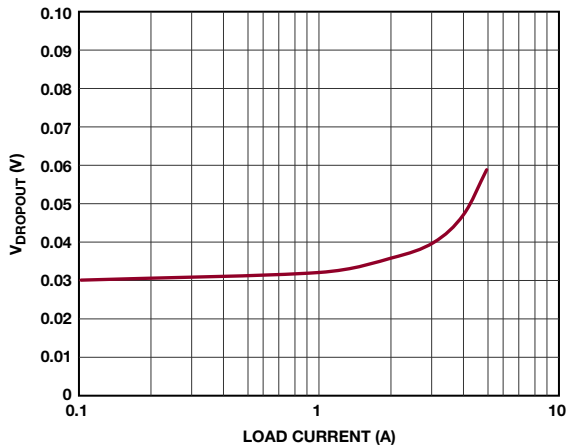
*10 Hz to 100 kHz

Low V_{IN} , Low Noise, High Current Linear Regulators

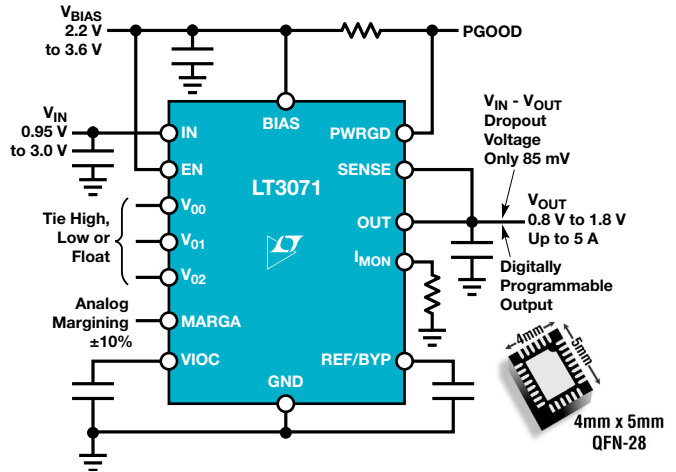
ADP1765: 5 A, Low V_{IN} , Low Noise, CMOS Linear Regulator



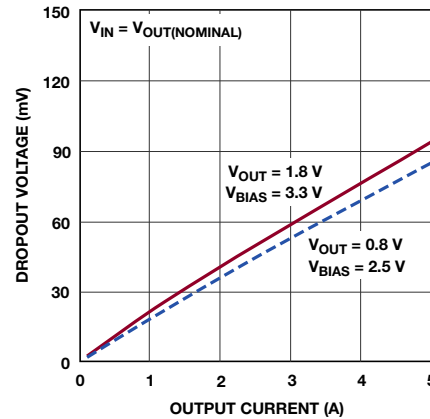
Dropout Voltage ($V_{DROPOUT}$) vs Load Current (I_{LOAD}), $V_{OUT} = 1.3 V$



LT3071: 5 A, Low Noise, Programmable Output, 85 mV Dropout Linear Regulator with Analog Margining



Dropout Voltage



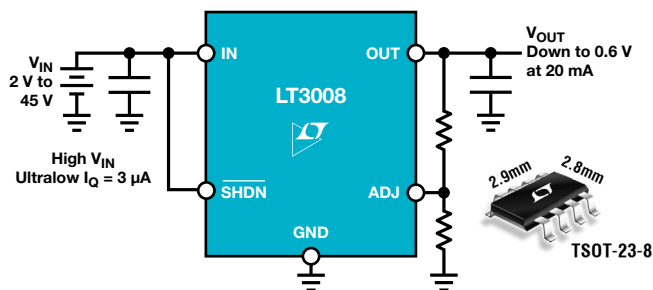
Low V_{IN} , Low Noise, High Current Linear Regulators

Part Number	I_{OUT} (A)	V_{IN} Range (V)	V_{OUT} Range (V)	RMS Noise (μV_{RMS})*	Dropout Voltage (mV)	Quiescent Current (mA)	Package Options (mm)
ADP1752	0.8	1.6 to 3.6	Fixed 0.75 to 2.5	23	140	1.4	4 × 4 LFCSP-16
ADP1753	0.8	1.6 to 3.6	Adj (0.75 to 3.3)	23	140	1.4	4 × 4 LFCSP-16
ADP1761	1	1.1 to 1.98	Fixed	12	30	7.3	3 × 3 LFCSP-16
ADP1754	1.2	1.6 to 3.6	Fixed 0.75 to 2.5	23	200	1.4	4 × 4 LFCSP-16
ADP1755	1.2	1.6 to 3.6	Adj (0.75 to 3.3)	23	200	1.4	4 × 4 LFCSP-16
ADP1762	2	1.1 to 1.98	Fixed	12	62	9.4	3 × 3 LFCSP-16
ADP1740	2	1.6 to 3.6	Fixed 0.75 to 2.5	23	160	1.4	4 × 4 LFCSP-16
ADP1741	2	1.6 to 3.6	Adj (0.75 to 3.3)	23	160	1.4	4 × 4 LFCSP-16
ADP1763	3	1.1 to 1.98	Fixed	12	95	12	3 × 3 LFCSP-16
ADP1764	4	1.1 to 1.98	Fixed	3	47	5	3 × 3 LFCSP-16
ADP1765	5	1.1 to 1.98	Fixed	3	59	5	3 × 3 LFCSP-16
LT3070	5	0.95 to 3.0	Adj (0.8 to 1.8)	25	85	1.1	4 × 5 QFN-28
LT3071^	5	0.95 to 3.0	Adj (0.8 to 1.8)	25	85	1.1	4 × 5 QFN-28

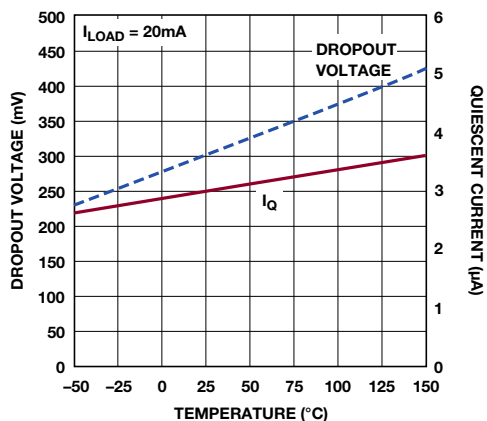
^ V_{OUT} Margining
*10 Hz to 100 kHz

Low Quiescent Current Linear Regulators

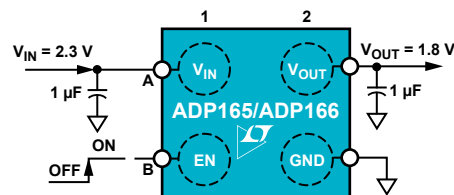
LT3008: 3 μA I_Q , 20 mA, 45 V Low Dropout Linear Regulator



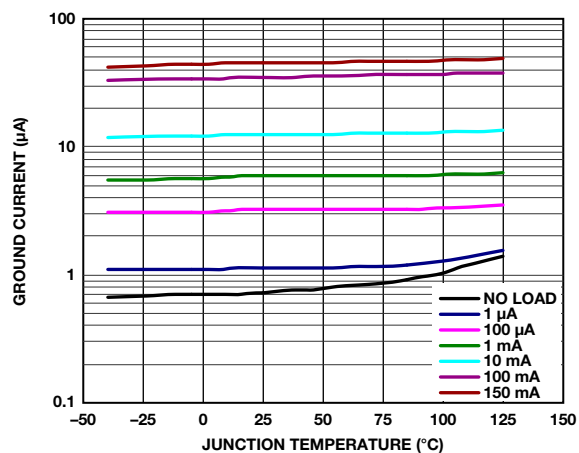
Dropout Voltage/ Quiescent Current



ADP165/ADP166: Very Low Quiescent Current, 150 mA, with Output Discharge LDO Regulators



Ground Current vs Junction Temperature



Low Quiescent Current Linear Regulators

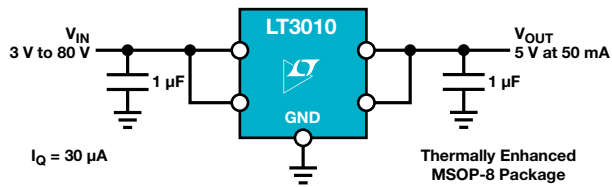
Part Number	I_{OUT} (mA)	V_{IN} Range (V)	V_{OUT} Range (V)	Dropout Voltage (mV)	Supply Current (μA)	RMS Noise (μV_{RMS})*	Package Options (mm)
LT3007 [^]	20	2 to 45	Adj (0.6 to 44.5), Fixed	300	3	92	SOT-23, 2 × 2 DFN-6
LT3008	20	2 to 45	Adj (0.6 to 44.5), Fixed	300	3	92	SOT-23, 2 × 2 DFN-6
LT3009	20	1.6 to 20	Adj (0.6 to 19), Fixed	280	3	150	2 × 2 DFN-6, SC-70
LT3014/LT3014B	20	3 to 80	Adj (1.22 to 60)	350	7	115/150	3 × 3 DFN-8, SOT-23
ADP160 to ADP166	150	2.2 to 5.5	Adj (1.0 to 4.2), Fixed	120	0.59	80	1 × 1 WLCSP-4, 2 × 2 LFCSP-6, TSOT-4

[^]FMEA Fault Tolerant

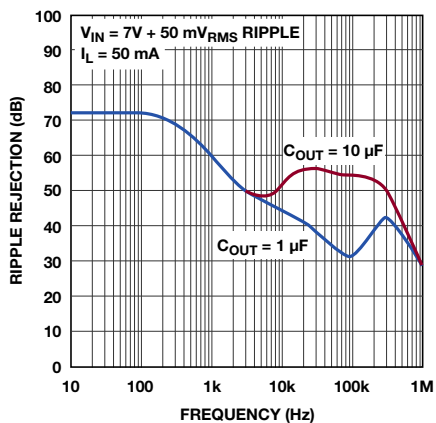
*10 Hz to 100 kHz

High Voltage Linear Regulators

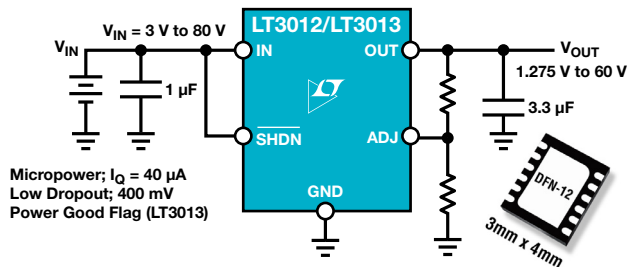
LT3010: 50 mA, 3 V to 80 V Low Dropout Micropower Linear Regulator



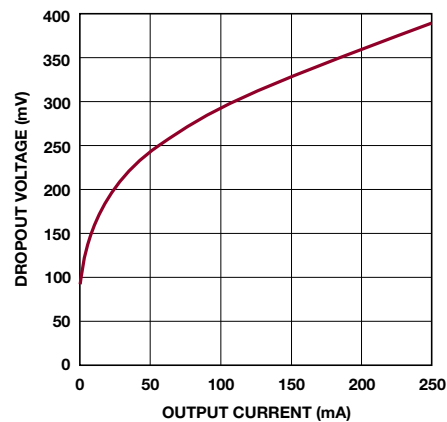
Input Ripple Rejection



LT3012/LT3013: 250 mA, 4 V to 80 V Low Dropout Micropower Linear Regulators



Dropout Voltage



High Voltage Linear Regulators

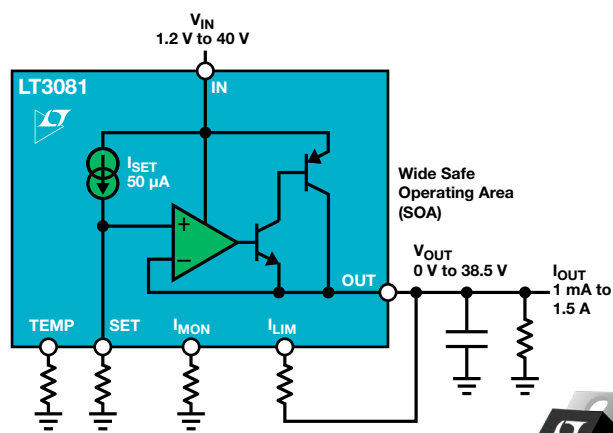
Part Number	I_{OUT} (mA)	V_{IN} Range (V)	V_{OUT} Range (V)	RMS Noise (μV_{RMS})*	Dropout Voltage (mV)	Quiescent Current (μA)	Package Options (mm)
LT3014/LT3014B	20	3 to 80	Adj (1.22 to 60)	115/150	350	7	3 × 3 DFN-8, SOT-23
LT3010/LT3010B	50	3 to 80	Adj (1.275 to 60), 5	100	300	30/45	MSOP-8E, 3 × 3 DFN-10
LT3011 [^]	50	3 to 80	Adj (1.24 to 60), 5	100	300	30/45	3 × 3 DFN-10, MSOP-12E
LT3012/LT3012B	250	4 to 80	Adj (1.24 to 60)	100	400	40/65	4 × 3 DFN-12, TSSOP-16
LT3013 [^]	250	4 to 80	Adj (1.24 to 60)	100	400	40/65	4 × 3 DFN-12, TSSOP-16

[^]Power Good

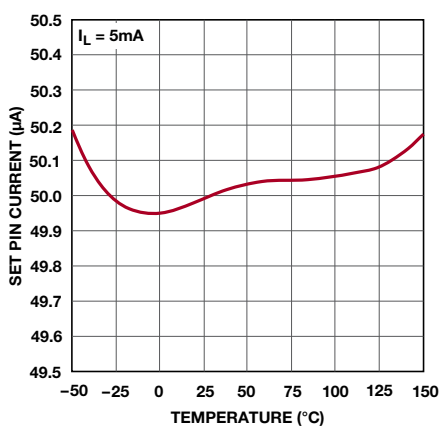
*10 Hz to 100 kHz

Current-Based Reference Linear Regulators

LT3081: 1.5 A Single Resistor Rugged Linear Regulator with Monitors



SET Pin Current



T0-220-7



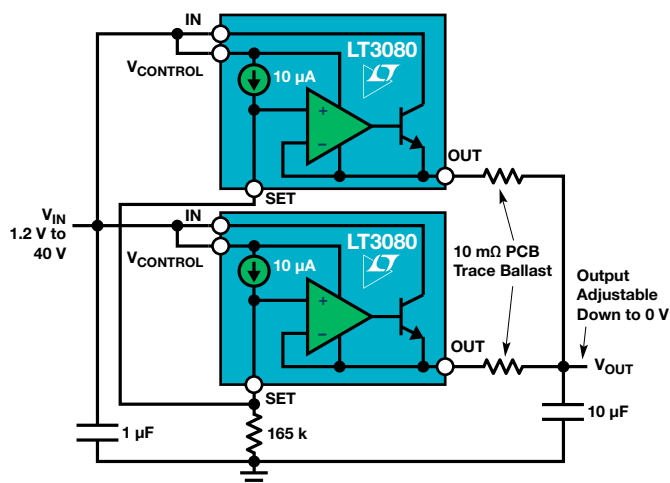
DD-Pak-7



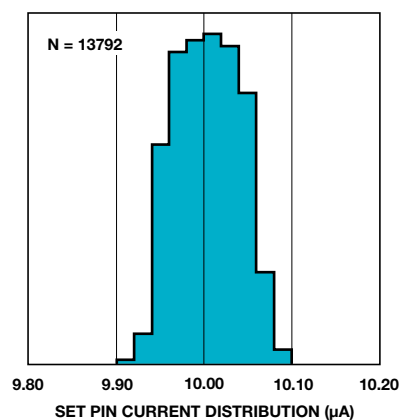
TSSOP-16


 DFN-12
4mm x 4mm

LT3080/LT3080-1: Adjustable 1.1 A Single Resistor Low Dropout Regulator



SET Pin Current Distribution



Current-Based Reference Linear Regulators

Part Number	I_{OUT} (A)	V_{IN} Range (V)	V_{OUT} Range (V)	RMS Noise (μV_{RMS})*	Dropout Voltage	Quiescent Current	Package Options (mm)
LT3082	0.2	1.2 to 40	Adj (0 to 38.5)	33	1.3 V	500 μA	3 × 3 DFN-8/TSOT23-8/SOT-223
LT3085	0.5	1.2 to 36	Adj (0 to 35.7)	33	275 mV#	1 mA	2 × 3 DFN-6/MSOP-8E
LT3088	0.8	1.2 to 36	Adj (0 to 34.5)	27	1.21 V	400 μA	3 × 3 DFN-8/SOT-223/DD-Pak
LT3089	0.8	1.2 to 36	Adj (0 to 34.5)	27	1.21 V	1.1 mA	4 × 4 DFN-12/TSSOP-16/DD-Pak
LT3080/LT3080-1@	1	1.2 to 36	Adj (0 to 35.7)	40	350 mV# 1.3 V (SOT-223)	1 mA	3 × 3 DFN-8/MSOP-8E/SOT-223/T0-220/DD-Pak
LT3081	1.5	1.2 to 36	Adj (0 to 34.5)	40	1.23 V	1.1 mA	4 × 4 DFN-12 /TSSOP-16E/T0-220/DD-Pak
LT3086	2.1	1.4 to 40	Adj (0.4 to 32)	40	330 mV	1.2 mA	4 × 5 DFN-16/TSSOP-16E/T0-220/DD-Pak
LT3083	3	1.2 to 8/18 ^	Adj (0 to 7.5 or 0 to 17.5^)	40	300 mV	1 mA	4 × 4 DFN-12 /TSSOP-16E/T0-220/DD-Pak

@ Integrated Ballast Resistor
^DD-Pak and T0-220 Packages

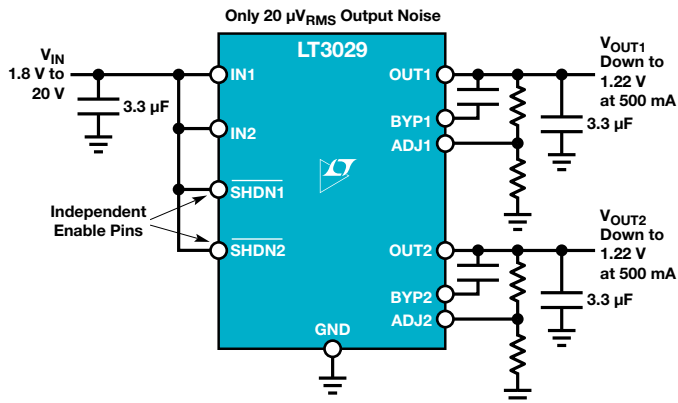
*10 Hz to 100 kHz
#Dual-Supply Operation

Current Sources

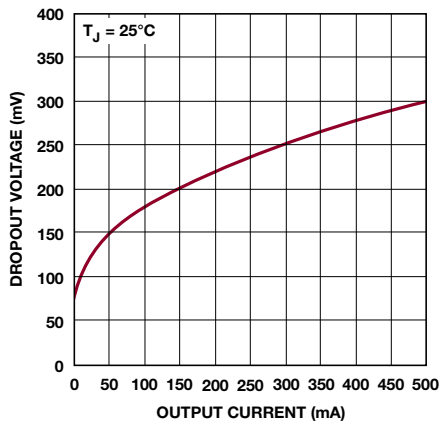
Part Number	I_{OUT}	V_{IN} Range (V)	Initial Accuracy (%)	Current Regulation (ppm/V)	Reverse Protection V/I	Quiescent Current (μA)	Current Limiting	Thermal Protection	Package Options (mm)
LT3092	0.5 mA to 200 mA	1.2 to 40	1	<10	Yes/Yes	300	Yes	Yes	3 × 3 DFN-8/TSOT23-8/SOT-223
LM334	1 μA to 10 mA	0.8 to 40	3	200	No/Yes	280	No	No	T0-92/SOIC-8

Multi-Channel Output Linear Regulators

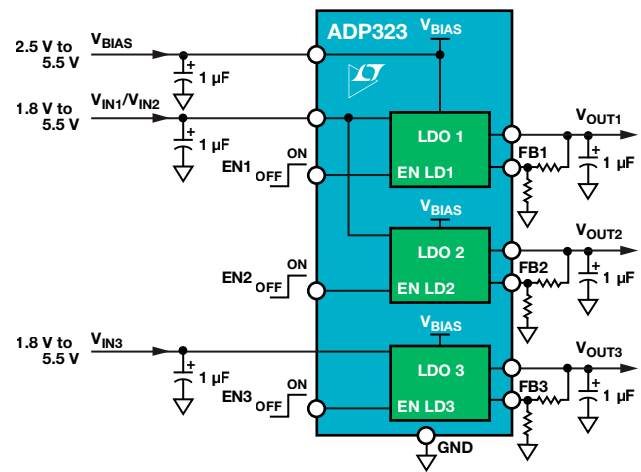
LT3029: Dual 500 mA/500 mA Low Dropout, Low Noise, Micropower Linear Regulator



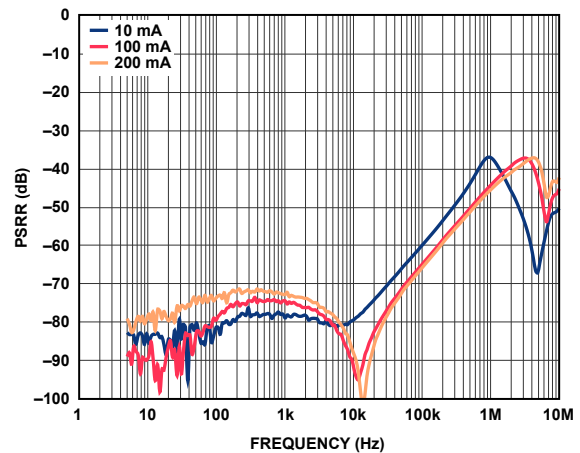
Dropout Voltage vs Load Current



ADP323: Triple, 200 mA, Low Noise, High PSRR Voltage Regulator



Power Supply Rejection Ratio vs Frequency, $V_{\text{OUT}} = 1.5\text{V}$, $V_{\text{IN}} = 2.5\text{V}$, $V_{\text{RIPPLE}} = 50\text{mV}$, $C_{\text{OUT}} = 1\mu\text{F}$



Multi-Channel Output Linear Regulators

Part Number	# Channels	I_{OUT} (A)	V_{IN} Range (V)	V_{OUT} Range (V)	RMS Noise (μV_{RMS})*	Dropout Voltage (mV)	Quiescent Current (μA)	Package Options (mm)
Positive: 5.5 V MAX V_{IN}								
ADP220 to ADP225	2	0.2/0.2 to 0.3/0.3	2.5 to 5.5	Fixed	27	150	60	1 \times 1.5 WLCSP, 2 \times 2 LFCSP
ADP320 to ADP323	3	0.2/0.2/0.2	1.8 to 5.5	Fixed	24	110	85	3 \times 3 LFCSP-16
Positive: 20 V MAX V_{IN}								
LT3023 LT3027	2	0.1/0.1	1.8 to 20	Adj (1.22 to 20)	20	300	40	3 \times 3 DFN-10, MSOP-10E
LT3024 LT3028	2	0.1/0.5	1.8 to 20	Adj (1.22 to 20)	20	300	60	3 \times 4 DFN-12, TSSOP-16 / 3 \times 5 DFN-16, TSSOP-16
LT3029	2	0.5/0.5	1.8 to 20	Adj (1.215 to 19.5)	20	300	110	3 \times 4 DFN-16, MSOP-16E
LT3030	2	0.75/0.25	1.7 to 20	Adj (1.22 to 19.5)	20	300	195	4 \times 5 QFN-28, TSSOP-20
Positive/Negative								
LT3032	2	0.15/0.15	± 2.3 to ± 20	Adj, ± 3 , ± 5 , ± 12 , ± 15	20/30	300/-340	60	3 \times 4 DFN-14

*10 Hz to 100 kHz

Radiation-Hardened (RH) Linear Regulators

Radiation-Hardened (RH) Linear Regulators

Part Number	I_{OUT} (A)	V_{IN} Range (V)	V_{REF}/I_{REF}	Polarity	Package Options
RH1086M	0.5/1.5	Up to 25	1.25 V	Positive	DICE TO-3 TO-39
RH117	0.5/1.5	Up to 40	1.25 V	Positive	DICE TO-3 TO-39
RH3080 [^]	1	Up to 35	10 μ A	Positive	DICE
RH137	0.5/1.5	Down to -30	-1.25 V	Negative	DICE TO-3 TO-39
RH1965	1	2.3 to 20	1.2 V	Positive	DICE
RH3083 [^]	3	Up to 23	10 μ A	Positive	DICE
RH1185	3	Down to -35	-2.37 V	Negative	DICE
RH1573	5	Up to 10	1.265 V	Positive	DICE
RH1084	5	Up to 25	1.25 V	Positive	TO-3

[^]Current Source Reference

References

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(see Appendix A, Using PCB Material as Low Value Resistors).

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Linear Technology Corporation.

All reference materials listed above are available at www.analog.com

Videos/Video Product Briefs

LT3009 LT3015 LT3042 LT3070/71 LT3080 LT3081 LT3086 LT3090 LT3092 LT3094

All videos listed above are available at www.analog.com



AHEAD OF WHAT'S POSSIBLE™

EASILY PARALLELED: HIGH OUTPUT CURRENT WITHOUT HOT SPOTS

LT3080/LT3080-1 ADJUSTABLE 1.1A SINGLE RESISTOR LOW DROPOUT REGULATOR

► Outputs Can Be Paralleled

► Output Current: 1.1A

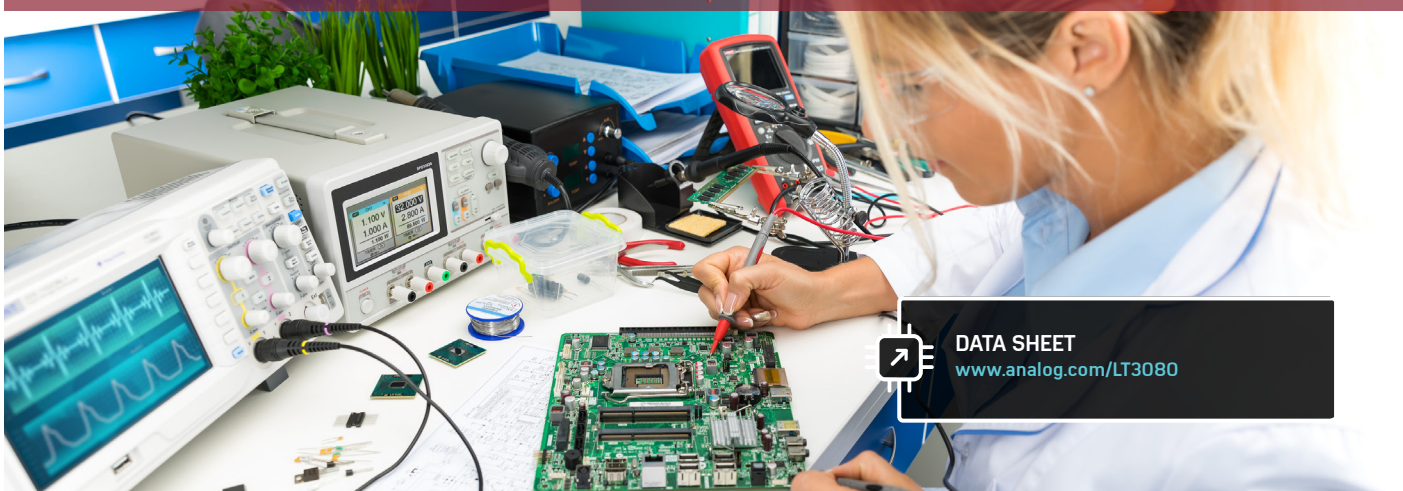
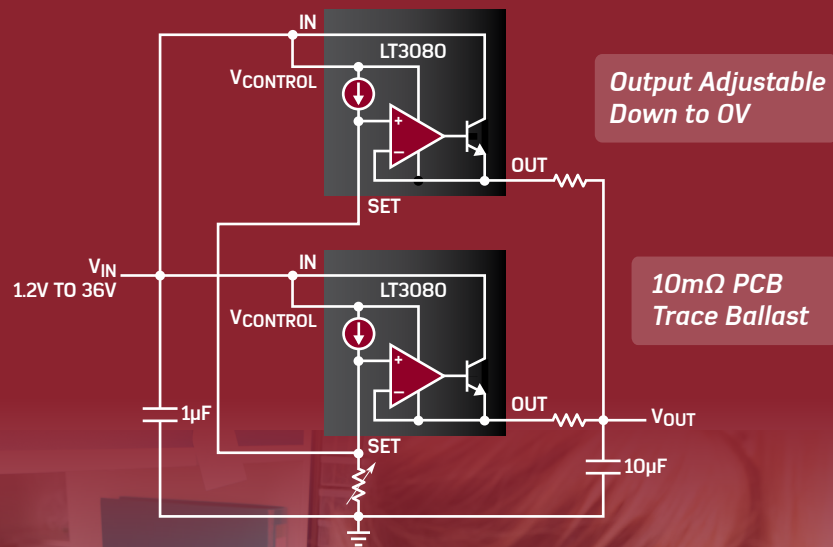
► Low Dropout Voltage:
300mV @ 1.1A

► Low Noise:

40µV_{RMS} Wideband (100kHz)

► Stable 10µA Current Source
Reference

► Single Resistor Programs V_{OUT}



DATA SHEET
www.analog.com/LT3080

Analog Devices, Inc.
Worldwide Headquarters

Analog Devices, Inc.
One Technology Way
P.O. Box 9106
Norwood, MA 02062-9106
U.S.A.
Tel: 781.329.4700
(800.262.5643, U.S.A. only)
Fax: 781.461.3113

Analog Devices, Inc.
Europe Headquarters

Analog Devices GmbH
Otto-Aicher-Str. 60-64
80807 München
Germany
Tel: 49.89.76903.0
Fax: 49.89.76903.157

Analog Devices, Inc.
Japan Headquarters

Analog Devices, KK
New Pier Takeshiba
South Tower Building
1-16-1 Kaigan, Minato-ku,
Tokyo, 105-6891
Japan
Tel: 813.5402.8200
Fax: 813.5402.1064

Analog Devices, Inc.
Asia Pacific Headquarters

Analog Devices
5F, Sandhill Plaza
2290 Zuchongzhi Road
Zhangjiang Hi-Tech Park
Pudong New District
Shanghai, China 201203
Tel: 86.21.2320.8000
Fax: 86.21.2320.8222

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