

0.1A LOW DROPOUT VOLTAGE REGULATORS

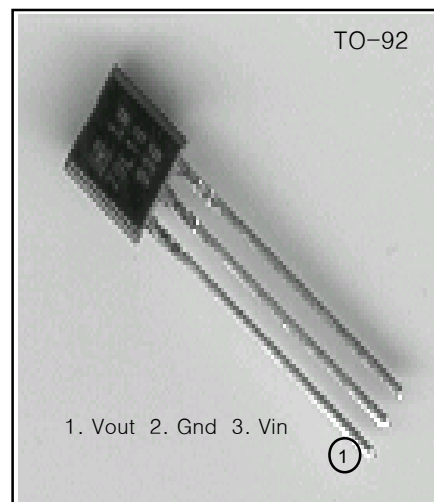
LM2931

Features

- 3-Terminal regulators
- 0.1A output within 2% over temperature
- Very low quiescent current
- Low dropout voltage (300mv Type)
- Extermely tight load and line regulation
- Very low temperature coefficent
- Current and thermal limiting
- Unregulated DC input canwithstand -20V
revers battery and +60V positive
transients

Applications

- High-efficiency linear regulator
- Battery powerd system
- Portable/Palm top/Notebook
computer
- Portable consumer equipment
- Portable Instrumentation
- Avionics
- Automotive Electronics
- SMPS Post-Regulator



ORDERING INFORMATION

DEVICE	PKG
LM2931L-XX	TO-92

(XX= Output Voltage=3.3, 5.0, 8.0, 8.5 9.0
10.0, 12.0,15.0V, Adjustable=AD)

PRODUCT DESCRIPTION

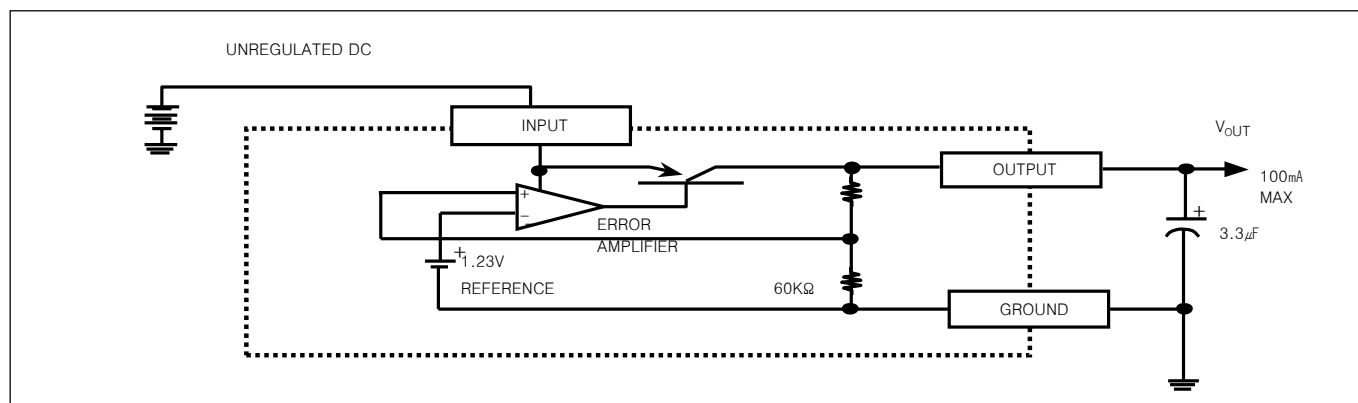
The LM2931 is a low power voltage regulator. This device excellent choice for use in battery powered. Furthermore, the quiescent current increases only slightly at dropout, which prolongs battery life.

The LM2931 features very low quiescent current (100 μ A Typ.) and very low drop output voltage (Typ. 60mV at light load and 300mV at 100mA).

This includes a tight initial tolerance of 0.5% Typ., extremely good load and line regulation of 0.05% Typ., and very low output temperature coefficient.

The LM2931 fixed-voltage and andjustable regulators is offered in 3-pin TO-92 package compatible with other fixed regulator.

BLOCK DIAGRAM AND TYPICAL APPLICATIONS



HTC

ABSOLUTE MAXIMUM RATINGS

POWER DISSIPATION	INTERNALLY LIMITED
Lead Temperature (Soldering, 5 seconds)	260°C
Storage Temperature Range	-65°C to +150°C
Operating Junction Temperature Range	-55°C to +150°C
Input Supply Voltage	-20 to +30V

ELECTRICAL CHARACTERISTICS(at $T_J=25^\circ\text{C}$, $I_O=100\mu\text{A}$, $V_{IN}=14\text{V}$, $C_O=100\mu\text{F}$; unless otherwise noted)

PARAMETER	CONDITIONS (Note 2)	MIN	TYP	MAX	UNITS
Output Voltage (Fixed Model)	$-25^\circ\text{C} \leq T_J \leq 85^\circ\text{C}$	0.985 V_O	V_O	1.015 V_O	V
	Full Operating Temperature	0.980 V_O		1.020 V_O	
Output Voltage (Fixed Model)	$100\mu\text{A} \leq I_L \leq 100\text{mA}$, $T_J \leq T_{JMAX}$	0.975 V_O	V_O	1.025 V_O	
Input Supply Voltage				26	
Output Voltage Temperature Coefficient	(Note 1)		50	150	ppm/°C
Line Regulation (Note 2)	$13\text{V} \leq V_{IN} \leq 26\text{V}$ (Note 3)		0.1	0.4	%
Load Regulation (Note 2)	$1\text{mA} \leq I_L \leq 100\text{mA}$		0.1	0.3	%
Dropout Voltage (Note 4)	$I_L=10\text{mA}$		60	200	mV
	$I_L=100\text{mA}$		300	600	
Ground Current (Note 5)	$I_L=100\mu\text{A}$		100	150	μA
	$I_L=10\text{mA}$		0.9	1.5	mA
	$I_L=100\text{mA}$		8	12	
Dropout Ground Current (Note 5)	$V_{IN}=V_O-0.5\text{V}$, $I_L=100\mu\text{A}$		110	170	μA
Current Limit	$V_{OUT}=0$		160	200	mA
Thermal Regulation (Note 6)			0.05	0.2	%/W
Output Noise, 10Hz to 100kHz $I_L = 10\text{mA}$	$C_L=2.2\mu\text{F}$		500		μV_{rms}
	$C_L=3.3\mu\text{F}$		350		
	$C_L=33\mu\text{F}$		120		
Shutdown Input					
Input Logic Voltage	Low (Regulator ON)		1.3	0.7	V
	High (Regulator OFF)	2			
Shutdown Pin Input Current	$V_S=2.4\text{V}$		30	50	μA
	$V_S=26\text{V}$		450	600	
Regulator Output Current Shutdown	(Note 8)				μA
	$5.0\text{V} \leq V_{OUT} < 15.0\text{V}$			10	
	$3.3\text{V} \leq V_{OUT} < 5.0\text{V}$			20	
	$2.0\text{V} \leq V_{OUT} < 3.3\text{V}$			30	

Note 1 : Output or reference voltage temperature coefficients defined as the worst case voltage change divided by the total temperature range.

Note 2 : Regulations is measured at constant junction temperature, using pulse testing with a low duty cycle.

Changes in output voltage due to heating effects are covered under the specification for thermal regulation.

Note 3 : Line regulation is tested at 150°C for $I_L = 1\text{mA}$. For $I_L = 100\mu\text{A}$ and $T_J = 125^\circ\text{C}$, line regulation is guaranteed by value measured at 1V differential.

Note 4 : Dropout voltage is defined as the input to output differential at which the output voltage drops 2% below its nominal value measured at 1V differential.

Note 5 : Ground pin current is the regulator quiescent current. The Total current drawn from the source is the sum of the ground pin current and output load current.

Note 6 : Thermal Regulation is the change in output voltage at a time T after a change in power dissipation, excluding load or line regulation effects. Specifications are for a 50mA load puls (1.25W) for $T = 10\text{ms}$

Note 7 : $V_{REF} \leq V_{OUT} \leq (V_{IN}-1\text{V})$, $2.3\text{V} \leq V_{IN} \leq 26\text{V}$, $100\mu\text{A} \leq I_L \leq 100\text{mA}$, $T_J \leq T_{JMAX}$

Note 8 : $V_{shutdown} \geq 2\text{V}$, $V_{IN} \leq 26\text{V}$, $V_{out} \leq 0\text{V}$