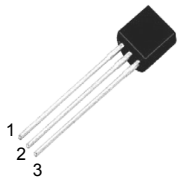
100mA LOW DROPOUT VOLTAGE REGULATORS LM2930/1

FEATURES

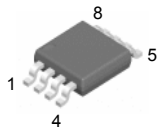
- 3-Terminal regulators (TO-92)
- 100mA output within 2% over temperature
- Very low quiescent current
- Extremely tight load and line regulation
- Very low temperature coefficient
- Current and thermal limiting
- Unregulated DC input can withstand -20V reverse battery and +60V positive trabsients
- Moisture Sensitivity Level 3

TO-92 PKG



Pin 1 : Output
Pin 2 : Ground
Pin 3 : Input

SOP-8 PKG



Pin 1 : Output
Pin 4 : Feedback
Pin 5 : Shutdown
Pin 8 : Input
Pin 2, 3, 6, 7 : Ground

APPLICATION

- High-efficiency linear regulator
- Battery powered systems
- Portable consumer equipment
- Portable / Parm, Desktop / Notebook computers
- Portable Instrumentation
- Automotive Electronics
- SMPS Post-Regulator

ORDERING INFORMATION

DEVICE	PKG
LM2930TA-XX	TO-92
LM2931D-XX	SOP-8

(XX = Output Voltage = 5.0V, 8.0V, ADJ)

PRODUCT DESCRIPTION

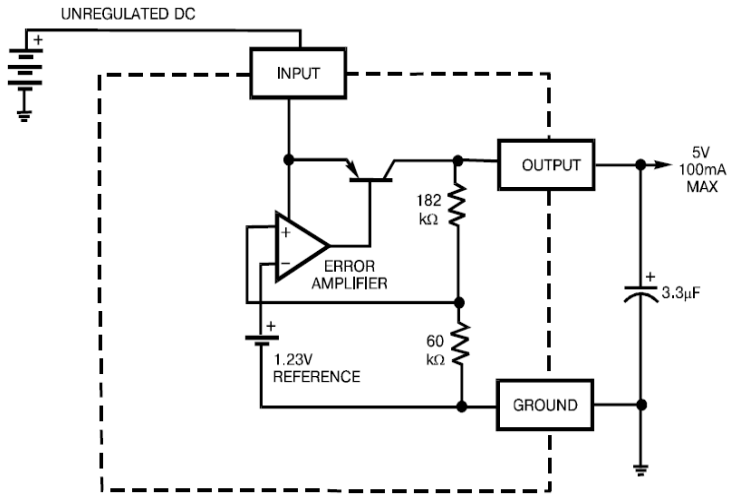
This series of fixed-voltage and adjustable monolithic micropower voltage regulators is designed for a wide range of applications. This device excellent coice for use in battery-powered application.

Futhermore, the quiescent current increases only slightly at dropout, which prolongs battery life.

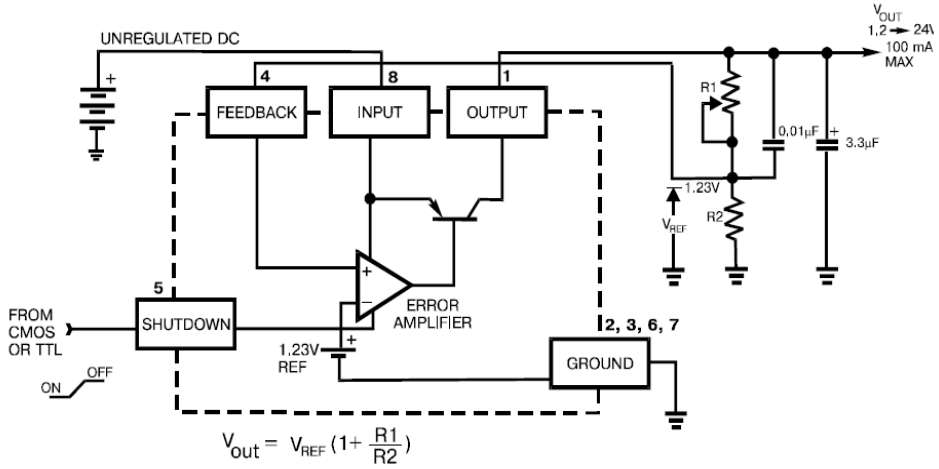
This series of fixed-voltage and adjustable voltage regulators features very low quiescent current (100uA Typ.) and very low drop output voltage (Typ. 60mV at light load 300mV at 100mA). This Include a tight initial tolerance of 0.5% typ, extremely food load and line regulation of 0.05% Typ., and very low output temperature coefficient.

This series of fixed-voltage and adjustable regulators is offered in 3-Pin TO-92 package for LM2930 and 8-Pin SOP-8 package for LM2931 compatible with other fixed-voltage regulators.

BLOCK DIAGRAM AND TYPICAL APPLICATIONS (Fixed)



BLOCK DIAGRAM AND TYPICAL APPLICATIONS (Adjustable)



ABSOLUTE MAXIMUM RATINGS

POWER DISSIPATION	INTERNALLY LIMITED
Lead Temperature (Soldering, 5 seconds)	260℃
Storage Temperature Range	-65℃ to +150℃
Operating Junction Temperature Range	-55℃ to +150℃
Input Supply Voltage	-20V to +35V

ELECTRICAL CHARACTERISTICS (at T_A=25℃, V_{IN}=15V, unles otherwise specified)

PARAMETER	CONDITIONS (Note 2)	MIN	TYP	MAX	UNITS
Output Voltage	-25℃ ≤T_J ≤85℃	0.985 | V_O |	V_O	1.015 | V_O |	V
	Full Operating Temperature	0.980 | V_O |		1.020 | V_O |	
Output Voltage	100μA≤I_L≤100mA,T_J≤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/℃
Line Regulation (Note 2)	13V ≤ V_{IN} ≤ 26V (Note 3)		0.1	0.4	%
Load Regulation (Note 2)	1mA ≤ I_L ≤ 100mA		0.1	0.6	%
Dropout Voltage (Note 4)	I_L=10mA		60	250	mV
	I_L=100mA		300	600	
Ground Current (Note 5)	I_L=100μA		100	150	μA
	I_L=10mA		0.9	1.5	mA
	I_L=100mA		8	12	mA
Dropout Ground Current (Note 5)	V_{IN}=V_o-0.5V, I_L=100μA		110	170	μA
Current Limit	V_o=0		160	200	mA
Thermal Regulation (Note 6)			0.05	0.3	%/W
Output Noise, 10Hz to 100kHz IL=10mA	C_L=2.2μF		500		μVrms
	C_L=3.3μF		350		
	C_L=33μF		120		
Ripple Rejection Ratio	Io=10mA, f=120Hz, Co=100uF Vin = Vo + 3V + 2Vpp	60			dB
SOP-8 PKG only					
Reference Voltage		1.21	1.235	1.26	V
Reference Voltage	Over Temperature (Note 7)	1.185		1.285	
Feedback Pin Bias Current			20	40	nA
Reference Voltage Temperature Coefficient	(Note 1)		50		ppm/℃
Feedback Voltage Temperature Coefficient			0.1		nA/℃
Shutdown Input					
Input Logic Voltage	Low (Regulator ON)		1.3	0.7	V
	High (Regulator OFF)	2			
Shutdown Pin Input Current	V_S=2.4V		30	50	μA
	V_S=26V		450	600	
Regulator Output Current Shutdown	(Note 8)				
	5.0V ≤ V_O < 15.0V			10	
	3.3V ≤ V_O< 5.0V			20	
	2.0V ≤ V_O < 3.3V			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℃ for I_L=1mA. For I_L=100uA and T_J=125℃, line regulation is guaranteed by design to 0.2%.

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 pulse (1.25W) for T=10ms.

Note 7 : $V_{REF} \leq V_O \leq (V_{IN}-1V)$, $2.3V \leq V_{IN} \leq 30V$, $100\mu A \leq I_L \leq 100mA$, $T_J \leq T_{JMAX}$

Note 8 : $V_{SHUTDOWN} \geq 2V$, $V_{IN} \leq 26V$, V_O=0, Feed-back pin tied to -XX V Tap.