AS2930

150 mA Low Dropout Voltage Regulator

FEATURES

- Output Current in Excess of 150mA
- 3V, 3.3V, 3.5V, 4.0V, 4.5V & 5.0V Versions Available
- Very Low Quiescent Current
- Input-Output Differential Less than 0.6V
- 60V Load Dump Protection
- -50V Reverse Transient Protection
- Internal Thermal Overload Protection
- Reverse Battery Protection
- Short Circuit Protection
- Available in TO-220, TO-92, SO-8, SOT-89 Packages
- Similar to Industry Standard LM2930

APPLICATIONS

- Cordless Telephones
- Portable Consumer Equipment
- Portable Instrumentation
- Radio Control Systems

PRODUCT DESCRIPTION

The AS2930 is a positive Low Power Voltage Regulator. This device is an excellent choice for use in battery-powered applications, such as cordless telephones, radio control systems, and automotive apllications. The AS2930 was originally designed for automotive applications, all circuitry is protected from reverse battery installations. During line transients, such as a load dump (+60V) when the input voltage to the regulator exceed its maximum operating voltage, this device will automatically shut down to protect both internal circuits as well as the load. The AS2930 is offered as a 3.0V, 3.3V, 3.5V, 4.5V, 5.0V fixed output in 3-pin SOT-89, TO-92/TO-220 packages compatible with other 5V regulators and TO-220/TO-92. The AS2930 is also offered in 5V SO-8 package.

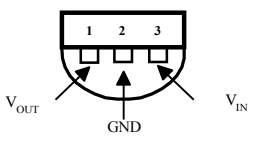
ORDERING INFORMATION

TO-92 3-PIN	SO-8	SOT-89 3-PIN	TO-220	Oper. Temp. Range
AS2930N-X	AS2930S-X	AS2930M1-X	AS2930U-X	IND.
	AS2930CS-X		AS2930CU-X	IND.

X= Output Voltage (X = 3.0V, 3.3V, 3.5V, 4.0V, 4.5V & 5.0V
For other fixed voltages consult factory.

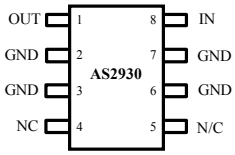
PIN CONNECTIONS

TO-92 (N)



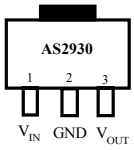
Bottom View

8-Pin Surface Mount (S)



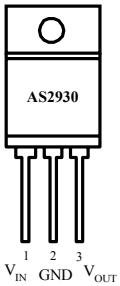
Top View

SOT-89



Top View

TO-220-3 Package



Front View

ABSOLUTE MAXIMUM RATINGS

Power Dissipation.....Internally Limited
Lead Temp. (soldering, 10 Seconds)..... 230°C
Storage Temperature Range -65° to +150°C
Operating Junction Temperature Range ..... -40° to +85°C
Maximum Junction Temperqture .....+125°C
ESD Rating.....2KV

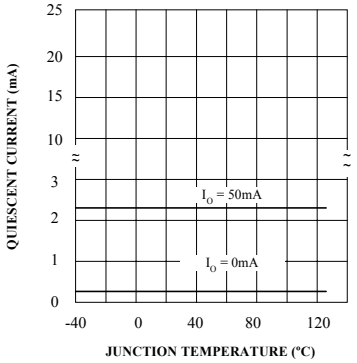
Over Voltage Protection.....60V
Reverse Voltage (100mS)..... -50V
Reverse Voltage(DC)..... -15V
Input Supply Voltage .....-0.3 to +26V

ELECTRICAL CHARACTERISTICS at V_S=14V, Ta=25°C , Io=150mA, C2=100µF, unless otherwise specified.

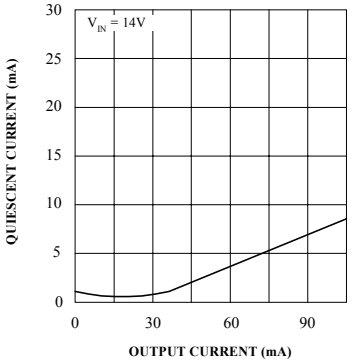
		AS2930A			AS2930			
Parameter	**Conditions**	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Units**
3.0 Volt Version			**AS2930A-3**			**AS2930-3**		
Output Voltage		2.94	3.00	3.06	2.91	3.00	3.09	V
	6V<V_{in}<26V, I_O =150mA Over Temp.	**2.88**	3.00	**3.12**	**2.85**	3.00	**3.15**	V
3.3 Volt Version			**AS2930A-3.3**			**AS2930-3.3**		
Output Voltage		3.23	3.30	3.36	3.20	3.30	3.39	V
	6V<V_{in}<26V, I_O =150mA Over Temp.	**3.20**	3.30	**3.39**	**3.16**	3.30	**3.43**	V
4.0 Volt Version			**AS2930A-4.0**			**AS2930-4.0**		
Output Voltage		3.92	4.0	4.08	3.90	4.0	4.1	V
	6V<V_{in}<26V, I_O =150mA Over Temp.	**3.90**	4.0	**4.1**	**3.86**	4.0	**4.14**	V
5 Volt Version			**AS2930A-5**			**AS2930-5**		
Output Voltage		4.81	5.00	5.19	4.75	5.00	5.25	V
	6V<V_{in}<26V, I_O =150mA Over Temp.	**4.75**		**5.25**	**4.5**		**5.5**	V
All Voltage Options								
Long Term Stability			20			20		mV/1000
Line Regulation	9V<V_{in}<16V 6V<V_{in}<26V		2.0 4.0	10 30		4.0	30	mV
Load Regulation	5mA<Io<150mA		14	50		14	50	mV
Dropout Voltage	I_o=10mA I_o=50mA I_o=150mA		0.05 0.07 0.3	0.2 0.1 0.6		0.05 0.07 0.3	0.2 0.1 0.6	V V V
Quiescent Current	I_o<10mA, 6V<V_{in}<26V -40°C<Tj<125°C I_o=150mA, Vin=14V, Tj=25°C		0.4 15	1.0		0.4 15	1.0	mA mA
Maximum Operational Input Voltage		26	33		26	33		V
Maximum Line Transient	R_L=500Ω, Vo<5.5V, 100ms	60	70		70	50		V
Reverse Polarity Input Voltage, DC	V_o>-0.3V, R_L=500Ω	-15	-30		-15	30		V
Reverse Polarity Input Voltage, Transient	1% Duty Cycle, τ<100ms, R_L=500Ω	-50	-80		-50	-80		V
Current Limit		150	400	450	150	400	450	mA
Output Noise Voltage	10Hz-100kHz,C_{out}=100µF		500			500		µVrms
Ripple Rejection	f_o=120Hz		80			80		dB

TYPICAL CHARACTERISTICS

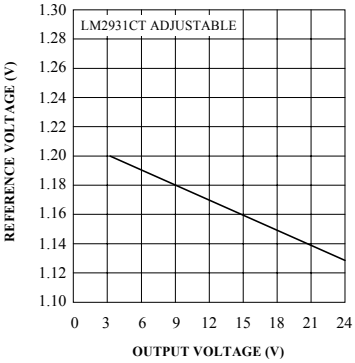
QUIESCENT CURRENT



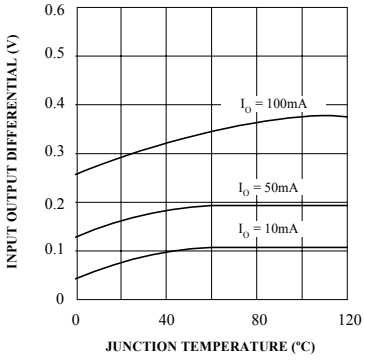
QUIESCENT CURRENT



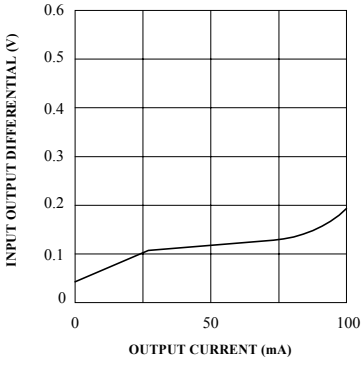
REFERENCE VOLTAGE



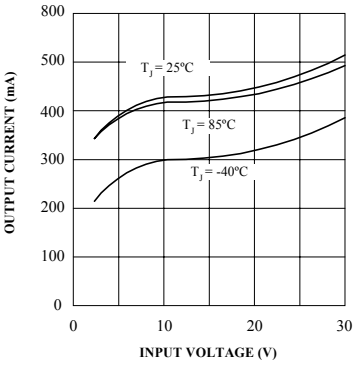
DROPOUT VOLTAGE



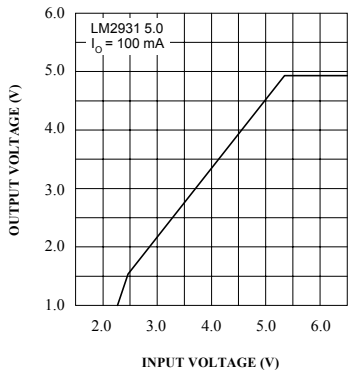
DROPOUT VOLTAGE



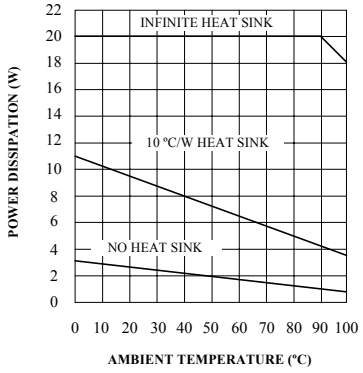
PEAK OUTPUT CURRENT



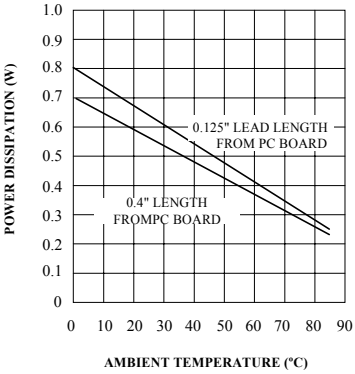
LOW VOLTAGE BEHAVIOR



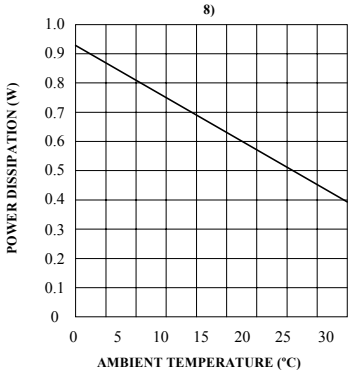
MAXIMUM POWER DISSIPATION (TO-220)



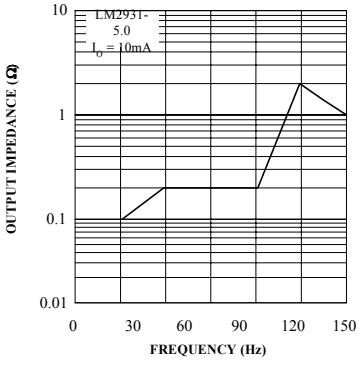
MAXIMUM POWER DISSIPATION (TO-92)



MAXIMUM POWER DISSIPATION (SO-8)



MAXIMUM POWER DISSIPATION



OPERATION DURING LOAD DUMP