

LP2950M-XX
LP2950M-Adj
LP2950MK

100mA Low Dropout Voltage Regulators

July 2006- revised March 2011



FEATURES

- High-accuracy output voltage
- Guaranteed 100mA output
- Very low quiescent current
- Low dropout voltage
- Extremely tight Load and Line Regulations
- Very low temperature coefficient
- Needs only 3 μF for stability
- Output programmable from 1.24 to 29V

APPLICATIONS

- Battery powered systems
- Cordless telephones
- Radio control systems
- Portable/palm top/notebook computers
- Portable consumer equipment
- Portable instrumentation
- Avionics
- Automotive electronics
- SMPS post-regulator
- Voltage reference

PRODUCT DESCRIPTION

The LP2950M is a low power voltage regulator. This device is an excellent choice for use in battery-powered application such as cordless telephone, radio control systems, and portable computers.

The LP2950M features very low quiescent current (75 μA , typ.) and very low drop output voltage (Typ. 40mV at light load and 380mV at 100 mA). This includes a tight initial tolerance of 0.5% (typ.), extremely good Load and Line Regulations of 0.05% (typ.), and a very low output temperature coefficient making the LP2950M useful as a low-power voltage reference.

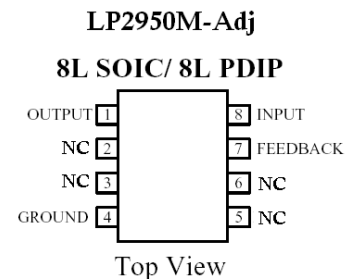
The LP2950M-XX is offered in 3-pin TO-92 package compatible with other fixed regulator.

The LP2950M-Adj may be programmed from 1.24V to 29V with external pair of resistors.

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	-40°C to +125°C
Input supply voltage	-0.3 to +30V
Operating input supply voltage	+2.3 to +30V

PIN CONNECTION

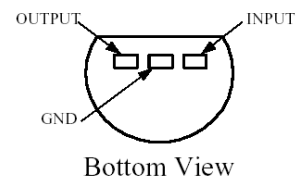


Device Selection Guide

V_{OUT} , V	DEVICE
1.24 to 29	LP2950M-Adj
1.5	LP2950M-1.5
1.8	LP2950M-1.8
2.5	LP2950M-2.5
2.85	LP2950M-2.85
3.0	LP2950M-3.0
3.3	LP2950M-3.3
5.0	LP2950M-5.0

LP2950M-XX

TO-92



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ELECTRICAL CHARACTERISTICS

Parameter	Conditions (Note 1)	Min.	Typ.	Max.	Units
Output voltage for fixed versions, Reference voltage for adjustable versions (Note 2)	25°C, wafer testing	0.992 Vnom	Vnom	1.008 Vnom	V
	-25°C ≤ T _J ≤ 85°C	0.985 Vnom	Vnom	1.015 Vnom	
		0.98 Vnom	Vnom	1.02 Vnom	
	100µA ≤ I _L ≤ 100mA	0.976 Vnom	Vnom	1.024 Vnom	
Output or reference voltage temperature coefficient	(Note 3)		50	150	ppm/°C
Line Regulation (Note 4)	V _{OUT} + 1V ≤ V _{IN} ≤ 30V		0.04	0.4	%
Load Regulation (Note 4)	100µA ≤ I _L ≤ 100mA		0.1	0.3	%
Dropout voltage (Note 5, Note 6)	I _L = 100µA		50	80	mV
	I _L = 100mA		380	450	
Ground current	I _L = 100µA		75	120	µA
	I _L = 100mA		5	12	
Dropout ground current (Note 6)	V _{IN} = V _{OUT} + 0.5, I _L = 100µA		110	170	µA
Current limit	V _{OUT} = 0		160	250	mA
Thermal regulation	T _J = 25°C		0.05	0.2	%/W
Output noise, 10Hz to 100kHz (Note 6)	C _L = 3µF C _L = 200µF (T _J = 25°C)		430		µVrms
			160		
FEEDBACK pin bias current			20	40	nA

Note 1: Unless otherwise specified all the limits are guaranteed for V_{IN}=V_{OUT}+1V, I_L=100µA, C_L=3µF, full operating temperature range.

Note 2: The nominal value of reference voltage is 1.24V.

Note 3: Output or reference voltage temperature coefficients are defined as the worst case voltage change divided by the total temperature range.

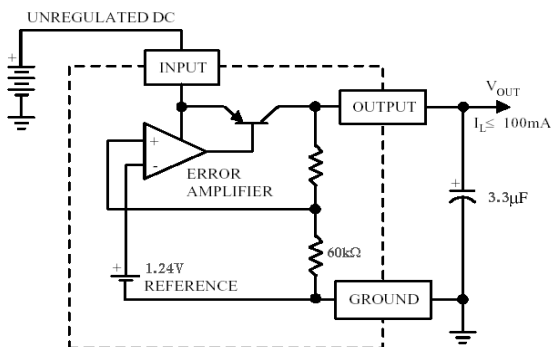
Note 4: The **Regulations** are measured at a constant junction temperature, using the pulse testing with a low duty cycle. The changes in the output voltage due to heating effects are covered under the specification for thermal regulation.

Note 5: The dropout voltage is defined as the input-to-output differential, at which the output voltage drops 100mV below its nominal value measured at 1V differential. At V_{OUT} = 1.5V and V_{OUT} = 1.8V the minimum input supply voltage 2V (2.3V over-temperature) must be taken into account.

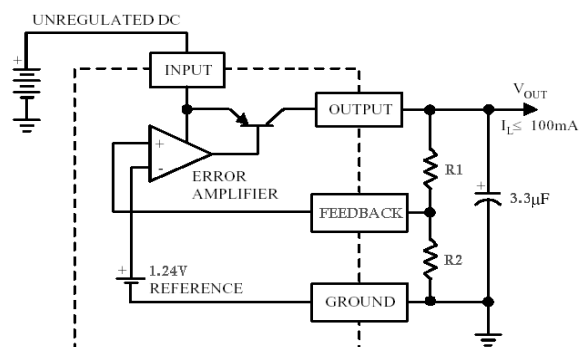
Note 6: Adjustable version programmed to 5V.

BLOCK DIAGRAM AND TYPICAL APPLICATIONS

LP2950M-XX

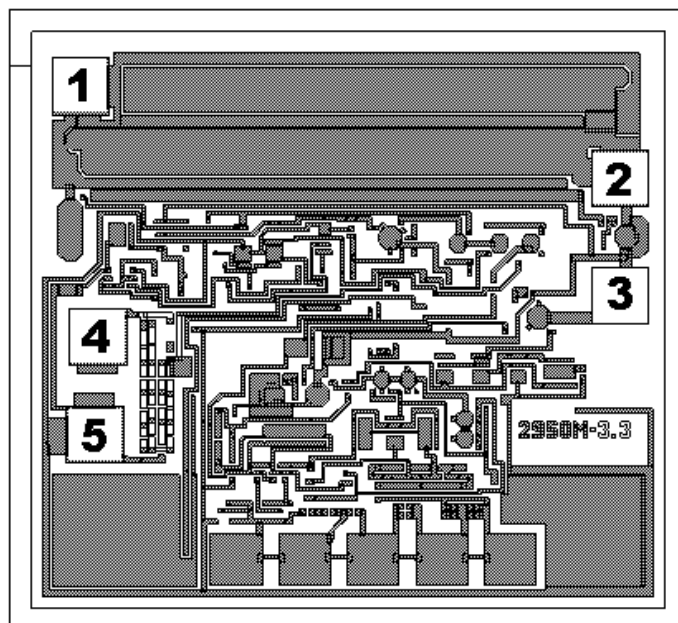


LP2950M-Adj



$$V_{out} = (V_{ref}) * (1 + R1/R2)$$

PAD LOCATION AND COORDINATES



Chip size: 1.19 mm x 1.09 mm

2950M is produced on 4" wafer
 2950MK is produced on 6" wafer

PAD	NAME	PAD OPENING SIZE (μm^2)	PAD CENTER COORDINATES (μm)	
			X	Y
1	OUTPUT	90 x 90	125	955
2	INPUT	90 x 90	1070	795
3	NC (Not connected)	90 x 90	1070	590
4	OUTPUT of LP2950M-XX, FEEDBACK of LP2950M-Adj	90 x 90	155	515
5	GND	90 x 90	150	345

The appearance complies with the requirements of the company standards.