

## FEATURES

- High accuracy output voltage
- Guaranteed 100 mA output
- Very low quiescent current
- Low dropout voltage
- Extremely tight load and line regulation
- Very low temperature coefficient
- Needs Output low-ESR ceramic capacitor for stability
- Logic-controlled electronic shutdown

## APPLICATION

- 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

### Pin Description



TO-92 PKG



SC-70-5L PKG

### ORDERING INFORMATION

Device	Package
LM2950G-X.X	TO-92 (Bulk)
LM2950GTA-X.X	TO-92 (Tape)
LM2950GTF5-X.X	SC-70-5L

X.X = Output Voltage = 3.3V, 5.0V

## DESCRIPTION

The LM2950G is a low power voltage regulator. This device is an excellent choice for use in battery-powered application such as cordless telephones, radio-control systems, and portable computers.

The LM2950G features a very low quiescent current (75uA typ.) and a very low drop output voltage (typ. 40mV at a light load and 380mV at 100mA).

Furthermore, a tight initial Output voltage tolerance of 0.5% Typ., an extremely good load and line regulation of 0.05% Typ., and a very low output temperature coefficient – all that makes the LM2950G very useful as a low-power voltage reference.

## ABSOLUTE MAXIMUM RATINGS

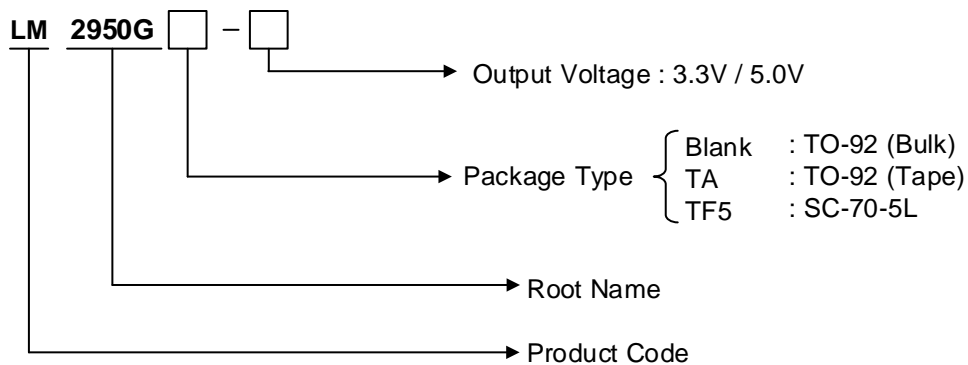
CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT
Lead Temperature	T <sub>SOL</sub>	-	260	°C
Storage Temperature Range	T <sub>STG</sub>	-65	150	°C
Operating Junction Temperature Range	T <sub>JOPR</sub>	-40	125	°C
Input Supply Voltage	V <sub>IN</sub>	-0.3	30	V

## RECOMMENDED OPERATING CONDITIONS

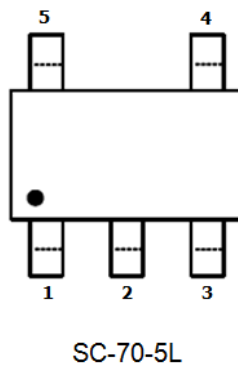
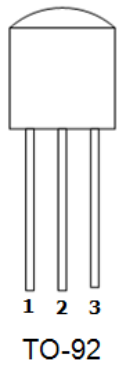
CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT
Maximum Input Voltage	$V_{IN\_MAX}$	-	30	V
Junction Temperature	$T_J$	-25	85	°C

## ORDERING INFORMATION

$V_{OUT}$	Package	Order No.	Supplied As	Status
3.3	TO-92	LM2950G-3.3	Bulk	Contact Us
3.3	TO-92	LM2950GTA-3.3	Tape	Contact Us
3.3	SC-70-5L	LM2950GTF5-3.3	Reel	Contact Us
5.0	TO-92	LM2950G-5.0	Bulk	Contact Us
5.0	TO-92	LM2950GTA-5.0	Tape	Contact Us
5.0	SC-70-5L	LM2950GTF5-5.0	Reel	Contact Us



## PIN DESCRIPTION

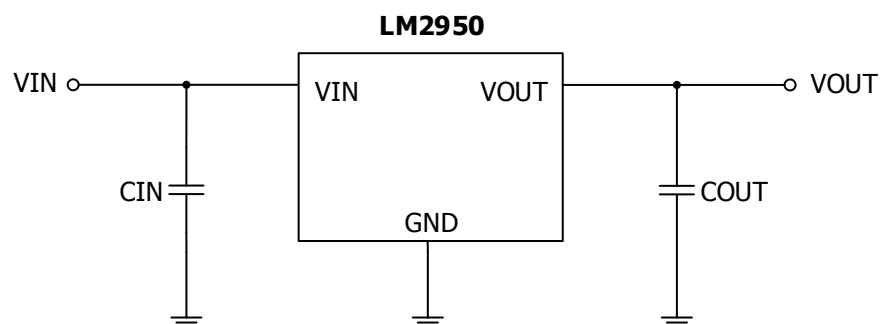


## PIN CONFIGURATION

Pin No.	TO-92	SC-70-5L
	Pin Name	
1	VOUT	VIN
2	GND	GND
3	VIN	N.C
4	-	N.C
5	-	VOUT

\* N.C : No connection

## TYPICAL CIRCUIT



## ELECTRICAL CHARACTERISTICS (at $T_a=25^\circ\text{C}$ , $V_{IN}=V_{OUT}+1\text{V}$ , $I_{OUT}=100\mu\text{A}$ , unless otherwise noted)

Parameters	Condition	Min.	Typ.	Max.	Unit
Output Voltage	$T_J=25^\circ\text{C}$	$0.990 V_O $	VO	$1.010 V_O $	V
	$-25^\circ\text{C} \leq T_J \leq 85^\circ\text{C}$	$0.985 V_O $		$1.015 V_O $	V
	Full Operating Temperature	$0.980 V_O $		$1.020 V_O $	V
	$100\mu\text{A} \leq I_{OUT} \leq 100\text{mA}$ , $T_J \leq T_{JMAX}$	$0.976 V_O $	VO	$1.024 V_O $	V
Output Voltage Temperature Coefficient	(Note 1)		50	150	ppm/ $^\circ\text{C}$
Line Regulation	$(V_{OUT}+1\text{V}) \leq V_{IN} \leq 30\text{V}$		0.04	0.2	%
Load Regulation (Note 2)	$100\mu\text{A} \leq I_{OUT} \leq 100\text{mA}$		0.1	0.3	%
Dropout Voltage (Note 3)	$I_{OUT}=100\mu\text{A}$		50	80	mV
	$I_{OUT}=100\text{mA}$		380	450	mV
Ground Current	$I_{OUT}=100\mu\text{A}$		75	120	$\mu\text{A}$
	$I_{OUT}=100\text{mA}$		3	12	mA
Dropout Ground Current	$V_{IN}=V_{OUT}-0.5\text{V}$ , $I_{OUT}=100\mu\text{A}$		110	170	$\mu\text{A}$
Current Limit	$V_{OUT}=0\text{V}$		160		mA
Thermal Regulation			0.05	0.2	%/W
Output Noise, (10Hz to 100KHz)	$C_{OUT}=1\mu\text{F}$		430		$\mu\text{V}_{rms}$
	$C_{OUT}=200\mu\text{F}$		160		
	$C_{OUT}=3.3\mu\text{F}$		100		
Over Temperature Protection			165		$^\circ\text{C}$

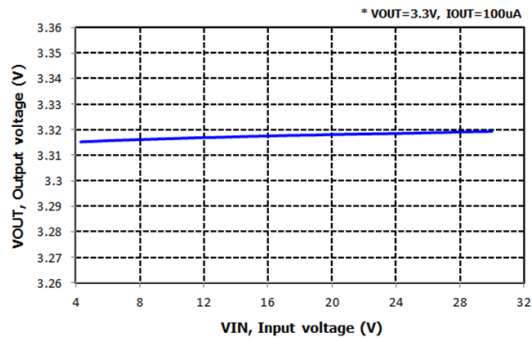
Note 1 : Output temperature coefficient is defined as the worst case voltage change divided by the total temperature range.

Note 2 : The regulation is measured at a constant junction temperature using pulse testing with a low duty cycle. Changes in the output voltage due to heating effects are covered under the specification for thermal regulation.

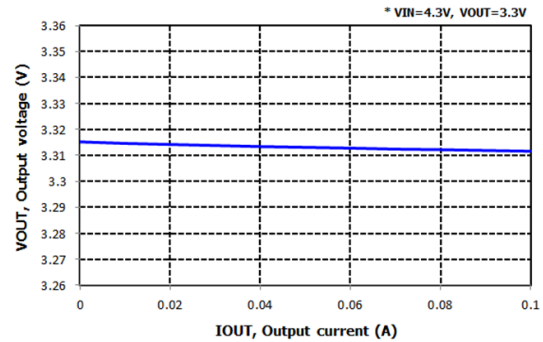
Note 3 : The dropout voltage is defined as the input-to-output differential, at which the output voltage drops 100mV below its nominal value measured at 1V differential. At very low values of a programmed output voltage, the minimum input supply voltage 2V (2.3V over temperature) must be taken into account.

## TYPICAL OPERATING CHARACTERISTICS

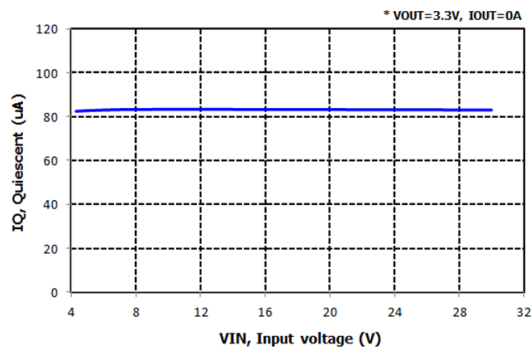
- VOUT vs. VIN



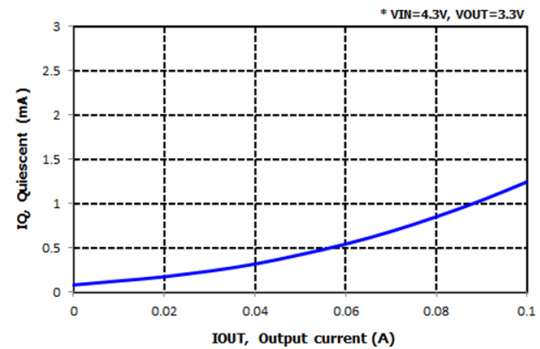
- VOUT vs. IOUT



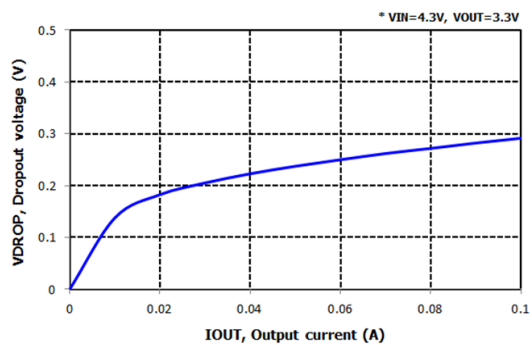
- IQ vs. VIN



- IQ vs. IOUT



- VDROPP vs. IOUT



## REVISION NOTICE

The description in this datasheet can be revised without any notice to describe its electrical characteristics properly.