Low power consumption, high performance 150mA LDO

General Description

The SL75XX is low power consumption very low 2.5uA ground current, high performance 150mA LDO . The family uses an advanced CMOS process and a PMOSFET pass device to achieve fast start-up, with high output voltage accuracy . The SL75XX is stable with a 1.0μF ceramic output capacitor, and uses a precision voltage reference and feedback loop to achieve a worst-case accuracy of 1% over all load, line, process, and temperature variations. It is fully specified from T_J =–40°C to +125°C and is offered in a SOT89-3 package

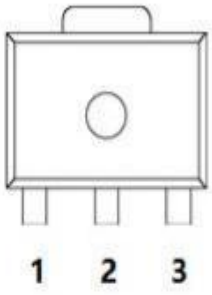
Features

- Wide Input Voltage Range: 2V to 40V
- Up to 150mA Load Current
- Very Low I_Q : 2.5μA@Typ
- Ultra Low Dropout: 650mV at 150mA Load @VOUT=5V
- Short current protection:60mA
- Excellent Load/Line Transient Response
- Line Regulation: 0.05% typical
- Package: SOT89-3

Mark Specification Label

Part No.		V_{OUT}
SL7530-8		3.0V
SL7533-8		3.3V
SL7550-8		5.0V

Pin Configuration

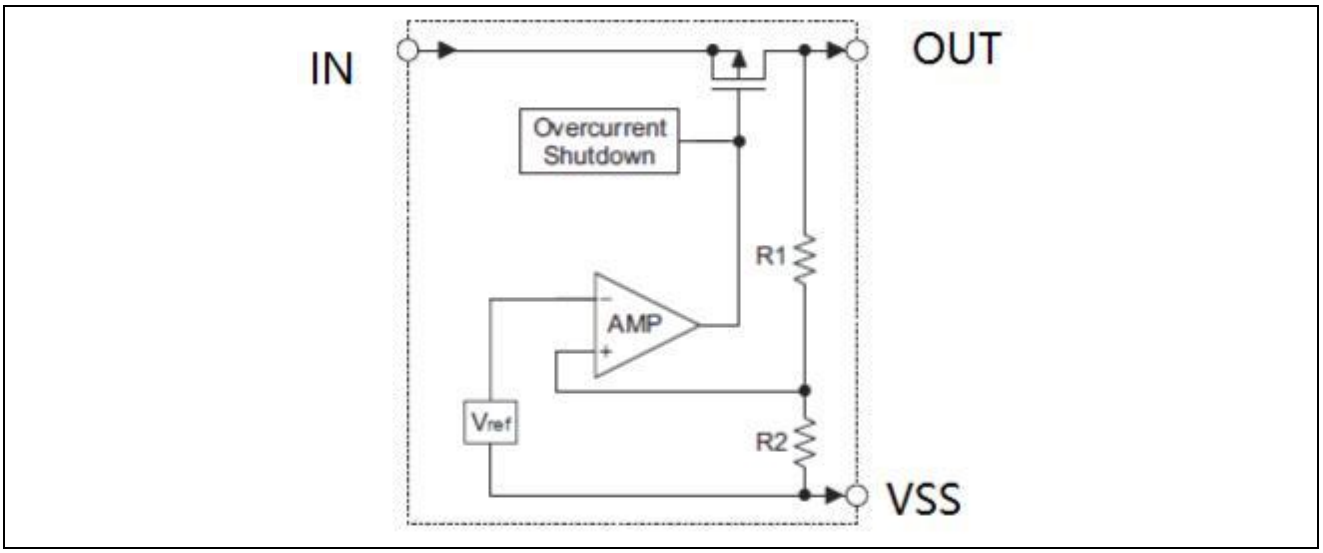


SOT89-3

Pin Function

Pin No. SOT89-3	Pin Name	Pin Function
1	GND	Ground.
2	IN	Supply input pin. Must be closely decoupled to GND with a 1μF or greater ceramic capacitor.
3	OUT	Output pin. Bypass a 1μF ceramic capacitor from this pin to ground.

Block Diagram



Input Capacitor

A 1μF- 10uF ceramic capacitor is recommended to connect between V_{IN} and GND pins to decouple input power supply glitch and noise. The amount of the capacitance may be increased without limit. This input capacitor must be located as close as possible to the device to assure input stability and less noise. For PCB layout, a wide copper trace is required for both V_{IN} and GND.

Output Capacitor

An output capacitor is required for the stability of the LDO. The recommended output capacitance is from 1μF to 10μF, Equivalent Series Resistance (ESR) is from 5mΩ to 100mΩ, and temperature characteristics are X7R or X5R. Higher capacitance values help to improve load/line transient response. The output capacitance may be increased to keep low undershoot/overshoot. Place output capacitor as close as possible to OUT and GND pins.

Low Quiescent Current

The SL75XX, consuming only around 2.5μA for all input range and output loading, provides great power saving in portable and low power applications.

Short Current Limit Protection

When output current at the OUT pin is higher than current limit threshold or the OUT pin is short-circuit to GND, the short current limit protection will be triggered and clamp the output current to approximately 100mA to prevent over-current and to protect the regulator from damage due to overheating.

Absolute Maximum Ratings

Parameter	Rating		Unit
IN Voltage	-0.3 to 49		V
Maximum Power Dissipation	SOT89-3	700	mw
Operating Junction Temperature	-40 to 125		C
Storage Temperature	-65 to 150		C
Lead Temperature (Soldering, 10 sec)	300		C

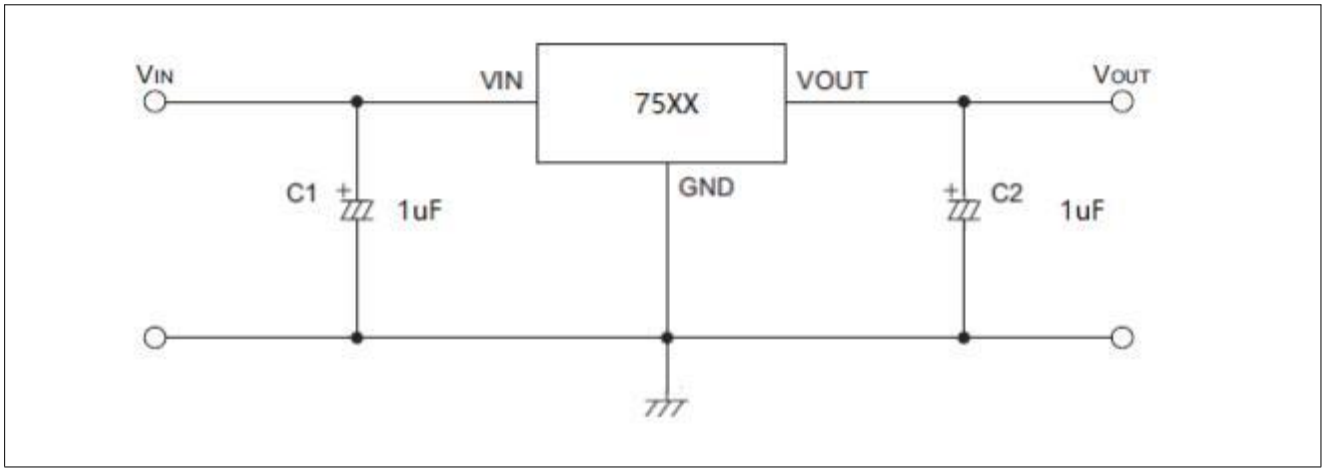
Electrical Characteristics

(V_{IN}= V_{EN} =7V, T_A = 27°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage Operation Range	V_{IN}		3		40	V
Dropout Voltage	V_{drop}	V_{OUT}= 5V, I_{OUT} = 150mA		650	780	mV
		V_{OUT}= 5V, I_{OUT} = 100mA		400	530	
DC Supply Quiescent Current	I_Q			2.5		μA
Regulated Output Voltage	V_{OUT}	I_{OUT}=1mA, -40℃≤T_A≤85℃	-1		1	%
Output Voltage Line Regulation		V_{IN} = V_{OUT} +1V to 30V, I_{OUT} = 10mA		0.05		%
Output Voltage Load Regulation		I_{OUT} from 0mA to 150mA		0.2		%
Maximum Output Current		V_{IN} = V_{OUT} +1V	150			mA
Short Current Protection		OUT short to GND		60		mA

Note: Production test at +25℃ . Specifications over the temperature range are guaranteed by design and characterization.

Application Circuits



Package Dimension

SOT89-3

