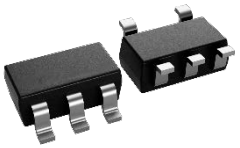
250-mA, 3.3-V OUTPUT, LOW-I_Q, LOW-DROPOUT LINEAR REGULATOR

FEATURES

- Ultralow noise: 9 µVRMS, independent of VOUT
- Ultralow quiescent current
  IGND = 15 µA with zero load
- Maximum output current: 250 mA
- Input voltage range: 3.7 V to 5.5 V
- Output voltage: 3.3 V
- Output voltage tolerance: ±1%
- Low shutdown current: < 1µA
- Low dropout: 140 mV
- PSRR performance of 62 dB at 1 kHz
- No additional noise bypass capacitor required
- Stable with 1 µF ceramic input and output capacitors
- Current limit and thermal overload protection
- Logic-controlled enable
- 5-Pin SOT-23 Package



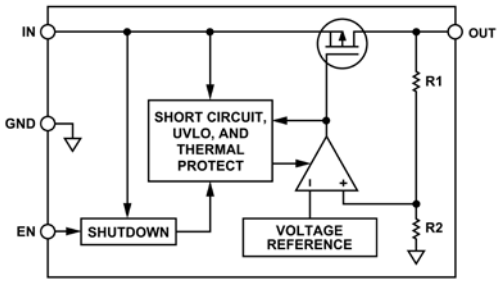


Figure 1. Functional Block Diagram

APPLICATIONS

- Smartphones
- Tablets
- Communications equipment
- Digital still cameras
- Factory automation

SPECIFICATIONS

at operating temperature range (TJ = –40°C to +125°C), V_{IN} = 5.5V, V_{EN} = V_{IN}, I_{OUT} = 1mA, C_{IN} = 1µF, and C_{OUT} = 1µF, and T_A = 25°C (unless otherwise noted).

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
V_{IN}	Input voltage	T_A = 25°C	3.7		5.5	V
V_{OUT}	Output voltage	T_A = 25°C		3.3		V
	Output voltage accuracy	I_{OUT} = 10 mA, T_J = −40°C to +125°C	-1		+1	%
V_{EN}	Enable input voltage high	3.7 V ≤ V_{IN} ≤ 5.5 V	2.0		5.5	V
	Enable input voltage low	3.7 V ≤ V_{IN} ≤ 5.5 V	0		0.4	
I_{OUT}	Output current		0		250	mA
I_{GND}	Operating supply current	V_{EN} = 5.5 V, I_{OUT} = 0 mA		15	28	µA
		V_{EN} = 5.5 V, I_{OUT} = 10 mA		45	60	
		V_{EN} = 5.5 V, I_{OUT} = 250 mA		270	320	
I_G	Shutdown current	V_{EN} = GND		0.2	0.7	µA
		V_{EN} = GND, T_J = −40°C to +125°C			1	
V_{DROP}	Dropout voltage	I_{OUT} = 10 mA		10	50	mV
		I_{OUT} = 100 mA		80	100	
		I_{OUT} = 250 mA		140	260	
PSRR	Power-supply rejection ratio	1 KHz, I_{OUT} = 10 mA		62	65	dB
		10 KHz, I_{OUT} = 10 mA		60	64	
		100 KHz, I_{OUT} = 10 mA		55	58	
OUT_{Noise}	Output noise voltage	BW=10 Hz to 100 kHz		9	50	µVrms
		BW=10 Hz to 100 kHz, I_{OUT} = 1 mA		9	27	
		BW=10 Hz to 100 kHz, I_{OUT} = 100 mA		10	35	

PIN CONFIGURATION AND FUNCTION DESCRIPTIONS

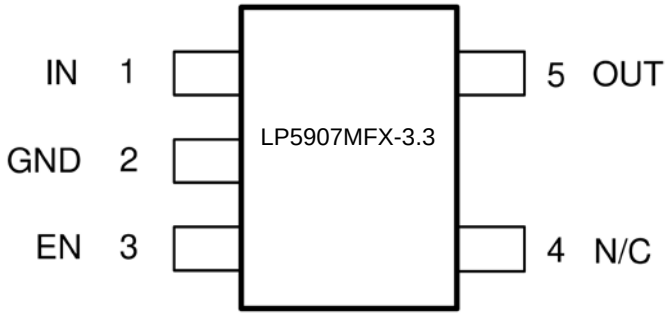


Figure 2. Pin Configuration

TERMINAL		DESCRIPTION
NAME	NO.	
IN	1	Regulator Input Supply. Bypass IN to GND with a 1 µF or greater capacitor
GND	2	The ground return for the supply and signals.
EN	3	Enable Input. Drive EN high to turn on the regulator; drive EN low to turn off the regulator. For automatic startup, connect EN to IN.
N/C	4	No Connect. Not connected internally.
OUT	5	Regulated Output Voltage. Bypass OUT to GND with a 1 µF or greater capacitor.

TYPICAL CONNECTION

Figure 3 shows a typical connection diagram for the LP5907MFX-3.3. The default minimum recommended value for input/output capacitance is 1 µF. In certain applications, input and output capacitors with a capacitance greater than 1 µF may be selected. To enable default automatic startup, connect the EN (enable) pin directly to IN.

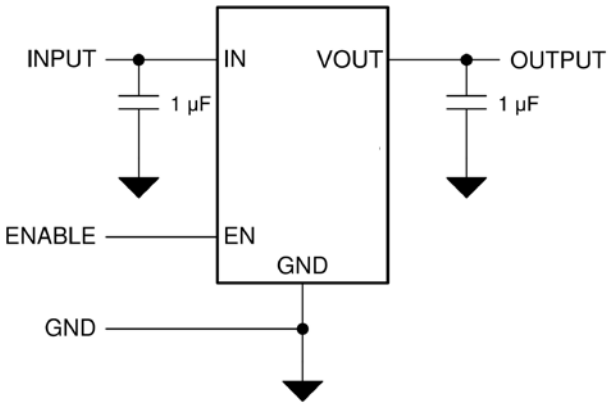
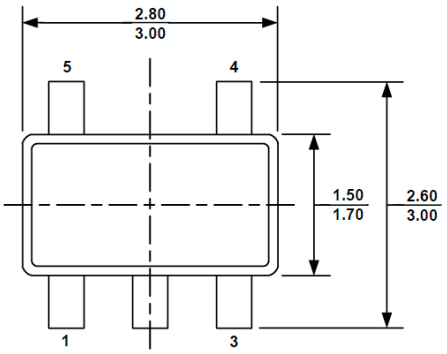
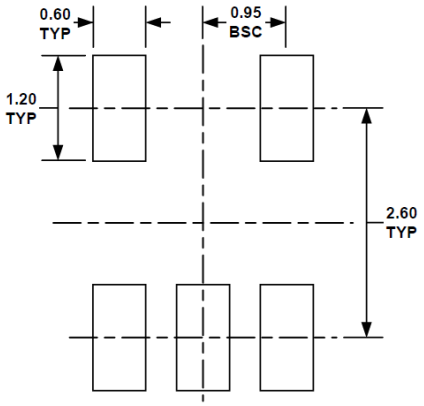


Figure 3. Typical Circuit Configuration

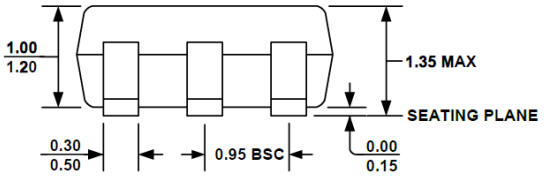
OUTLINE DIMENTIONS



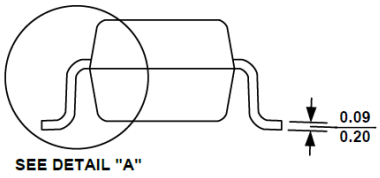
TOP VIEW



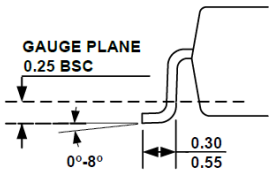
RECOMMENDED LAND PATTERN



FRONT VIEW



SIDE VIEW



DETAIL "A"

NOTE:

1) ALL DIMENSIONS ARE IN MILLIMETERS.
2) PACKAGE LENGTH DOES NOT INCLUDE MOLD FLASH, PROTRUSION OR GATE BURR.
3) PACKAGE WIDTH DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION.
4) LEAD COPLANARITY (BOTTOM OF LEADS AFTER FORMING) SHALL BE 0.10 MILLIMETERS MAX.
5) DRAWING CONFORMS TO JEDEC MO-178, VARIATION AA.
6) DRAWING IS NOT TO SCALE.

NOTES

1. Unpacked ICs, tube-mounted ICs, etc. must be stored in a drying cabinet, and the humidity in the drying cabinet < 20% R.H.
2. After access, the components are stored in an electrostatic packaging protective bag.
3. Anti-static damage: the device is an electrostatic sensitive device, and sufficient anti-static measures should be taken during transmission, assembly and testing.
4. The user should conduct a visual inspection before use, and the bottom, side and surrounding of the circuit can be welded only if it is bright. If oxidation occurs, the circuit can be processed by means of oxidation, and the circuit must be soldered within 12 hours after processing.