



300mA, Ultra-low Noise LDO Regulator

General Description

The LP3986 is designed for portable applications with demanding performance and space requirements. The LP3986 performance is optimized for battery-powered systems to deliver ultra low noise and low quiescent current. Regulator ground current increases only slightly in dropout, further prolonging the battery life. The LP3986 also works with low-ESR ceramic capacitors, reducing the amount of board space necessary for power applications, critical in hand-held wireless devices. The other features include ultra low dropout voltage, high output accuracy, current limiting protection, and high ripple rejection ratio. Available in the 3-lead of SOT-23 packages

Order Information

LP3986	□ □ □ □ □	F: Pb-Free
	□ □ □ □ □	Package Type
	B3: SOT23	
	□ □ □ □ □	Output Type
	12: 1.2V	
	15: 1.5V	
	18: 1.8V	
	25: 2.5V	
	28: 2.8V	
	30: 3.0V	
	33: 3.3V	
	36: 3.6V	
	50: 5.0V	

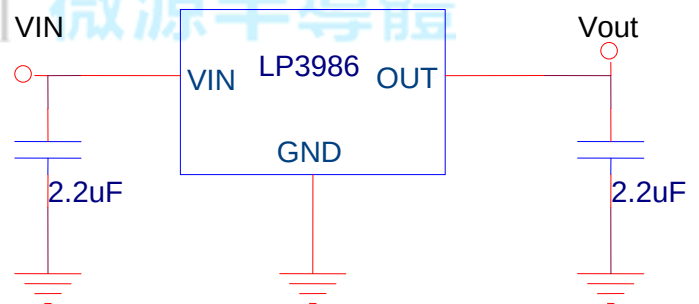
Features

- ◆ Ultra-Low-Noise for RF Application
- ◆ 2.5V- 6V Input Voltage Range
- ◆ Low Dropout : 220mV @ 300mA
- ◆ Ultra-Fast Response in Line/Load Transient
- ◆ Current Limiting and Thermal Shutdown Protection

Applications

- ✧ PMP/PDA/MP3 players
- ✧ Cellular and Mobile phone
- ✧ RF Module
- ✧ Sensor Module

Typical Application Circuit

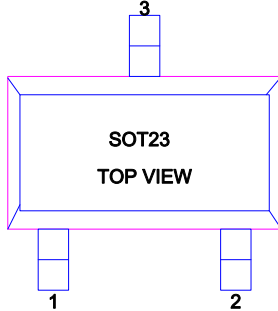


Marking Information

Device	Marking	Package	Shipping
LP3986B3F		SOT23-3	3K/REEL



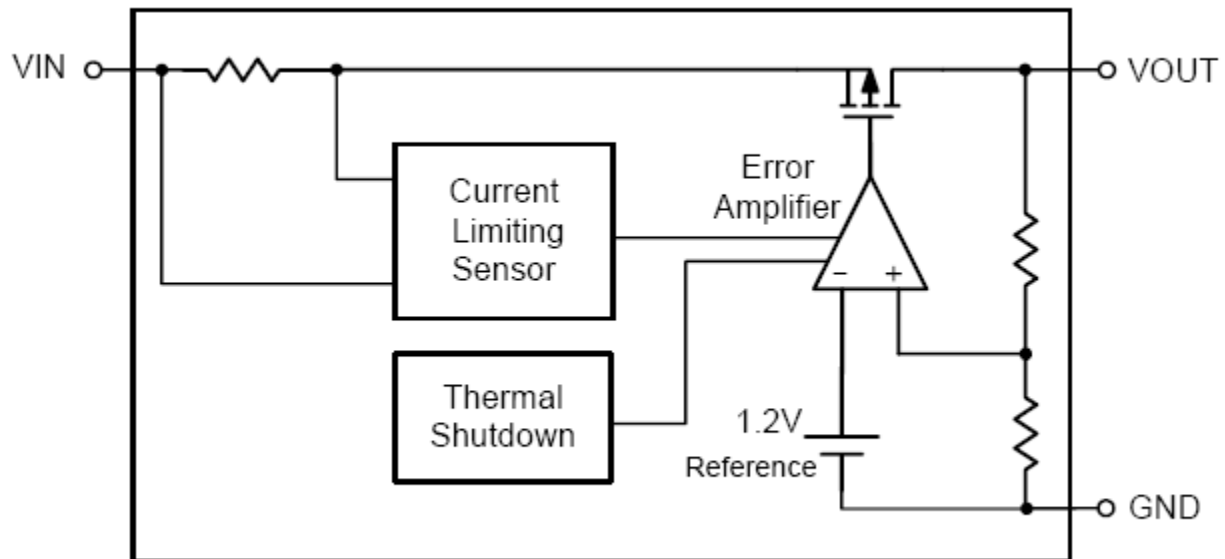
Functional Pin Description

Package Type	Pin Configurations
SOT23	

Pin Description

Pin	Name	Description
1	GND	Ground.
3	VIN	Power Input Pin.
2	OUT	Output Pin.

Function Diagram





Absolute Maximum Ratings

- ✧ Supply Input Voltage ----- 7V
Power Dissipation, PD @ TA = 25°C
- ✧ SOT-23-3 ----- 350mW
Package Thermal Resistance
- ✧ SOT-23-3, θ_{JA} ----- 350°C/W
- ✧ Lead Temperature (Soldering, 10 sec.) ----- 260°C
- ✧ Storage Temperature Range ----- -65°C to 165°C
ESD Susceptibility
- ✧ HBM (Human Body Mode) ----- 2kV
- ✧ MM(Machine-Mode) ----- 200V
Recommended Operating Conditions
- ✧ Supply Input Voltage ----- 2.5V to 6V
- ✧ Operation Junction Temperature Range ----- -40°C to 125°C
- ✧ Operation Ambient Temperature Range ----- -40°C to 85°C

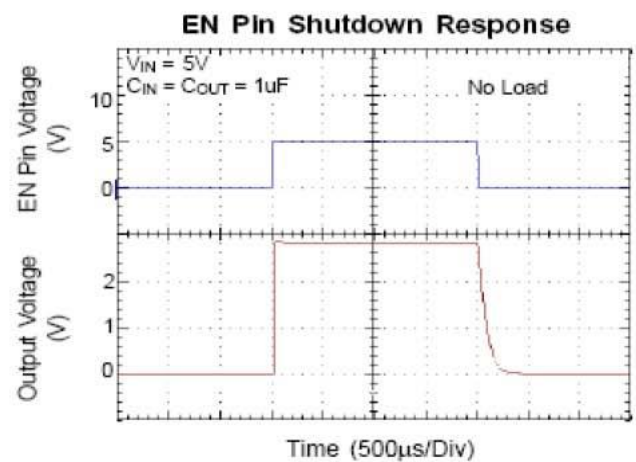
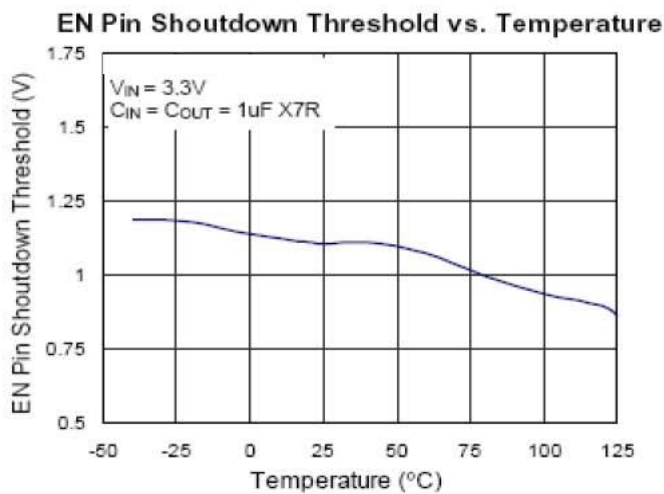
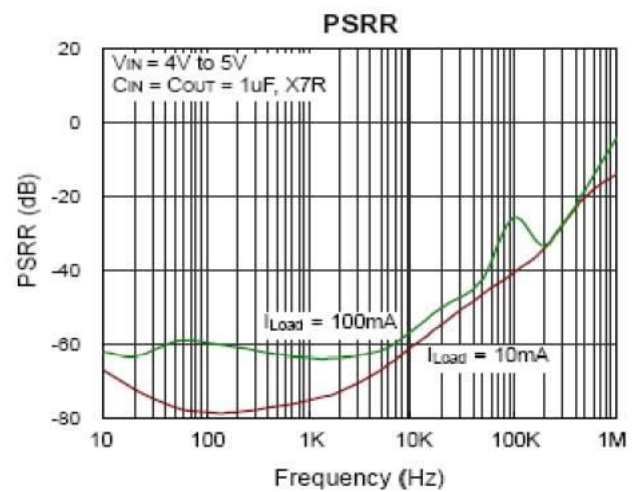
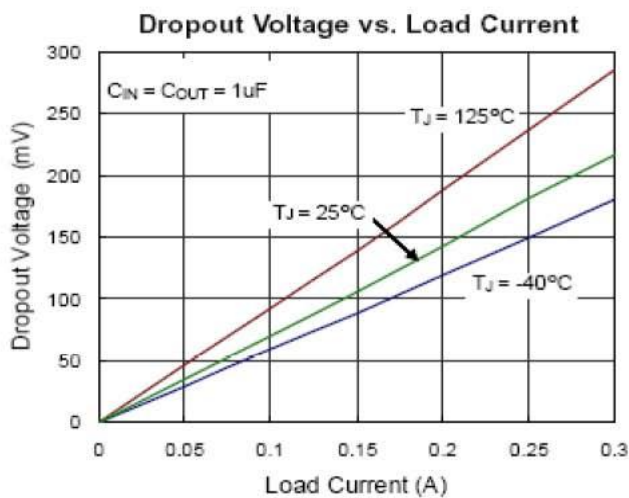
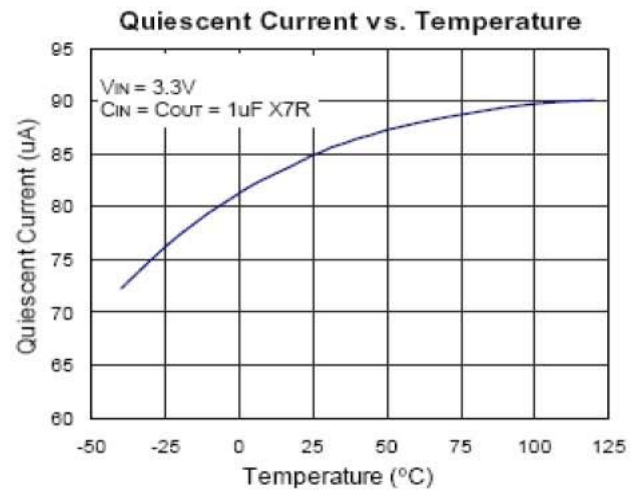
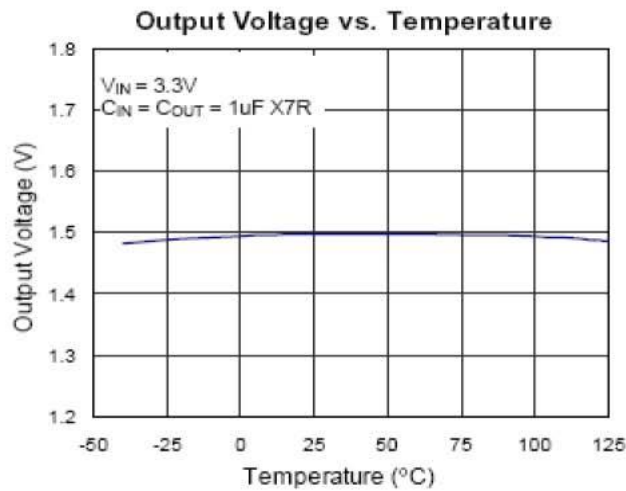
Electrical Characteristics

(LP3986-33B3F, VIN = VOUT + 1V, CIN = COUT = 2.2 μ F, TA = 25° C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ.	Max	Units
Output Voltage Accuracy	ΔV_{OUT}	IOUT = 1mA	-3	--	+3	%
Output Voltage	VOUT	IOUT = 1mA		3.33		V
Current Limit	ILIM	RLOAD = 1 Ω	350			mA
Quiescent Current	IQ	IOUT = 0mA, Vout=3.3V		75	130	μ A
Dropout Voltage	VDROP	IOUT = 300mA, VOUT > 2.8V		220	300	mV
Line Regulation	ΔV_{LINE}	VIN = (VOUT + 1V) to 5.5V, IOUT = 1mA			0.2	%
Load Regulation	ΔV_{LOAD}	1mA < IOUT < 300mA			2	%
Power Supply Rejection Reat	PSRR	Iout=100mA F=1KHz		-76		dB
		Iout=100mA F=10KHz		-65		dB
Thermal Shutdown Temperature	TSD			150		°C
Thermal Shutdown Hysteresis				20		°C

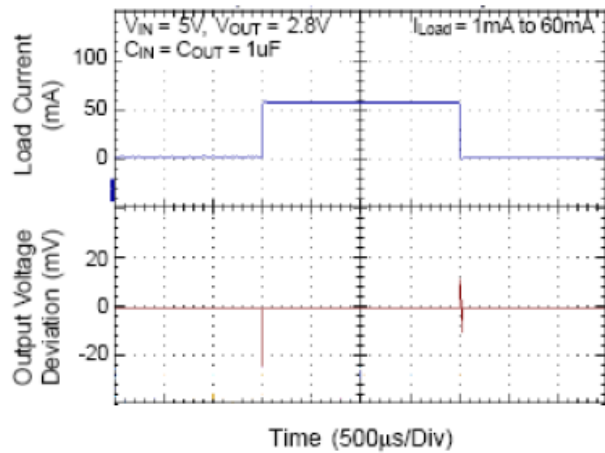


Typical Operating Characteristics

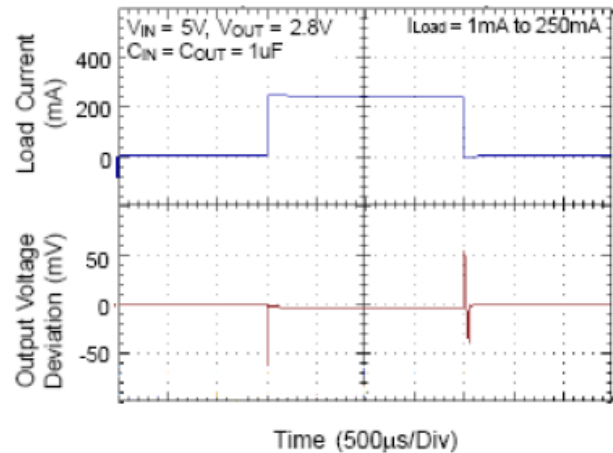




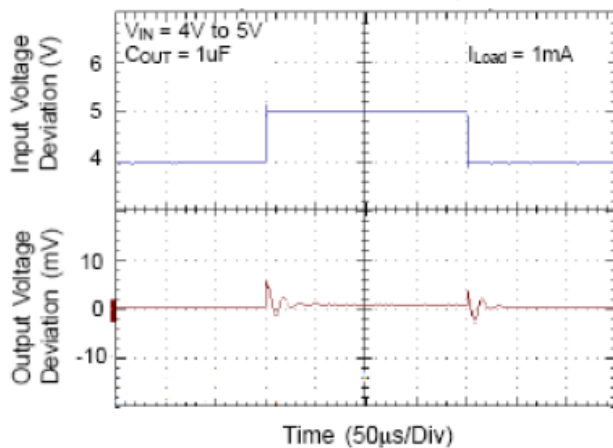
Load Transient Response



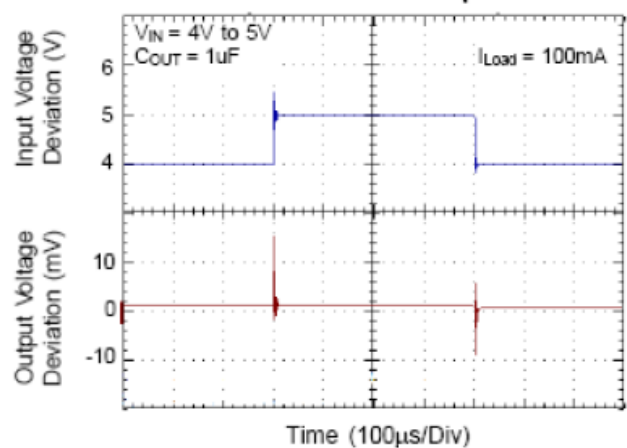
Load Transient Response



Line Transient Response



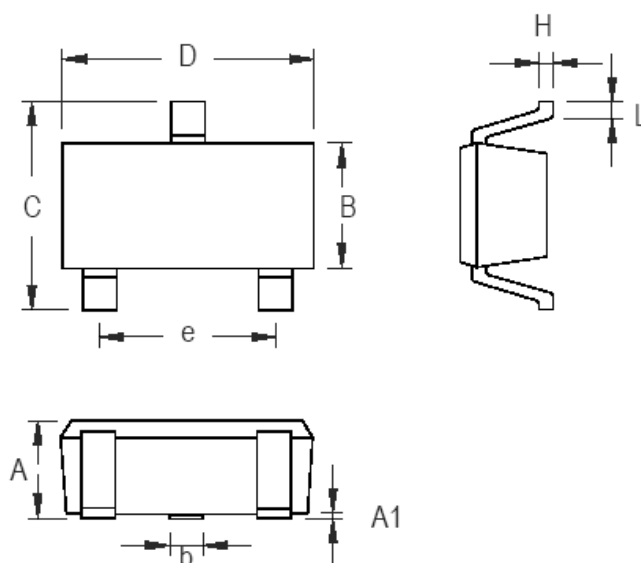
Line Transient Response





Packaging Information

SOT23-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.035	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.356	0.508	0.014	0.020
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	1.803	2.007	0.071	0.079
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024

SOT-23 Surface Mount Package