



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

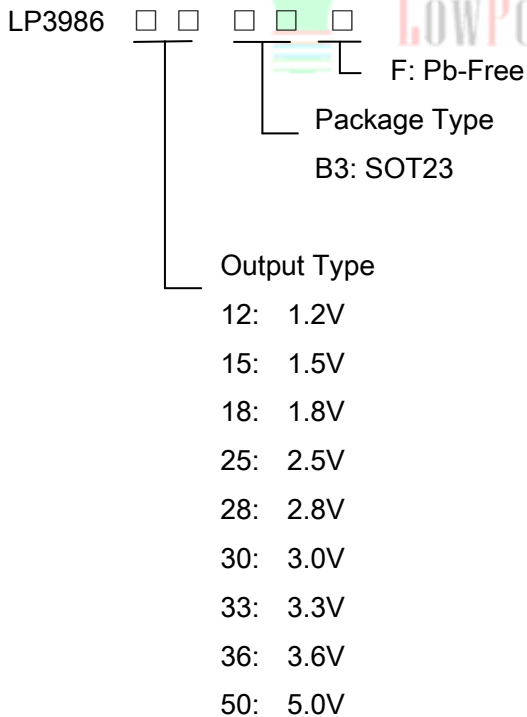
Features

- ◆ 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

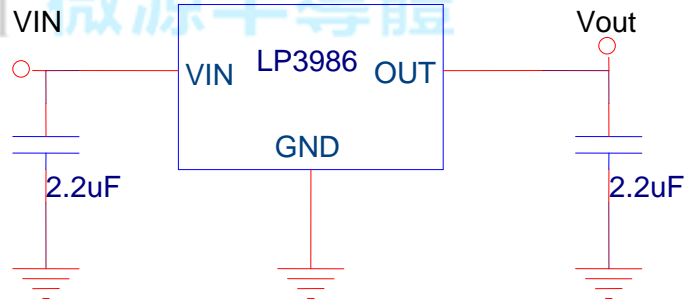
Applications

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

Order Information



Typical Application Circuit



Marking Information

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



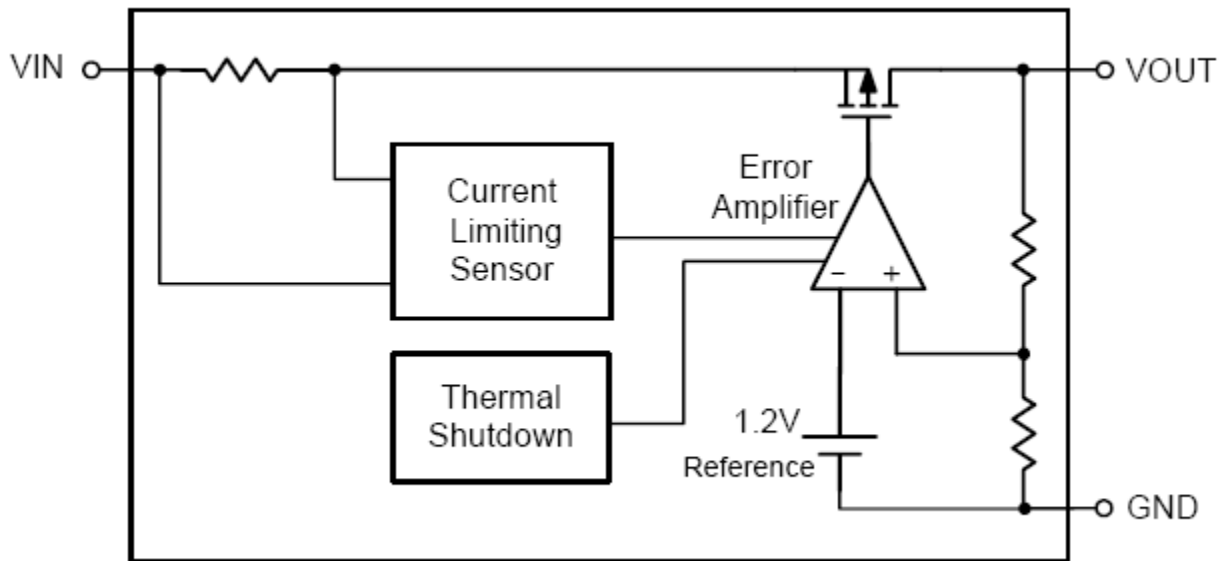
Functional Pin Description

| Package Type | Pin Configurations |
|--------------|---------------------------|
| SOT23 | <p>SOT23 TOP VIEW</p> |

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

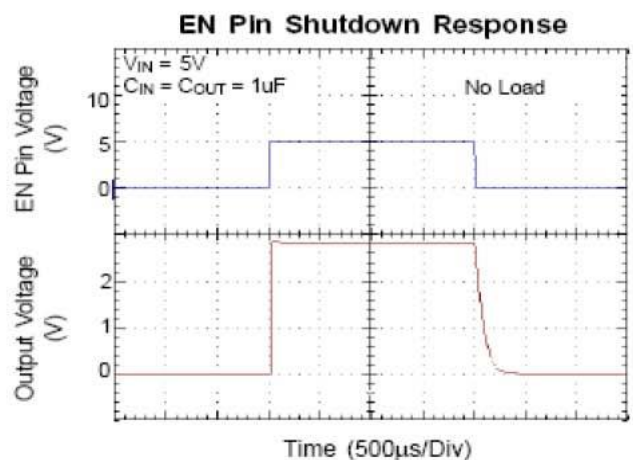
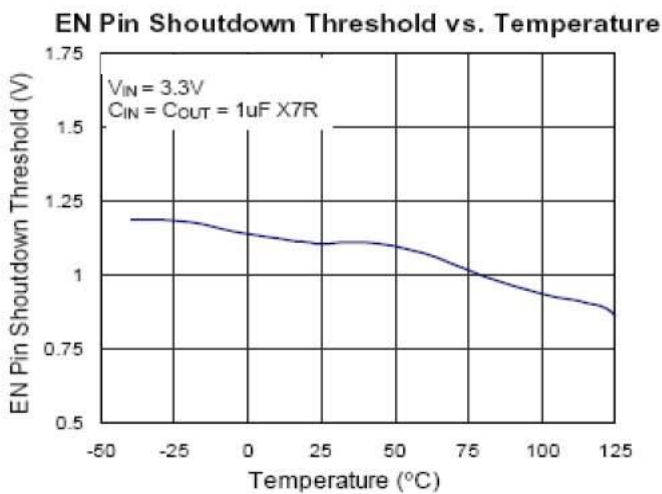
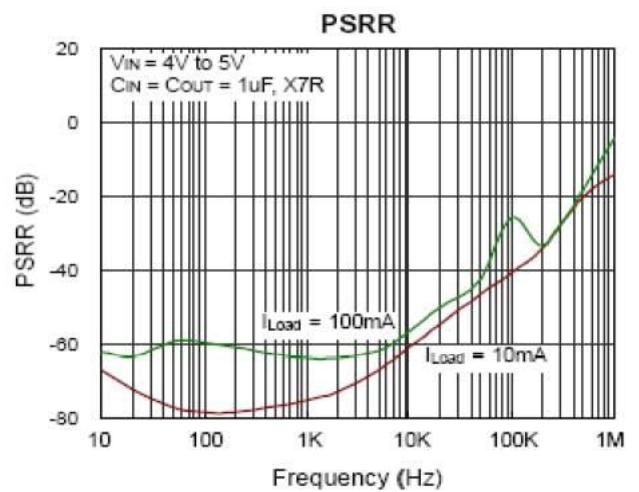
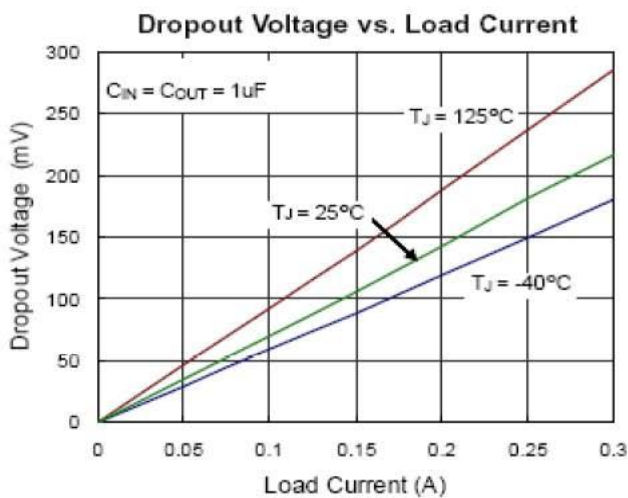
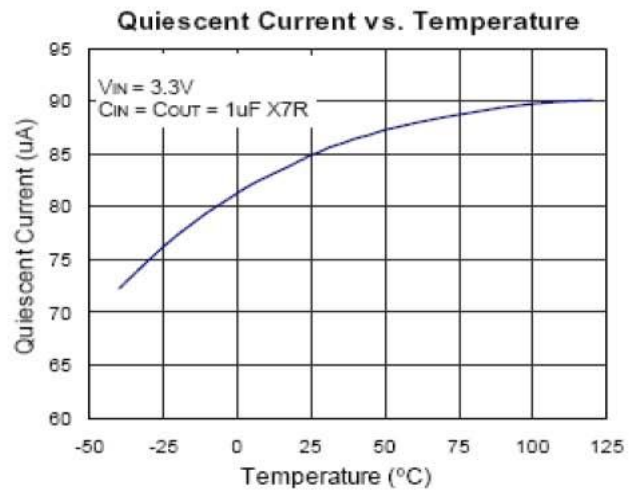
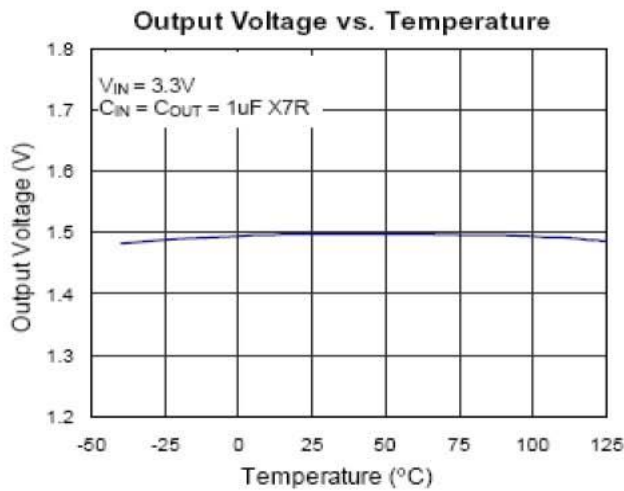
Electrical Characteristics

(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 |

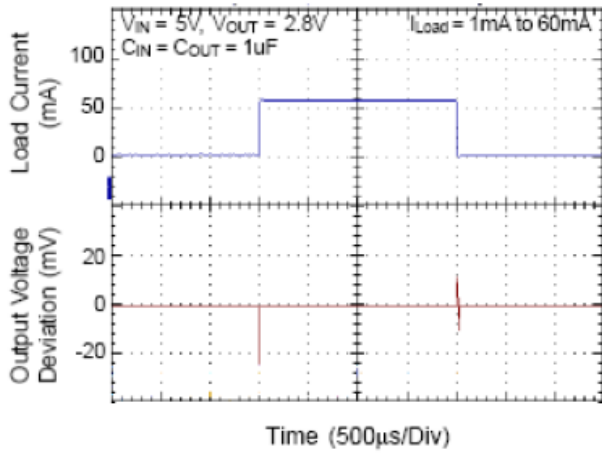


Typical Operating Characteristics

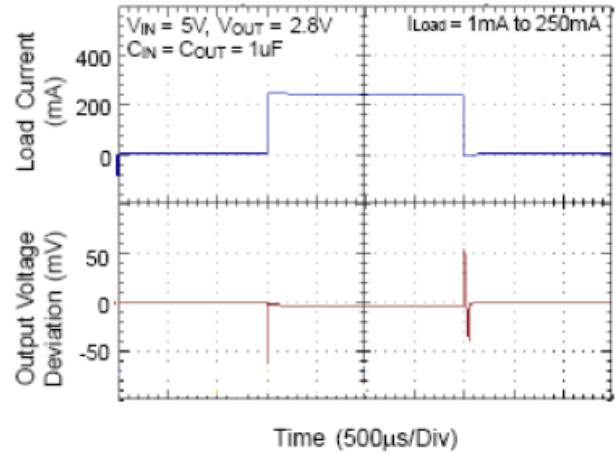




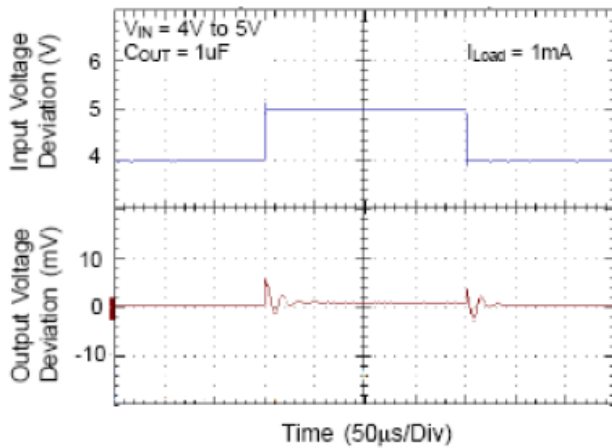
Load Transient Response



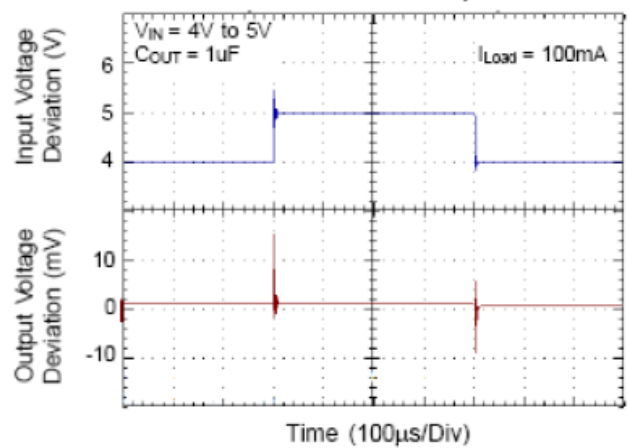
Load Transient Response



Line Transient Response



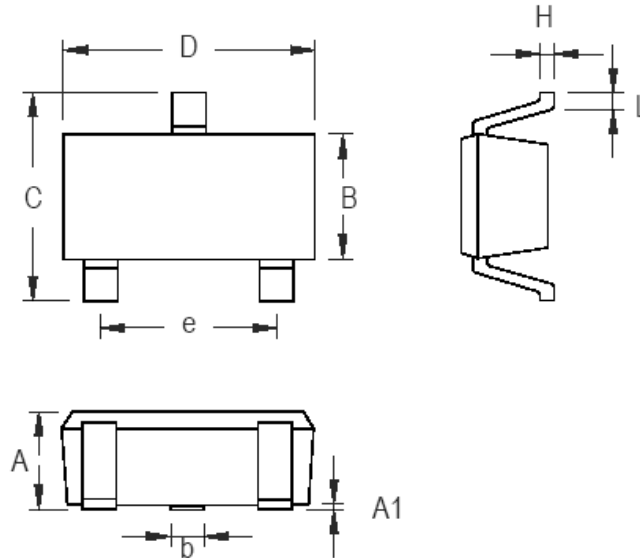
Line Transient Response





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

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