

GENERAL DESCRIPTION

LC1206 series are a group of positive voltage output, high precise, and high PSRR and low power consumption voltage regulator. Voltages are selectable in 100mV steps within a range of 1.2V to 3.6V. It also can be customized on command.

LC1206 series have excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within $\pm 2\%$.

LC1206 series are available in SOT-23-3, SOT-23-5, SOT-89-3 and TO-92 packages, which are lead (Pb)- free.

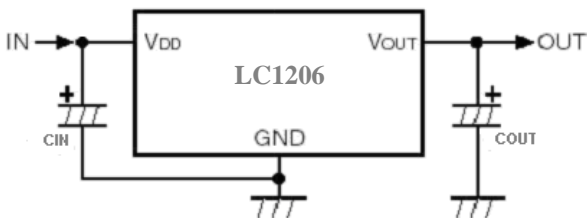
FEATURES

- Low Quiescent Current: 2uA at 5V
- 60dB PSRR at 100Hz
- Low Output Noise: 44uVRMS
- Low Dropout: 280mV at 150mA load
- Low Temperature Coefficient: $\pm 100\text{ppm}/^\circ\text{C}$
- Excellent Line Regulation: 0.05%/V
- Highly Accurate: $\pm 2\%$

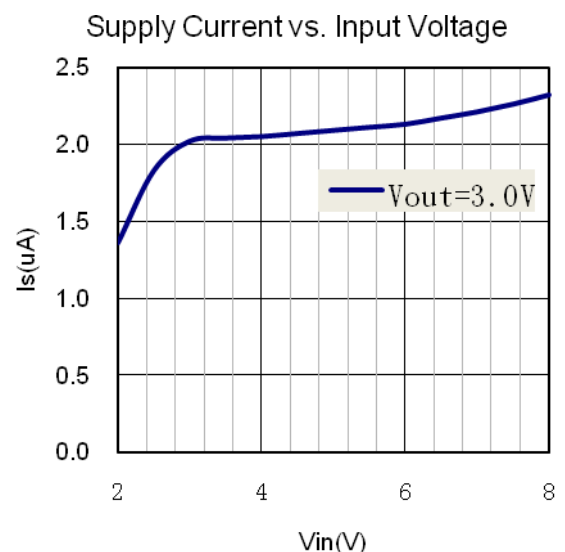
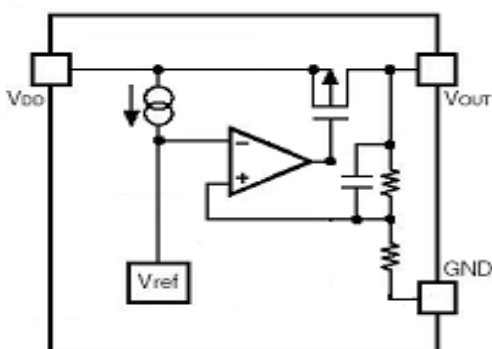
APPLICATIONS

- Reference Voltage Source
- Battery Powered Equipment
- Hand-Hold Equipment
- Wireless LAN
- GPS Receivers

TYPICAL APPLICATION



BLOCK DIAGRAM



MARKING INFORMATION (Note 1)

| | | |
|------------------------|--------------------|---|
| Product Classification | | LC1206CB3TR□□ |
| Marking | | <p>SOT-23-3</p> <p>1 GND 2 VOUT 3 VDD</p> |
| EXZZ | E: Product Code | |
| | X: Output Voltage | |
| ZZ: Date Code | | |
| Product Classification | | LC1206CB5TR□□ |
| Marking | | <p>SOT-23-5</p> <p>1 GND 2 VDD 3 VOUT 4 NC 5 NC</p> |
| EXZZ | E: Product Code | |
| | X: Output Voltage | |
| ZZ: Date Code | | |
| Product Classification | | LC1206CC3TR□□ |
| Marking | | <p>SOT-89-3</p> <p>1 GND 2 VDD 3 VOUT</p> |
| AFXX YYBZZ | AF: Product Code | |
| | XX: Output Voltage | |
| | YY: LOT NO. | |
| | B: FAB Code | |
| ZZ: Date Code | | |
| Product Classification | | LC1206CHBG□□ |
| Marking | | <p>TO-92</p> <p>1. GND 2. VDD 3. VOUT</p> |
| EXZZ | E: Product Code | |
| | X: Output Voltage | |
| ZZ: Date Code | | |
| GND | | Ground |
| VOUT | | Output Voltage |
| VDD | | Supply Voltage Input |

Note 1

E: Product Code

X: Output Voltage Code

| VOUT | Code | VOUT | Code | VOUT | Code |
|------|-----------|------|-----------|------|-----------|
| 1.2V | 2 | 2.1V | $\bar{1}$ | 3.0V | $\bar{0}$ |
| 1.3V | 3 | 2.2V | $\bar{2}$ | 3.1V | $\bar{1}$ |
| 1.4V | 4 | 2.3V | $\bar{3}$ | 3.2V | $\bar{2}$ |
| 1.5V | 5 | 2.4V | $\bar{4}$ | 3.3V | $\bar{3}$ |
| 1.6V | 6 | 2.5V | $\bar{5}$ | 3.4V | $\bar{4}$ |
| 1.7V | 7 | 2.6V | $\bar{6}$ | 3.5V | $\bar{5}$ |
| 1.8V | 8 | 2.7V | $\bar{7}$ | 3.6V | $\bar{6}$ |
| 1.9V | 9 | 2.8V | $\bar{8}$ | | |
| 2.0V | $\bar{0}$ | 2.9V | $\bar{9}$ | | |

XX: Output voltage:

e.g. 12=1.2V, 25=2.5V, 36=3.6V.

Z: The Year of manufacturing, "7" stands for year 2007, "8" stands for year 2008, and " $\bar{0}$ " stands for year 2010.

Z: The week of manufacturing. "A" stands for week 1, "Z" stands for week 26, " \bar{A} " stands for week 27, " \bar{Z} " stands for week 52.

ORDERING INFORMATION

LC1206 ①②③④

| Code | Description |
|------|---|
| ① | Temperature & Rohs: C: -40~85°C, Pb Free Rohs Std. |
| ② | Package type: B3: SOT-23-3 B5: SOT-23-5 C3: SOT-89-3 H: TO-92 |
| ③ | Packing type: TR:Tape&Reel (Standard) BG:Bag (TO-92) |
| ④ | Output voltage: e.g. 12=1.2V 25=2.5V 36=3.6V |

ABSOLUTE MAXIMUM RATING

| Parameter | Value |
|--|--------------------|
| Max Input Voltage | 10V |
| Operating Junction Temperature (T _J) | 125°C |
| Ambient Temperature (T _A) | -40°C~85°C |
| Power Dissipation | SOT-23-3, SOT-23-5 |
| | SOT-89-3, TO-92 |
| Storage Temperature (T _S) | -40°C~150°C |
| Lead Temperature & Time | 260°C, 10 Sec |

Note 2: Exceed these limits to damage to the device.

Note 3: Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED WORK CONDITIONS

| Parameter | Value |
|---------------------|------------|
| Input Voltage Range | Max. 8V |
| Ambient Temperature | -40°C~85°C |

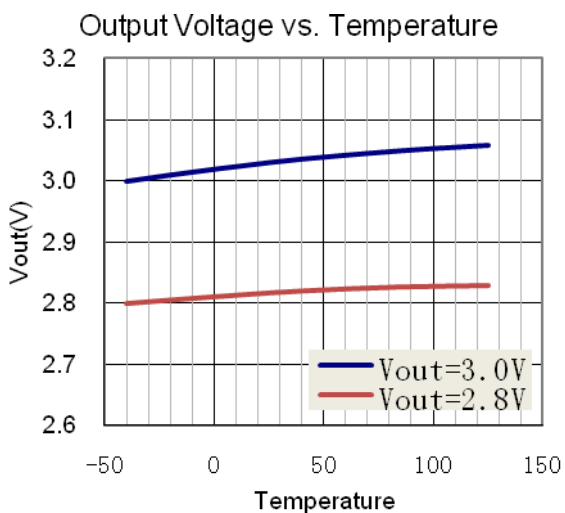
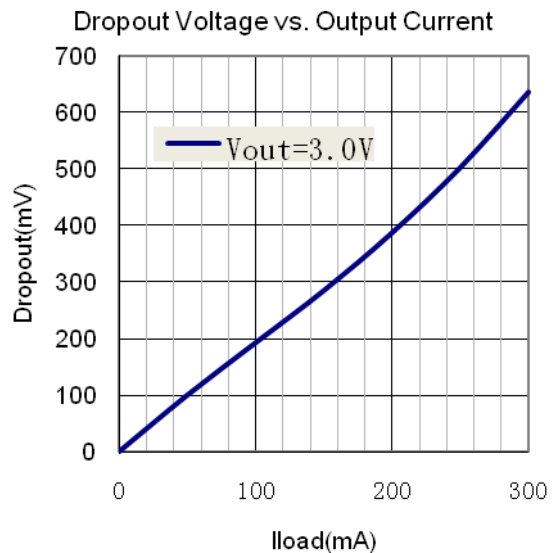
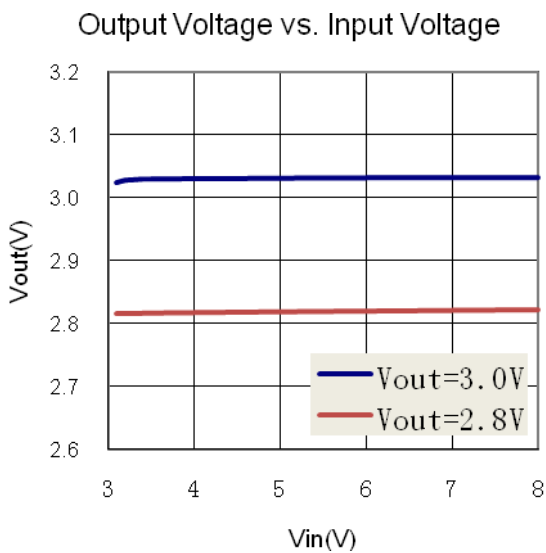
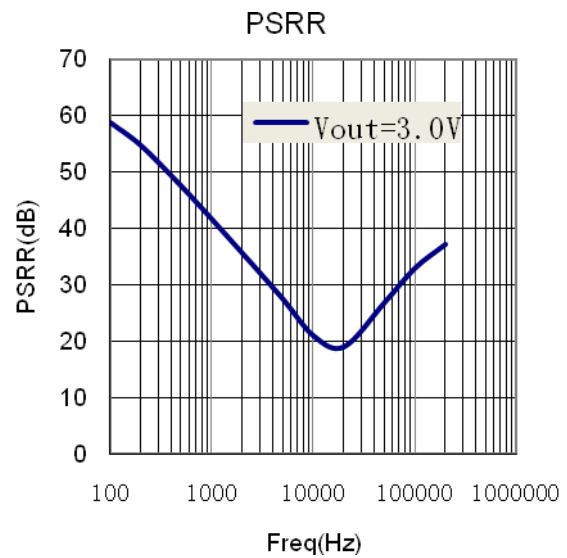
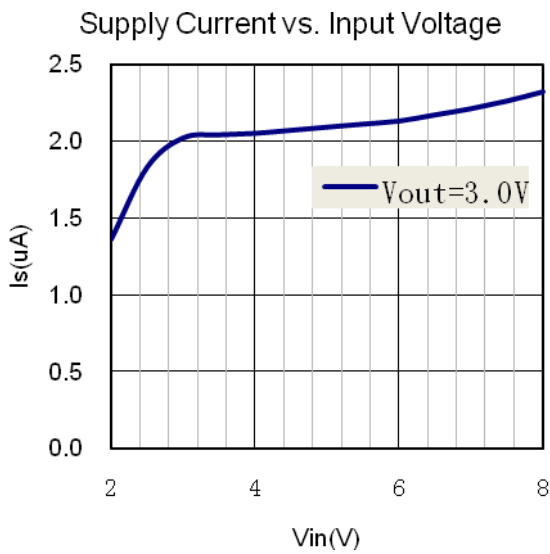
ELECTRICAL CHARACTERISTICS

Test Conditions: C_{IN}=1uF, C_{OUT}=1uF, T_A=25°C, unless otherwise specified.

| Symbol | Parameter | Conditions | Min | Typ | Max | Units | |
|--|--|---|--|----------------------------|------------------|----------------------------|---|
| V _{DD} | Input Voltage | | | | 8 | V | |
| V _{OUT} | Output Voltage | V _{OUT} > 1.5V | V _{DD} =Set V _{OUT} +1V 1mA ≤ I _{OUT} ≤ 10mA | V _{OUT} X0.98 | V _{OUT} | V _{OUT} X1.02 | V |
| | | V _{OUT} ≤ 1.5V | | V _{OUT} - 0.03 | V _{OUT} | V _{OUT} + 0.03 | V |
| I _{OUT} (Max.) (Note 4) | Maximum Output Current | V _{DD} -V _{OUT} =1V | 300 | | | mA | |
| V _{DROP} | Dropout Voltage | I _{OUT} =150mA V _{OUT} =3.0V | | 280 | | mV | |
| $\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$ | Line Regulation | I _{OUT} =10mA 4V ≤ V _{DD} ≤ 6V | | 0.05 | 0.2 | %/V | |
| ΔV _{out} | Load Regulation | V _{DD} =Set V _{OUT} +1V 1mA ≤ I _{OUT} ≤ 300mA | | 150 | | mV | |
| I _S | Supply Current | V _{DD} =Set V _{OUT} +1V V _{OUT} Floating | | 2 | 3 | uA | |
| $\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$ | Output Voltage Temperature Coefficient | I _{OUT} =10mA | | ± 100 | | ppm/°C | |
| PSRR | Ripple Rejection | f=100Hz, Ripple=0.5Vp-p, V _{DD} =Set V _{OUT} +1V | | 60 | | dB | |
| en | Output Noise | BW=10Hz~100KHz | | 44 | | uVrms | |

Note 4: The maximum power rating of each package is a constant, so along with the change of I_{LOAD}, the V_{DD}-V_{OUT} should be controlled to a certain range to ensure the normal operation.

TYPICAL PERFORMANCE CHARACTERISTICS

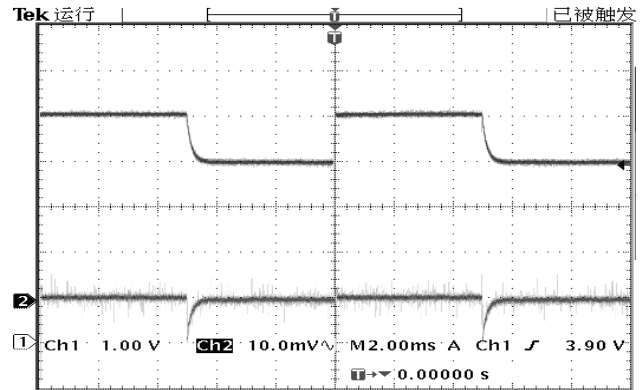
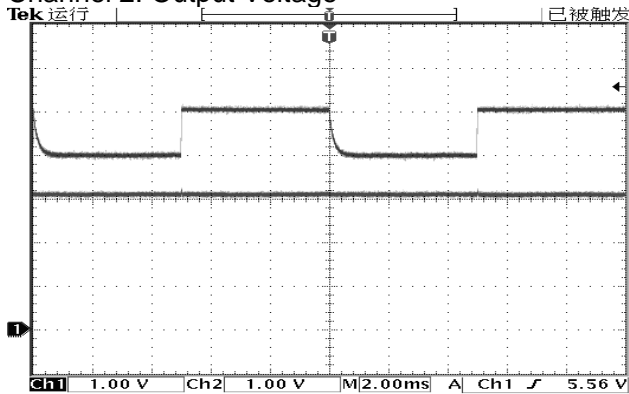


TEST WAVEFORMS

Line Transient Response ($C_{IN}=C_{OUT}=1\mu F$, $V_{IN}=4\leftrightarrow 5V$, $V_{OUT}=3V$)

Channel 1: Input Voltage

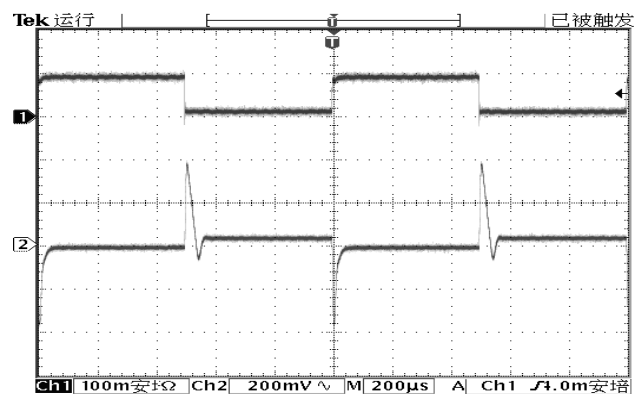
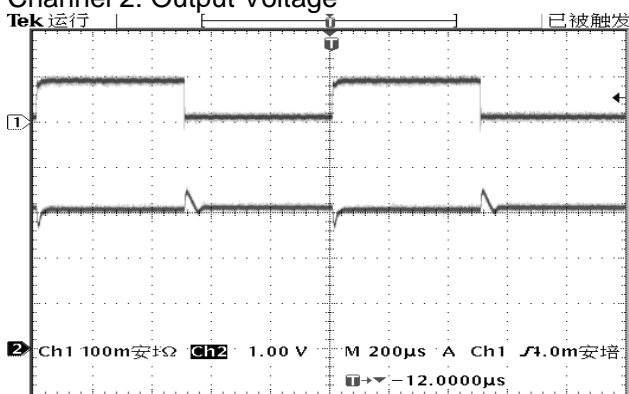
Channel 2: Output Voltage



Load Transient Response ($C_{IN}=C_{OUT}=1\mu F$, $I_{OUT}=1\leftrightarrow 100mA$, $V_{OUT}=3V$)

Channel 1: Output Current

Channel 2: Output Voltage



PACKAGE LINE

| Package | SOT23-3 | Devices per reel | 3000Pcs | Unit | mm |
|---|---------|------------------|---------|------|----|
| Package dimension: | | | | | |
| <p>Technical drawing of the SOT23-3 package. It includes three views: a top view, a side view, and a cross-sectional view. The top view shows a rectangular body with a width of 1.900 ± 0.05 mm and a total length of 2.400 ± 0.05 mm. The distance between the two leads is 1.300 ± 0.05 mm. The lead length is 0.550 ± 0.05 mm. The lead width is 0.400 ± 0.03 mm. The lead thickness is 0.080 ± 0.02 mm. The lead angle is 2°. The package has four corners with a maximum radius of $4 \times R0.1$ MAX. The side view shows a total length of 2.900 ± 0.05 mm and a height of 1.000 ± 0.05 mm. The cross-sectional view shows a lead height of 0.2 mm (minimum), a lead width of 0.100 ± 0.05 mm, and a lead thickness of 0.080 ± 0.02 mm. The package has a maximum radius of $4 \times R0.1$ MAX. The lead angle is 2°. The package has a maximum radius of $R0.08$ at the lead base.</p> | | | | | |

| Package | SOT-23-5 | Devices per reel | 3000Pcs | Unit | mm |
|---|----------|------------------|---------|------|----|
| Package Dimension: | | | | | |
| <p>Technical drawing of the SOT-23-5 package. It includes three views: a top view, a side view, and a perspective view. The top view shows a rectangular body with a total length of 2.9 ± 0.2 mm and a width of 1.9 ± 0.2 mm. The distance between the two leads is 1.6 ± 0.1 mm. The lead length is 0.4 ± 0.1 mm. The lead width is 0.8 ± 0.1 mm. The lead thickness is 0.15 ± 0.05 mm. The lead angle is 0 to 0.1 degrees. The package has a maximum radius of 0.2 mm. The side view shows a total length of 1.1 ± 0.2 mm and a height of 0.8 ± 0.1 mm. The perspective view shows the package from an isometric perspective.</p> | | | | | |

PACKAGE LINE(Continued)

| Package | SOT-89-3 | Devices per reel | 1000Pcs | Unit | mm |
|---|----------|------------------|---------|------|----|
| Package Dimension: | | | | | |
| <p>Technical drawing of the SOT-89-3 package. The top view shows a width of 4.5 ± 0.1 mm and a central hole diameter of $\varnothing 1.0$ mm. The distance from the center to the first lead is 1.6 ± 0.2 mm. The lead height is 0.4 mm. The package height is 2.5 ± 0.1 mm, with a maximum height of 4.25 mm. The lead pitch is 1.5 ± 0.1 mm. The lead width is 0.8 mm (MIN). The side view shows a lead height of 0.4 ± 0.1 mm. The bottom view shows a lead width of 0.42 ± 0.2 mm and a lead pitch of 1.5 ± 0.1 mm. The distance between the center of the hole and the center of the leads is 0.47 ± 0.1 mm.</p> | | | | | |

| Package | TO-92 | Devices per Bag | 1000Pcs | Unit | mm |
|---|-------|-----------------|---------|------|----|
| Package Dimension: | | | | | |
| <p>Technical drawing of the TO-92 package. The side view shows a diameter of $\varnothing 4.5 \pm 0.1$ mm and a height of 4.95 ± 0.35 mm. The lead height is 0.46 mm. The lead pitch is 1.5 mm. The lead width is 0.5 mm. The distance from the center of the hole to the center of the leads is 14.3 ± 0.1 mm. The lead width is 0.38 mm. The top view shows a diameter of $\varnothing 1.5 \times 0.2$ mm and a lead pitch of 2.54 mm. The lead height is 0.38 mm. The distance from the center of the hole to the center of the leads is 1.25 ± 0.1 mm.</p> | | | | | |