

LC1206

300mA Low Consumption Linear Regulator

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 packages, which are lead (Pb)-free.

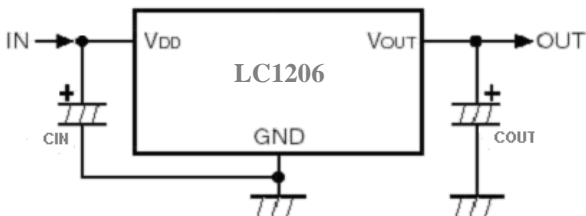
FEATURES

- 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: $\pm 2\%$

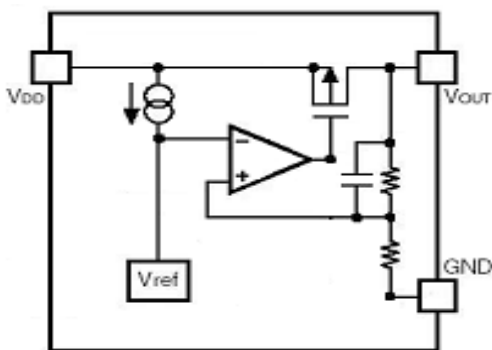
APPLICATIONS

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

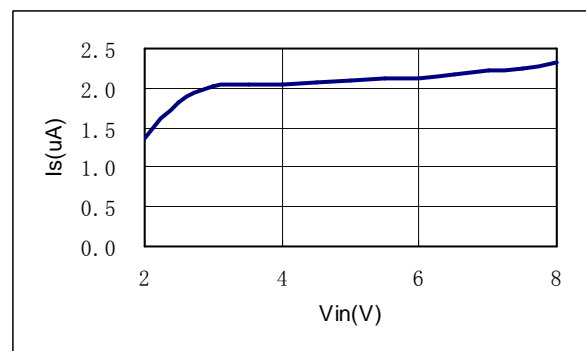
TYPICAL APPLICATION



BLOCK DIAGRAM



Supply Current vs. Input Voltage

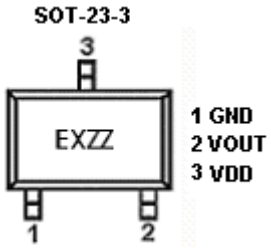
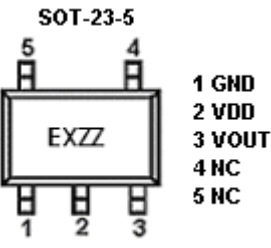


ORDERING INFORMATION

LC1206 [1](#) [2](#) [3](#) [4](#)

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

MARKING DESCRIPTION

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 (NOTE 3)		 <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	
GND	Ground	
VOUT	Output Voltage	
VDD	Supply Voltage Input	
NC	Not Connected	

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	$\bar{9}$		

NOTE 3:

E: Product Code; X: Output Voltage;

Z: The Year of manufacturing, "8" stands for year 2008, "9" stands for year 2009;

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.

ABSOLUTE MAXIMUM RATING

Parameter	Value
Max Input Voltage	8V
Operating Junction Temperature (T _J)	125°C
Ambient Temperature (T _A)	-40°C~85°C
Power Dissipation	250mW
Storage Temperature (T _S)	-40°C~150°C
Lead Temperature & Time	260°C, 10 Sec

Note 4: Exceed these limits to damage to the device.

Note 5: Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED WORK CONDITIONS

Parameter	Value
Input Voltage Range	Max. 6V
Ambient Temperature	-40°C~85°C

ELECTRICAL CHARACTERISTICS

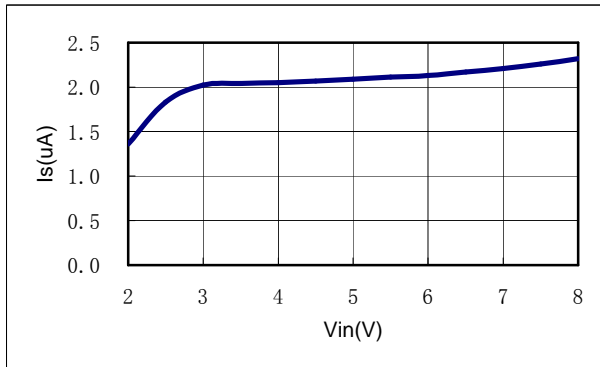
Test Conditions: C_{IN}=1uF, C_{OUT}=1uF, T_A=25°C, unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{DD}	Input Voltage				6	V
V _{OUT}	Output Voltage	V _{DD} =Set V _{OUT} +1V 1mA≤I _{OUT} ≤10mA	V _{OUT} X0.98	V _{OUT}	V _{OUT} X1.02	V
I _{OUT} (Max.) Note 6	Maximum Output Current	V _{DD} -V _{OUT} =1V	300			mA
V _{DROP}	Dropout Voltage	I _{OUT} =150mA		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		450		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

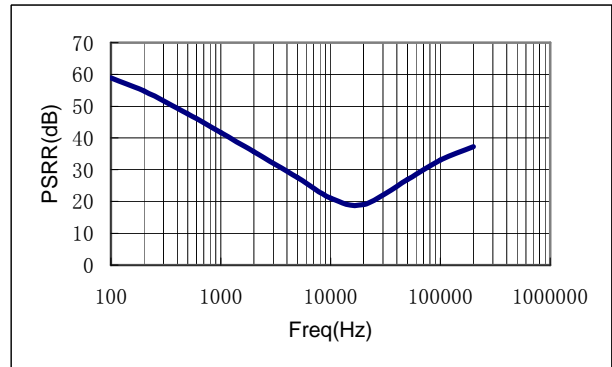
Note 6: The maximum power rating of each package is a constant, so along with the change of I_{LOAD}, the V_{DD}-V_{OUT} should be controlled to a certain range to ensure the normal operation.

TYPICAL PERFORMANCE CHARACTERISTICS

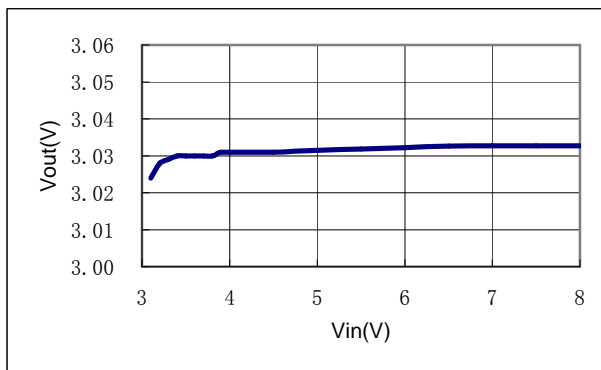
Supply Current vs. Input Voltage



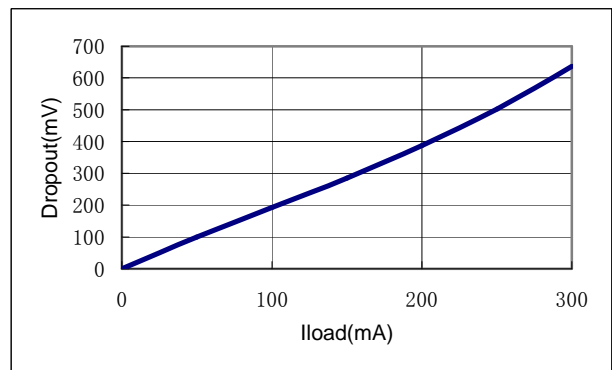
Ripple Rejection vs. Frequency



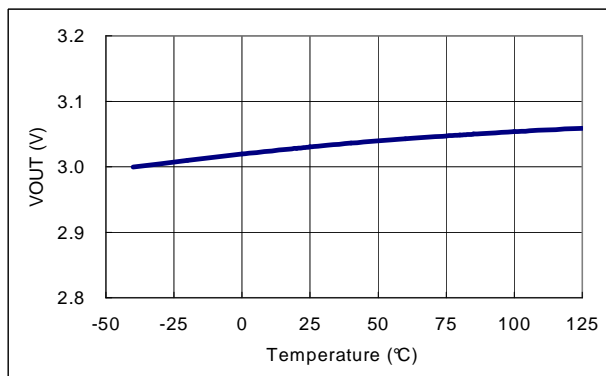
Output Voltage vs. Input Voltage



Dropout Voltage vs. Output Current



Output Voltage vs. Temperature

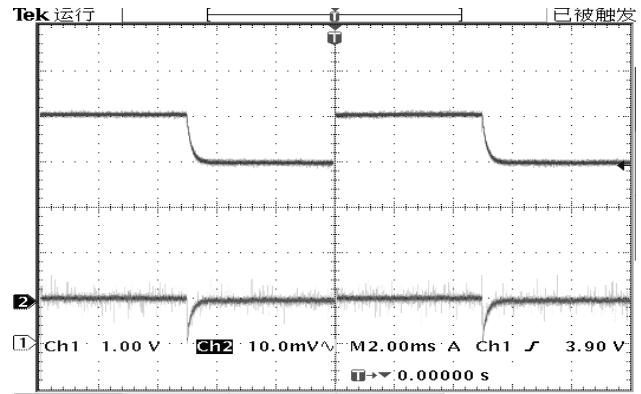
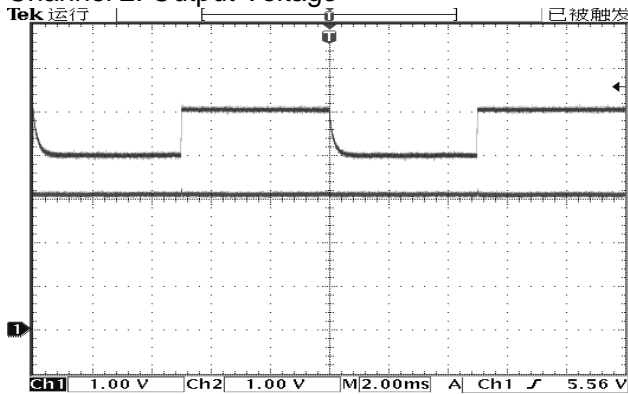


TEST WAVEFORMS

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

Channel 1: Input Voltage

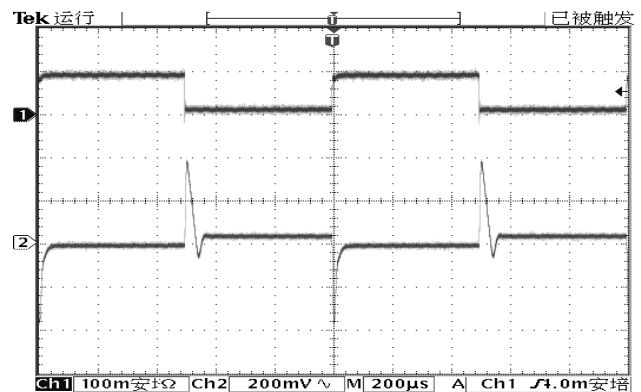
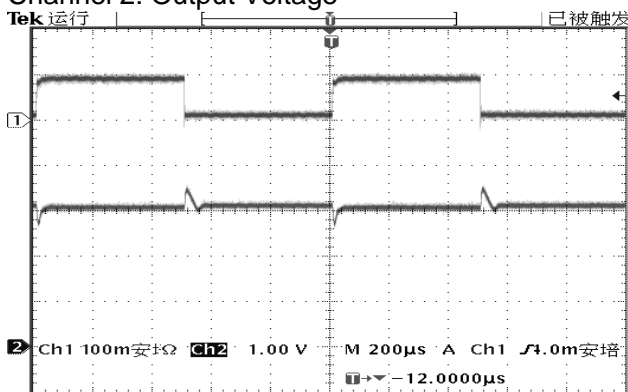
Channel 2: Output Voltage



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 $0.100^{+0.05}_{-0.01}$ mm. The lead height is 0.080 ± 0.02 mm. The lead tip radius is $4 \times R0.1$ MAX. The side view shows a total length of 2.900 ± 0.05 mm and a lead length of $1.000^{+0}_{-0.05}$ mm. The lead thickness is $0.400^{+0}_{-0.05}$ mm. The lead tip radius is $4 \times R0.1$ MAX. The cross-sectional view shows a lead height of 0.2 mm, a lead tip radius of $R0.08$, and a lead thickness of $0.100^{+0.05}_{-0.01}$ mm. The lead tip radius is $4 \times R0.1$ MAX.</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 width of 1.9 ± 0.2 mm and a total length of 2.9 ± 0.2 mm. The distance between the two leads is $1.6^{+0.2}_{-0.1}$ mm. The lead length is 0.4 ± 0.1 mm. The lead width is 0.8 ± 0.1 mm. The lead height is $1.1^{+0.2}_{-0.1}$ mm. The lead tip radius is 0 to 0.1 mm. The lead thickness is $0.15^{+0.1}_{-0.05}$ mm. The lead tip radius is 0.2 MIN. The side view shows a total length of 2.8 ± 0.3 mm and a lead length of $1.6^{+0.2}_{-0.1}$ mm. The lead thickness is 0.4 ± 0.1 mm. The lead tip radius is 0 to 0.1 mm. The perspective view shows the package from an isometric perspective.</p>					