



Features

- Input voltage: 1.5V~6.5V
- Output range: 1.2V~5.0V
- Maximum output current: 400mA @ VOUT=3.3V
- PSRR: 60dB @1KHz
- Dropout voltage: 180mV @ IOU=100mA
- Quiescent current: 0.5µA Typ.
- Shut-down current: <1µA
- Recommend capacitor: 1µF
- Built-in Short-Circuit Protection, Current Limiter

Applications

- Radio control systems
- Cellphones, radiophone, digital cameras
- Bluetooth, wireless handsets
- Others portable consumer equipments

General Description

The XC6206-1.2V is a high accuracy, low noise, high speed CMOS Linear regulator with low power consumption and low dropout voltage, which provide large output currents even when the difference of the input-output voltage is small. The devices offer a new level of cost effective performance in cellular phones, laptop and notebook computers, and other portable

devices.

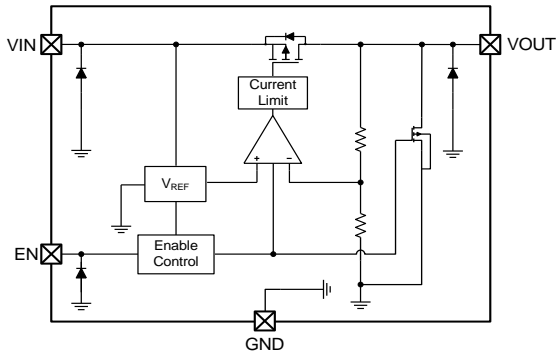
The current limiter's fold-back circuit also operates as a short circuit protection and an output current limiter at the output pin.

The XC6206-1.2V regulators are available in standard SOT23-3L packages. Standard products are Pb-free and Halogen-free.

Selection Table

Part No.	Package	Temperature	Tape & Reel
XC6206-1.2V	SOT23-3L	-40 ~ +125°C	3000/REEL

Block Diagram



Pin Assignment

SOT23-3L (Top View)

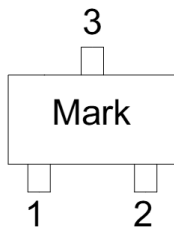


Table1: XC6206-1.2V (SOT23-3L PKG)

PIN NO.	PIN NAME	FUNCTION
1	GND	GND pin
2	VOUT	Output voltage pin
3	VIN	Input voltage pin



Absolute Maximum Ratings

Input Voltage.....-0.3V to 8V Storage Temperature-55°C to 150°C
 Output Current.....450mA Package Lead Soldering Temperature.....260°C
 Operating Temperature-40°C to 125°C

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Thermal Information

Symbol	Parameter	Package	Max.	Unit
θ_{JA}	Thermal Resistance (Junction to Ambient) (Assume no ambient airflow, no heat sink)	SOT23-3	260	
P_D	Power Dissipation	SOT23-3	0.40	W

Note: P_D is measured at $T_a = 25^\circ\text{C}$

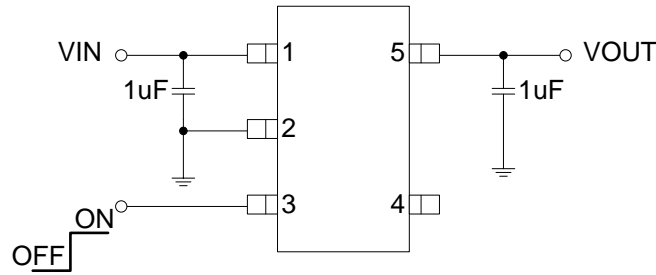
Electrical Characteristics

The following specifications apply for $V_{OUT}=3.3V, T_A=25^\circ\text{C}$, unless specified otherwise

SYMBOL	ITEMS	CONDITIONS	MIN	TYP	MAX	UNIT
V_{IN}	Input Voltage		1.5	--	6.5	V
V_{OUT}	Output Range	$V_{OUT} \leq 2.5V, I_{OUT}=1mA$	$V_{OUT}-50$	V_{OUT}	$V_{OUT}+50$	mV
		$2.5V \leq V_{OUT} \leq 5V, I_{OUT}=1mA$	-2	V_{OUT}	2	%
I_Q	Quiescent Current	$V_{OUT}=3.3V, I_{OUT}=0$	--	0.5	--	μA
I_{LIMIT}	Current Limit	$V_{IN}=V_{EN}=4.5V$	--	400	--	mA
V_{DROP}	Dropout Voltage	$V_{OUT}=3.3V, I_{OUT}=100mA$	--	180	--	mV
		$V_{OUT}=3.3V, I_{OUT}=200mA$	--	400	--	
ΔV_{LINE}	Line Regulation	$V_{IN}=2.7\sim 5.5V, I_{OUT}=1mA$	--	0.01	0.15	%/V
ΔV_{LOAD}	Load Regulation	$V_{OUT}=3.3V, I_{OUT}=1\sim 300mA$	--	40	--	mV
I_{SHORT}	Short Current	$V_{EN}=V_{IN}, V_{OUT}$ Short to GND with 1Ω	--	35	--	mA
I_{SHDN}	Shut-down Current	$V_{EN}=0V$	--	--	1	μA
PSRR	Power Supply Rejection Rate	$V_{IN}=5V_{DC}+0.5V_{P-P}$ $F=1KHz, I_{OUT}=10mA$		60		dB
V_{ENH}	EN logic high voltage	$V_{IN}=5.5V, I_{OUT}=1mA$	1.2	--	V_{IN}	V
V_{ENL}	EN logic low voltage	$V_{IN}=5.5V, V_{OUT}=0V$	--	--	0.4	V
I_{EN}	EN Input Current	$V_{EN}=0$ to 5.5V	--	--	1	μA



Application Circuits

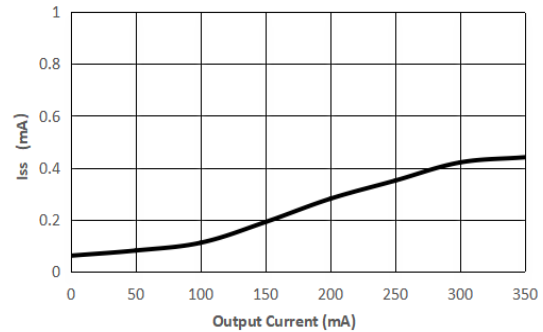
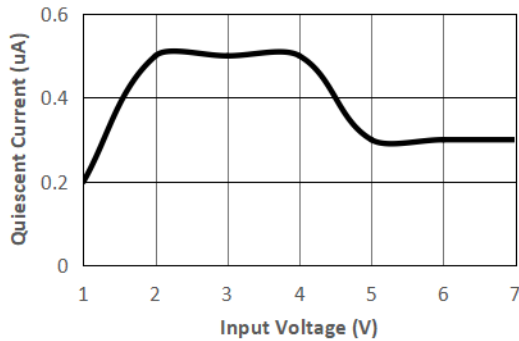


Typical Performance Characteristics

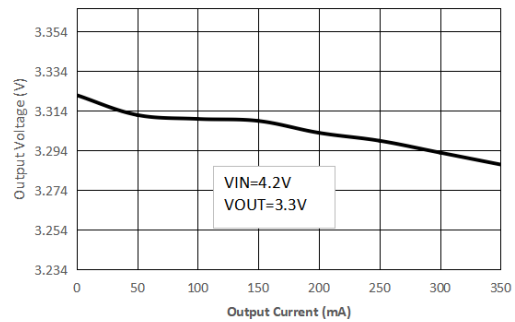
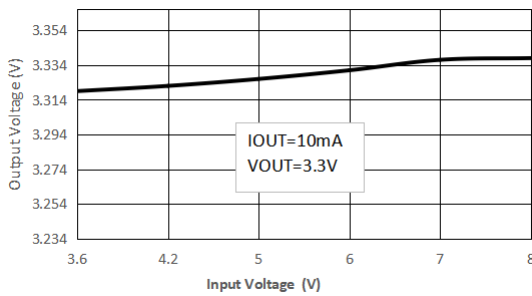
$C_{IN}=1\mu F$, $C_{OUT}=1\mu F$, $V_{IN}=4.5V$, $V_{OUT}=3.3V$, SOT23-5, $T_A=25^\circ C$

(Unless specified otherwise. Package: SOT23-5L)

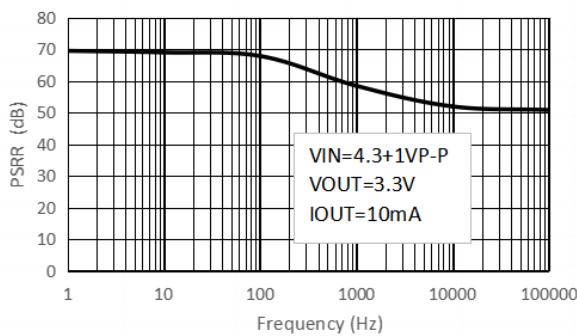
(1) Quiescent current vs Input voltage



(2) Output Voltage vs Input voltage

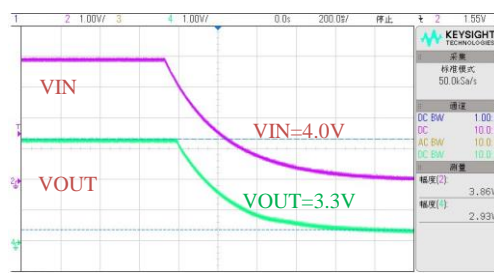
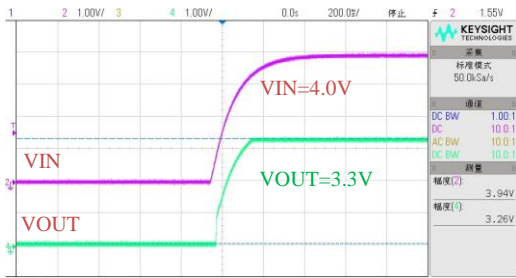


(3) PSRR vs Frequency

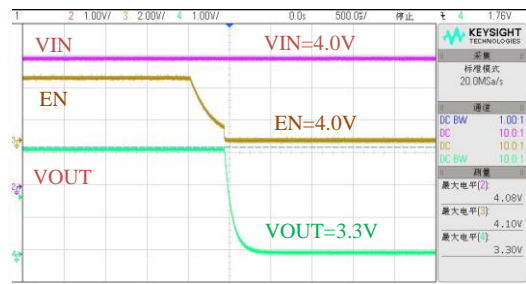
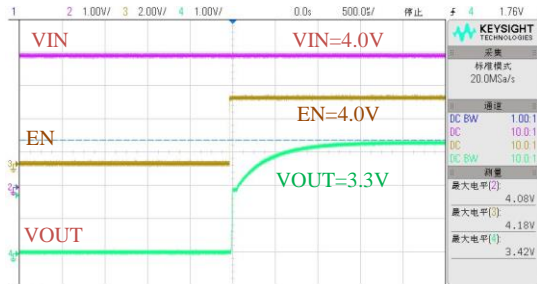




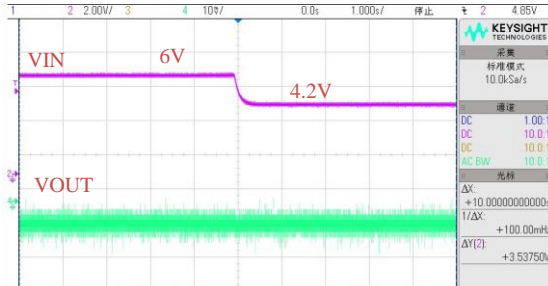
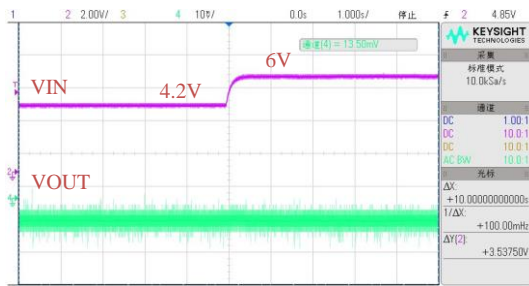
Power ON / OFF



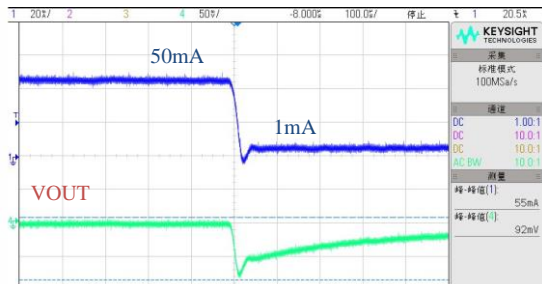
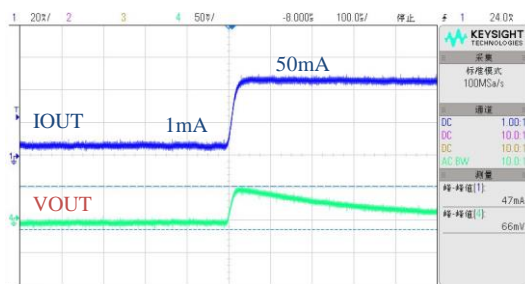
EN ON/OFF



Line Transient



Load Transient





Application Information

In general, all the capacitors need to be low leakage. Any leakage the capacitors have will reduce efficiency, increase the quiescent current.

A recent trend in the design of portable devices has been to use ceramic capacitors to filter DC-DC converter inputs. Ceramic capacitors are often chosen because of their small size, low equivalent series resistance (ESR) and high RMS current capability. Also, recently, designers have been looking to ceramic capacitors due to shortages of tantalum capacitors.

Unfortunately, using ceramic capacitors for input filtering can cause problems. Applying a voltage step to a ceramic capacitor causes a large current surge that stores energy in the inductance of the power leads. A large voltage spike is created when the stored energy is

transferred from these inductance into the ceramic capacitor. These voltage spikes can easily be twice the amplitude of the input voltage step.

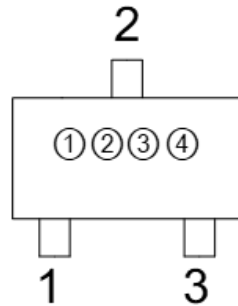
Many types of capacitors can be used for input by-pass, however, caution must be exercised when using multi layer ceramic capacitors (MLCC). Because of the self-resonant frequency generated under some start-up conditions, such as connecting the LDO input to a live power source.

The LDO also requires an output capacitor for loop stability. Connect a 1uF tantalum capacitor from OUT to GND close to the pins. For improved transient response, this output capacitor may be ceramic.



Marking Description

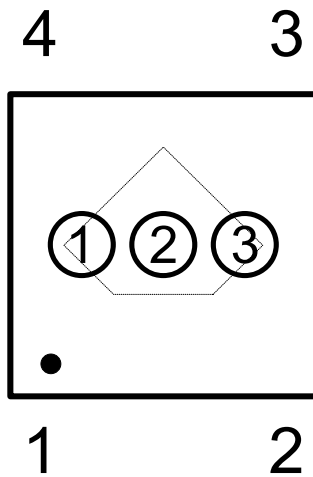
SOT23-3L



- ① product code: 4
- ② output voltage code:

Symbol	Voltage(V)
d	1.2

③④: The last two of them are based on the time of this product which is the first time into production, the third is the year of this product first time into production, such as expressed in "1" in 2021, in "2" in 2022 and the fourth is the month of this product first time into production, it can be in 1 ~ 9, which is expressed in "0" in October, in November with an "A", in December with "B"; For example: 4y16 represents XC6206-1.2V product is first put into production in June in 2021.



- ① output voltage code:

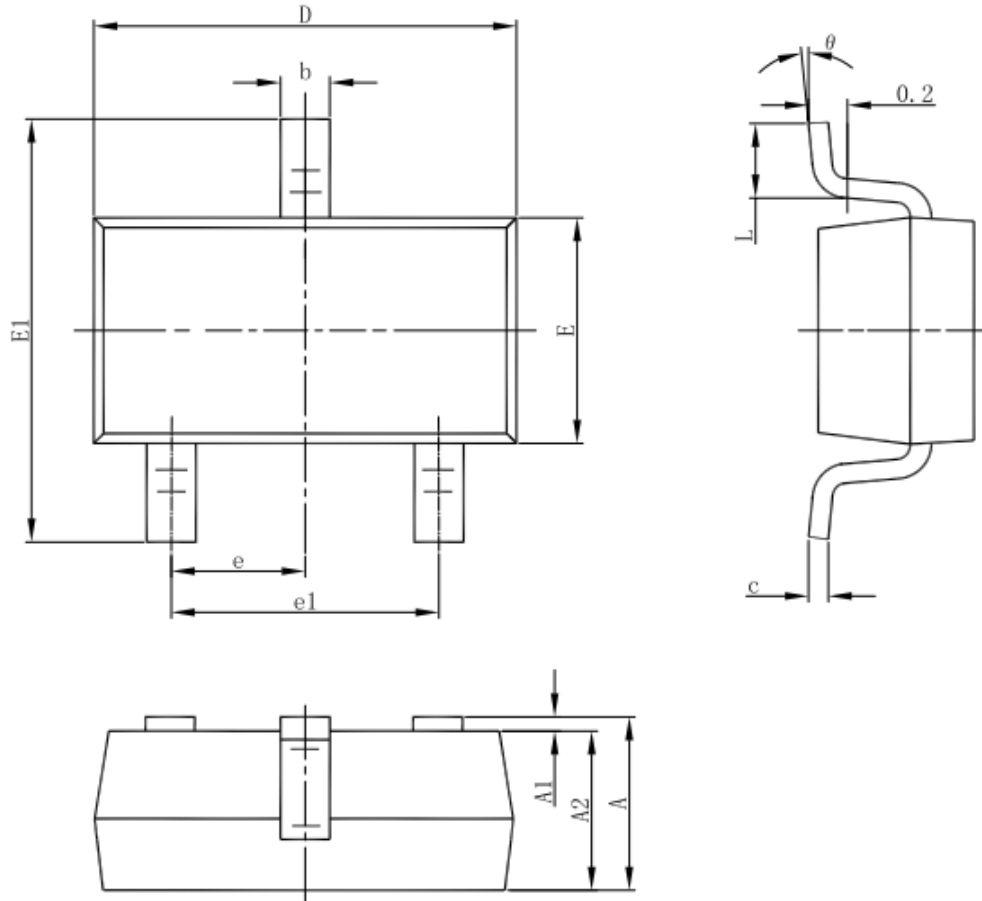
Symbol	Voltage(V)
d	1.2

②③: The last two of them are based on the time of this product which is the first time into production, the third is the year of this product first time into production, such as expressed in "1" in 2021, in "2" in 2022 and the fourth is the month of this product first time into production, it can be in 1 ~ 9, which is expressed in "0" in October, in November with an "A", in December with "B"; . For example: 4y16 represents XC6206-1.2V product is first put into production in June in 2021.



Package Information

3-pin SOT23-3L Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°