

## 300mA ultra-low noise ultra-fast response LDO linear regulator

### Descriptions

- The SL6206 series is a CMOS step-down voltage regulator characterized by high ripple suppression, low powerconsumption, low dropout, and features such as overcurrent and short-circuit protection.
- These devices exhibit very low quiescent current (70μA typical) and are capable of delivering 300mA output current with minimal input-to-output voltage differentials, while maintaining excellent regulation.
- Due to their minimal voltage drop and quiescent current, these devices are particularly suitable for battery-powered products aimed at extending battery life, such as computers, consumer electronics, and industrial equipment.

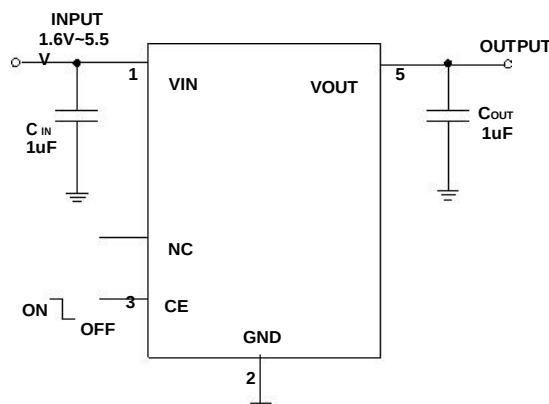
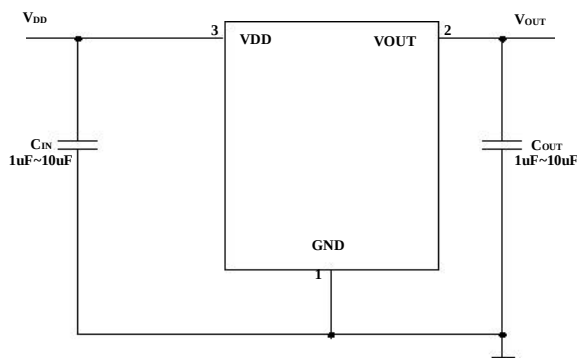
### Features

- Output rang: 1.2V - 3.6V
- 300mA output current
- High PSRR: 70 dB at 1 kHz
- Extremely low quiescent current: 70μA (typical)
- Less than 1μA in shutdown mode
- Junction temperature operation is -40°C to +85°C

### Applications

- CDMA/GSM mobile phones
- PDAs, MP3
- WLAN and Bluetooth devices
- Cordless phone
- Battery powered system

### Typical Application

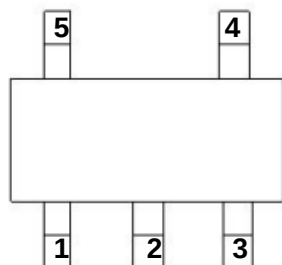


SL6206 is available in SOT-23-5L and SOT-23-3L packages

| Part Number | Output Voltage | Package | Transport Media, Quantity |
|-------------|----------------|---------|---------------------------|
| SL6206-XXNR | 1.2 V ~ 3.6V   | SOT23-3 | Tape and Reel, 3,000      |
| SL6206-XXMR | 1.2 V ~ 3.6V   | SOT23-5 | Tape and Reel, 3,000      |

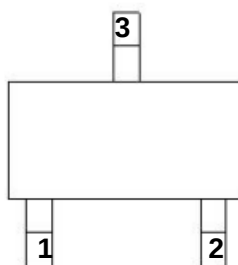
## Pin Distribution

SOT-23-5L



$V_{IN}$  GND CE

SOT-23-3L



GND  $V_{OUT}$

## Pin description

| Pin Number |           | Pin Name  | Description                                     |
|------------|-----------|-----------|-------------------------------------------------|
| SOT-23-3L  | SOT-23-5L | $V_{IN}$  | power supply                                    |
|            | 1         | GND       | ground terminal                                 |
| 1          | 2         | CE        | EN, enable terminal                             |
|            | 3         | NC        | not connected                                   |
| 2          | 4         | $V_{OUT}$ | output                                          |
| 3          | 5         | $V_{DD}$  | power supply for chip and input pin for standby |

## Absolute Maximum Ratings

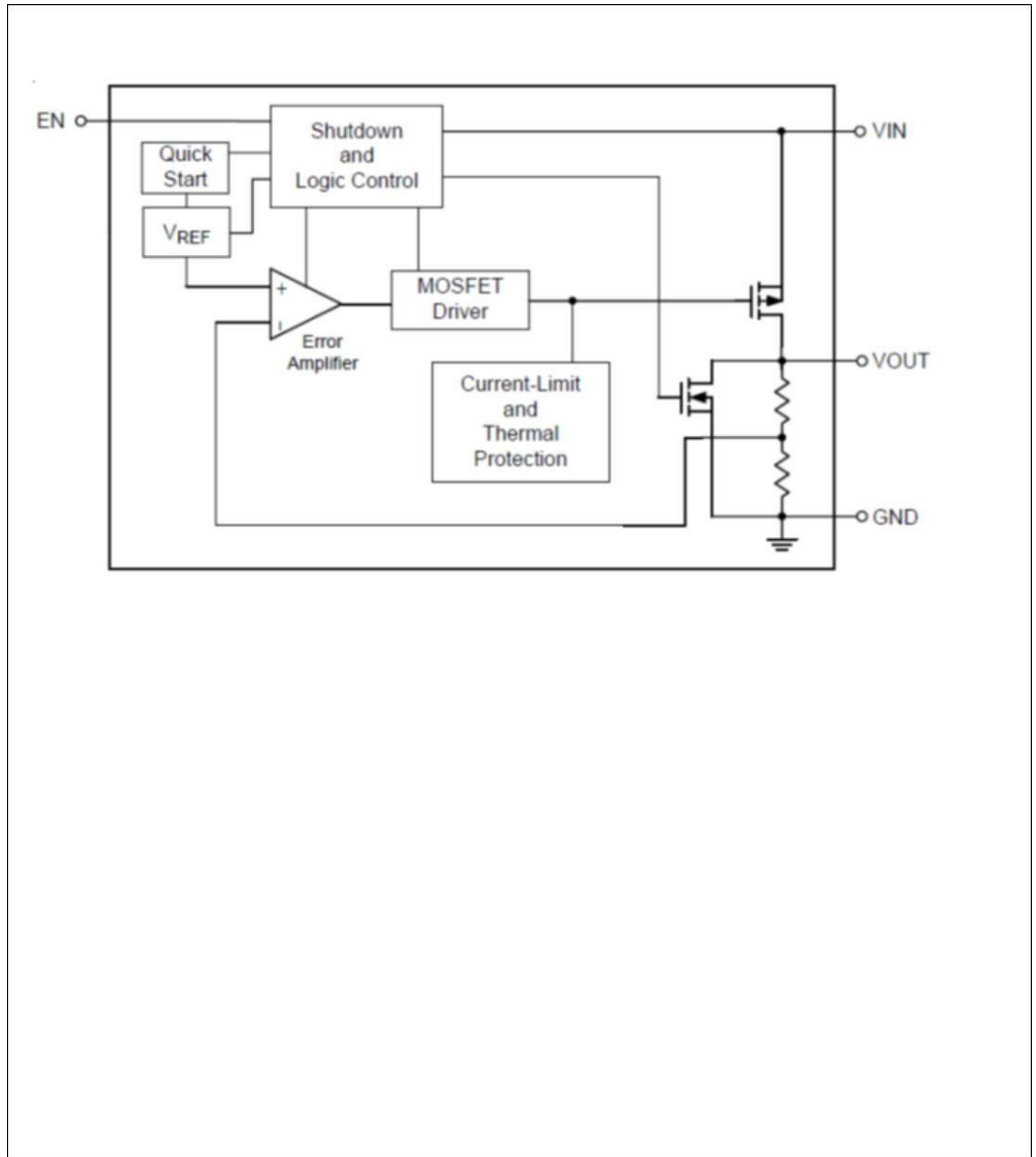
| Parameter                       | Symbol       | Value                         | Unit |
|---------------------------------|--------------|-------------------------------|------|
| Input voltage at $V_{in}$ pin   | $V_{IN}$     | 6                             | V    |
| Output current at $V_{out}$ pin | $I_{out}$    | 450                           | mA   |
| Output voltage at $V_{out}$ pin | $V_{out}$    | $V_{SS}-0.3 \sim V_{out}+0.3$ | V    |
| Operating temperature           | $T_{Opr}$    | -40 ~ +85                     | °C   |
| Storage temperature             | $T_{stg}$    | -55 ~ +125                    | °C   |
| Soldering temperature and time  | $T_{solder}$ | 260°C, 10s                    | °C   |

Note: Exceeding the "absolute maximum ratings" may damage the device. Operation within recommended parameters allows device functionality but does not guarantee performance. Prolonged operation at absolute maximum ratings may affect device reliability.

## Package power dissipation rating

| Package   | $P_d$ (mW) |
|-----------|------------|
| SOT-23-5L | 250        |
| SOT-23-3L | 300        |

## Structure diagram



## Electrical Characteristics

( $V_{IN}=V_{OUT}+1V$ ,  $C_{IN}=1\mu F\sim 10\mu F$ ,  $C_{OUT}=1\mu F\sim 10\mu F$ ,  $T_a=25^\circ C$ , unless otherwise specified)

| Parameter                  | Symbol                                               | Conditions                                                                | Min.   | Typ                   | Max.   | Unit          |
|----------------------------|------------------------------------------------------|---------------------------------------------------------------------------|--------|-----------------------|--------|---------------|
| Output voltage             | $V_{OUT}(E)$ (Note 2)                                | $I_{OUT}=40mA$ , $V_{IN}=V_{OUT}+1V$                                      | X 0.98 | $V_{OUT}(T)$ (Note 1) | X 1.02 | V             |
| Input voltage              | $V_{IN}$                                             |                                                                           |        |                       | 6      | V             |
| Maximum output current     | $I_{OUT\ max}$                                       | $V_{IN}=V_{OUT}+1V$                                                       |        | 300                   |        | mA            |
| Load characteristics       | $\Delta V_{OUT}$                                     | $V_{IN} = V_{OUT} + 1V$ , $1mA \leq I_{OUT} \leq 100mA$                   |        | 50                    |        | mV            |
| Voltage difference (Note3) | $V_{dif1}$                                           | $I_{OUT} = 100mA$                                                         |        | 90                    |        | mV            |
|                            | $V_{dif2}$                                           | $I_{OUT} = 200mA$                                                         |        | 230                   |        | mV            |
| Static current             | $I_{SS}$                                             | $V_{IN} = V_{OUT} + 1V$                                                   |        | 70                    |        | $\mu A$       |
| Voltage regulation         | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$ | $I_{OUT} = 40mA$<br>$V_{OUT} + 1V \leq V_{IN} \leq 8V$                    |        | 0.05                  |        | %/V           |
| Output noise               | EN                                                   | $I_{OUT} = 40mA$ , 300Hz ~ 50kHz                                          |        | 50                    |        | $\mu V_{rms}$ |
| Ripple suppression ratio   | $P_{SRR}$                                            | $V_{IN} = [V_{OUT} + 1] V + 1V_p - p_{AC}$<br>$I_{OUT} = 40mA$ , $f=1kHz$ |        | 70                    |        | dB            |

### Note :

1.  $V_{OUT}(T)$ : Specified output voltage
2.  $V_{OUT}(E)$ : Effective output voltage, defined as the output voltage when  $I_{OUT}$  is maintained at a specified value and  $V_{IN} = V_{OUT}(T) + 1.0V$ .
3.  $V_{dif}$ :  $V_{IN1}-V_{OUT}(E)$   
 $V_{IN1}$ : The input voltage at which the output voltage decreases to 98% of  $V_{OUT}(E)$  as the input voltage is gradually reduced.  
 $V_{OUT}(E)'=V_{OUT}(E) \times 98\%$ .