



Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- Low Quiescent Current: 5uA at 6V
- Output voltage accuracy: tolerance $\pm 2\%$

Applications

- Battery-powered equipment
- Reference voltage sources
- Cameras, video cameras
- Portable AV systems
- Mobile phones
- Portable games

General Description

XC6206 series are a highly precise, lower consumption, 3 terminal, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage. The XC6206 consists of a current limiter circuit, a driver transistor, a precision reference voltage and an error correction circuit. The series is

compatible with low ESR ceramic capacitors. The current limiter's foldback circuit operates as a short circuit protection as well as the output current limiter for the output pin. Output voltages are internally by laser trimming technologies. It is selectable in 0.1V increments within a range of 1.2V to 5.0V. XC6206 series are available in SOT-89 packages.

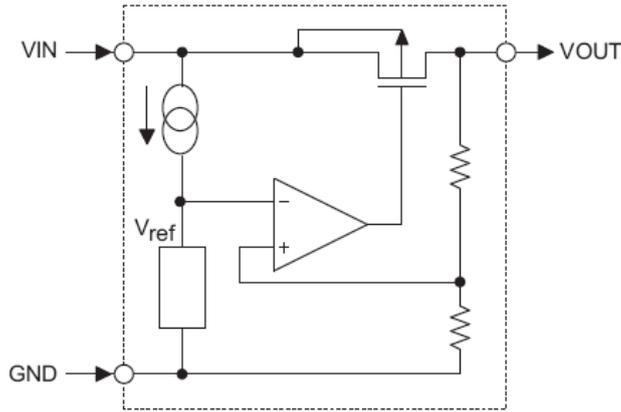
Order Information

XC6206-①②

| Designator | Symbol | Description |
|------------|---------|---------------------------|
| ①② | Integer | Output Voltage (1.2~5.0V) |

Note: "①②" stands for output voltages. Other voltages can be specially customized

Block Diagram



Pin Assignment

SOT89 (Top View)

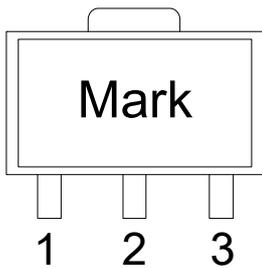
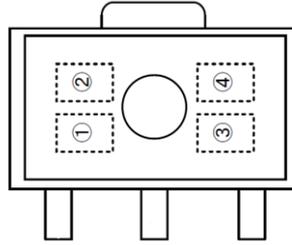


Table2: XC6206 series (SOT89 PKG)

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



Marking Rule



SOT-89
(TOP VIEW)

① represents product number

| MARK | PRODUCT SERIES |
|------|----------------|
| 6 | XC6206**** |

② represents 3 pins regulator

| MARK | | PRODUCT SERIES |
|------------------|-------------------|----------------|
| VOLTAGE=0.1~3.0V | VOLTAGE=3.1V~6.0V | |
| 5 | 6 | XC6206 |

③ represents output voltage

| MARK | VOLTAGE(V) | | | MARK | VOLTAGE(V) | | |
|------|------------|-----|---|------|------------|-----|---|
| 0 | - | 3.1 | - | F | 1.6 | 4.6 | - |
| 1 | - | 3.2 | - | H | 1.7 | 4.7 | - |
| 2 | - | 3.3 | - | K | 1.8 | 4.8 | - |
| 3 | - | 3.4 | - | L | 1.9 | 4.9 | - |
| 4 | - | 3.5 | - | M | 2.0 | 5.0 | - |
| 5 | - | 3.6 | - | N | 2.1 | - | - |
| 6 | - | 3.7 | - | P | 2.2 | - | - |
| 7 | - | 3.8 | - | R | 2.3 | - | - |
| 8 | - | 3.9 | - | S | 2.4 | - | - |
| 9 | - | 4.0 | - | T | 2.5 | - | - |
| A | - | 4.1 | - | U | 2.6 | - | - |
| B | 1.2 | 4.2 | - | V | 2.7 | - | - |
| C | 1.3 | 4.3 | - | X | 2.8 | - | - |
| D | 1.4 | 4.4 | - | Y | 2.9 | - | - |
| E | 1.5 | 4.5 | - | Z | 3.0 | - | - |

④ X



Absolute Maximum Ratings (The following specifications apply for Ta=25°C, unless specified otherwise)

| Parameter | Symbol | Ratings | Units |
|-----------------------------|------------------|---|-------|
| Input Voltage | V _{IN} | 8 | V |
| Output Current | I _{OUT} | 300* | mA |
| Output Voltage | V _{OUT} | V _{SS} -0.3~V _{IN} +0.3 | V |
| Power Dissipation | SOT-89 | P _d | 0.50 |
| | | | W |
| | | | W |
| Operating Temperature Range | T _{opr} | -40~+85 | °C |
| Storage Temperature Range | T _{stg} | -55~+125 | °C |

*I_{OUT}=P_d/(V_{IN}-V_{OUT})

*P_d is measured at Ta=25°C

Electrical Characteristics

XC6206 for any output voltage

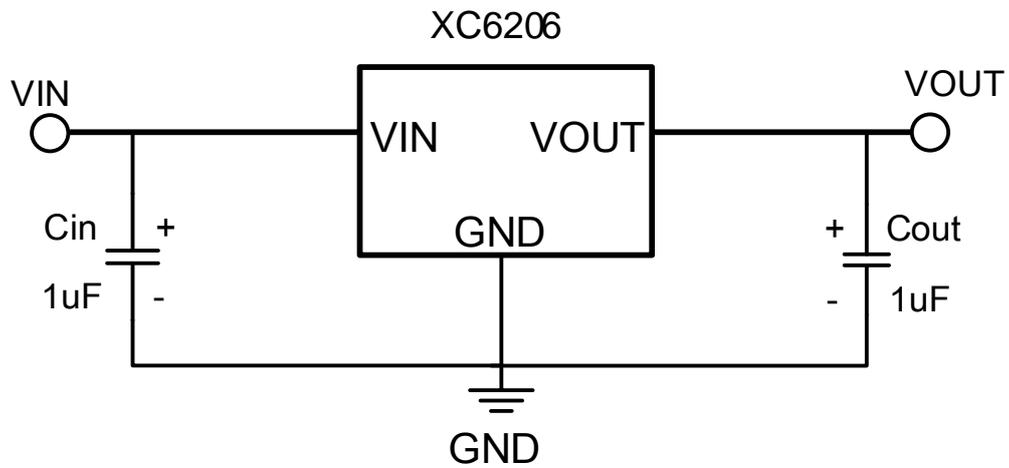
(Ta=25°C)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|--|--|------------------------|------|------------------------|--------|
| Output Voltage | V _{out} | V _{in} =V _{out} +1V 1.0mA≤I _{out} ≤30mA 1.2V≤V _{OUT} ≤2.5V | V _{out} -0.05 | -- | V _{out} +0.05 | V |
| | | V _{in} =V _{out} +1V 1.0mA≤I _{out} ≤30mA 2.5V≤V _{OUT} ≤5.0V | V _{out} ×0.98 | -- | V _{out} ×1.02 | V |
| Output Current*1 | I _{out} | V _{in} -V _{out} =1V | -- | 300 | -- | mA |
| Low dropout*2 | V _{drop} | Refer to the next table | | | | |
| Line Regulation | ΔV _{out} 1/(V _{in} -V _{out}) | 1.6V≤V _{in} ≤8V I _{out} =40mA | -- | 0.05 | 0.2 | %/V |
| Load Regulation | ΔV _{out} /ΔI _{out} | V _{in} = V _{out} +1V 1.0mA≤I _{out} ≤80mA | -- | 12 | 30 | mV |
| Output voltage Temperature Coefficiency | ΔV _{out} /(Ta·V _{out}) | I _{out} =30mA 0°C≤Ta≤70°C | -- | ±50 | -- | Ppm/°C |
| Supply Current | I _{ss} | -- | -- | 5 | 8 | uA |
| Input Voltage | V _{in} | -- | -- | 6 | 8 | V |
| PSRR | PSRR | F=1KHz V _{in} =V _{out} +1V | -- | 55 | -- | dB |
| Output Noise | EN | BW=10HZ~100KHz | -- | 30 | -- | uVrms |

Electrical Characteristics by Output Voltage:

| Output Voltage Vout (V) | Dropout Voltage Vdif (V) | | |
|-------------------------|--------------------------|------|------|
| | Conditions | Typ. | Max. |
| Vout ≤ 1.5V | Iout = 100 mA | 0.35 | 0.57 |
| 1.8 ≤ Vout ≤ 2 | | 0.28 | 0.42 |
| 2.8 ≤ Vout ≤ 5.0 | | 0.19 | 0.35 |

Typical Application

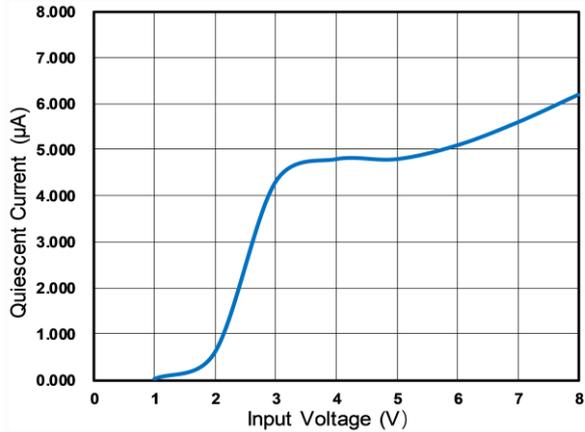




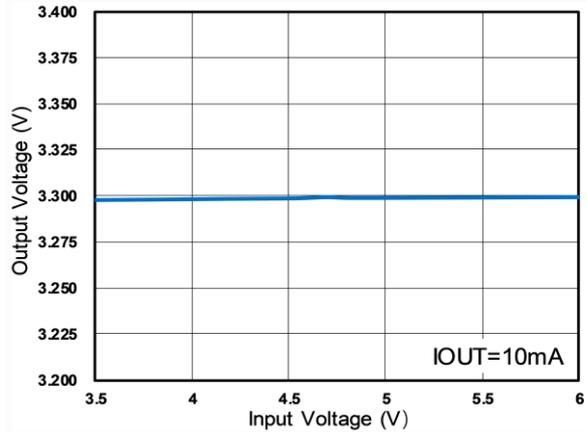
Typical Performance Characteristics

Note: $C_{IN}=0.33\mu F$ $C_{OUT}=0.1\mu F$ $V_{OUT}=3.3V$ $T=25^{\circ}C$ unless specified otherwise

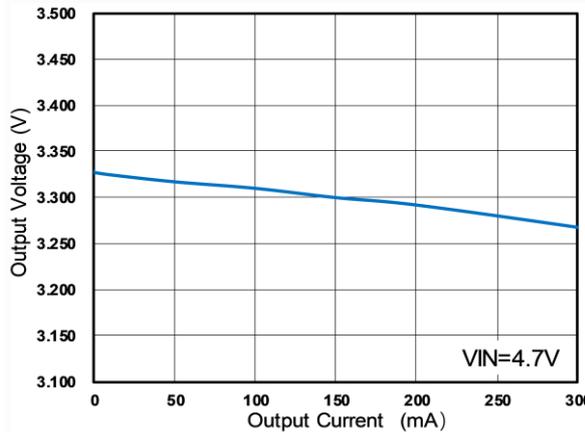
(1) Quiescent Current VS Input Voltage



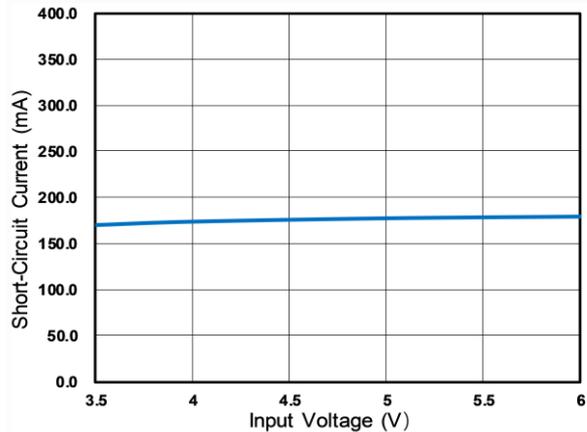
(2) Output Voltage VS Input Voltage



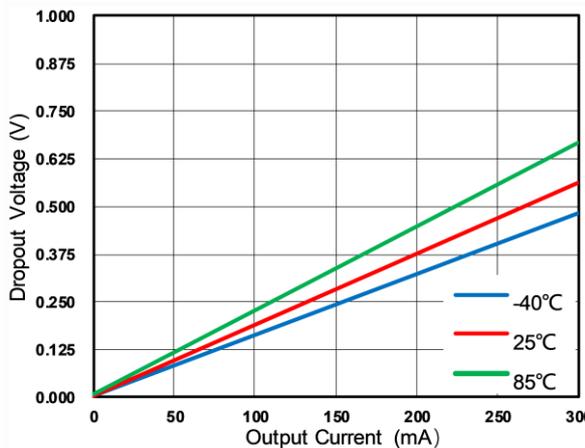
(3) Output Voltage VS Output Current



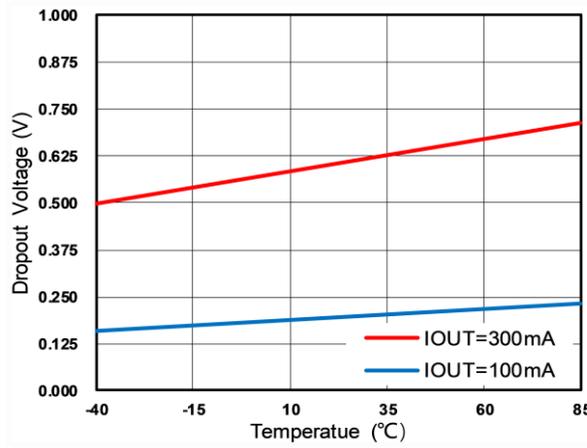
(4) Short-Circuit Current VS Input Voltage



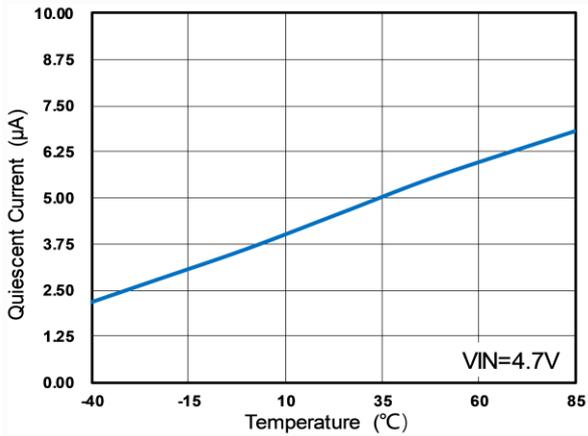
(5) Dropout Voltage VS Output Current



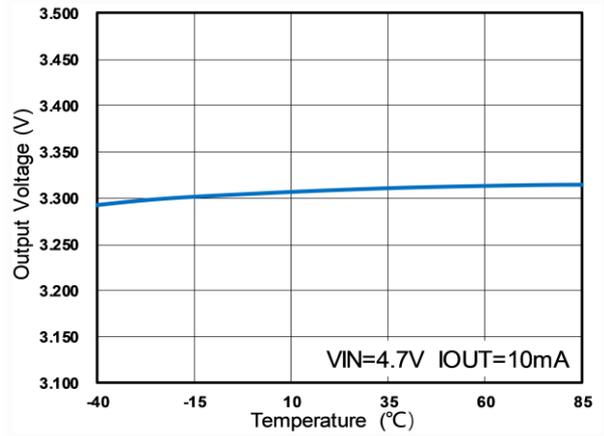
(6) Dropout Voltage VS Temperature



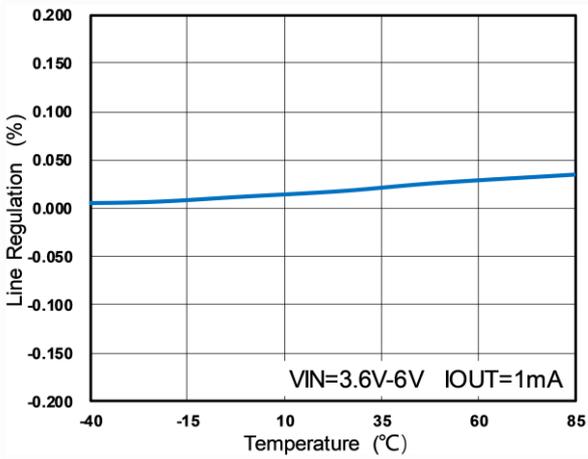
(7) Quiescent Current VS Temperature



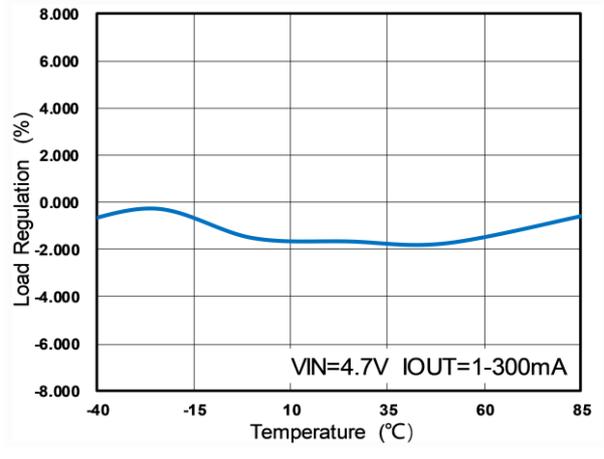
(8) Output Voltage VS Temperature



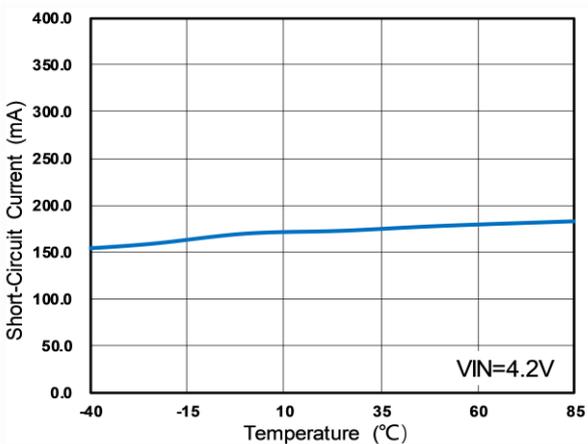
(9) Line Regulation VS Temperature



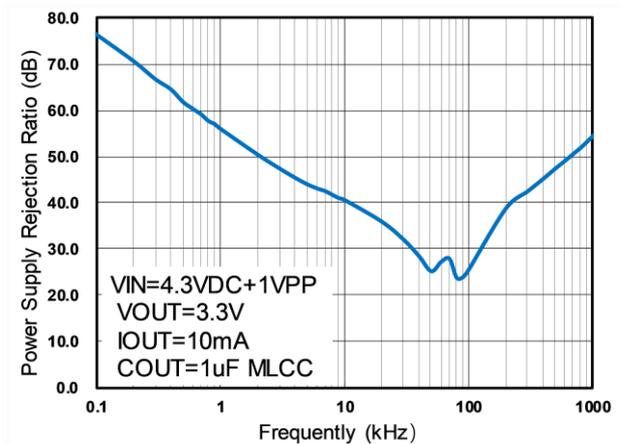
(10) Load Regulation VS Temperature



(11) Short-Circuit Current VS Temperature

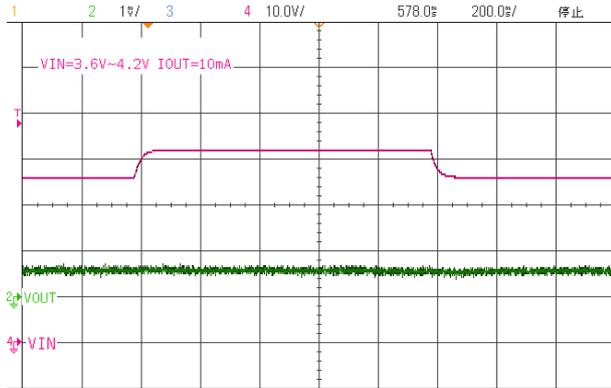


(12) PSRR

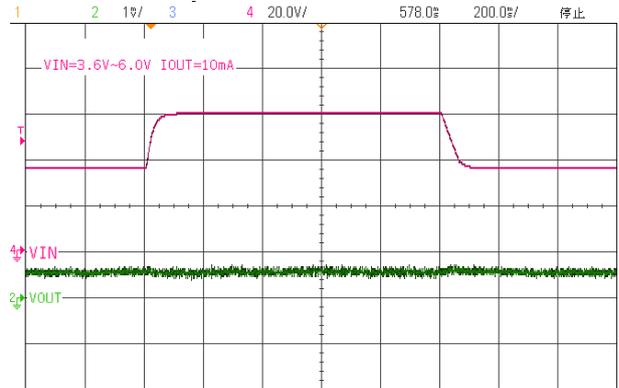




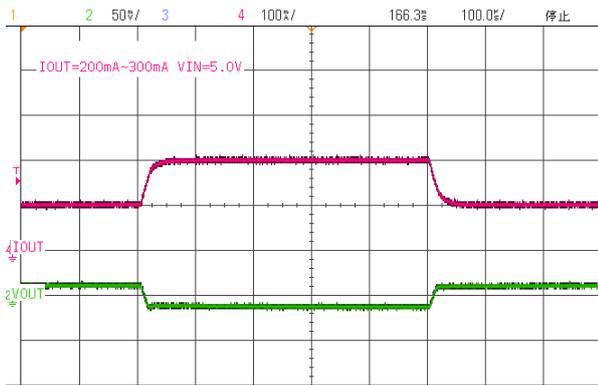
(13) Input Transient Response (VIN=3.6V-4.2V)



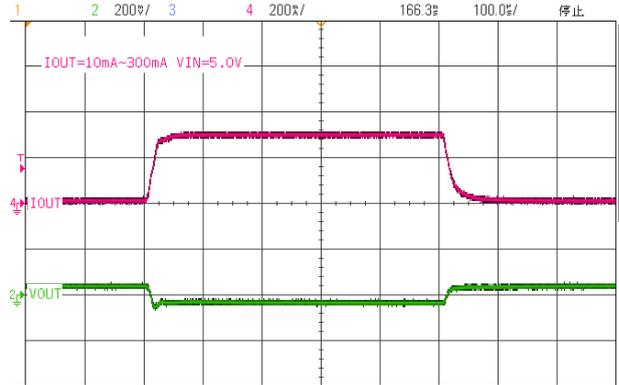
(14) Input Transient Response (VIN=3.6V-6.0V)



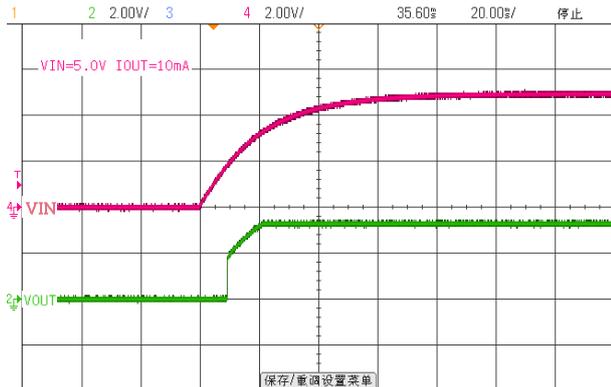
(15) Load Transient Response (IOUT=200mA-300mA)



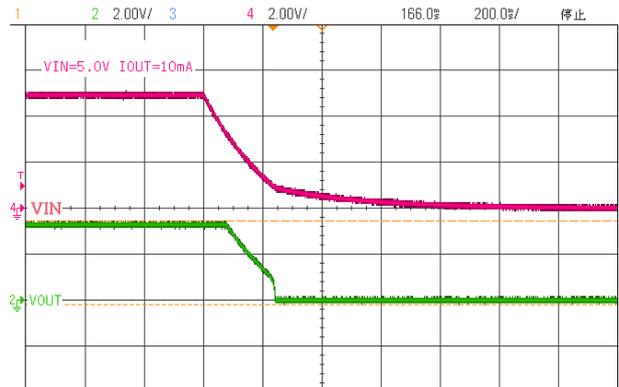
(16) Load Transient Response (IOUT=10mA-300mA)



(17) Power ON (VIN=5.0V IOUT=10mA)

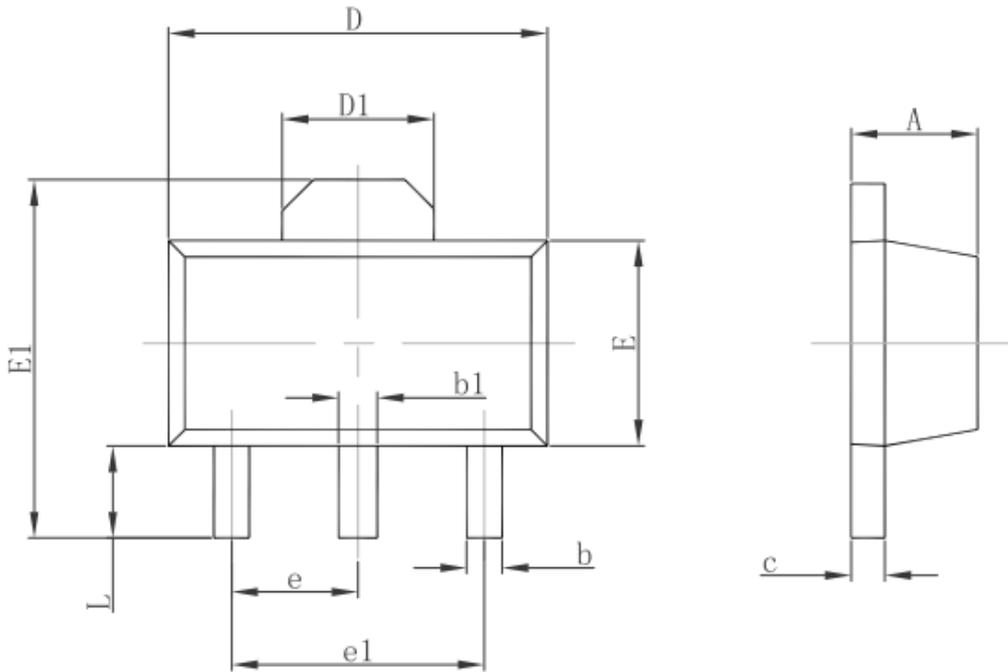


(18) Power OFF (VIN=5.0V IOUT=10mA)





3-pin SOT89 Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| b1 | 0.400 | 0.580 | 0.016 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF. | | 0.061 REF. | |
| E | 2.300 | 2.600 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TYP. | | 0.060 TYP. | |
| e1 | 3.000 TYP. | | 0.118 TYP. | |
| L | 0.900 | 1.200 | 0.035 | 0.047 |