

250mA Low Consumption Linear Regulator

DESCRIPTION

BL8061 series is a group of positive voltage output, low power consumption, low dropout voltage, three terminal regulator. It can provide 200mA output current when input / output voltage differential drops to 420mV ($V_{out}=3.3V$), And it also provides foldback short-circuit protection and output current limit function. The very low power consumption of BL8061 ($I_q=2.0\mu A$) can greatly improve natural life of batteries.

BL8061 can provide output value in the range of 1.1V~5.0V in 0.1V steps. It also can customized on command.

BL8061 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

BL8061 has well load transient response and good temperature characteristic, And it uses trimming technique to guarantee output voltage accuracy within $\pm 2\%$.

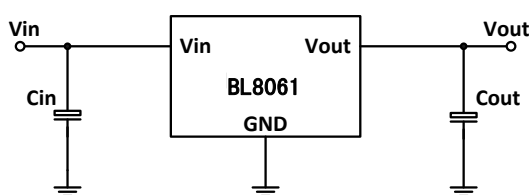
FEATURES

- Low Power Consumption: $2.0\mu A$ (Typ.)
- Maximum Output Current: 250mA
- Small Dropout Voltage
210mV@100mA ($V_{out}=3.3V$)
420mV@200mA ($V_{out}=3.3V$)
- Input Voltage Range: 2V~16V
- Output Voltage Range: 1.1V~5.0V (customized on command in 0.1V steps)
- Highly Accurate: $\pm 2\%$ ($\pm 1\%$ customized)
- Output Current Limit
330mA@ $V_{out}=3.3V$
- Foldback Short-circuit Current
56mA@ $V_{out}=3.3V$

APPLICATIONS

- Battery Powered equipment
- Power Management of MP3、PDA、DSC、Mouse、PS2 Games
- Reference Voltage Source Regulation after Switching Power

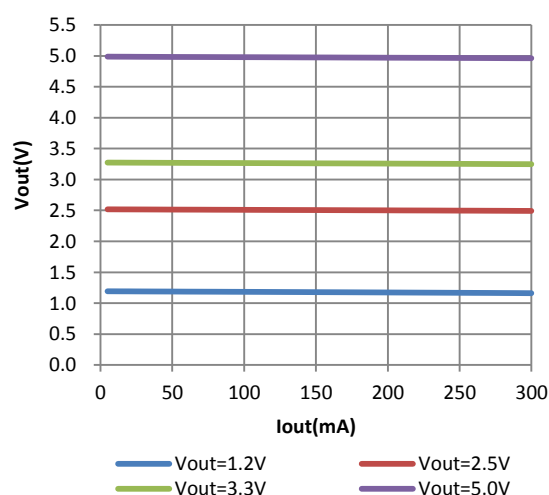
TYPICAL APPLICATION



NOTE: Input capacitor ($C_{in}=1\mu F$) and Output capacitor ($C_{out}=1\mu F$) are recommended in all application circuit. Ceramic capacitor is recommended.

ELECTRICAL CHARACTERISTICS

Vout Voltage vs Load Current



ORDERING INFORMATION

BL8061 1 2 3 4 5

| 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 C3B:SOT-89-3 (B) |
| 3 | Packing type: TR:Tape&Reel (Standard) |
| 4 | Output voltage: e.g. 11=1.1V 15=1.5V 55=5.5V |
| 5 | Voltage accuracy: 1=±1% Blank(default)=±2% |

MARKING DEScriptON

M: Product Code

X: Output Voltage

Output Voltage Code

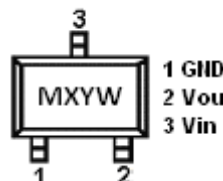
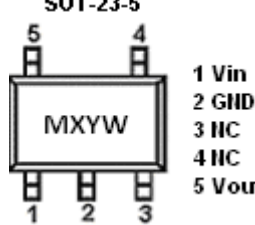
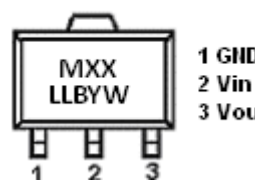
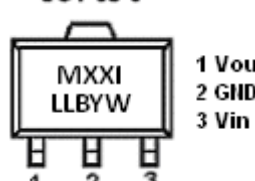
| VOUT | Code | VOUT | Code | VOUT | Code |
|------|------|------|------|------|------|
| 1.1V | 1 | 2.9V | 9 | 4.3V | 3 |
| 1.2V | 2 | 3.0V | 0 | 4.4V | 4 |
| 1.3V | 3 | 3.1V | 1 | 4.5V | 5 |
| 1.5V | 5 | 3.2V | 2 | 4.6V | 6 |
| 1.8V | 8 | 3.3V | 3 | 4.7V | 7 |
| 2.0V | 0 | 3.4V | 4 | 4.8V | 8 |
| 2.1V | 1 | 3.5V | 5 | 4.9V | 9 |
| 2.2V | 2 | 3.6V | 6 | 5.0V | 0 |
| 2.3V | 3 | 3.7V | 7 | 5.1V | 1 |
| 2.4V | 4 | 3.8V | 8 | 5.2V | 2 |
| 2.5V | 5 | 3.9V | 9 | 5.3V | 3 |
| 2.6V | 6 | 4.0V | 0 | 5.4V | 4 |
| 2.7V | 7 | 4.1V | 1 | 5.5V | 5 |
| 2.8V | 8 | 4.2V | 2 | | |

Y: The Year of manufacturing, "1" stands for year 2011, "2" stands for year 2012, and "8" stands for year 2018.

W: The week of manufacturing. "A" stands for week

1, "Z" stands for week 26, "A" stands for week 27, "Z" stands for week 52.

PIN CONFIGURATION

| | | |
|------------------------|--------------------|---|
| Product Classification | | BL8061CB3TR□□□ |
| Marking | | SOT-23-3 |
| MXYW | M:Product Code |  |
| | X:Output Voltage | |
| | YW: Date Code | |
| Product Classification | | BL8061CB5TR□□□ |
| Marking | | SOT-23-5 |
| MXYW | M:Product Code |  |
| | X: Output Voltage | |
| | YW: Date Code | |
| Product Classification | | BL8061CC3TR□□□ |
| Marking | | SOT-89-3 |
| MXX LLBYW | M:Product Code |  |
| | XX: Output Voltage | |
| | LL: LOT NO. | |
| | B:FAB Code | |
| Product Classification | | BL8061CC3BTR□□□ |
| Marking | | SOT-89-3 |
| MXXI LLBYW | M:Product Code |  |
| | XX: Output Voltage | |
| | LL: LOT NO. | |
| | B:FAB Code | |
| | YW: Date Code | |

**ABSOLUTE MAXIMUM RATING**

| Parameter | | Value |
|------------------------------------|----------|--------------|
| Max Input Voltage | | 20V |
| Operating Junction Temperature(Tj) | | 125°C |
| Ambient Temperature(Ta) | | -40°C -85°C |
| Power Dissipation | SOT-23-3 | 250mW |
| | SOT-23-5 | 250mW |
| | SOT-89-3 | 500mW |
| Storage Temperature(Ts) | | -40°C -150°C |
| Lead Temperature & Time | | 260°C,10S |

Note:

Exceed these limits to damage to the device.

Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED WORK CONDITIONS

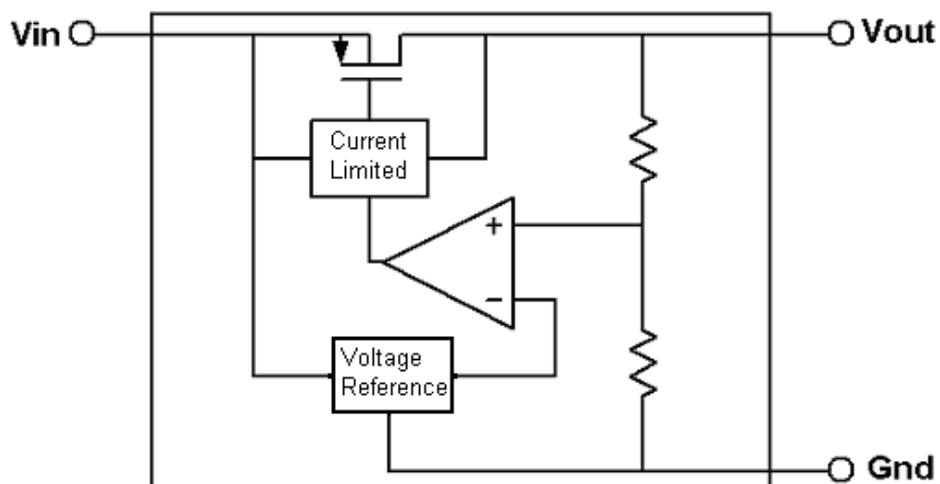
| Item | Min | Recommended | Max. | Unit |
|---------------------|-----|-------------|------|------|
| Input Voltage Range | | | 16 | V |
| Ambient Temperature | -40 | | 85 | °C |

ELECTRICAL CHARACTERISTICS

(Test Conditions: Cin=1uF, Cout=1uF, TA=25°C, Unless Otherwise Specified)

| Symbol | Parameter | Conditions | | Min | Type | Max | Units |
|--|--|-----------------------------------|-------------|---------------|------|---------------|--------|
| Vin | Input Voltage | | | | | 16 | V |
| Vout | Output Voltage | | | Vout x0.98 | | Vout X1.02 | V |
| Iout(Max.) | Maximum Output Current | Vin-Vout=1V | | 250 | | | mA |
| Dropout Voltage | Input-Output Voltage Differential | Iout=100mA | Vout ≤ 2.5V | | 600 | 1000 | mV |
| | | | Vout ≥ 2.5V | | 300 | 600 | |
| $\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$ | Line Regulation | Iout=10mA 2V≤Vin≤16V | | | 0.2 | 0.3 | %/V |
| ΔV_{out} | Load Regulation | Vin=Set Vout+1V 1mA≤Iout≤100mA | | | 20 | 40 | mV |
| Iq | Quiescent Current | Vin=Set Vout+1V | | | 2.0 | 5.0 | uA |
| $\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$ | Output Voltage Temperature Coefficient | Iout=10mA | | | 100 | | ppm/°C |

BLOCK DIAGRAM



EXPLANATION

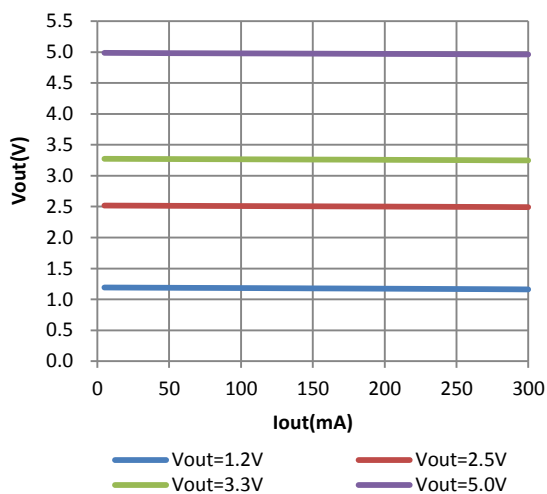
BL8061 is a series of low dropout voltage and low power consumption three pins regulator. Its application circuit is very simple, which only needs two outside capacitors. It is composed of these modules: high accuracy voltage reference, current limit circuit, error amplifier, output driver and power transistor.

Current Limit module can keep chip and power system away from danger when load current is more than 250mA.

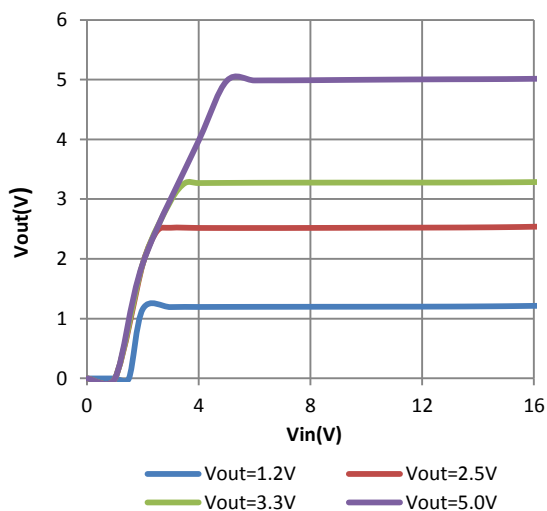
BL8061 uses trimming technique to assure the accuracy of output value within $\pm 2\%$, at the same time, temperature compensation is elaborately considered in this chip, which makes BL8061's temperature coefficient within 100ppm/ $^{\circ}\text{C}$.

TYPICAL PERFORMANCE CHARACTERISTICS

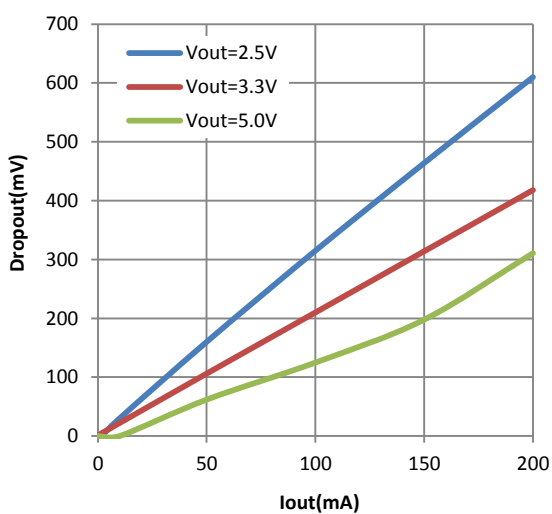
Vout Voltage vs Load Current



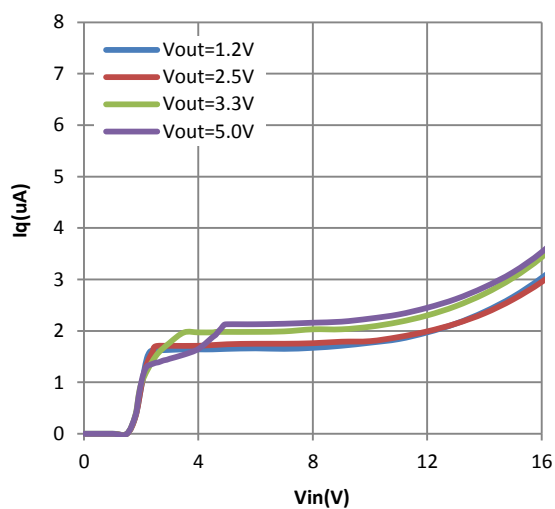
Line Regulation

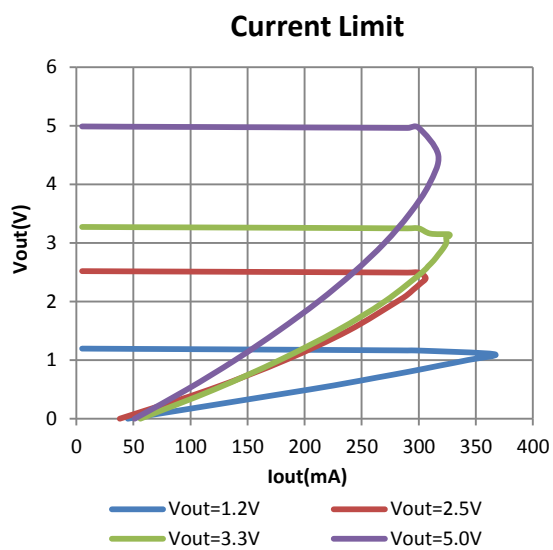


Dropout Voltage vs Load Current



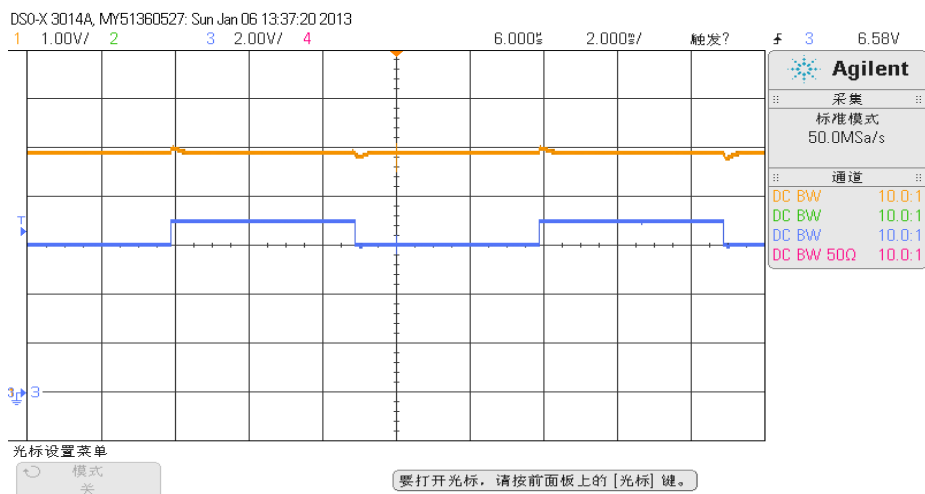
Iq





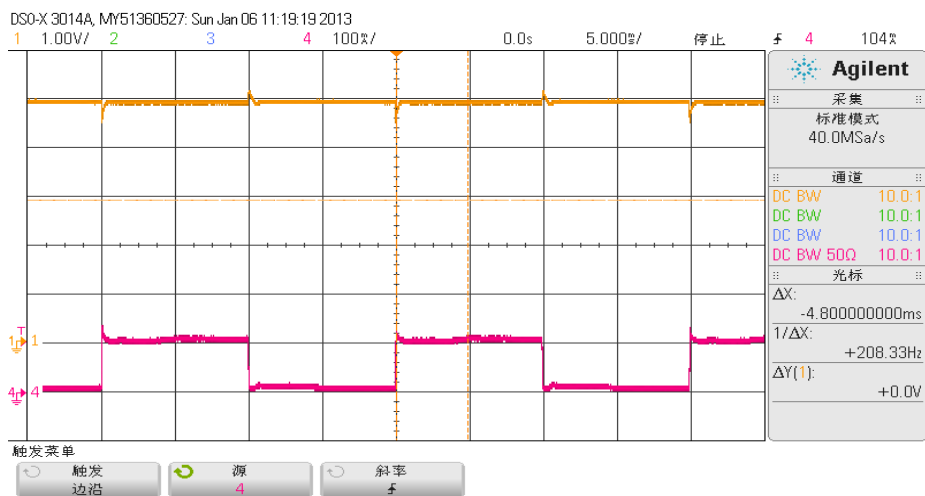
Line transient response

Vin=6V~7V, Ch1—Vout, Ch3—Vin



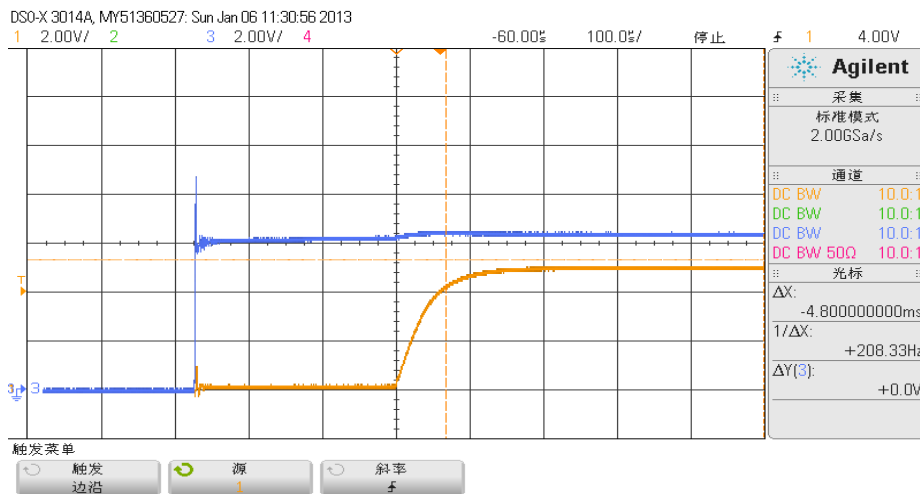
Load transient response

Iout=1mA~100mA, Ch1—Vout, Ch4—Iout

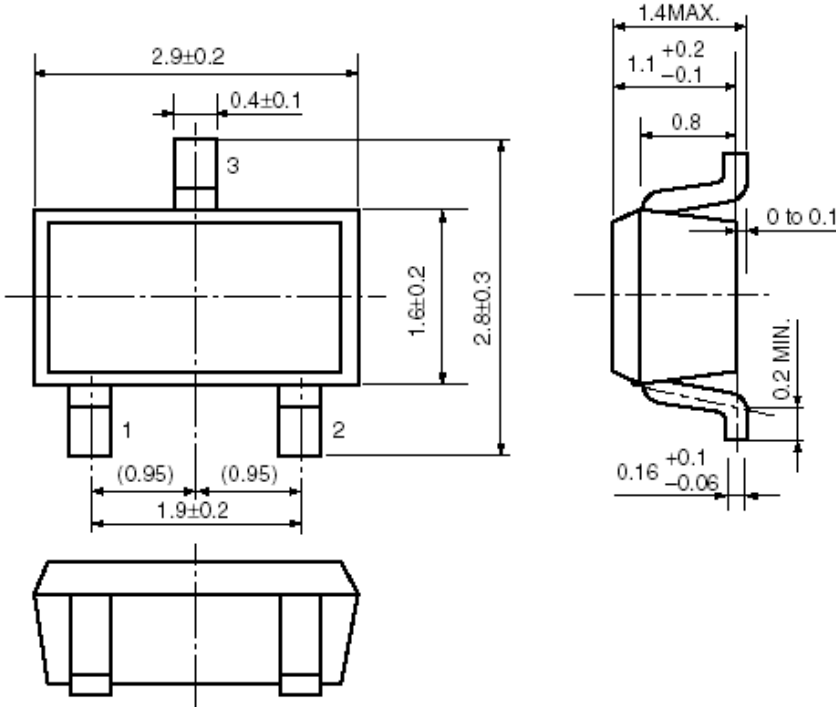


Start up

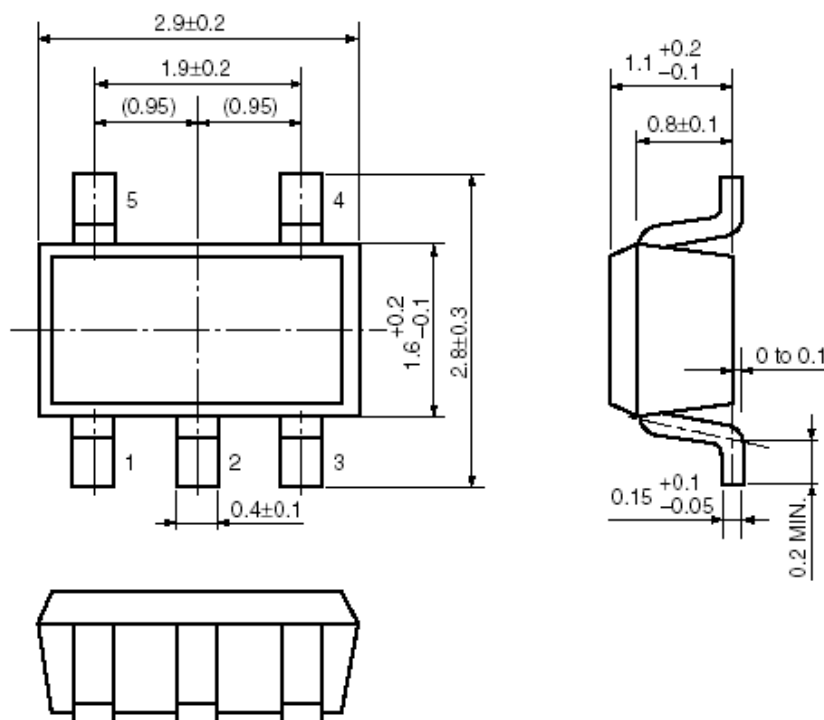
Ch1—Vout, Ch3—Vin



PACKAGE LINE

| Package | SOT-23-3 | Devices per reel | 3000Pcs | Unit | mm |
|--|----------|------------------|---------|------|----|
| <div> <div>Package dimension:</div>  </div> | | | | | |
| Package | SOT-23-5 | Devices per reel | 3000Pcs | Unit | mm |

Package Dimension:



Package

SOT-89-3

Devices per reel

1000Pcs

Unit

mm

Package Dimension:

