

## 250mA Low Consumption Linear Regulator

### DESCRIPTION

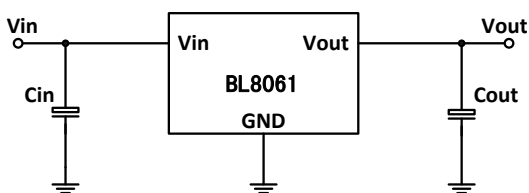
BL8061 series is a group of positive voltage output, low power consumption, low dropout voltage, three terminal regulator. It can provide 200mA output current when input / output voltage differential drops to 420mV ( $V_{out}=3.3V$ ), And it also provides foldback short-circuit protection and output 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  $\pm 2\%$ .

### 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.

### FEATURES

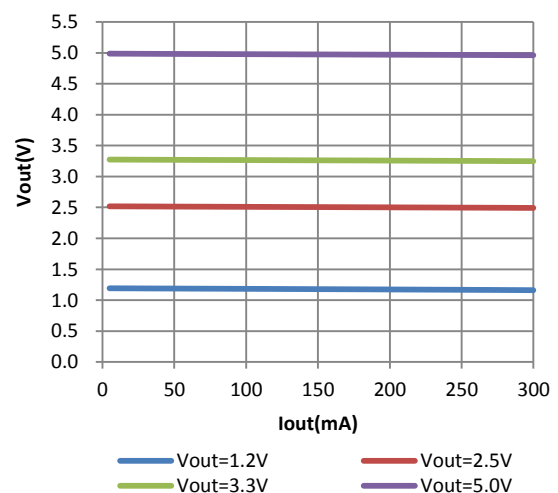
- Low Power Consumption:  $2.0\mu A$  (Typ.)
- Maximum Output Current: 250mA
- Small Dropout Voltage  
210mV@100mA ( $V_{out}=3.3V$ )  
420mV@200mA ( $V_{out}=3.3V$ )
- Input Voltage Range: 2V~16V
- Output Voltage Range: 1.1V~5.0V (customized on command in 0.1V steps)
- Highly Accurate:  $\pm 2\%$  (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

### ELECTRICAL CHARACTERISTICS

Vout Voltage vs Load Current



# BL8061

## ORDERING INFORMATION

BL8061 ①②③④⑤

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

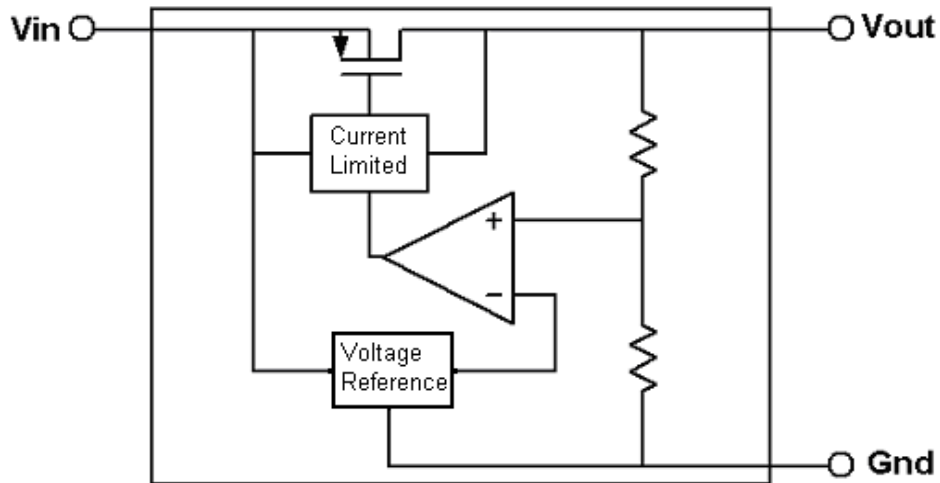
Item	Min	Recommended	Max.	Unit
Input Voltage Range			16	V
Ambient Temperature	-40		85	°C

## 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
$\Delta V_{out}$	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

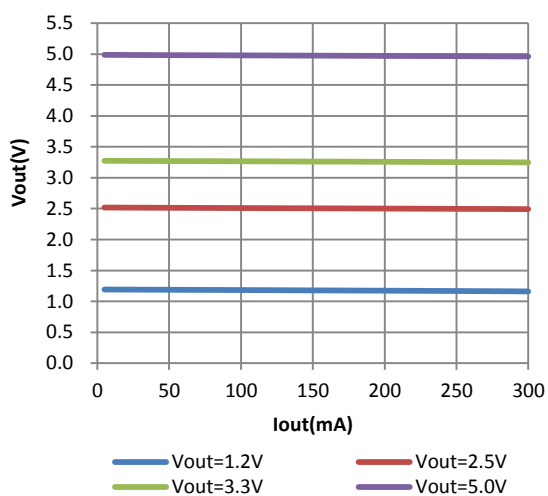
BL8061 is a series of low dropout voltage and low power consumption three pins regulator. Its application circuit is very simple, which only needs two outside capacitors. It is composed of these modules: high accuracy voltage reference, current limit circuit, error amplifier, output driver and power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

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

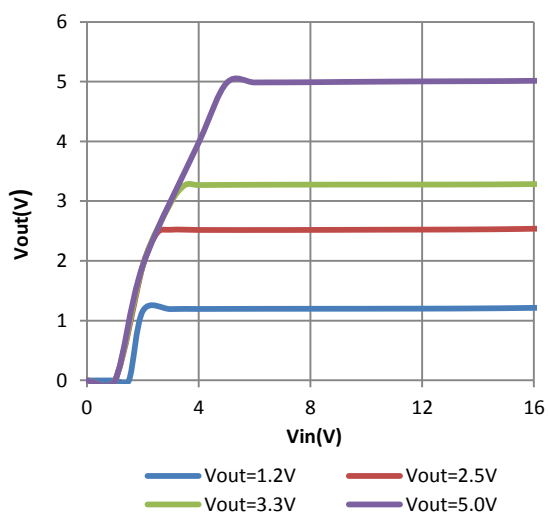
BL8061 uses trimming technique to assure the accuracy of output value within  $\pm 2\%$ , at the same time, temperature compensation is elaborately considered in this chip, which makes BL8061's temperature coefficient within  $100\text{ppm}/^\circ\text{C}$ .

## TYPICAL PERFORMANCE CHARACTERISTICS

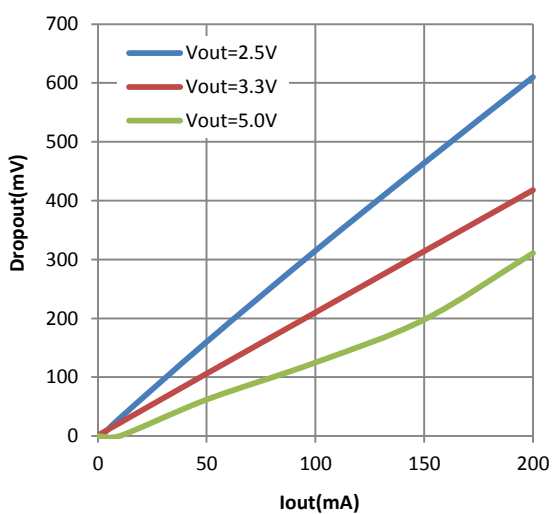
### Vout Voltage vs Load Current



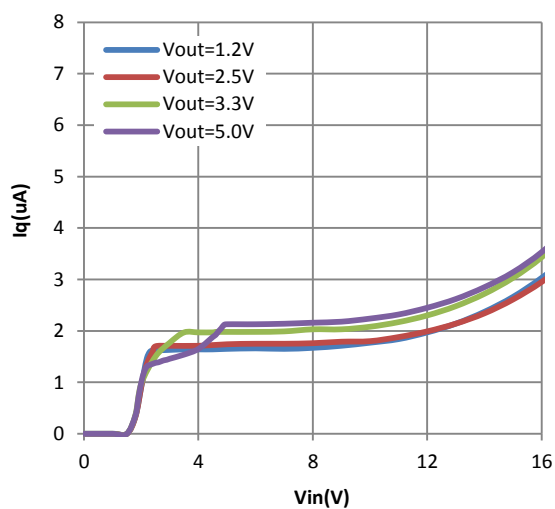
### Line Regulation



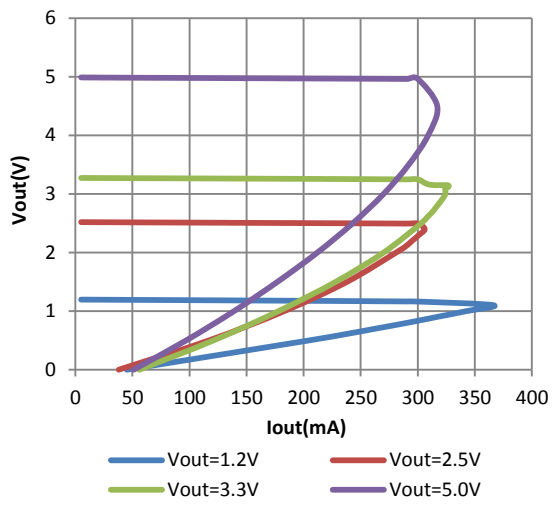
### Dropout Voltage vs Load Current



### Iq

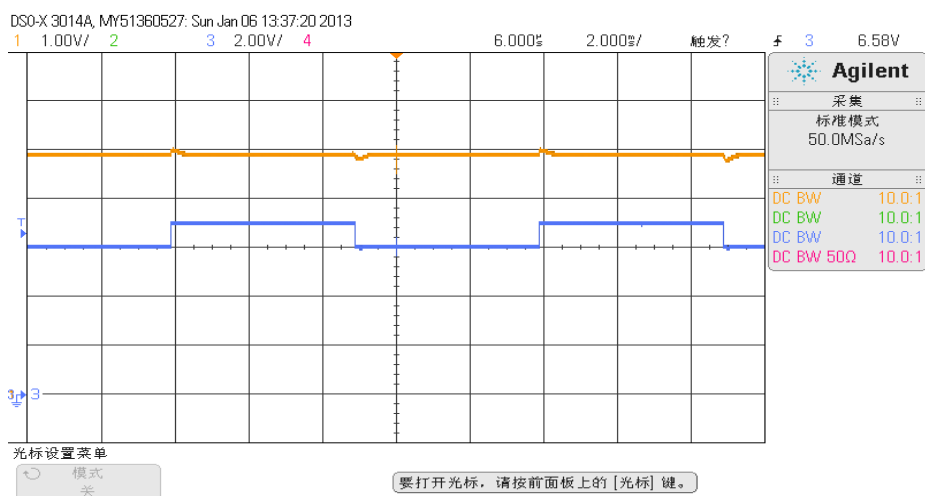


## Current Limit



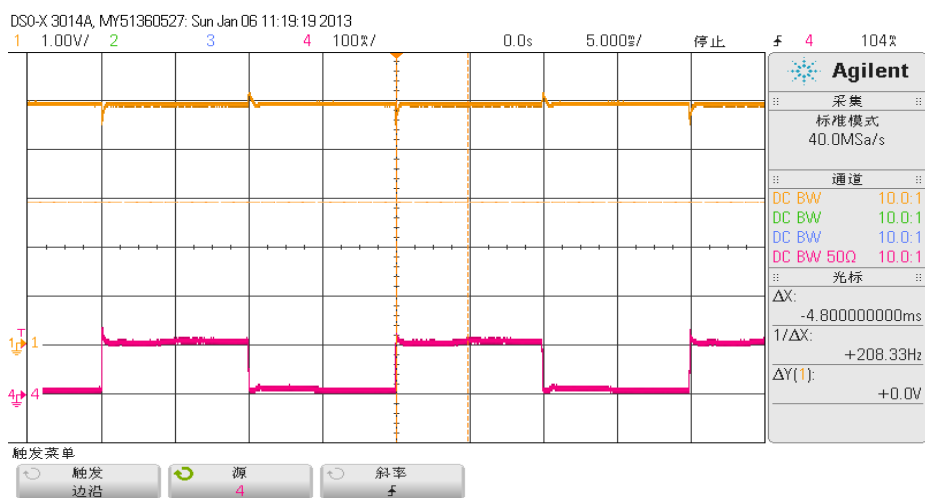
## Line transient response

Vin=6V~7V, Ch1—Vout, Ch3—Vin



## Load transient response

Iout=1mA~100mA, Ch1—Vout, Ch4—Iout

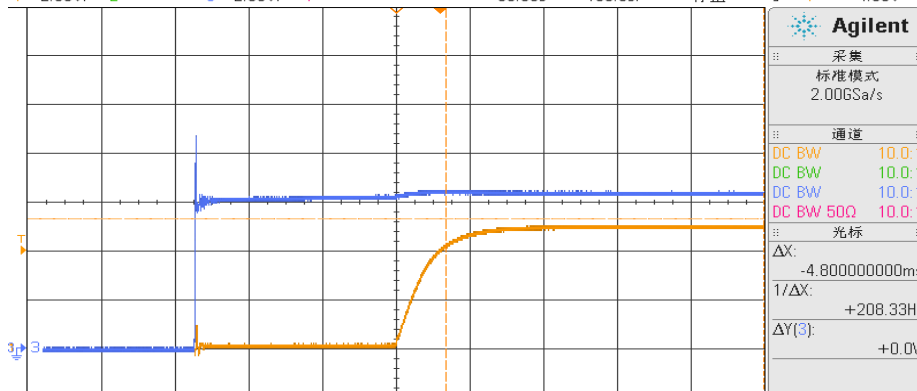


## Start up

Ch1—Vout, Ch3—Vin

DSO-X 3014A, MY51360527, Sun Jan 06 11:30:56 2013

1 2.00V/ 2 3 2.00V/ 4 -60.00% 100.0%/ 停止 f 1 4.00V



触发菜单

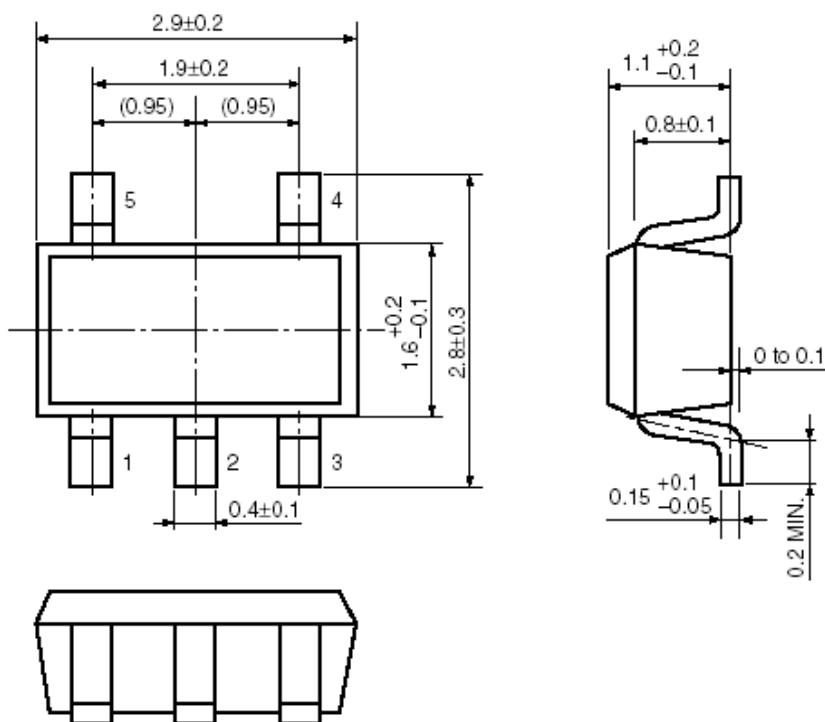
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## PACKAGE LINE

Package	SOT-23-3	Devices per reel	3000Pcs	Unit	mm
<p>Package dimension:</p> <p>The drawing shows three views of the SOT-23-3 package. The top view shows a rectangular body with a width of <math>2.9 \pm 0.2</math> mm and a length of <math>1.9 \pm 0.2</math> mm. The distance between the two leads (1 and 2) is <math>1.9 \pm 0.2</math> mm, with each lead offset by <math>0.95</math> mm from the center. The lead length is <math>0.4 \pm 0.1</math> mm. The body height is <math>1.6 \pm 0.2</math> mm, and the total height including the lead is <math>2.8 \pm 0.3</math> mm. The side view shows a lead height of <math>1.1^{+0.2}_{-0.1}</math> mm, a lead width of <math>0.8</math> mm, and a lead thickness of <math>0.16^{+0.1}_{-0.06}</math> mm. The lead angle is <math>0.2</math> mm minimum. The maximum lead length is <math>1.4</math> mm. The bottom view shows the package from below, highlighting the lead positions.</p>					
Package	SOT-23-5	Devices per reel	3000Pcs	Unit	mm

Package Dimension:



Package	SOT-89-3	Devices per reel	1000Pcs	Unit	mm
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Package Dimension:

