

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 $\pm 2\%$.

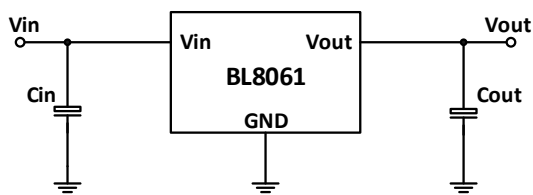
FEATURES

- 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

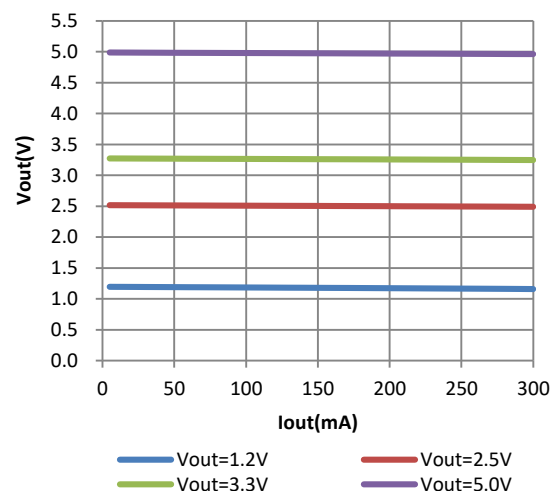
TYPICAL APPLICATION



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 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 DESRIPTON

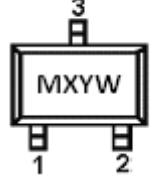
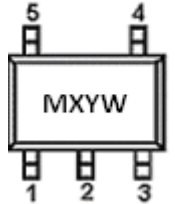
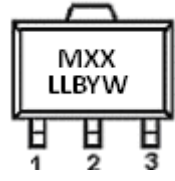
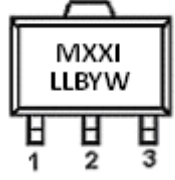
M: Product code

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		

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	

Y: The Year of manufacturing, "1" stands for year 20X1, "2" stands for year 20X2, and "8" stands for year 20X8. (X=0,1,2,...,9)

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.

The date code of the 53rd week is the same as that of the first week of the next year. For example, the date code of the 53rd week of 2017 is the same as that of the first week of 2018, which are 1801 and 8A.

ABSOLUTE MAXIMUM RATING

Parameter		Value
Max input voltage		20V
Operating junction temperature(T _J)		125°C
Ambient temperature(T _A)		-40°C -85°C
Power dissipation	SOT-23-3	250mW
	SOT-23-5	250mW
	SOT-89-3	500mW
Storage temperature(T _S)		-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

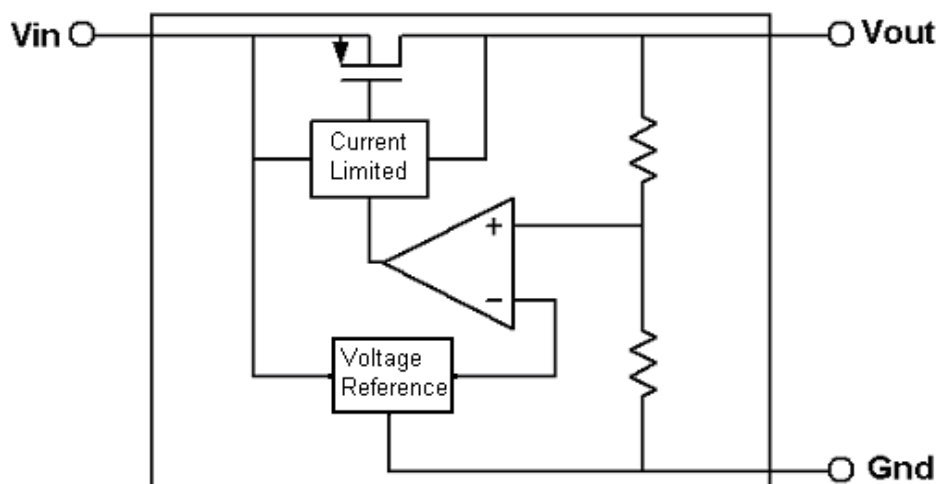
Item	Min	Recommended	Max.	Unit
Input voltage range			16	V
Ambient temperature	-40		85	°C

ELECTRICAL CHARACTERISTICS

(Test Conditions: C_{IN}=1uF, C_{OUT}=1uF, T_A=25°C, Unless Otherwise Specified)

Symbol	Parameter	Conditions		Min	Type	Max	Units
V _{IN}	Input voltage					16	V
V _{OUT}	Output voltage			V _{OUT} x0.98		V _{OUT} X1.02	V
I _{OUT} (Max.)	Maximum output current	V _{IN} -V _{OUT} =1V		250			mA
Dropout Voltage	Input-output voltage differential	I _{OUT} =100mA	V _{OUT} ≤ 2.5V		600	1000	mV
			V _{OUT} ≥ 2.5V		300	600	
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line regulation	I _{OUT} =10mA 2V≤V _{IN} ≤16V			0.2	0.3	%/V
ΔV_{out}	Load regulation	V _{IN} =Set V _{OUT} +1V 1mA≤I _{OUT} ≤100mA			20	40	mV
I _Q	Quiescent current	V _{IN} =Set V _{OUT} +1V			2.0	5.0	uA
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output voltage temperature coefficient	I _{OUT} =10mA			100		ppm/°C

BLOCK DIAGRAM



EXPLANATION

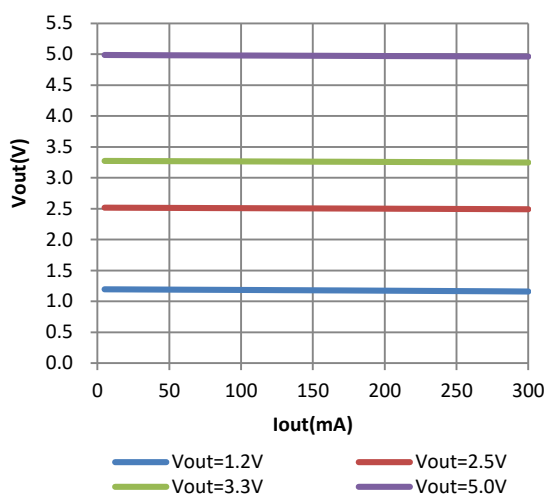
BL8061 is a series of low dropout voltage and low power consumption three pins regulator. Its application circuit is very simple, which only needs two outside capacitors. It is composed of these modules: high accuracy voltage reference, current limit circuit, error amplifier, output driver and power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

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

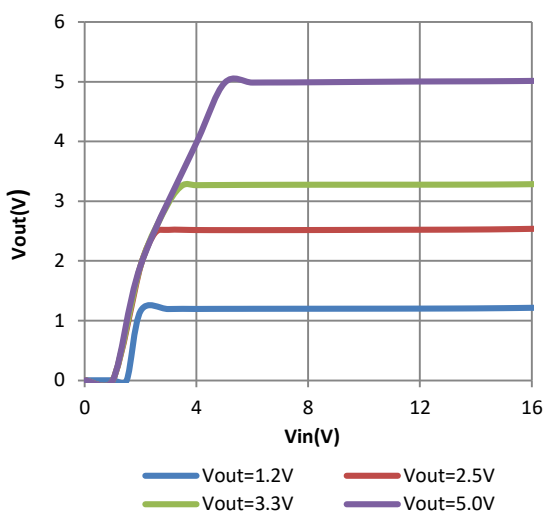
BL8061 uses trimming technique to assure the accuracy of output value within $\pm 2\%$, at the same time, temperature compensation is elaborately considered in this chip, which makes BL8061's temperature coefficient within 100ppm/ $^{\circ}\text{C}$.

TYPICAL PERFORMANCE CHARACTERISTICS

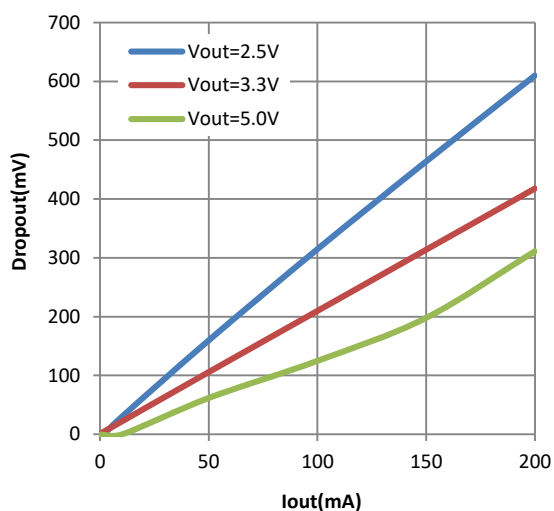
Vout Voltage vs Load Current



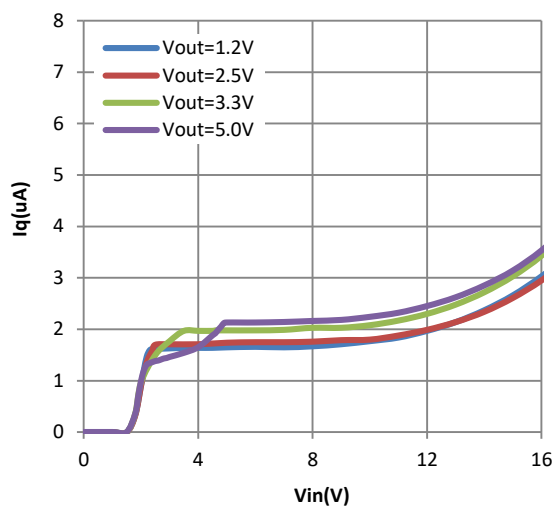
Line Regulation



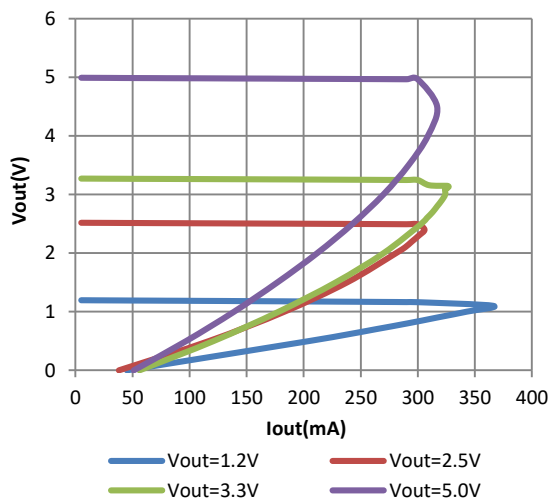
Dropout Voltage vs Load Current



I_q

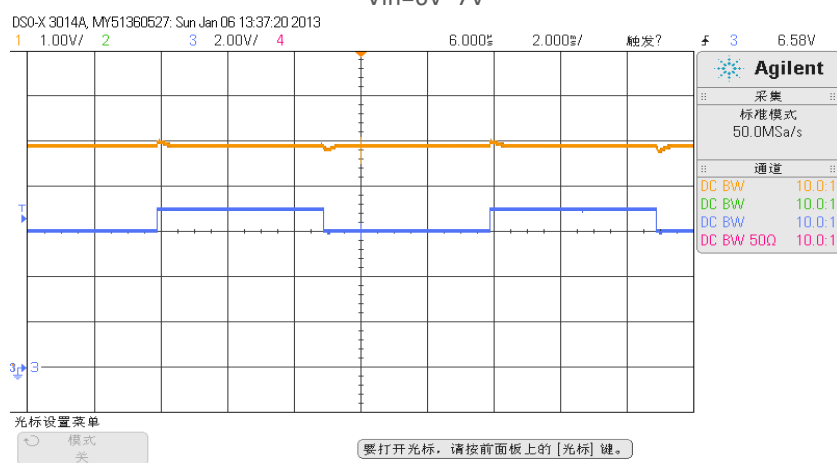


Current Limit



Line transient response

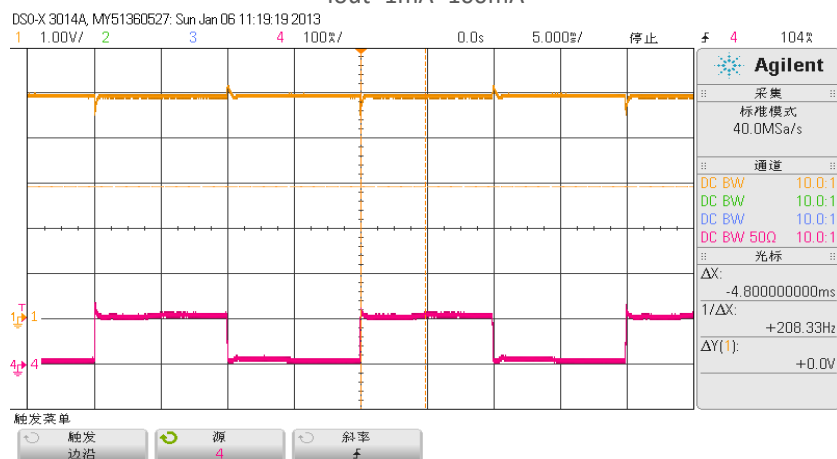
Vin=6V~7V



Ch1—Vout, Ch3—Vin

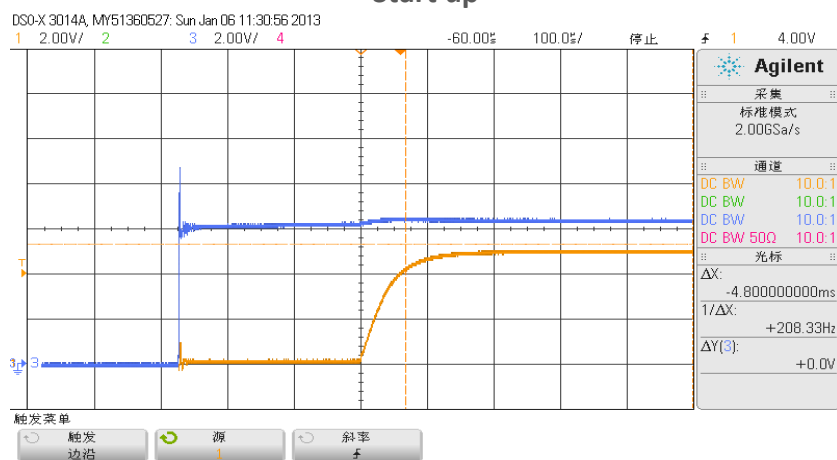
Load transient response

Iout=1mA~100mA



Ch1—Vout, Ch4—Iout

Start up

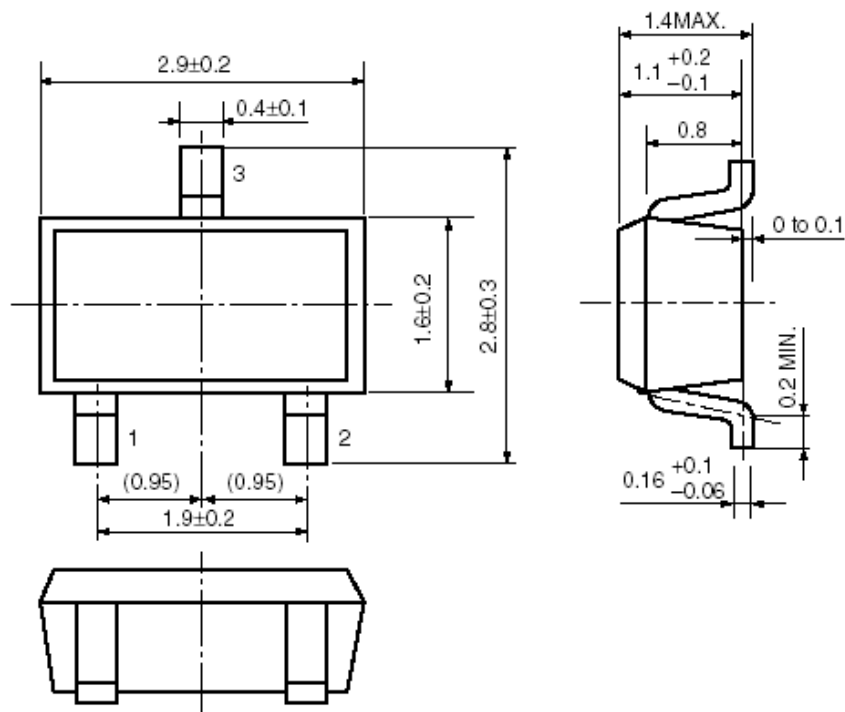


Ch1—Vout, Ch3—Vin

PACKAGE OUTLINE

Package	SOT-23-3	Devices per reel	3000pcs
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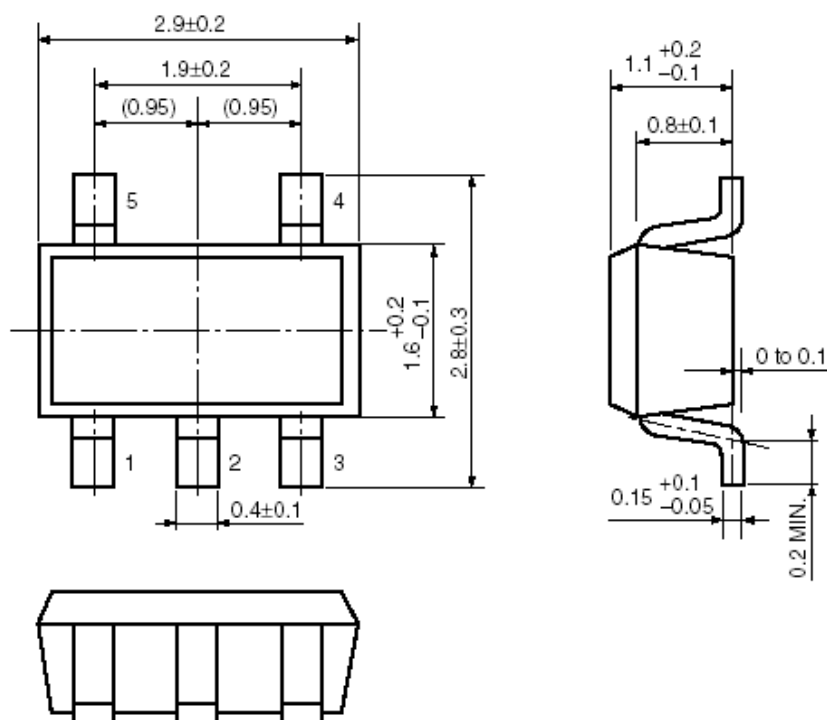
Package specification:



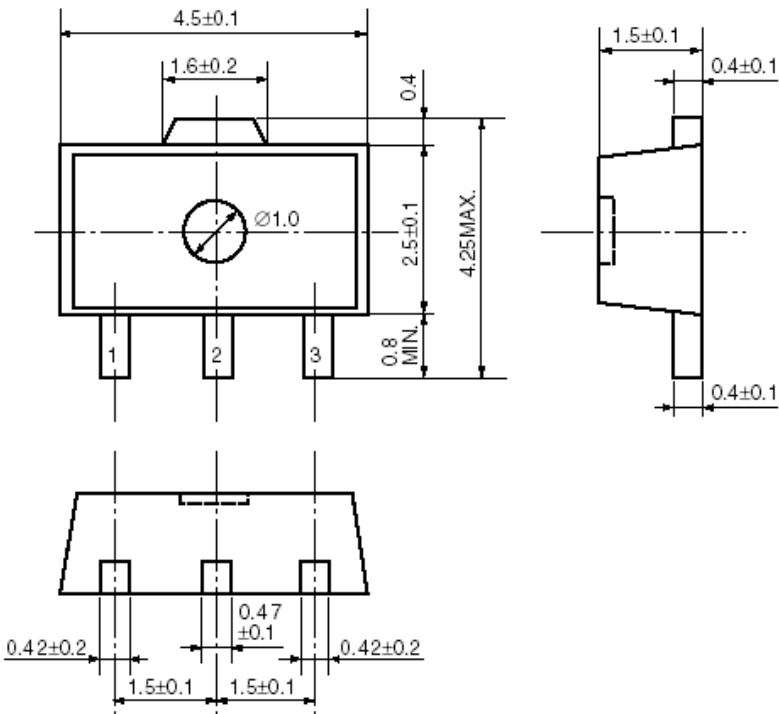
Unit: mm

Package	SOT-23-5	Devices per reel	3000pcs
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Package specification:



Unit: mm

Package	SOT-89-3	Devices per reel	1000pcs
Package specification:			
 The technical drawing illustrates the SOT-89-3 package for the BL8061 device. It includes three views: a top view, a side view, and a bottom view. The top view shows a rectangular body with a central circular feature of diameter $\varnothing 1.0$. The overall width is 4.5 ± 0.1 mm, and the width of the central feature is 1.6 ± 0.2 mm. The height of the body is 2.5 ± 0.1 mm, with a maximum height of 4.25 mm. The distance from the bottom of the body to the base of the pins is 0.8 mm minimum. The side view shows the profile of the package with a width of 1.5 ± 0.1 mm and a height of 0.4 ± 0.1 mm. The bottom view shows the three pins, with a pin width of 0.42 ± 0.2 mm and a pin pitch of 1.5 ± 0.1 mm. The distance between the center of the pins is 0.47 ± 0.1 mm.			
Unit: mm			