

800mA Ultra-Low Vin Low Dropout Voltage Linear Regulator

GENERAL DESCRIPTION

BL8074 series are a group of positive voltage output, high precise, and low power consumption voltage regulator. Voltages are selectable in 100mV steps within a range of 1.2V to 5.0V. It also can be customized on command.

BL8074 series have excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within $\pm 2\%$.

BL8074 series are available in SOT-89-3 package, which is lead (Pb)- free.

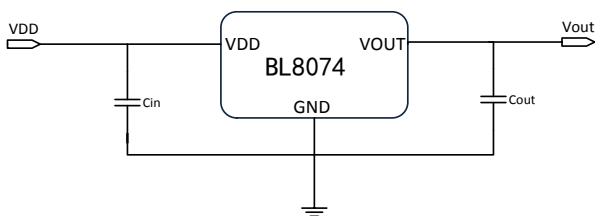
FEATURES

- Low Quiescent Current: 100uA at 5V
- High PSRR: 65dB range to 1KHz
- Low Output Noise: 44uVRMS
- Low Dropout: 200mV@Iout=0.8A, Vout=3.3V
- Maximum output current: 800mA
- Highly Accurate: $\pm 2\%$
- Low ESR Ceramic Capacitor Compatible

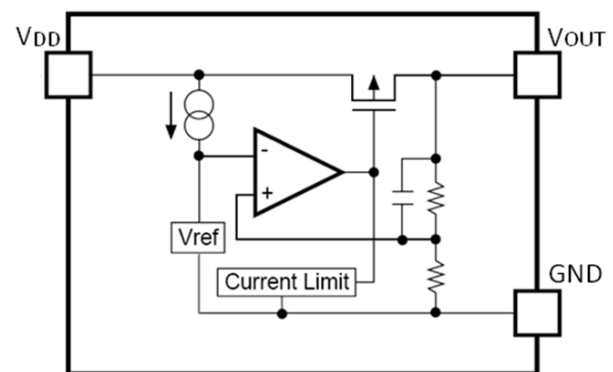
APPLICATIONS

- Reference Voltage Source
- Battery Powered Equipment
- PC Peripherals
- Wireless Devices
- Instrumentation

TYPICAL APPLICATION



BLOCK DIAGRAM



ORDERING INFORMATION

BL8074 ①②③④⑤

| Code | Description |
|------|---|
| ① | Temperature&Rohs: C:-40~85°C ,Pb Free Rohs Std. |
| ② | Package type: C3:SOT-89-3 |
| ③ | Packing type: TR:Tape&Reel (Standard) |
| ④ | Output voltage: e.g. 12=1.2V 18=1.8V 25=2.5V 33=3.3V 50=5.0V |
| ⑤ | Voltage accuracy: 1=±1%(Customized) Blank(default)=±2% |

MARKING DESCRIPTON

Output Voltage Code X

| VOUT | Code | VOUT | Code | VOUT | Code |
|------|------|------|------|------|------|
| 1.2V | 2 | 2.9V | 9 | 4.3V | 3 |
| 1.3V | 3 | 3.0V | 0 | 4.4V | 4 |
| 1.4V | 4 | 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 | | |

XX: Output Voltage, e.g. 18=1.8V 33=3.3V

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 | | BL8074CC3TR□□ |
|------------------------|----------------------|--|
| JBXX LLBYW | JB:Product Code | <p>SOT-89-3 1 GND 2 VDD 3 VOUT</p> |
| | XX:Output Voltage | |
| | LL:LOT NO. | |
| | B:FAB Code | |
| | YW:Date Code | |
| VDD | Supply Voltage Input | |
| GND | Ground Pin | |
| VOUT | Output Voltage | |

ABSOLUTE MAXIMUM RATING

| Parameter | Value |
|--|----------------|
| Max Input Voltage | 8V |
| Max Operating Junction Temperature (T _J) | 145°C |
| Ambient Temperature (T _A) | -40°C~85°C |
| Power Dissipation | SOT-89-3 500mW |
| Storage Temperature (T _S) | -40°C~150°C |
| Lead Temperature & Time | 260°C, 10 Sec |

RECOMMENDED WORK CONDITIONS

| Parameter | Value |
|--|------------|
| Input Voltage Range | Max. 6V |
| Ambient Temperature | -40°C~85°C |
| Operating Junction Temperature (T _J) | 125°C |

ELECTRICAL CHARACTERISTICS

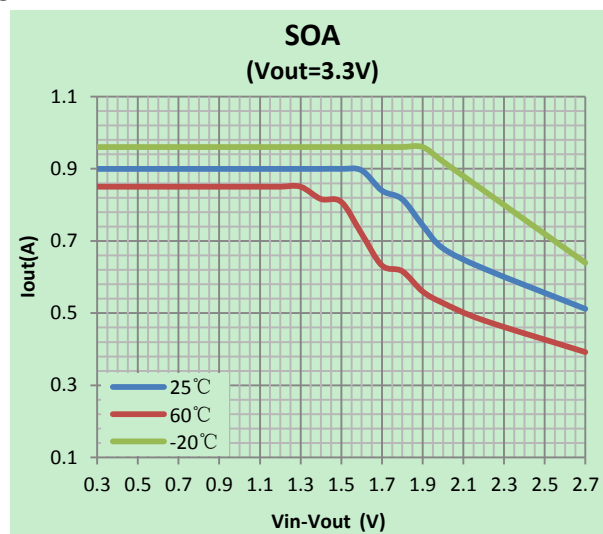
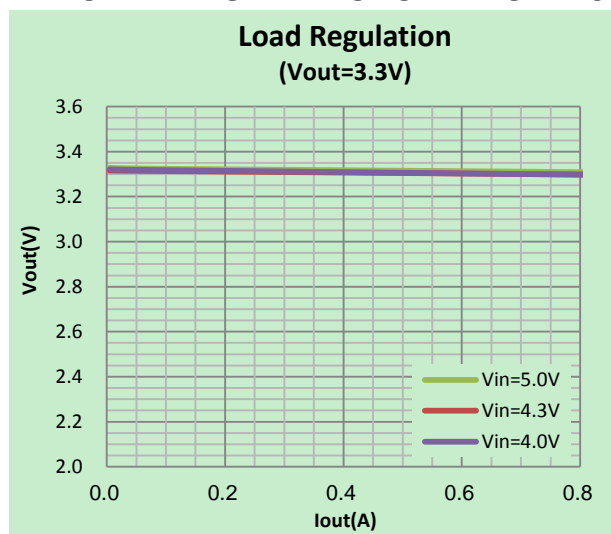
Test Conditions: $C_{IN}=4.7\mu F, C_{OUT}=4.7\mu F, T_A=25^\circ C$, unless otherwise specified.

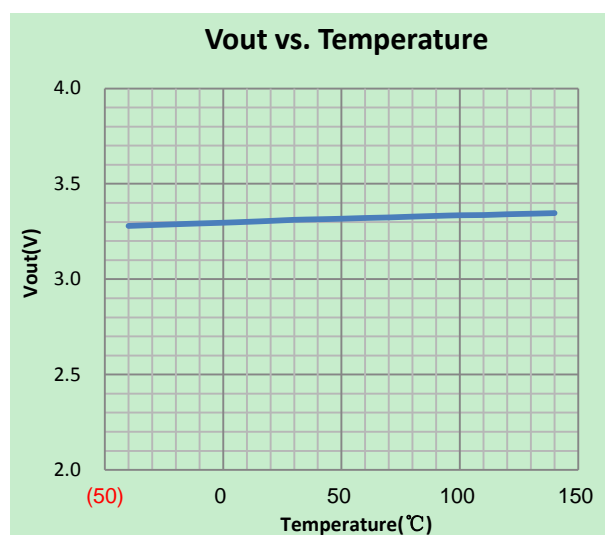
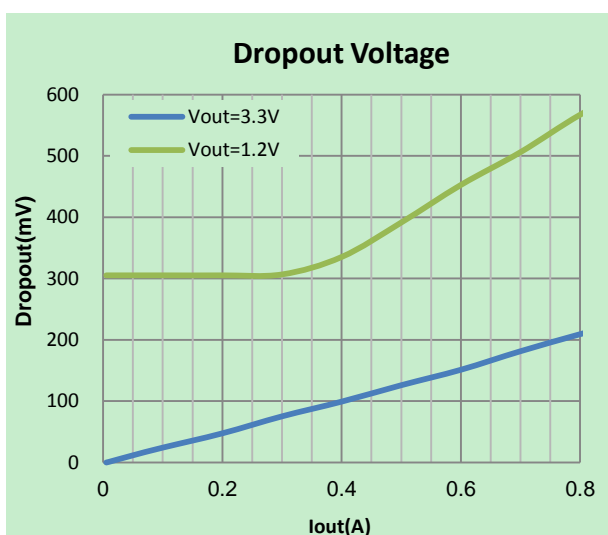
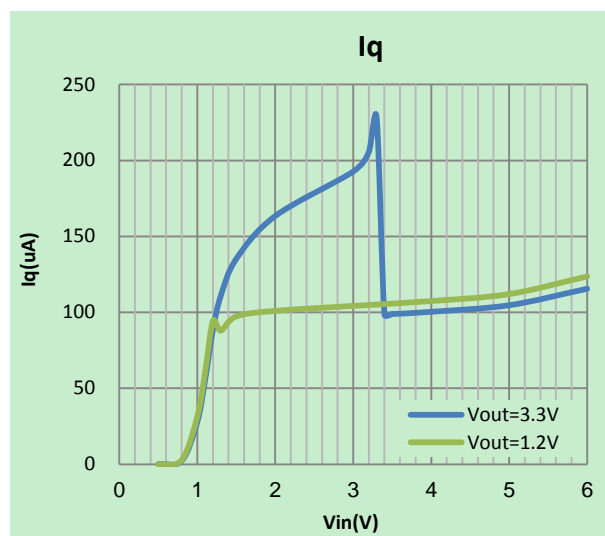
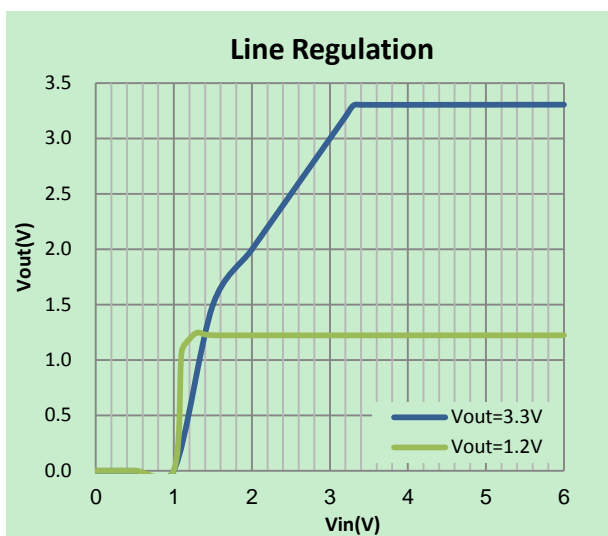
| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|--|--|--|---------------------------------|-----------|-----------------------|-----------------|
| V_{DD} | Input Voltage | | 1.5* | | 6 | V |
| V_{OUT} | Output Voltage | $V_{OUT}>1.5$ | $V_{DD}=\text{Set } V_{OUT}+1V$ | V_{OUT} | $V_{OUT} \times 1.02$ | V |
| | | $V_{OUT} \leq 1.5$ | $1mA \leq I_{OUT} \leq 10mA$ | | | |
| $I_{OUT} \text{ (Max.)}^{**}$ | Maximum Output Current | $V_{DD}-V_{OUT}=1V$ | 0.8 | | | A |
| V_{DROP} | Dropout Voltage | $V_{OUT}=3.3V, I_{OUT}=1A$ | | 300 | 500 | mV |
| $\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$ | Line Regulation | $I_{OUT}=10mA, 4V \leq V_{DD} \leq 6V$ | | 0.05 | 0.2 | %/V |
| ΔV_{out} | Load Regulation | $V_{DD}=\text{Set } V_{OUT}+1V$ $1mA \leq I_{OUT} \leq 2.5A$ | | 30 | 60 | mV |
| I_s | Supply Current | $V_{DD}=\text{Set } V_{OUT}+1V, V_{OUT}$ Floating | | 100 | 150 | μA |
| $\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$ | Output Voltage Temperature Coefficient | $I_{OUT}=10mA$ | | ± 100 | | ppm/ $^\circ C$ |
| PSRR | Ripple Rejection | $f=100Hz, \text{Ripple}=0.5Vp-p,$ $V_{DD}=\text{Set } V_{OUT}+1V$ | | 65 | | dB |
| en | Output Noise | $BW=10Hz \sim 100KHz$ | | 44 | | μV_{rms} |

Note: * $I_{out}=350mA @ V_{in}=1.5V, V_{out}=1.2V$

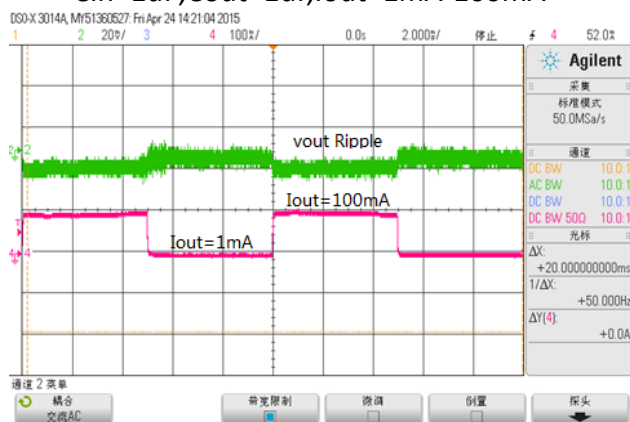
**The maximum power rating of each package is a constant, so along with the change of I_{LOAD} , the $V_{DD}-V_{OUT}$ should be controlled to a certain range to ensure the normal operation.

TYPICAL PERFORMANCE CHARACTERISTICS

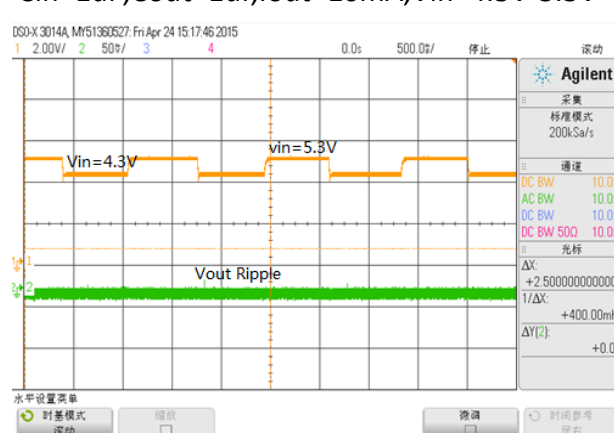




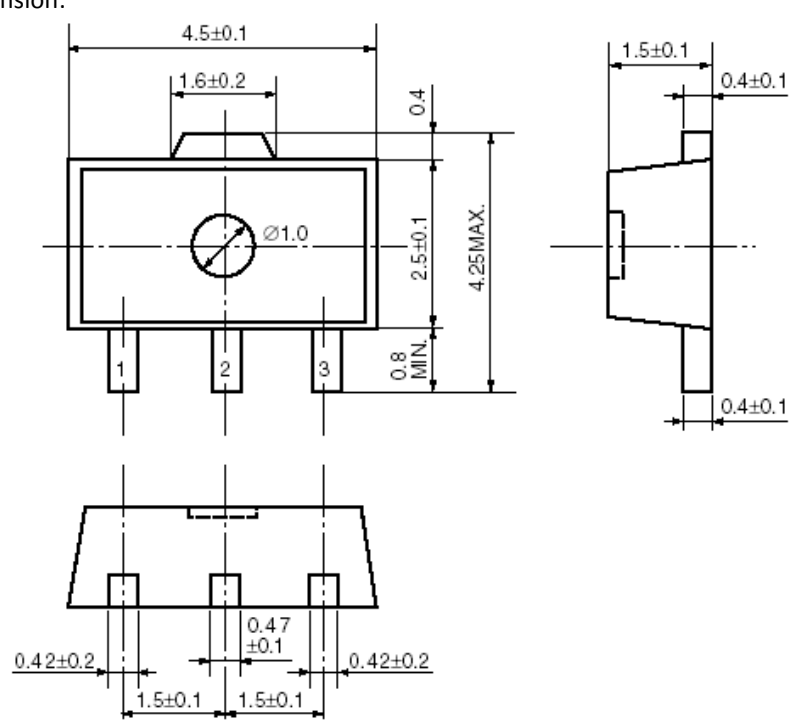
Load Transient Response (Vin=5V, Vout=3.3V)
Cin=1uF, Cout=1uF, Iout=1mA-100mA



Line Transient Response (Vin=5V, Vout=3.3V)
Cin=1uF, Cout=1uF, Iout=10mA, Vin=4.3V-5.3V



PACKAGE LINE

| Package | SOT-89-3 | Devices per reel | 1000Pcs | Unit | mm |
|---|----------|------------------|---------|------|----|
| Package Dimension:  <p> The technical drawing illustrates the SOT-89-3 package in three views: <ul style="list-style-type: none"> Top View: Shows a rectangular body with a width of 4.5 ± 0.1 mm and a height of 2.5 ± 0.1 mm. A central circular feature has a diameter of $\varnothing 1.0$ mm. Three pins are located at the bottom, with a minimum height of 0.8 mm. A top feature has a width of 1.6 ± 0.2 mm and a height of 0.4 mm. Side View: Shows the profile of the package with a total height of 4.25 mm (maximum). The top feature has a width of 1.5 ± 0.1 mm and a height of 0.4 ± 0.1 mm. The bottom pins have a height of 0.4 ± 0.1 mm. Bottom View: Shows the base of the package with a width of 1.5 ± 0.1 mm between the pins. The distance from the center to each pin is 0.42 ± 0.2 mm. The pin height is 0.47 ± 0.1 mm. </p> | | | | | |