上海贝岭 SHANGHAI BELLING

BL8071

1.5A Linear Regulator

GENERAL DESCRIPTION

BL8071 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.

BL8071 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 ±2%.

BL8071 series are available in SOT-223 package, which are lead (Pb)- free.

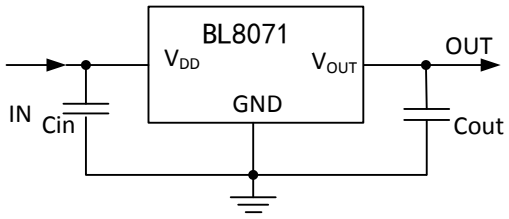
FEATURES

- Low Quiescent Current: 100uA at 5V
- High PSRR: 70dB range to 1KHz
- Low Output Noise: 44uVRMS
- Low Dropout: 300mV at 1A load
- Maximum output current: 1.5A
- Highly Accurate: ±2%
- Low ESR Ceramic Capacitor Compatible

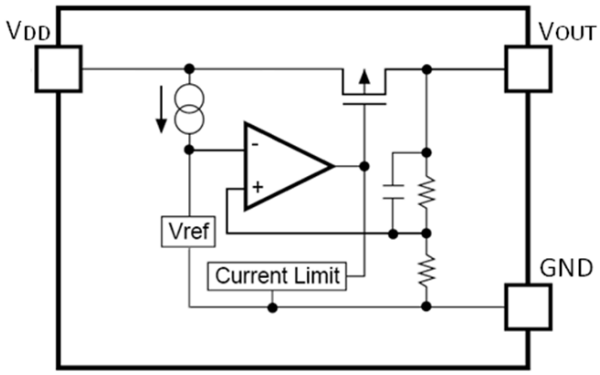
APPLICATIONS

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

TYPICAL APPLICATION



BLOCK DIAGRAM

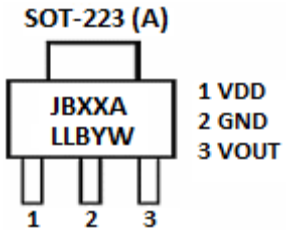
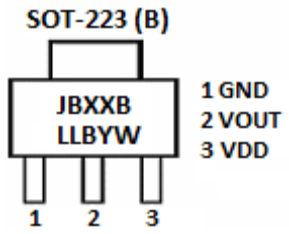


ORDERING INFORMATION

BL8071 □□□□□

Code	Description
□	Temperature&Rohs: C:-40~85°C ,Pb Free Rohs Std.
□	Package type: LA: SOT-223 (A) LB: SOT-223 (B)
□	Packing type: TR:Tape&Reel (Standard)
□	Output voltage: e.g. 12=1.2V 18=1.8V 25=2.5V 33=3.3V 50=5.0V
□	Voltage accuracy: 1=±1%(Customized) Blank(default)=±2%

PIN CONFIGURATION

Product Classification		BL8071CLATR□□
JBXX LLBYW	JB:Product Code XX:Output Voltage A: A type LL:LOT NO. B:FAB Code YW:Date Code	
Product Classification		BL8071CLBTR□□
JBXX LLBYW	JB:Product Code XX:Output Voltage B: B type LL:LOT NO. B:FAB Code YW:Date Code	
VDD	Supply Voltage Input	
GND	Ground Pin	
VOUT	Output Voltage	

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," $\overline{A}$ " stands for week 27," $\overline{Z}$ " stands for week 52.

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
Package Thermal Resistance	SOT-223	20°C / W
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}=4.7uF,C_{OUT}=4.7uF,T_A=25°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}=Set V_{OUT}+1V 1mA≤I_{OUT}≤10mA	V_{OUT} X0.98	V_{OUT}	V_{OUT} X1.02	V
		V_{OUT}<=1.5		V_{OUT} -0.03		V_{OUT} +0.03	
I_{OUT} (Max.) **	Maximum Output Current		V_{DD}-V_{OUT}=1V	1.5			A
V_{DROP}	Dropout Voltage		V_{OUT} =3.3V, I_{OUT}=1A		300	500	mV
$\frac{\Delta Vout}{\Delta Vin \cdot Vout}$	Line Regulation		I_{OUT}=10mA, 4V≤V_{DD}≤6V		0.05	0.2	%/V
$\Delta Vout$	Load Regulation		V_{DD}=Set V_{OUT}+1V 1mA≤I_{OUT}≤2.5A		30	60	mV
Is	Supply Current		V_{DD}=Set V_{OUT}+1V, V_{OUT} Floating		100	150	uA
$\frac{\Delta Vout}{\Delta T \cdot Vout}$	Output Voltage Temperature Coefficient		I_{OUT}=10mA		±100		ppm/°C
PSRR	Ripple Rejection		f=100Hz, Ripple=0.5Vp-p, V_{DD}=Set V_{OUT}+1V		70		dB
en	Output Noise		BW=10Hz~100KHz		44		uVrms

Note: *Iout=500mA@Vout=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.*

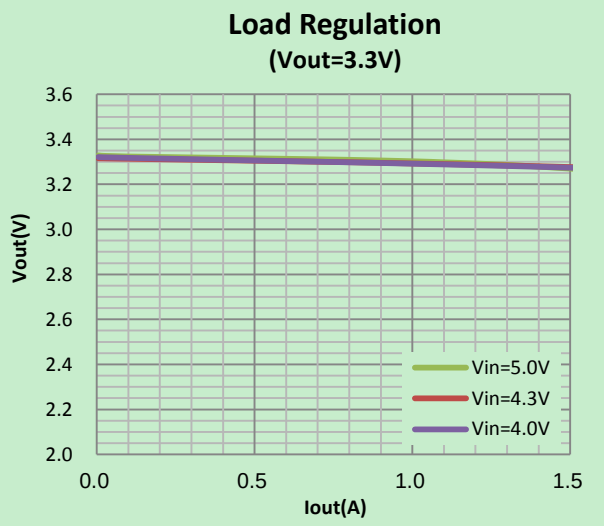
THERMAL CONSIDERATIONS

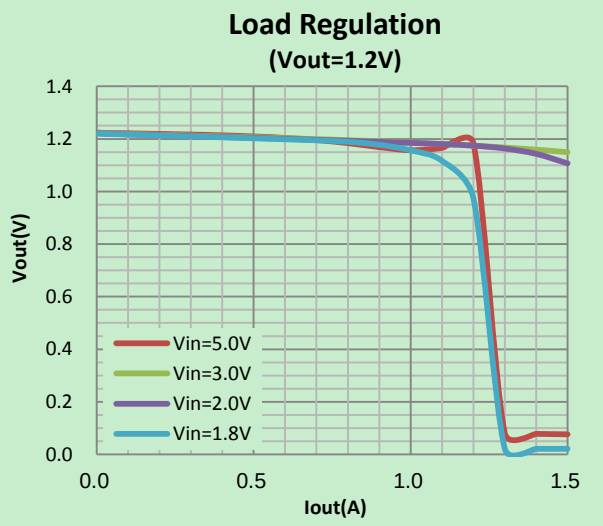
We have to take heat dissipation into great consideration when output current or differential voltage of input and output voltage is large. Because in such cases, the power dissipation consumed by BL8071 is very large. BL8071 series uses SOT-223 package type and its thermal resistance is about 20°C/W. And the copper area of application board can affect the total thermal resistance. If copper area is 5cm*5cm (two sides), the resistance is about 30°C/W. So the total thermal resistance is about 20°C/W + 30°C/W. In this case, the power dissipation should be limited less than 1.2W. We can decrease total thermal resistance by increasing copper area in application board. When there is no good heat dissipation copper are in PCB, the total thermal resistance will be as high as 120°C/W, then the power dissipation of BL8071 could allow on itself is less than 1W. And furthermore, BL8071 will work at junction temperature higher than 125°C under such condition and no lifetime is guaranteed.

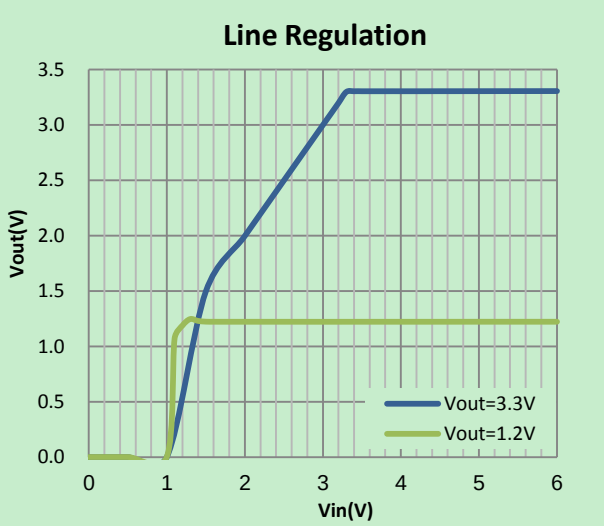
CURRENT LIMIT MODE

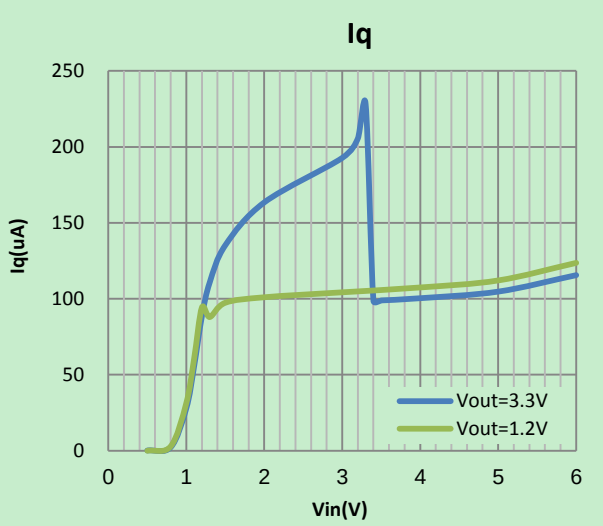
Current Limit module can keep chip and power system away from danger when load current is too large. When Vout decrease the Short Circuit Current will fold back to a small value.

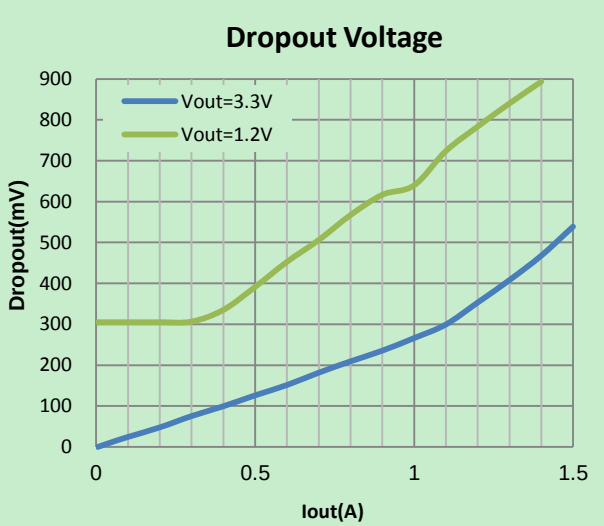
TYPICAL PERFORMANCE CHARACTERISTICS

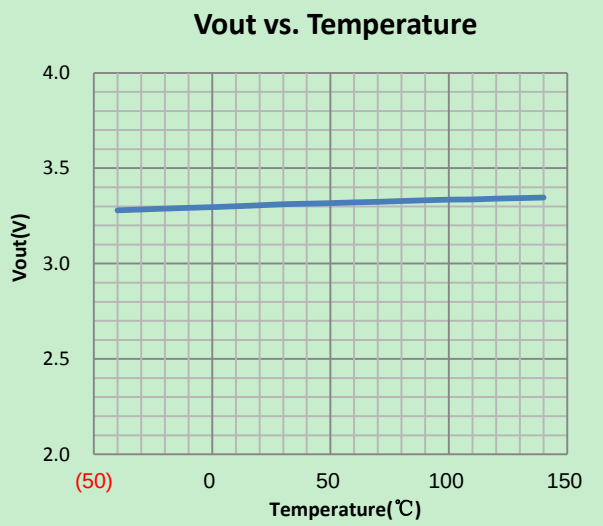






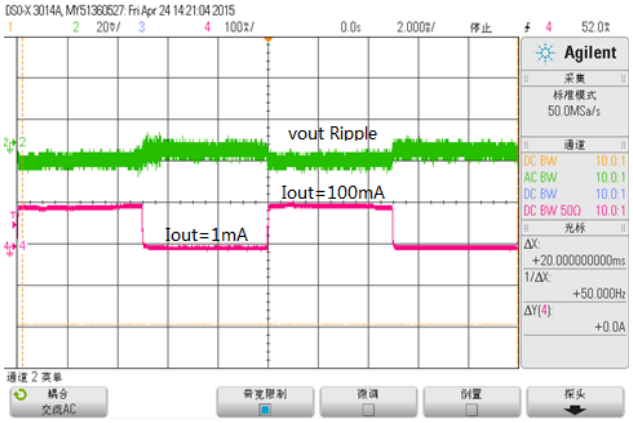






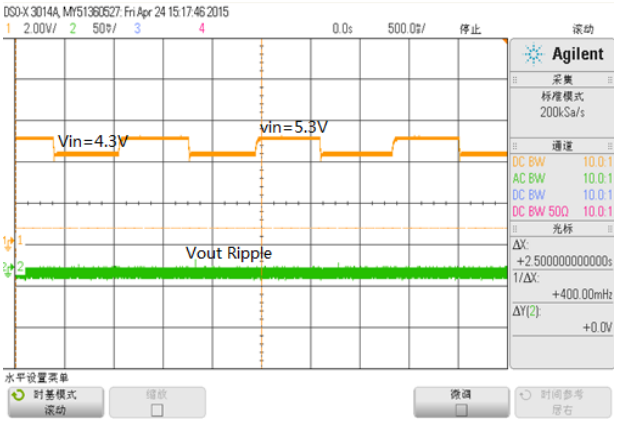
Load Transient Response (Vin=5V,Vout=3.3V)

Cin=1uF,Cout=1uf,Iout=1mA-100mA



Line Transient Response(Vin=5V,Vout=3.3V)

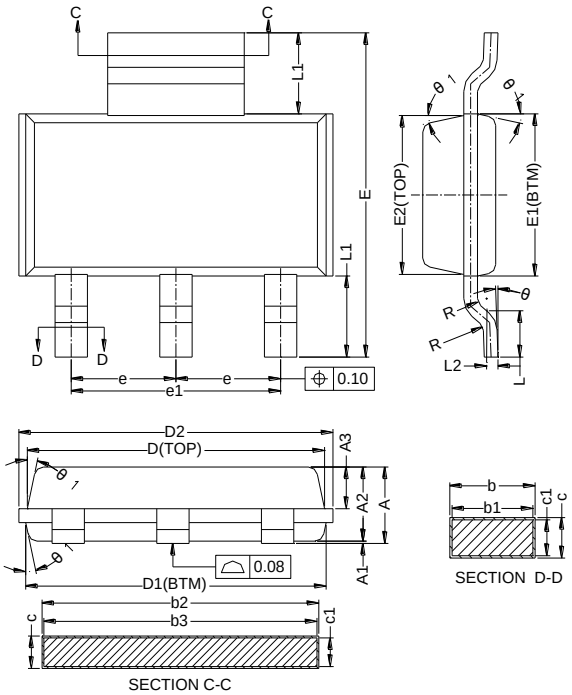
Cin=1uF,Cout=1uf,Iout=10mA,Vin=4.3V-5.3V



PACKAGE LINE

Package	SOT-223	Devices per reel	2500Pcs	Unit	mm

Package specification：



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	-	-	1.80
A1	0.02	-	0.10
A2	1.50	1.60	1.70
A3	0.80	0.90	1.00
b	0.67	-	0.80
b1	0.66	0.71	0.76
b2	2.96	-	3.09
b3	2.95	3.00	3.05
c	0.30	-	0.35
c1	0.29	0.30	0.31
D	6.48	6.53	6.58
D1	6.55	6.60	6.65
D2	-	-	7.05
E	6.80	-	7.20
E1	3.40	3.50	3.60
E2	3.33	3.43	3.53
e	2.30BSC		
e1	4.60BSC		
L	0.80	1.00	1.20
L1	1.75REF		
L2	0.25BSC		
R	0.10	-	-
R1	0.10	-	-
θ	0°	-	8°
θ 1	10°	12°	14°

NOTES:
ALL DIMENSIONS REFER TO JEDEC STANDARD TO261-AA