上海贝岭
SHANGHAI BELLING

BL8068

700mA High PSRR, Low Noise, Fast Response Linear Regulator

DESCRIPTION

BL8068 series is a group of positive voltage output, low power consumption, low dropout voltage regulator.

BL8068 can provide output value in the range of 1.2V~4.5V every 0.1V step. It also can be customized on command.

BL8068 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module with discharge capability.

BL8068 has 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%.

BL8068 is available in SOT-23-5, SC-70-5 packages which is lead free.

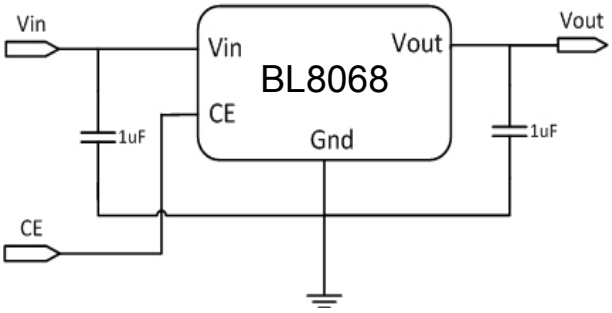
FEATURES

- Low Power Consumption: 30uA（Typ.）
- Low output noise (50uVRMS)
- Standby Mode: 0.1uA
- Low dropout Voltage: 0.08V@150mA (Typ.)
- High Ripple Rejection: 72dB@1000Hz (Typ.)
- Low Temperature Coefficient: ±100ppm/°C
- Excellent Line regulation: 0.05%/V
- Build-in chip enable and discharge circuit
- Output Voltage Range: 1.2V~4.5V (customized on command every 0.1V step)
- Highly Accurate: ±2%
- Output Current Limit

APPLICATIONS

- Power source for cellular phones and various kind of PCSs
- Battery Powered equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source
- Regulation after Switching Power

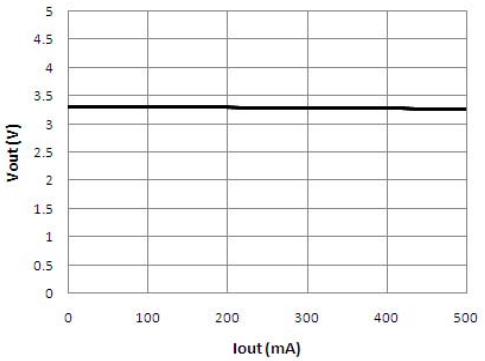
TYPICAL APPLICATION CIRCUIT



NOTE: Input capacitor (Cin=1uF) and Output capacitor (Cout≥1uF) are recommended in all application circuit.

ELECTRICAL CHARACTERISTICS

Load Regulation (Vin=4.5V, Vout=3.3V)



ORDERING INFORMATION

BL8068 ①②③④⑤

Code	Description
①	Temperature&Rohs: C: -40~85°C ,Pb Free Rohs Std.
②	Package type: A5: SC-70-5 B5A: SOT-23-5(A) B5B: SOT-23-5(B)
③	Packing type: TR:Tape&Reel (Standard)
④	Output voltage: e.g. 15=1.5V 18=1.8V 45=4.5V
⑤	Voltage accuracy: Blank(default)=±2%

MARKING DESCRIPTION

F̄: Product Code
X: Output Voltage

Vout	Code	Vout	Code	Vout	Code
		2.6V	6̄	4.1V	1̄
1.2V	2	2.7V	7̄	4.2V	2̄
1.3V	3	2.8V	8̄	4.3V	3̄
1.4V	4	2.9V	9̄	4.4V	4̄
1.5V	5	3.0V	0	4.5V	5̄
1.6V	6	3.1V	1		
1.7V	7	3.2V	2		
1.8V	8	3.3V	3		
1.9V	9	3.4V	4		
2.0V	0̄	3.5V	5		
2.1V	1̄	3.6V	6		
2.2V	2̄	3.7V	7		
2.3V	3̄	3.8V	8		
2.4V	4̄	3.9V	9		
2.5V	5̄	4.0V	0̄		

Date code 1st Z: The year of manufacturing, "8" for year 2008, and "0̄" for year 2010.

Date code 2nd Z: The week of manufacturing, "A" for week 1, "Z" for week 26, "Ā" for week 27, "Z̄" for week 52.

PIN CONFIGURATION

Part No.		BL8068CA5TR□□□
Marking		SC-70-5 5 4 F̄XZZ 1 2 3 1 Vin 2 Vss 3 CE 4 NC 5 Vout
F̄XZZ	F: product code X: output voltage ZZ: date code	
Part No.		BL8068CB5ATR□□□
Marking		SOT-23-5 (A) 5 4 F̄XZZ 1 2 3 1 Vin 2 Vss 3 CE 4 NC 5 Vout
F̄XZZ	F: product code X: output voltage ZZ: date code	
Part No.		BL8068CB5BTR□□□
Marking		SOT-23-5 (B) 5 4 F̄XZZI 1 2 3 1 Vout 2 Vss 3 Vin 4 CE 5 NC
F̄XZZI	F: product code X: output voltage ZZ: date code | : Type B	

PIN DESCRIPTION

Pin	Description
Vss	Gound
Vin	Input voltage supply
Vout	Output voltage
CE	Chip enable
NC	No connection

BLOCK DIAGRAM

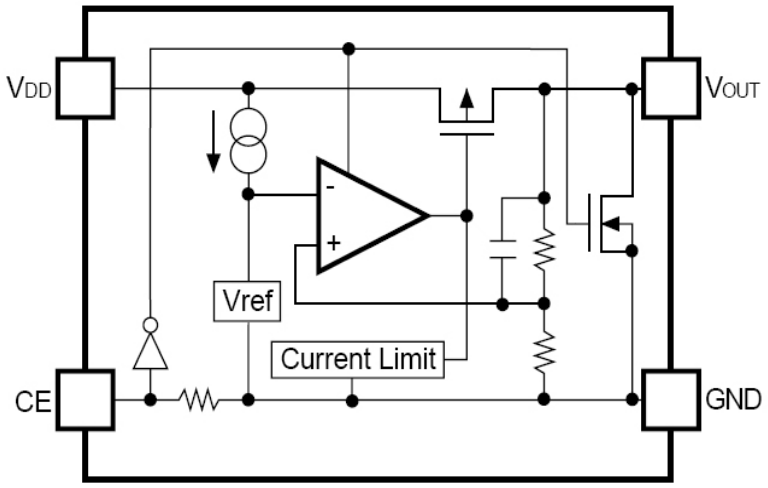


DIAGRAM EXPLANATION

BL8068 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module with discharge capability.

BL8068 has 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%.

Low ESR ceramic capacitor can be used for BL8068 for both input and output ends. Both 1uF can keep BL8068 work stable. However, a larger output capacitor, such as 3.3uF /4.7uF is always recommended to compensate dymanic load current change.

ABSOLUTE MAXIMUM RATING

Parameters		Value
Input Voltage		-0.3 ~ 6 V
Operation Junction Temperature (Tj)		150 °C
Output Current		800 mA
Storage Temperature		-65 ~ 150 °C
Power Dissipation	SC70-5	250 mW
	SOT23-5	360 mW
IR Reflow Lead Temperature and Time		260°C , 10s
ESD Rating, Human Body Mode		3000 V

Note:

Exceed these limits to damage to the device.

Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED OPERATION RANGE

Parameters	Value
Input Voltage	1.2 ~ 6 V
Operation Ambient Temperature	-40 ~ 85 °C

ELECTRICAL CHARACTERISTICS

Test condition: Cin=1uF, Cout=1uF, T_A=25°C, unless otherwise specified.

BL8068, for arbitrary output voltage ($Vout_{set}$)

Symbol	Parameters	Condition	Min.	Typ.	Max.	Unit
Vin	Input Voltage		1.2		6	V
Vout	Output Voltage	Vin=$Vout_{set}$+1V 1mA≤Iout≤30mA	$Vout_{set}$ x 0.98	$Vout_{set}$	$Vout_{set}$ x 1.02	V
$Iout_{MAX}$	Maximum Output Current		700			mA
Vdrop	Dropout Voltage, Vout≥2.8V	Iout=50mA		25	40	mV
		Iout=100mA		50	75	mV
		Iout=150mA		75	115	mV
		Iout=400mA		220	280	mV
$\frac{\Delta Vout}{\Delta Vin \cdot Vout}$	Line Regulation	Iout=40mA; 2.8V≤Vin≤6V		0.05	0.1	%/V
$\Delta Vout / \Delta Iout$	Load Regulation	Vin=$Vout_{set}$+1V 1mA≤Iout≤500mA		100	150	mV
Iss	Supply Current when Operation	Vin=$Vout_{set}$+1V		30	50	uA
Ishutdown	Supplay Current when Shut Down	Vin=$Vout_{set}$+1V, Vce=0V		0.1	1	uA
$\frac{\Delta Vout}{\Delta T \cdot Vout}$	Output Voltage Temperature Coefficient	Vin=Set Vout+1V Iout=30mA		±50		ppm/°C
PSRR	Power Supply Ripple Rejection Rate	F=1000Hz, Ripple=0.5Vpp Vin=$Vout_{set}$+1V		72		dB
I_{limit}	Output Short Current Limit	Vout=0V		800		mA
Vceh	CE Input Voltage for “High”		1.4			V
Vcel	CE Input Voltage for “Low”				0.25	V
e_n	Output Noise	Bandwith=10~100KHz		50		uVrms

NOTE:

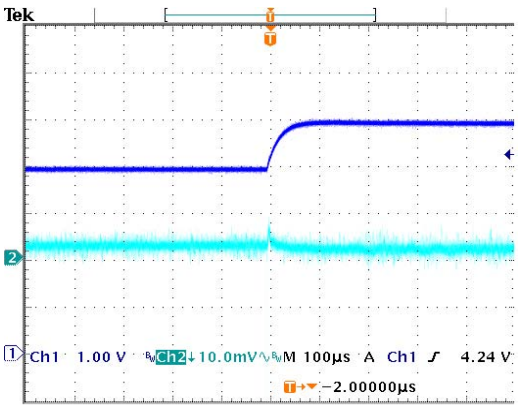
$Vout_{set}$ is the nominal output voltage that BL8068 is set to, for example, 3.3V.

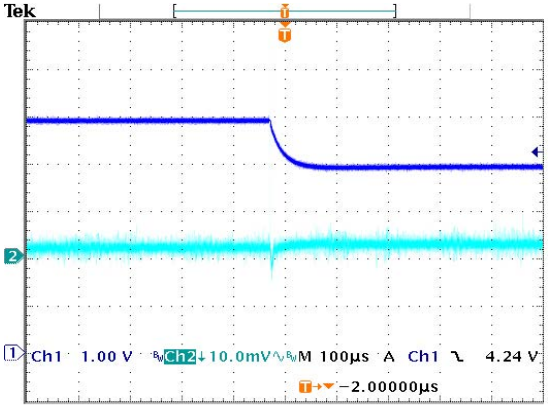
*Vdrop=Vin-(Vout*0.98), in which Vout is the output voltage when Vin=$Vout_{set}$+1.0V at different output current, and Vin is the input voltage at which the output voltage becomes 98% of Vout after gradually decreasing the input voltage.*

TYPICAL PERFORMANCE CHARACTERISTICS (Cont')

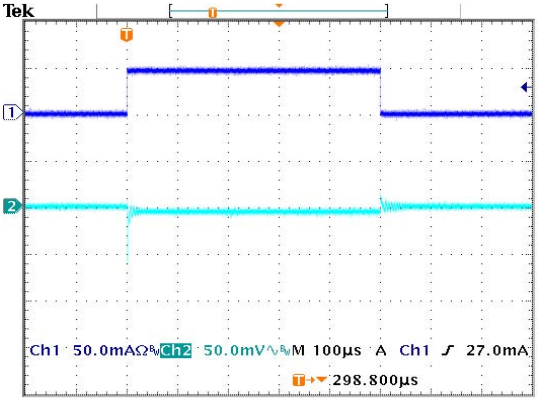
Test condition: Cin=1uF, Cout=1uF, T_A=25°C, CE pin is tied to Vin, $Vout_{set}$=3.3V, unless otherwise specified.

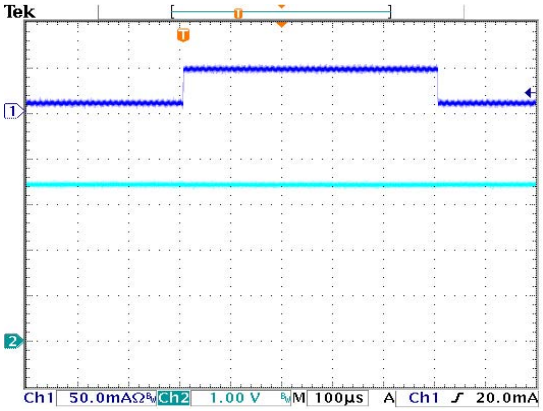
5) Line Transient Response (Ch1: Vin 4↔5V; Ch2: Vout)



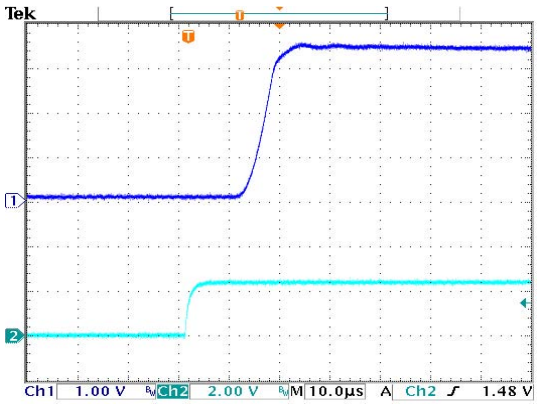


6) Load Transient Response (Ch1: Iout 1↔50mA; Ch2: Vout)

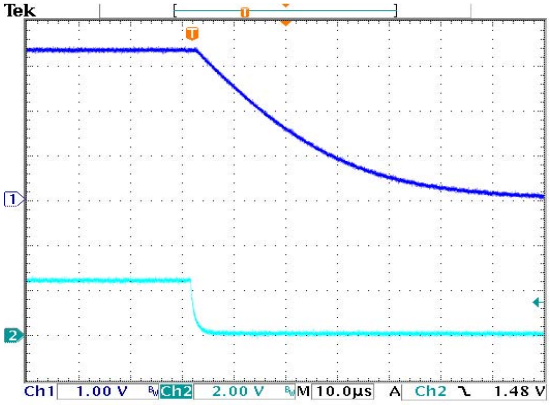




7) Startup by CE (Ch1: Vout; Ch2: CE)



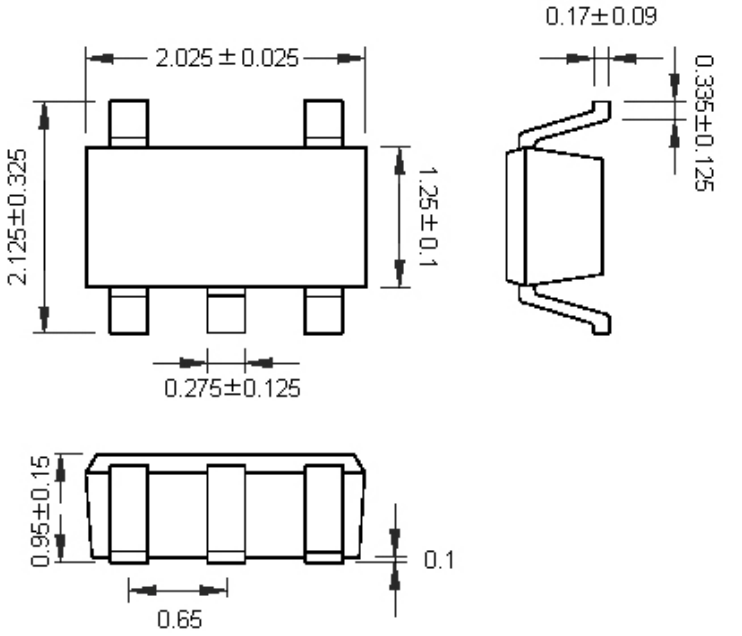
8) Shutdown by CE (Ch1: Vout; Ch2: CE)



PACKAGE OUTLINE DIMENSION

Package	SC70-5
Devices per reel	3000

Dimension (mm)



Package	SOT23-5
Devices per reel	3000

Dimension (mm)