BL9157

150mA High Voltage Regulator

FEATURES

- Low Power Consumption: 2μA(Typ.)
- Maximum Output Current: 150mA
- Low Dropout Voltage:
  650mV@100mA (V_{OUT}=5V)
- High Input Voltage (up to 30V)
- PSRR：-60dB@217Hz
- Output Voltage Accuracy: 1%
- -40~ + 85℃ Operating Temperature Range
- Available in SOT89-3 package

APPLICATIONS

- Battery-Powered Equipment
- Communication Equipment
- Audio/Video Equipment

DESCRIPTION

The BL9157 is a low power high voltage regulator which can provide 150mA output current. The device allows input voltage up to 30V. The BL9157 is available in several fixed output voltages which has low dropout voltage and low quiescent current features.

Although designed primarily as fixed voltage regulators, the device can be used with external components to obtain variable output voltages.

The BL9157 is available in SOT89-3 package. It operates over an ambient temperature range of -40℃ to +85℃.

TYPICAL APPLICATION

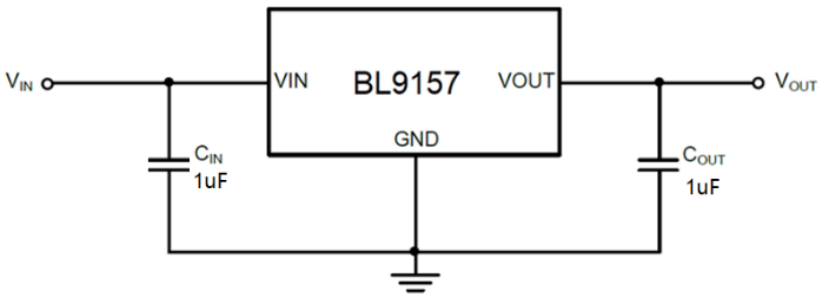


Figure 1. Typical Application Circuit

ORDERING INFOMATION

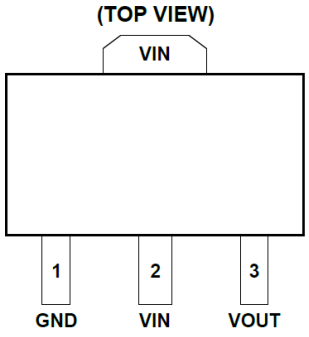
BL9157 - XX X XXX

Package:
C3A: SOT89-3(A)
C3B: SOT89-3(B)

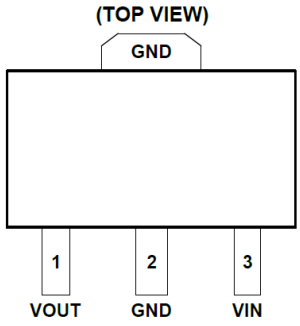
Output Voltage Accuracy:
B: ± 1%

Output Voltage:
18: 1.8V 28: 2.8V 33: 3.3V 50: 5.0V

PIN CONFIGURATIONS



SOT-89-3 (A Type)



SOT-89-3 (B Type)

PIN DESCRIPTION

NAME	FUNCTION
GND	Ground
VIN	Supply Voltage Input
VOUT	Output Voltage

ABSOLUTE MAXIMUM RATINGS (Note 1)

Max Input Voltage ····· +33V
Maximum Junction Temperature ····· 150°C
Package Thermal Resistance θ_{JA} (SOT89-3) ····· 100℃/W
Operating Temperature Range ····· -40°C to 85°C
Storage Temperature Range ····· -65°C to 125°C

Note 1: Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

ELECTRICAL CHARACTERISTICS (Note 2)

(Test conditions: $V_{IN}=V_{OUT}+2V$, $C_{IN}=C_{OUT}=1\mu F$, $T_A=25℃$, unless otherwise noted.)

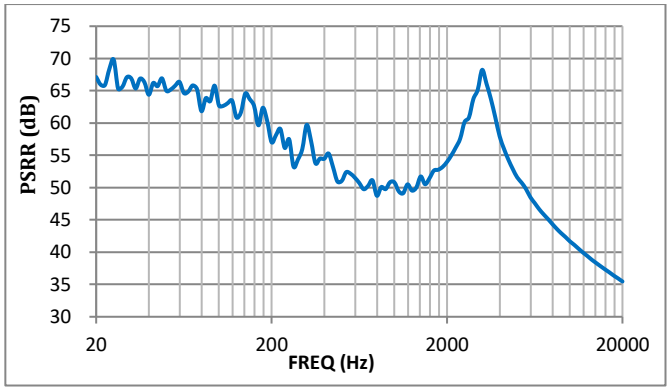
Parameter		Symbol	Conditions	MIN	TYP	MAX	unit
Input Voltage		V_{IN}				30	V
Output Voltage Accuracy		ΔV_{OUT}	I_{OUT}=10mA	-1		+1	%
Maximum Output Current			$V_{IN}= V_{OUT}+2V$	150			mA
Quiescent Current		I_Q	I_{OUT}=0mA		2		μA
Dropout Voltage		V_{DROP}	I_{OUT}=100mA, V_{OUT}=5V		650		mV
			I_{OUT}=150mA, V_{OUT}=5V		1000		mV
Line Regulation		$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	V_{IN} = V_{OUT} + 2V to 30V, I_{OUT} =1mA		0.02		%/V
Load Regulation		ΔV_{OUT}	1mA<I_{OUT}<150mA V_{IN}=Vout+2V		7		mV
Output Voltage Temperature Coefficient (Note 3)		TC_{VOUT}	I_{OUT}=1mA		±100		ppm/℃
Power Supply Rejection Ratio	f=217Hz	PSRR	I_{OUT}=10mA V_{OUT}=5V		-60		dB
	f=1KHz				-50		
Thermal Shutdown Temperature		T_{SD}			145		℃
Thermal Shutdown Hysteresis		T_{SDHY}			30		℃

Note 2: Production test at +25°C. Specifications over the temperature range are guaranteed by design and characterization.

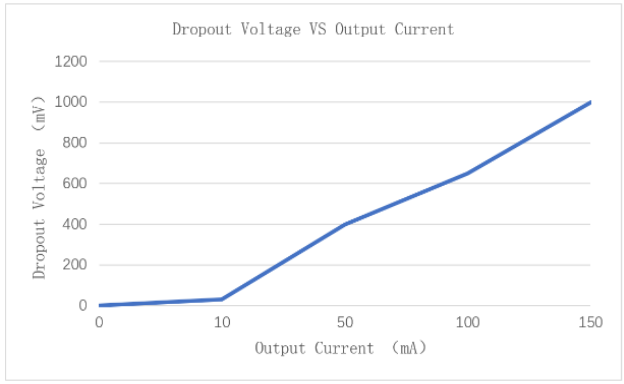
Note 3: The temperature coefficient is calculated by $TC_{V_{OUT}} = \frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$

TYPICAL PERFORMANCE CHARACTERISICS

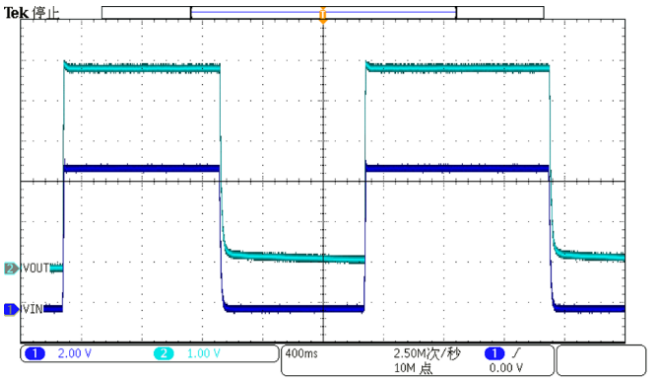
Test conditions： V_{IN}=V_{OUT}+2V C_{IN}=C_{OUT}= 1μF, TA = +25℃, unless otherwise noted



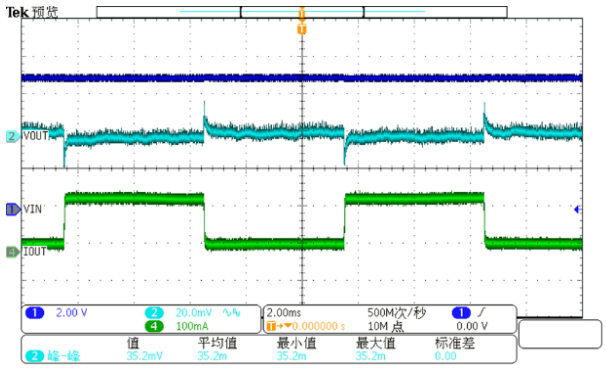
PSRR vs Frequency (V_{OUT}=5V, I_{OUT}=10mA)



Dropout Voltage vs Output Current (V_{OUT}=5V)



Power ON/OFF



Load transient response（15mA-135mA）

APPLICATIONS INFORMATION

Input Voltage and Output Current

if input voltage is below 24V, the transient load current can be 150mA when starting. if input voltage is between 24V and 30V, It must be ensured that the transient load current not exceed 50mA when starting.

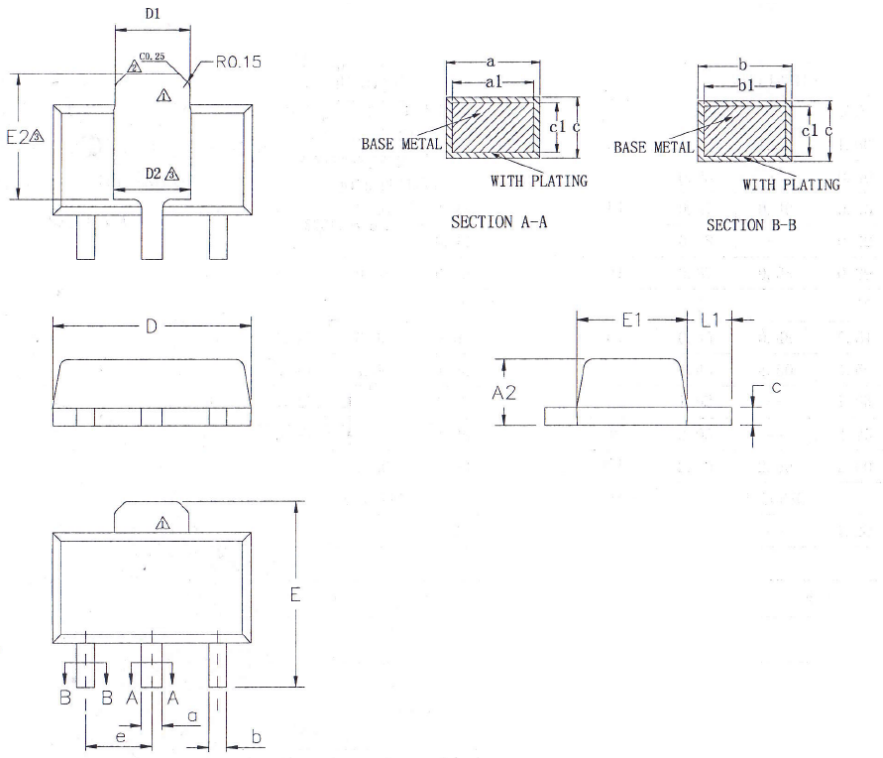
Thermal Considerations

Thermal protection limits power dissipation in BL9157. When the operation junction temperature exceeds 145°C, the OTP circuit starts the thermal shutdown function turn the pass element off. The pass element turns on again after the junction temperature cools by 30°C.

The maximum power dissipation is dependent on the thermal resistance of the case and the circuit board, the temperature difference between the die junction and the ambient air, and the rate of air flow. The GND pin must be connected to the ground plane for proper dissipation.

PACKAGE DESCRITIPON

SOT89-3



	SYMBOL	MILLIMETER		
		MIN	NOM	MAX
	A2	1.40	1.50	1.60
4	b	0.38	—	0.46
	b1	0.37	0.40	0.43
4	c	0.38	—	0.42
4	c1	0.37	0.38	0.39
	a	0.46	—	0.56
	a1	0.45	0.48	0.51
4	D	4.40	4.50	4.60
5	D1	1.62	—	1.83
5	E	3.95	—	4.25
4	E1	2.40	2.50	2.60
	e	1.50BSC		
5	L1	0.89	—	1.20

L/F Size (mil) \ Size(mm)	3 D2	3 E2
66.9*63	1.75REF	2.84REF

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