Bay Linear
Inspire the Linear Power

Dual 1.0Amp Low Dropout Voltage Regulator

B2117

Description

The Bay Linear B2117 is a five terminal Dual positive NPN regulator offered as adjustable or fix voltages of 1.8V, 2.5V, 3.3V, and 5Volts. The output current has a capability up to 1.0Amp,. This device has been optimized for low voltage where transient response and minimum input voltage are critical.

Current limit is trimmed to ensure specified output current and controlled short-circuit current. On-Chip thermal limiting provides protection against any combination of overload and ambient temperatures that would create excessive junction temperatures.

The B2117 is offered in a 5-pin SOT-263,

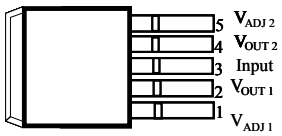
Features

- **Adjustable Output Down to 1.2V**
- **Output Current of 1.0Amp**
- **Low Dropout 1.0V for B2117**
- **Adjustable & Fix 1.8V, 2.5V, 3.3V**
- **0.05% Load Regulation**
- **Current & Thermal Limiting**
- **Lower Cost SOT-89 Package**
- **Available in TO-263**

Applications

- **High efficiency Linear Regulator**
- **Post regulators fro Switching Supplies**
- **Battery Charger**
- **5V to 3.3V linear Regulators**
- **Motherboard Clock Supplies**

Pin Connection



TO-263-5 Package

Ordering Information

Devices	Package	Temp.
B2117S-X	TO-263	0 °C to 125 °C

X=output voltage

Absolute Maximum Rating

Parameter	Min	Max	Unit
Maximum Input Voltage		7.0	V
Operating Junction Temperature Range	0	125	°C
Storage Temperature Range	-65	150	
Lead Temperature (Soldering 10 Sec.)		300	

Electrical Characteristics

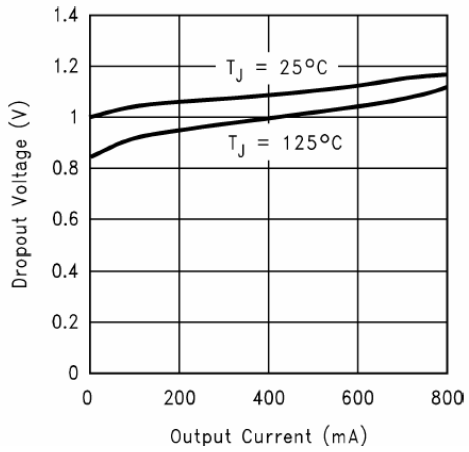
(V_{IN} = 7V; T_J=25°C I_O = 10mA to 1.0Amp, unless otherwise specified)

Parameter	Symbol	Conditions	MIN	TYP	MAX	UNIT
Reference Voltage	V_O	1117-adj, I_{OUT}=10mA, V_{IN}-V_{OUT}=2V, T_J=25°C	1.238	1.250	1.262	V
		1.5V≤(V_{IN}-V_{OUT}) ≤5.75V 10mA≤I_{OUT}≤$I_{FULL\ LOAD}$	**1.225** -2%	**1.250**	**1.275** +2%	V
Line Regulation (1)	$REG_{(line)}$	(V_{OUT}+1.5)≤V_{IN}≤7V, I_{OUT}=10mA		0.005	0.5	%
Load Regulation (1)	$REG_{(LOAD)}$	(V_{in}-V_{out})=2V 10mA≤I_{OUT}≤$I_{FULL\ LOAD}$ T= 25 °C		0.05	0.5	
Output Voltage	V_O	1117-1.8 I_{OUT}=10mA, V_{IN}=3.8V, T_J=25°C 0≤I_{OUT}≤1.0Amp, 3.2V≤V_{IN}≤7V	1.782 **1.746**	1.80 **1.80**	1.818 **1.854**	V
		1117-2.5 I_{OUT}=10mA, V_{IN}=4.5V, T_J=25°C 0≤I_{OUT}≤1.0Amp, 4.0V≤V_{IN}≤7V	2.475 **2.450**	2.50 **2.50**	2.525 **2.550**	V
		1117-3.3 I_{OUT}=10mA, V_{IN}=5.0V, T_J=25°C 0≤I_{OUT}≤1.0Amp, 4.8V≤V_{IN}≤7V	3.267 **3.235**	3.30 **3.30**	3.333 **3.365**	V
		1117-5.0 I_{OUT}=10mA, V_{IN}=6.0V, T_J=25°C 0≤I_{OUT}≤1.0Amp, 6.5V≤V_{IN}≤7V	4.950 **4.900**	5.00 **5.00**	5.050 **5.100**	V
Dropout Voltage	V_D	Control Input V_{POWER}=V_{OUT}+0.8, I_{LOAD}=10mA V_{POWER}=V_{OUT}+0.8, I_{LOAD}=1.0Amp,		0.80 0.80	1.20 1.30	V
Current Limit	I_S	(V_{in}-V_{out})=2V	1.0	1.1		A
Minimum Load Current	$I_{MIN\ LOAD}$	1.5V≤(V_{IN}-V_{OUT}) ≤5.75V	10			mA
Temperature Regulation	T_A	T= 25 °C, 30ms pulse		0.004	0.02	%/W
Long Term Stability	-	T= 25 °C, 1000Hrs		0.03	1.0	%
Temperature Stability	T_S			0.5		%
Adjust pin Current	-	T= 25 °C		35	120	µA
Ripple Rejection	R_A	F=120Hz, C_{ADJ}=22µF, C_{OUT}=22µF Tantalum I_{OUT}=$I_{FULL\ LOAD}$, (V_{in}-V_{out})=3V (Note 5)	60	75		dB
Thermal Shutdown				155		°C
Thermal Shutdown Hysterics				10		°C
Thermal Resistance Junction to case	-	DD Package		3.0	3.0	°C/W

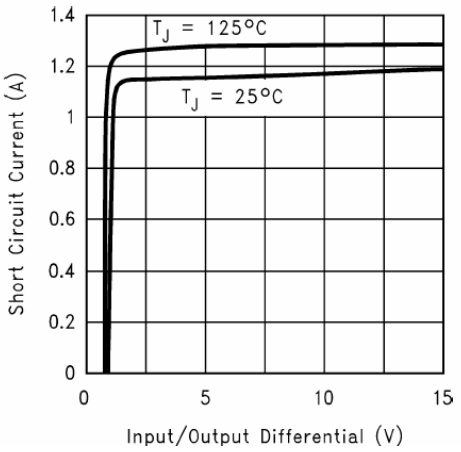
Note: Output Switch tests are performed under pulsed conditions to minimize power dissipation

TYPICAL CHRACTRISTICS

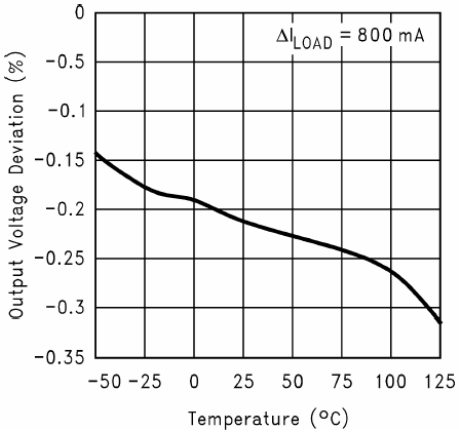
Dropout Voltage (V_{IN}-V_{OUT})



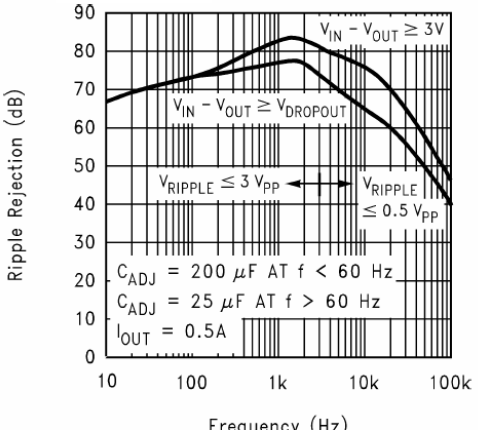
Short-Circuit Current



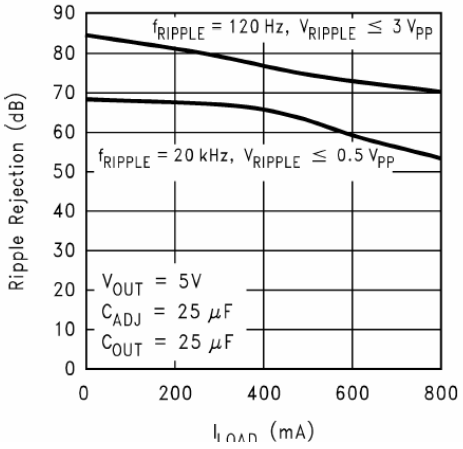
Load Regulation



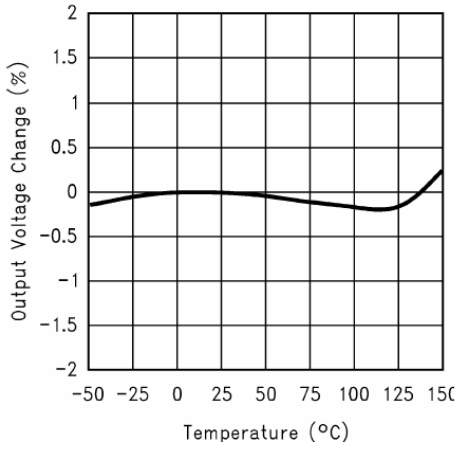
B2117-2.85 Ripple Rejection



B2117-ADJ Ripple Rejection vs. Current



Temperature Stability

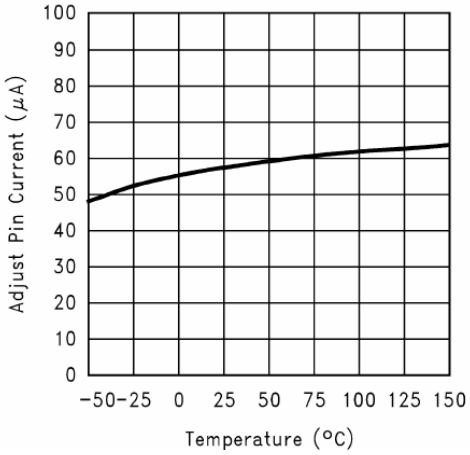


TYPICAL CHRACTRISTICS (Continued)

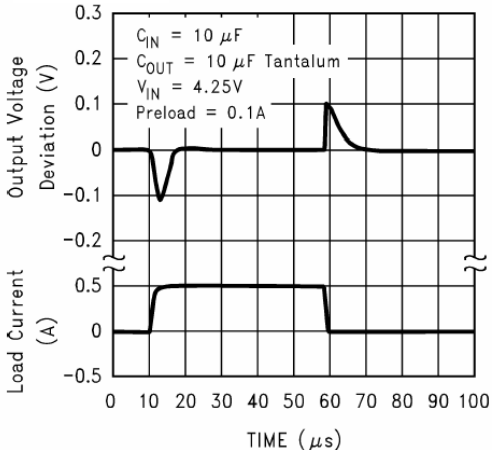
Dropout Voltage (V_{IN}-V_{OUT})

Short-Circuit Current

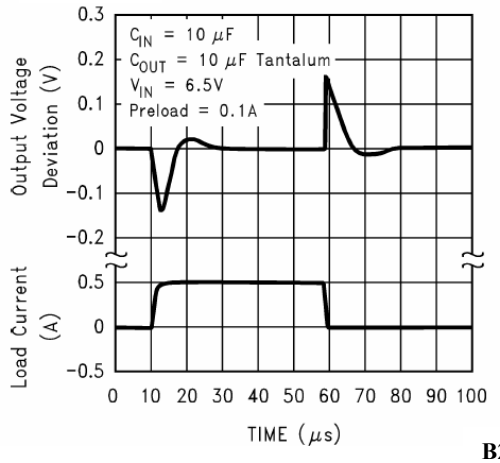
Adjust Pin Current



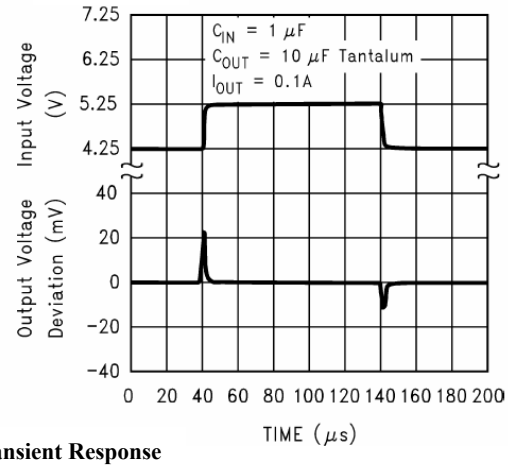
B2117-2.85 Load Transient Response



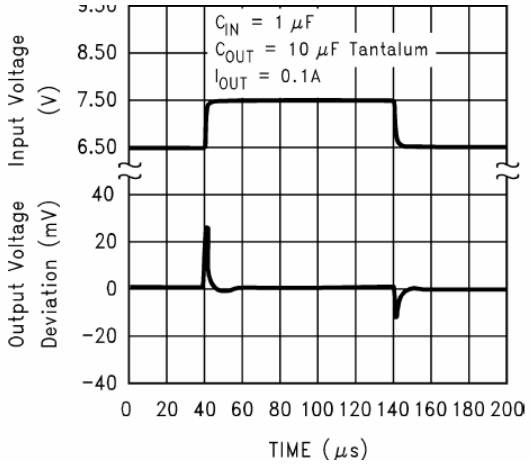
B2117-5.0 Load Transient Response



B2117-2.85 Line Transient Response



B2117-5.0 Line Transient Response



Advance Information- These data sheets contain descriptions of products that are in development. The specifications are based on the engineering calculations, computer simulations and/ or initial prototype evaluation.

Preliminary Information- These data sheets contain minimum and maximum specifications that are based on the initial device characterizations. These limits are subject to change upon the completion of the full characterization over the specified temperature and supply voltage ranges.

The application circuit examples are only to explain the representative applications of the devices and are not intended to guarantee any circuit design or permit any industrial property right to other rights to execute. Bay Linear takes no responsibility for any problems related to any industrial property right resulting from the use of the contents shown in the data book. Typical parameters can and do vary in different applications. Customer's technical experts must validate all operating parameters including " Typical" for each customer application.

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