Bay Linear

Linear Excellence

5.0A Low Dropout Voltage Regulator

B1084

Adjustable **Advance Information**

Description

The Bay Linear B1084 is Monolithic low power 5.0A Adjustable and fixed NPN voltage regulator that are easy to use with minimum external components. All internal circuitry is designed to operate down to 1V input to output differential and the dropout voltage is fully specified as a function of load current. Dropout is guaranteed at a maximum of 1.5V at a maximum output current. Current limit is trimmed, minimizing the stress on both the regulator and power source circuitry under overload conditions. It is suitable for applications requiring a well-regulated positive output voltage with low input-output differential voltage.

The B1084 Outstanding features include full power usage up to 5.0Amp of load current internal current limiting and thermal shutdown. A 10 µF output capacitor is required on these new devices; how ever, this is usually included in most regulator design.

The B1084 is offered in a 3-pin TO-220, TO-263 packages compatible with other 3 terminal regulators. For 7A Low dropout Regulator refer to the BL1083 data sheet.

Features

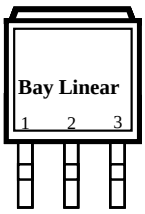
- **Adjustable Output Down to 1.2V**
- **Output Current of 5.0A**
- **Low Dropout Voltage 1.0V Typ.**
- **0.015% Line Regulation**
- **0.01% Load Regulation**
- **Current & Thermal Limiting**
- **Standard 3-Terminal Low Cost TO-220, D^2Packages**
- **Similar to industry Standard LT1084**

Applications

- **Constant Current Regulators**
- **SMPS Post Regulator**
- **High Efficiency Linear Regulator**
- **High Efficiency Linear Power Supplies**
- **Battery Charger**
- **Adjustable Power Supplies**

Pin Connection

TO-263-3 (S)



Top View

Ordering Information

Devices	Package	Temp.
B1084T	TO-220	0 °C to 70 °C
B1084S	TO-263	0 °C to 70 °C

Absolute Maximum Rating

Parameter	Symbol	Value	Unit
Maximum Input Voltage	V_{IN}	30	V
Power Dissipation	P_O	Internally Limited	W
Thermal Resistance Junction to Case	θ_{JC}	3	°C/W
Thermal Resistance Junction to Ambient	θ_{JA}	50	
Operating Junction Temperature Range Control Section Power Transistor	T_J	 0 to 125 0 to 150	°C
Storage Temperature Range	T_{STG}	-65 to 150	
Lead Temperature (Soldering 10 Sec.)	T_{LEAD}	300	

Electrical Characteristics

(V_{IN} = 4.75V to 5.25V; I_O = 10mA to 3.0Amp, unless otherwise specified)

Parameter	Symbol	Conditions	MIN	TYP	MAX	UNIT
Reference Voltage	V_O	I_O = 10mA,T= 25 °C, V_{in}-V_{out} =3V 10mA≤I_{OUT}≤$I_{FULL\ LOAD}$ 1.5V≤(V_{in}-V_{out}) ≤25V (Note3)	1.238 1.225	1.250	1.262 1.270	V
Line Regulation (1)	$REG_{(line)}$	I_{LOAD} = 10mA, 1.5V≤(V_{IN} – V_{OUT}) ≤15V T= 25 °C 15V≤(V_{in}-V_{out}) ≤30V		0.015 0.035 0.05	0.20 0.20 0.50	%
Load Regulation (1)	$REG_{(LOAD)}$	(V_{in}-V_{out})=3V 10mA≤I_{OUT}≤$I_{FULL\ LOAD}$ T= 25 °C		 0.1 0.2	 0.30 0.40	
Dropout Voltage	V_D	T= 25 °C Over Temperature		1.3	1.5	V
Current Limit	I_S	(V_{in}-V_{out})=5V (V_{in}-V_{out})=25V		5.5 0.3	6.5 0.6	A
Minimum Load Current	$I_{MIN\ LOAD}$	(V_{in}-V_{out})= 25V		10	10	mA
Temperature Regulation	T_A	T= 25 °C, 30ms pulse		0.003	0.015	%/W
Long Term Stability	-	T= 25 °C, 1000Hrs		0.3	1	
Temperature Stability	T_S			0.5		%
Adjust pin Current	-	T= 25 °C Over Temp.		55	 120	µA
Ripple Rejection	R_A	F=120Hz, C_{ADJ}=25µF, C_{OUT}=25µF Tantalum I_{OUT}=$I_{FULL\ LOAD}$, (V_{in}-V_{out})=3V (Note 5)	60	75		dB
Thermal Resistance	-	TO-220 Junction to Tab Junction to Ambient DD Package Junction to Tab Junction to Ambient		3.0 60 3.0 60	3.0 60 3.0 60	°C/W

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

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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