Bay Linear
Inspire the Linear Power

1.00Amp High Current Low Dropout Voltage Regulator Adjustable & Fix

B1129/B1129-3.3/B1129-5.0

Description

The Bay Linear B1129 is a 1 Amp high accuracy, low dropout voltage regulator with only 40mV at light loads and 450mV(Typ.)@ 1.0A) and low quiescent current of 240μA typical.

The B1129 is designed for low voltage a application that requires lower dropout voltage and faster transient response. This device is an excellent choice for use in powering low voltage applications where require a lower dropout, faster transient response and as a post regulator for switching supplies applications.

The B1129 offers full protection against over-current faults, reversed input polarity, reversed load insertion, and positive and negative transient voltage. On-Chip trimming adjusts the reference voltage to 1%. The B1129-xx devices are in 3 pin fixed voltage regulators. The B1129 include an Enable pin in the 5 pin packages.

The B1129are offered in a 3 & 5-pin SOT-223 & TO-263 package compatible with other 3 terminal regulators. .

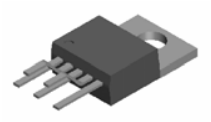
Features

- **High output accuracy of 2% 3.3V & 5.0V**
- **Output Adjustable from 1.24V to 26V**
- **Output Current of 1.00A**
- **Low Dropout Voltage**
- **Low quiescent current**
- **Extremely Tight Load & Line Regulation**
- **Reverse-battery and "Load Dump" Protection**
- **Zero Current Shutdown Mode (5-pin version)**
- **Offer in TO-263, & SOT-223**
- **Similar to industry Standard LT1129**

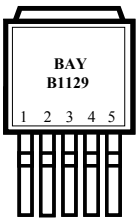
Applications

- **Powering VGA & Sound Card**
- **LCD Monitor**
- **Battery Powered Equipments/Laptop & Notebook**
- **SMPS Post Regulator / DC to DC Modules**
- **High Efficiency Linear Power Supply**
- **Adjustable Power Supply**
- **Bar Code Scanners**

Pin Connection



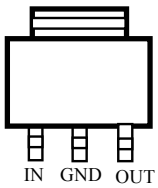
TO-263-5 Package



1) OUT
2) ADJ
3) GND
4) ON/OFF
5) OUPUT

Top View

SOT-223



Front View

Ordering Information

Devices	Package	Temp.
B1129N-X	SOT-223	-40 °C to 125 °C
B1129S	TO-263	-40 °C to 125 °C

ABSOLUTE MAXIMUM RATINGS

Lead Temp. (Soldering, 5 Seconds).....260°C
Storage Temperature Range..... -65° to +150°C
Operating Junction Temperature Range
B1129/2941 Control Section..... -45°C +125°C
B1129/2941 Power Transistor.....-45°C +150°C

Input Voltage 26V
Maximum Output Current.....3.5A
Input Supply Voltage (Note1) (Survival)-20V to +60V

ELECTRICAL CHARACTERISTICS (NOTE 1) at I_{OUT} = 5mA, $V_{IN}=V_{OUT}$ + 1V, I_1= 1000mA, C_L = 10µF. Ta=25°C, unless otherwise specified. The B1129 is programmed to output 5V and has $V_{SHUTDOWN} \leq 0.6V$

PARAMETER	CONDITIONS	Typ	B1129 Min	B1129 Max	Units
3.3V Version2.					
Output Voltage (Note 2)	I_{OUT} = 5mA 5mA ≤I_{OUT}≤1.00A, 4.75V≤V_{IN}≤26V	3.30 **3.30**	3.250 **3.200**	3.350 **3.400**	V
5.0V Version					
Output Voltage (Note 2)	I_{OUT} = 5mA 5mA ≤I_{OUT}≤1.00A, 5.5V≤V_{IN}≤26V	5.00 **5.00**	4.925 **4.850**	5.075 **5.150**	V
Output Voltage Accuracy 5mA ≤I_{OUT}≤1.0 A			-1 **-2** **-2.5**	1 **2** **2.5**	%
All Voltage Options					
Line Regulation	I_O = 5mA, (V_{OUT} + 1V) ≤ V_{IN}≤ 26V	1.5		10	mA
Load Regulation	V_{IN} = V_{OUT} + 5V, 5mA ≤ I_{OUT}≤ 1 A (Note 2, 6)	6		20	mA
Dropout Voltage	I_O = 10mA	40		200	mV
	I_O = 500mA	370		450	
	I_O = 1.00A	450		550	
Ground Current	I_O = 10mA, V_{IN} = V_{OUT}, +1V I_O = 500mA, V_{IN} = V_{OUT}, +1V I_O = 1.00A	310 25 50		450 45 80	µA mA
I_{GNDDO} Ground Pin Current at Dropout	V_{IN} = 0.5V less than specified V_{OUT} I_{OUT} = 10mA	0.9			mA
Current Limit	V_{OUT} = 0V (Note 4)	1.7	1.5		A
Output Noise Voltage (10Hz to 100kHz) I_L = 100mA	C_L = 10µF C_L = 33µF	400 260			μV_{RMS}
Reference Voltage		1.235	1.223 **1.210**	1.247 **1.260**	V V_{max}
Reference Voltage	(Note 8)`		**1.204**	**1.266**	V
Adjust Pin Bias Current		40		80 **120**	nA
Reference Voltage Temperature Coefficient	(Note 7)	20			ppm/°C
Adjust Pin Bias Current Temperature Coefficient		0.1			nA/°C

ENABLE Input B1129					
Input Logic Voltage Low (OFF) High (ON)			**2.4**	**0.8**	V
Enable Pin Input Current	V_{EN} = 26V	100		600 **750**	V
	V_{EN} = 0.8V			2.5 **5**	µA
Regulator Output Current in Shutdown	(Note 10)	10		**500**	µA

NOTES:

The Bold specifications apply to the full operating temperature range.

Note 1: Maximum positive supply voltage of 60V must be of limited duration (<100msec) and duty cycle.) The maximum continuous supply voltage is 26V.

Note 2: Full load current (I_{FL}) is defined as 1.00A for the B1129.

Note 3: Dropout voltage is defined as the input-to output differential when the output voltage drops to 99% of its nominal value with V_{OUT} + 1V applied to V_{IN}.

Note 4: VIN = $V_{OUT\ (NOMINAL)}$ +1V. For example, use V_{IN}= 4.3V for a 3.3V regulator. Employ pulse-testing procedures to minimize temperature rise.

Note 5: Ground pin current is the regulator quiescent current. The total current drawn from the source is the sum of the load current to the ground current.

Note 6: Output voltage temperature coefficient is defined as the worst case voltage changed divided by the total temperature range.

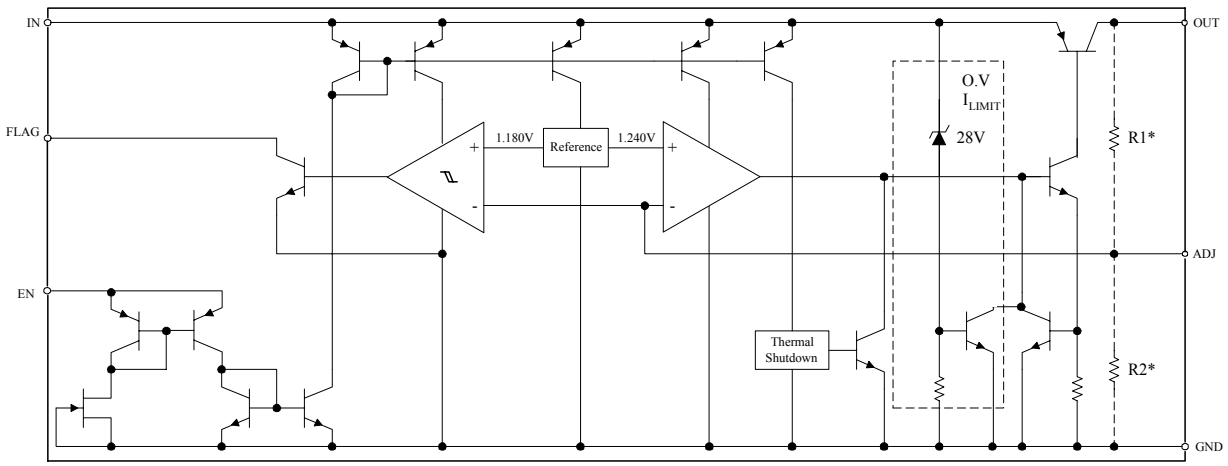
Note 7: Thermal regulation is defined as the change in the output voltage at a time T after a change in power dissipation is applied, excluding load or line regulation effects. Specifications are for a 200mA load pulse as V_{IN} = 20V (a 4W pulse) for T = 10ms.

Note 8: VREF ≤ V_{OUT} ≤ (V_{IN} - 1), 2.3V ≤ V_{IN}≤ 26V, 10mA < I_L ≤ I_{FL}, T_J ≤ T_{JMAX}

Note 9: Comparator threshold is expressed in terms of a voltage differential at the Adjust terminal below the nominal reference voltage measured 6V input. To express these thresholds in terms of output voltage change, multiply the error amplifier gain = V_{OUT}/V_{REF} = (R1 + R2)/R2. For example, at a programmable output voltage of 5V, the Error output is guaranteed to go low when the output drops by 95mVx 5V/ 1.240V = 38mV. Threshold remains constant as a percent of V_{OUT} as V_{OUT} is varied, with the dropout warning occurring at typically 5% below nominal, 7.7% guaranteed.

Note 10: V_{EN} ≤ 0.8V and V_{IN}≤ 26V, V_{OUT} = 0.

BLOCK DIAGRAM



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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