

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. .

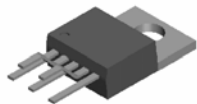
Features

- **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



Top View

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

SOT-223
Tab GND



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 $I_{OUT} = 5mA$, $V_{IN} = V_{OUT} + 1V$, $I_L = 1000mA$, $C_L = 10\mu F$, $T_a = 25^\circ C$, unless otherwise specified. The B1129 is programmed to output 5V and has $V_{SHUTDOWN} \leq 0.6V$

PARAMETER	CONDITIONS	Typ	B1129		Units
			Min	Max	
3.3V Version2.					
Output Voltage (Note 2)	$I_{OUT} = 5mA$ $5mA \leq I_{OUT} \leq 1.00A$, $4.75V \leq V_{IN} \leq 26V$	3.30 3.30	3.250 3.200	3.350 3.400	V
5.0V Version					
Output Voltage (Note 2)	$I_{OUT} = 5mA$ $5mA \leq I_{OUT} \leq 1.00A$, $5.5V \leq V_{IN} \leq 26V$	5.00 5.00	4.925 4.850	5.075 5.150	V
Output Voltage Accuracy	$5mA \leq I_{OUT} \leq 1.0 A$		-1 -2 -2.5	1 2 2.5	%
All Voltage Options					
Line Regulation	$I_O = 5mA$, $(V_{OUT} + 1V) \leq V_{IN} \leq 26V$	1.5		10	mA
Load Regulation	$V_{IN} = V_{OUT} + 5V$, $5mA \leq I_{OUT} \leq 1 A$ (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	$I_O = 10mA$, $V_{IN} = V_{OUT} + 1V$	310		450	μA
	$I_O = 500mA$, $V_{IN} = V_{OUT} + 1V$	25		45	mA
	$I_O = 1.00A$	50		80	
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) $I_L = 100mA$	$C_L = 10\mu F$	400			μV_{RMS}
	$C_L = 33\mu F$	260			
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: $V_{IN} = V_{OUT (NOMINAL)} + 1V$. 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.

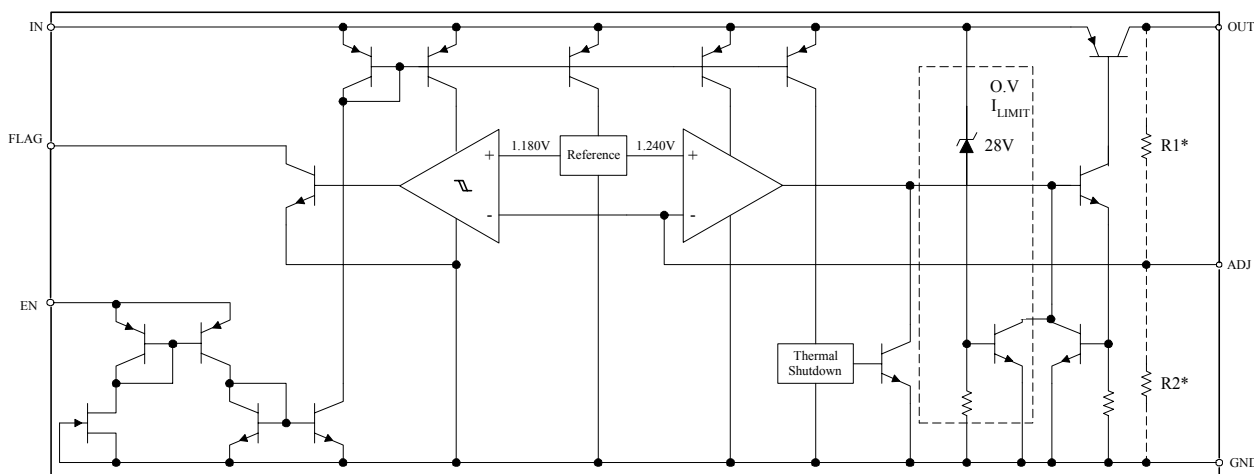
Note 8: Specifications are for a 200mA load pulse as $V_{IN} = 20V$ (a 4W pulse) for $T = 10ms$.

Note 9: $V_{REF} \leq V_{OUT} \leq (V_{IN} - 1)$, $2.3V \leq V_{IN} \leq 26V$, $10mA < I_L \leq I_{FL}$, $T_J \leq T_{JMAX}$

Note 10: 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 $95mV \times 5V / 1.240V = 38mV$. 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: $V_{EN} \leq 0.8V$ and $V_{IN} \leq 26V$, $V_{OUT} = 0$.

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.

LIFE SUPPORT AND NUCLEAR POLICY

Bay Linear products are not authorized for and should not be used within life support systems which are intended for surgical implants into the body to support or sustain life, in aircraft, space equipment, submarine, or nuclear facility applications without the specific written consent of Bay Linear President.
