

General Description

The AAT3212 Low Dropout Linear Regulator is ideal for portable applications where extended battery life is critical. It features low quiescent current (30 μ A typ), and low dropout voltage (250mV max) at full output current. The device is able to protect itself from short circuit conditions with fold back current limiting. Thermal shutdown is activated to prevent damage under extreme conditions.

The AAT3212 also features a low-power shutdown mode for longer battery life. A power good pin signals when the output is out of regulation.

The AAT3212 is available in a space saving 5-pin SOT-23 in 8 factory-programmed voltages of 2.5V, 2.7V, 2.8V, 3.0V, 3.3V, 3.5V, 3.6V or 3.8V.

The AAT3210-3214 is a family of 150mA CMOS LDOs that include a wide array of features such as Power Good, Enable, Reference Bypass, and Fixed or Adjustable Output.

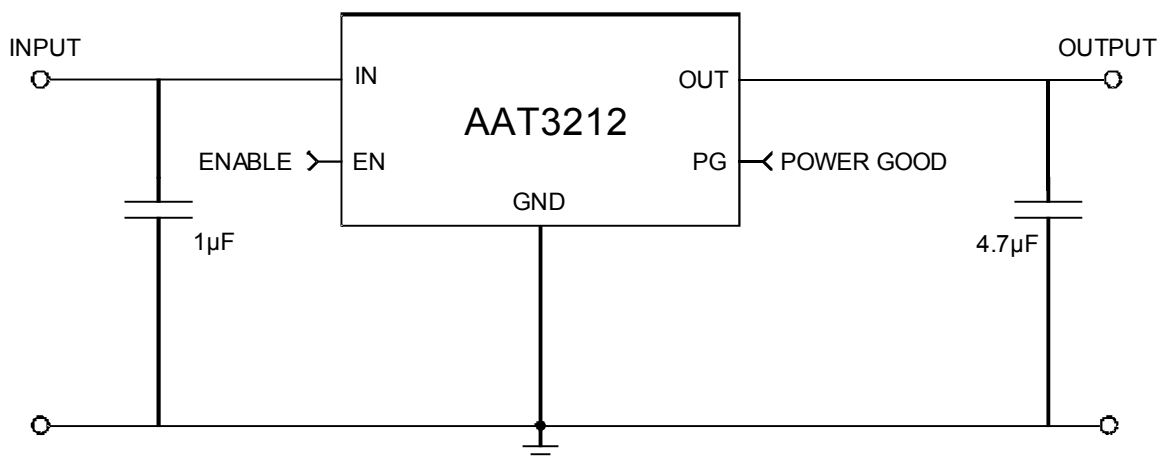
Features

- Low Dropout - 250mV (max) at 150mA
- Guaranteed 150mA Output
- High accuracy
- 30 μ A Quiescent Current
- Short circuit current fold back
- Over-Temperature protection
- Power good output
- Shutdown mode for longer battery life
- Low Tempco
- 8 Factory programmed output voltages
- SOT-23 5-pin package

Applications

- Cellular Phones
- Notebook Computers
- Portable Communication Devices
- Handheld Electronics

Typical Application



Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Description	Value	Units
V_{IN}	Input Voltage	8	V
I_{OUT}	DC Output Current	$P_D/(V_{IN}-V_O)$	mA
T_J	Operating Junction Temperature Range	-40 to 150	$^{\circ}\text{C}$
Θ_{JA}	Maximum Thermal Resistance (SOT-23-5)	260	$^{\circ}\text{C}/\text{W}$
P_D	Maximum Power Dissipation (SOT-23-5)	380	mW
T_{LEAD}	Maximum Soldering Temperature (at leads, 10 sec)	300	$^{\circ}\text{C}$

Note: Stresses above those listed in Absolute Maximum Ratings may cause permanent damage to the device. Functional operation at conditions other than the operating conditions specified is not implied. Only one Absolute Maximum rating should be applied at any one time.

Recommended Operating Conditions

Symbol	Description	Rating	Units
V_{IN}	Input Voltage	$(V_{OUT}+0.3)$ to 7	V
T	Ambient Temperature Range	-40 to +85	$^{\circ}\text{C}$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Description	Conditions	Min	Typ	Max	Units
V_{OUT}	Output Voltage		-1.5		1.5	%
I_{OUT}	Output Current	$V_{OUT} > 1.2\text{V}$	150			mA
I_{SC}	Foldback Short Circuit Current	$V_{OUT} < 0.4\text{V}$			300	mA
I_Q	Ground Current	$V_{IN} = 5\text{V}$, no load		30	50	μA
I_{SD}	Shutdown Current	$V_{IN} = 5\text{V}$, $EN = \text{low}$			1	μA
$\Delta V_{OUT}/V_{OUT}$	Line Regulation	$I_{OUT} = 5\text{mA}$, $V_{IN} = V_{OUT} + 1$ to $V_{OUT} + 2$		0.02	0.1	%
$\Delta V_{OUT}/V_{OUT}$	Load Regulation	$I_{OUT} = 1\text{mA}$ to 150mA		0.2	1	%
V_{DO}	Dropout Voltage ¹	$I_{OUT} = 150\text{mA}$		175	250	mV
$V_{EN(L)}$	Enable Threshold Low		0.5			V
$V_{EN(H)}$	Enable Threshold High				$V_{IN}-0.5$	V
$V_{PG(L)}$	Power Good Threshold Low	Referenced to V_{OUT}	90			%
$V_{PG(H)}$	Power Good Threshold High	Referenced to V_{OUT}			110	%
PSRR	Power Supply Rejection Ratio	1 kHz		55		dB
T_{SD}	Over Temp Shutdown Threshold			150		$^{\circ}\text{C}$
T_{HYS}	Over Temp Shutdown Hysteresis			30		$^{\circ}\text{C}$
e_N	Output Noise			20		μV_{RMS}
TC	Output Voltage Temp. Coeff.			40		ppm/ $^{\circ}\text{C}$

Note 1: V_{DO} is defined as $V_{IN} - V_{OUT}$ when V_{OUT} is 98% of nominal.

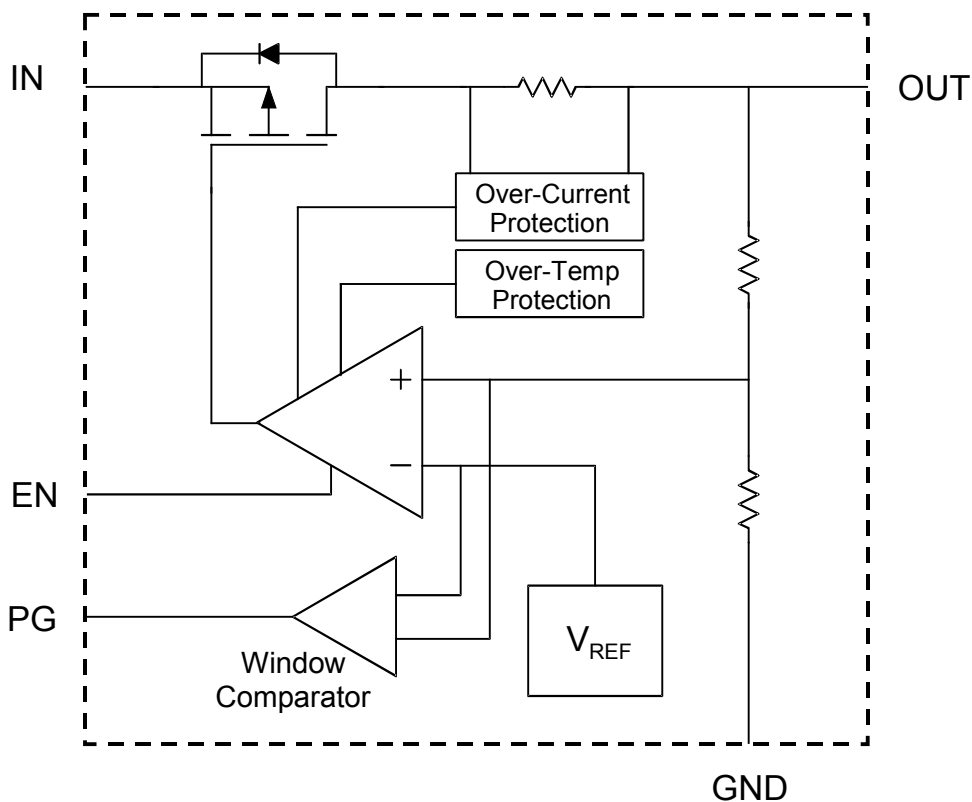
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Pin Descriptions

Pin #	Symbol	Function
1	V_{IN}	Input voltage pin – should be decoupled with 1 μ F or greater capacitor.
2	GND	Ground connection pin
3	EN	Enable pin – this pin is internally pulled high. When pulled low the PMOS pass transistor turns off and the device enters low-power mode, consuming less than 1 μ A.
4	PG	Open drain output -- pulled low when output is outside regulation window of +/- 10%
5	OUT	Output pin – should be decoupled with 4.7 μ F or greater output capacitor

Functional Block Diagram

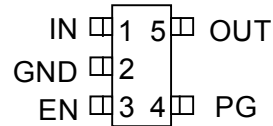


Ordering Information

Output Voltage	Package	Marking	Part Number	
			Bulk	Tape and Reel
2.5V	SOT-23-5		N/A	AAT3212IGV-2.5-T1
2.7V	SOT-23-5		N/A	AAT3212IGV-2.7-T1
2.8V	SOT-23-5		N/A	AAT3212IGV-2.8-T1
3.0V	SOT-23-5		N/A	AAT3212IGV-3.0-T1
3.3V	SOT-23-5		N/A	AAT3212IGV-3.3-T1
3.5V	SOT-23-5		N/A	AAT3212IGV-3.5-T1
3.6V	SOT-23-5		N/A	AAT3212IGV-3.6-T1
3.8V	SOT-23-5		N/A	AAT3212IGV-3.8-T1

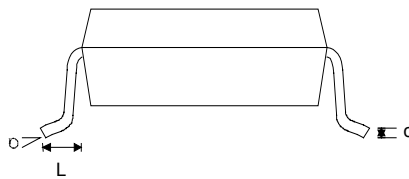
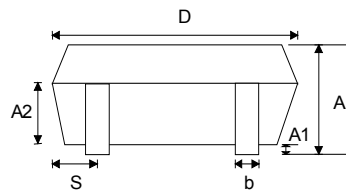
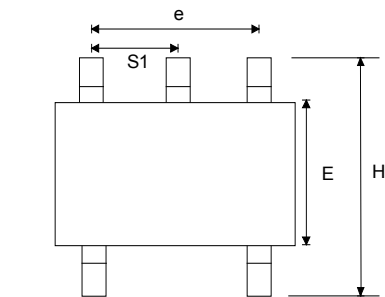
Pin Configuration

5-lead SOT-23
(Top View)



Package Information

SOT-23-5



Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	1.00	1.30	0.039	0.051
A1	0.00	0.10	0.000	0.004
A2	0.70	0.90	0.028	0.035
b	0.35	0.50	0.014	0.020
c	0.10	0.25	0.004	0.010
D	2.70	3.10	0.106	0.122
E	1.40	1.80	0.055	0.071
e	1.90		0.075	
H	2.60	3.00	0.102	0.118
L	0.37		0.015	
S	0.45	0.55	0.018	0.022
S1	0.85	1.05	0.033	0.041
θ	1°	9°	1°	9°

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