AT1202

Preliminary Product Information

High Voltage Linear Regulator

Features

- ±2% Output Accuracy
- 12μA Quiescent Current
- Shutdown Current <1μA
- High Output Voltage: Up to 28V
- 30mA Output Current
- Tiny SOT-25 Package

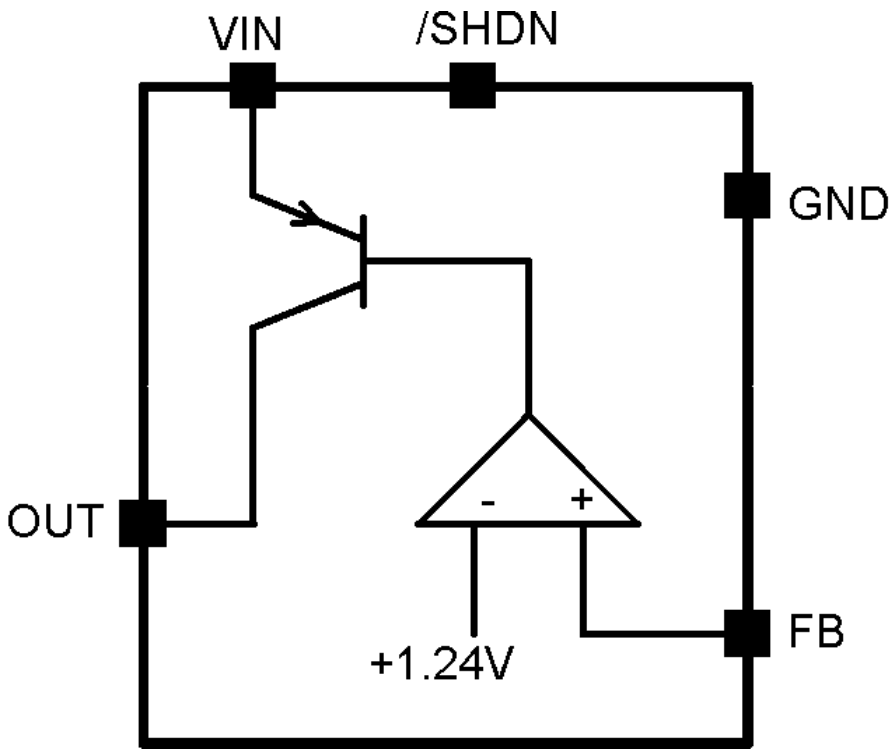
Applications

- Microcontroller Power
- Notebook Computers
- Battery Operating system

General Description

The AT1202 is high voltage, micropower linear regulator. Key feature include wide input voltage, low-noise, low-dropout and low-quiescent-current. The output voltage precision is within ± 2% and output currents of up to 30mA.

Block Diagram



Aimtron reserves the right without notice to change this circuitry and specifications.

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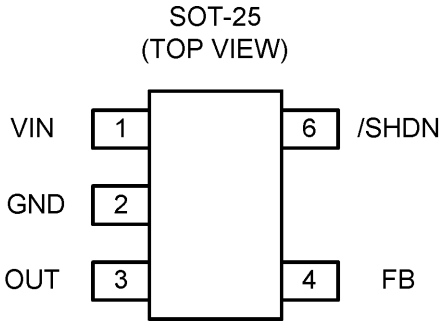
Pin Assignment



Pin Description

Pin No.	Symbol	I/O	Description
1	VIN	P	Power Supply
2	GND	P	Ground
3	OUT	O	Regulator Output
4	FB	I	Feedback Input
5	/SHDN	I	Shutdown input, active low.

Absolute Maximum Ratings

Item	Symbol	Ratings	Units
Storage temperature	T_{STG}	-55～＋150	℃
Operating temperature	T_{OPR}	-30～＋85	℃
VIN		-0.3～+30	V
/SHDN,FB		-0.3～＋(VIN+0.3)	V
OUT		-0.3V～+30	V
Power consumption	Pd*1	570	mW

***1. Continuous Power Dissipation derate 7.1mW/℃ above +70℃**

Electrical Characteristics

(V_{IN}=15V, /SHDN = V_{IN}, I_{LOAD}=5μA, Ta=T_{MIN} to T_{MAX} ,unless otherwise note. Typical Ta =25°C)

Parameter	Symbol	Condition	Values			Unit
			Min.	Typ.	Max.	
Input Voltage	V_{IN}		4	-	28	V
Supply Current	I_{IN}	/SHDN=VIN, Ta =25°C	-	12	15	μA
		/SHDN=VIN,VIN=6~28V, Ta=T_{MIN} to T_{MAX}	-	-	20	μA
Shutdown Supply Current	I_{IN1}	/SHDN=GND, Ta =25°C	-	-	3	μA
		/SHDN=GND, Ta=T_{MIN} to T_{MAX}	-	-	5	μA
Feedback Reference	V_{FB}	FB=OUT, Ta =25°C VIN=6V to 28V,I_{LOAD}=1mA	1.215	1.240	1.265	V
		FB=OUT, VIN=6V to 28V, Ta=T_{MIN} to T_{MAX} I_{LOAD}=5 μA to 30mA	1.18	-	1.28	V
Feedback Input Current	I_{FB}	V_{FB} =1.3V	-10	12	30	nA
Dropout Voltage	ΔVDO	I_{LOAD}=30mA	-	-	350	mV
Output Current Limit		V_{IN}=6	-	100	-	mA
OUT Reverse Leakage Current		VIN=unconnected, OUT set to 5V	-	80	-	μA
Capacitive Load Requirement			0.33	-	-	μF/mA
Start-Up Time Response		R_L =500Ω,OUT set to 5V C_{OUT} =10 μF	-	-	2	ms
Start-Up overshoot		R_L =500Ω,C_{OUT} =10 μF OUT set to 5V with 90% output	-	0.5	-	%OUT
/SHDN Input Current	$I_{/SHDN}$	/SHDN=0 or 15V	-1	-	1	μA
/SHDN Input Level	V_{IH} V_{IL}		1.4 -	- -	- 0.25	V V

Typical Application Circuit

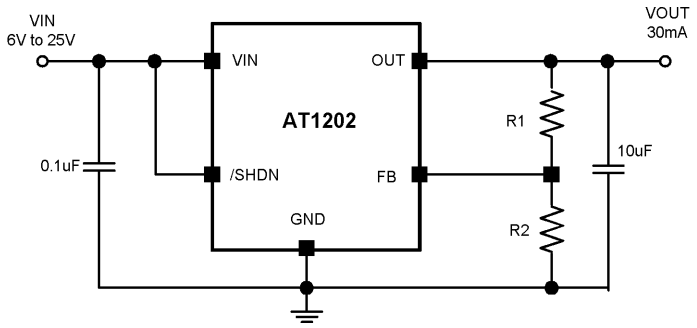


Fig1. AT1202 Typical Application Circuit

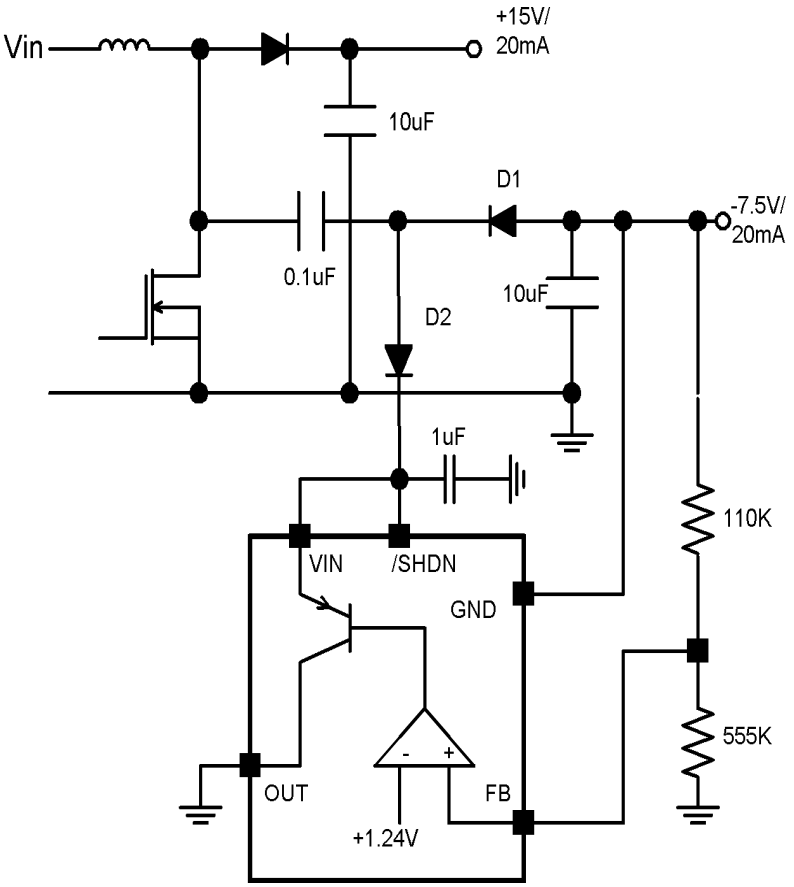


Fig2. Negatve Power supply

Typical Characteristics (C_{OUT}=10μF)

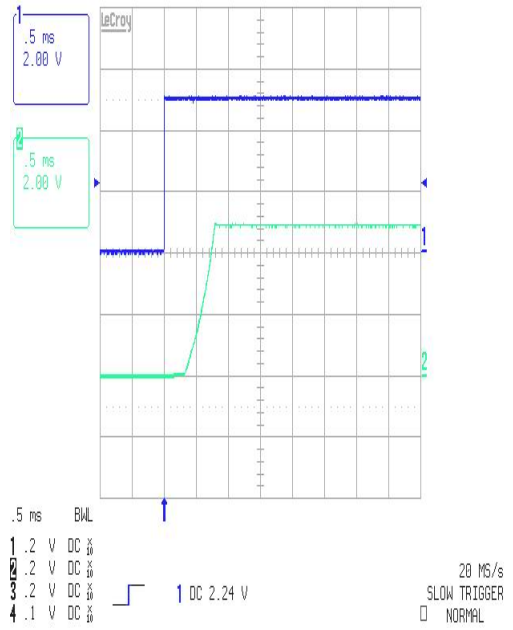


Fig1a. VOUT=5V Start-Up Response

(CH1:/SHDN CH2:V_{OUT}/30mA VIN=10V)

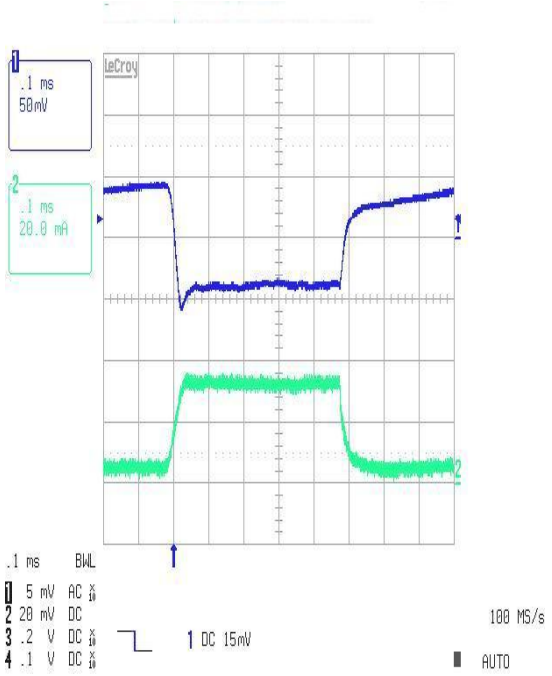


Fig1b. VOUT=5V Transient

(CH1:V_{OUT} CH2:I_{OUT})

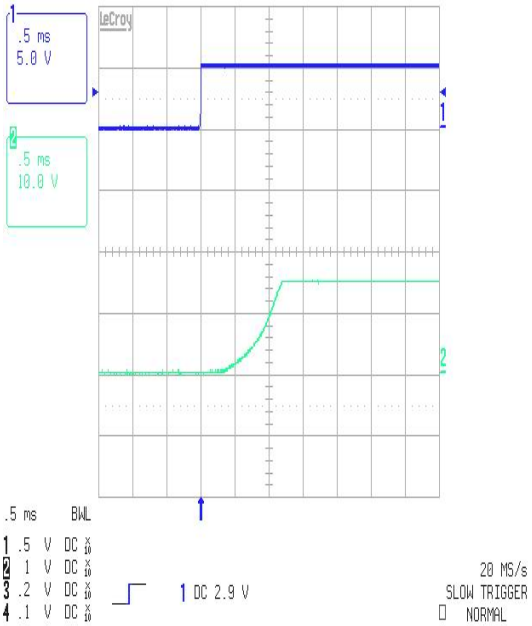


Fig 2a. VOUT=15V Start-Up Response

(CH1:/SHDN CH2:VOUT/30mA VIN=20V)

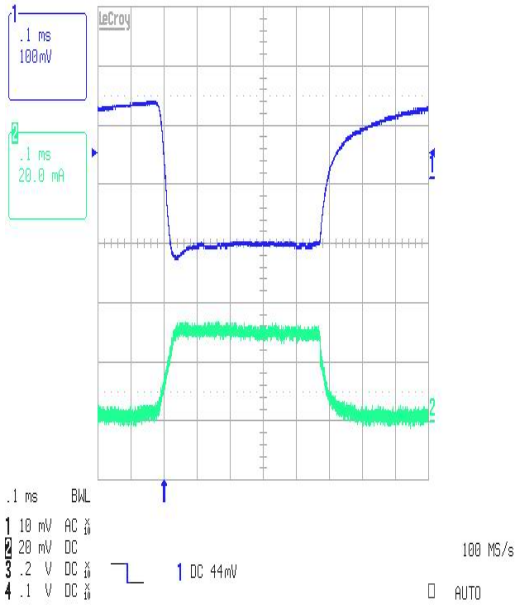
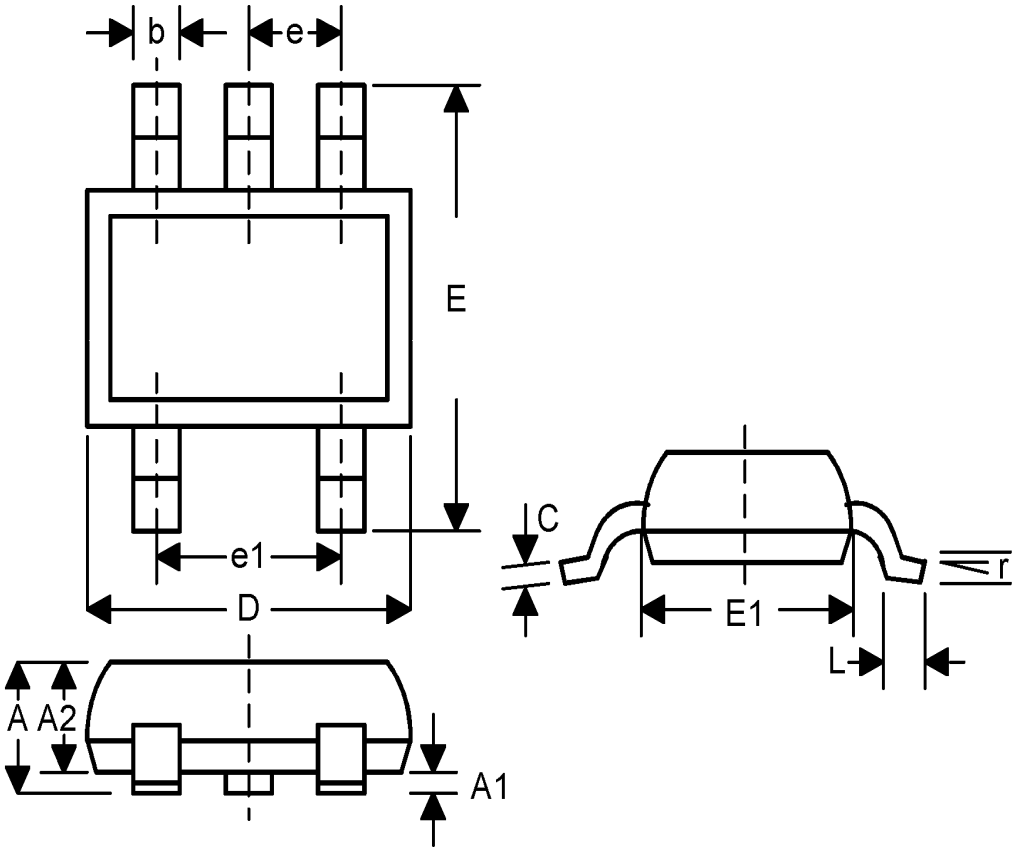


Fig2b. VOUT=15V Transient

(CH1:V_{OUT} CH2:I_{OUT})

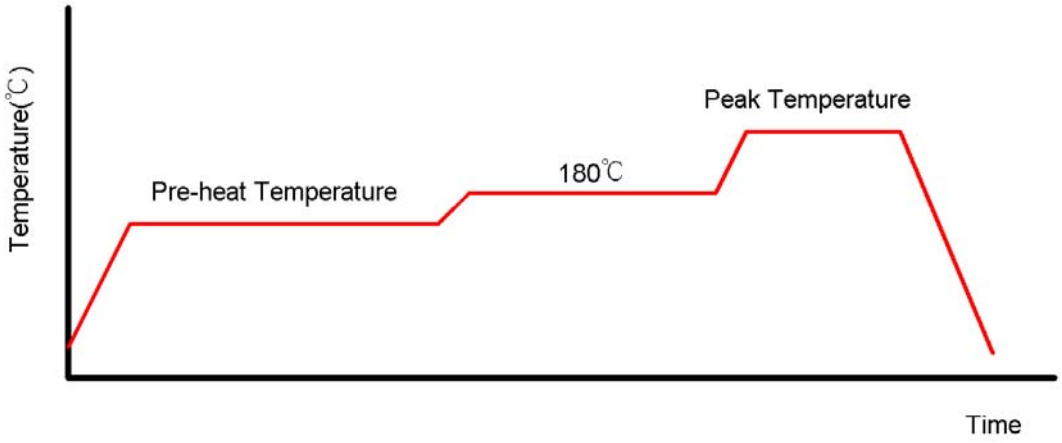
Small Outline SOT-25



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	0.035	0.057	0.90	1.45	-
A1	0.000	0.006	0.00	0.15	-
A2	0.035	0.051	0.90	1.30	-
b	0.010	0.020	0.25	0.50	-
C	0.003	0.008	0.08	0.20	-
D	0.110	0.122	2.80	3.10	-
E	0.102	0.118	2.60	3.00	-
E1	0.059	0.069	1.50	1.75	-
L	0.014	0.022	0.35	0.55	
e	0.037ref		0.95ref		
e1	0.075ref		1.90ref		
r	0^0	10^0	0^0	10^0	-

Reflow Condition (IR/Convection or VPR Reflow)

Reference JEDEC Standard J-STD-020A



Classification Reflow Profiles

	Convection or IR/Convction	VPR
Average Heating Rate(180°C to peak)	5°C/second max.	10°C/second max.
Preheat Temperature(125±20°C)	120 seconds max.	
Temperature maintained above 180°C	10~150 seconds	
Time within 5°C of actual Peak Temperature	10~20 seconds	60 seconds
Peak Temperature Range(Note 1)	219~225°C or 235~240°C	219~225°C or 235~240°C
Cooling Rate	6°C /second max.	10°C/second max.
Time 25°C to Peak Temperature	6 minutes max.	

*1 The maximum peak temperatures for IR and VP reflow are depending on package dimensions.

Package Reflow Conditions

Pkg. Thickness ≥2.5mm and all bags	Pkg. Thickness <2.5mm and Pkg. Volume ≥350 mm^3	Pkg. Thickness <2.5mm and Pkg. Volume <350 mm^3
Convection 219~225°C		Convection 235~240°C
VPR 219~225°C		VPR 235~240°C
IR/Convection 219~225°C		IR/Convection 235~240°C