



圓創科技股份有限公司

AT1201

Preliminary Product Information
2.5/2.7/2.8/3.0/3.3/4.5/5.0V 150mA LDO

Features

- Output voltage 2.5/2.7/2.8/3.0/3.3/4.5/5.0V
- Output current 150mA
- Output noise voltage $35 \mu V_{rms}$ typ.
- No-load input current $90 \mu A$ typ.
- I/O voltage difference 0.1V typ. ($I_o=50mA$)
- Ripple rejection ratio 70dB typ.
- Built-in On/Off control

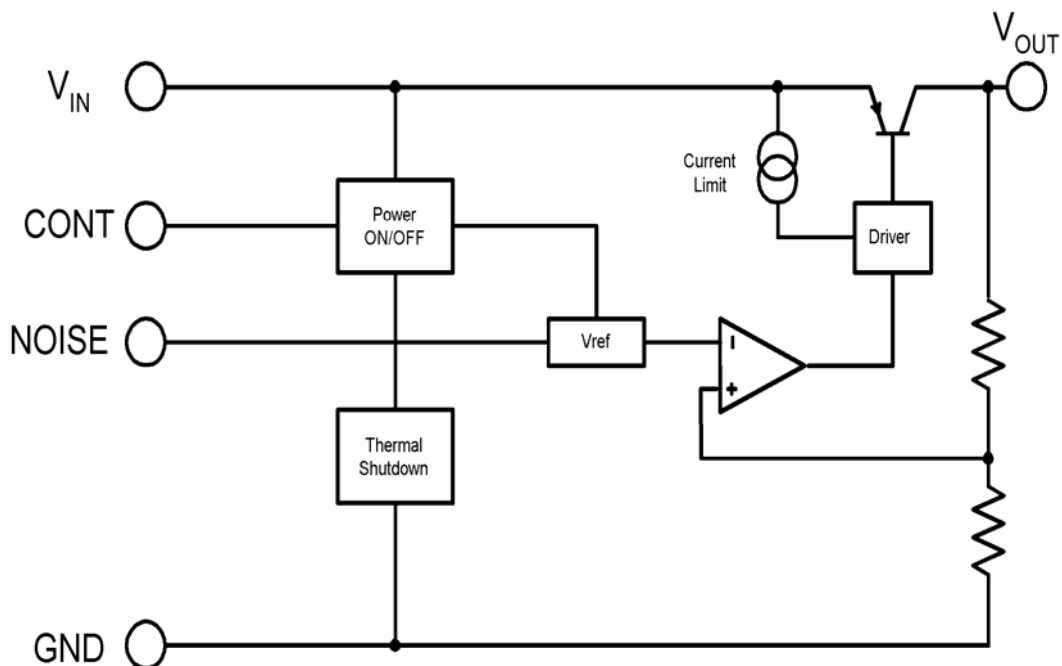
General Description

The AT1201 is a low-noise, low-dropout, low-quiescent-current linear regulator designed for battery-powered applications. The output voltage precision is within $\pm 2\%$ and output currents of up to 150mA; the input/output voltage difference at 50mA is only 0.1V.

Applications

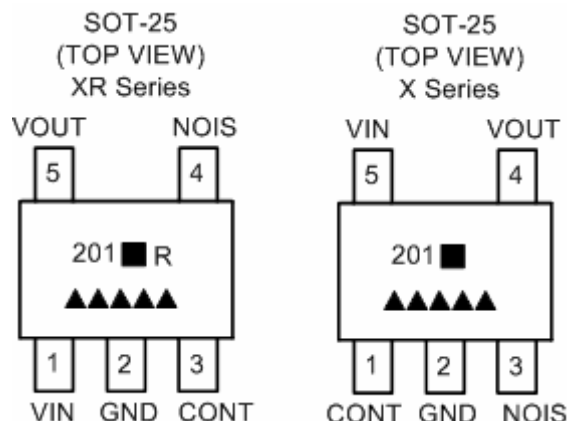
- Cordless phones
- Portable phones, PHS
- Other battery operating system

Block Diagram



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

Pin Assignment



Ordering Information

Part number	Package	Marking
AT1201-□□X	SOT-25	▲▲▲▲▲ Date Code
AT1201-□□X_Green	SOT-25, Green	▲▲▲▲▲, Date Code with one bottom line
AT1201-□□XR	SOT-25	▲▲▲▲▲ Date Code
AT1201-□□XR_Green	SOT-25, Green	▲▲▲▲▲, Date Code with one bottom line

□□: Output Voltage 25::2.5V 27::2.7V 28:2.8V 30:3.0V 33:3.3V 45::4.5V 50:5.0V

■: A:5V B:3.3V C:3.0V D:2.8V E:2.7V F:4.5V G:2.5V

▲▲▲▲▲: Date Code

*For more marking information, contact our sales representative directly

Absolute Maximum Ratings

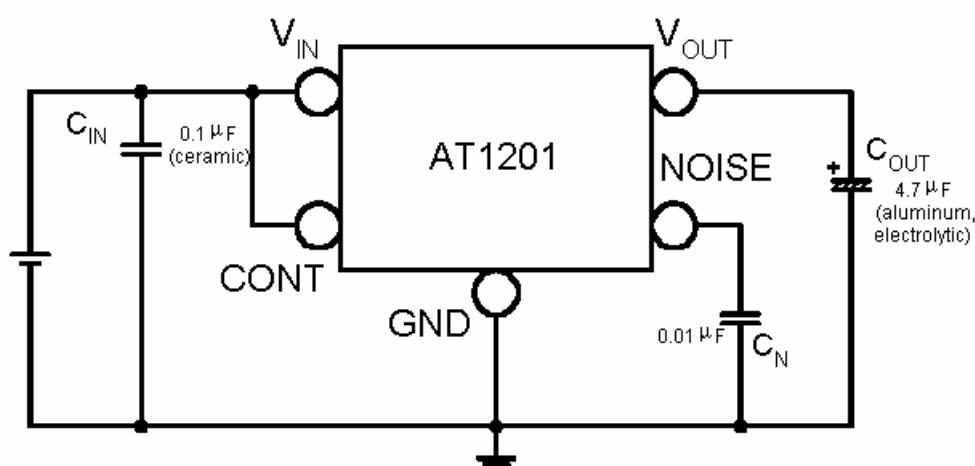
Item	Symbol	Ratings	Units
Storage temperature	T _{STG}	-40 ~ +125	°C
Operating temperature	T _{OPR}	-30 ~ +85	°C
Power supply voltage	V _{CC}	-0.3 ~ +14	V
Output current	I _{OUT}	200	mA
Power consumption	P _d	150	mW

Recommended Operating Condition

Item	Symbol	Ratings	Units
Operating temperature	T _{OP}	-20 ~ +75	°C
Output current	I _{OP}	0 ~ 150	mA
Operating voltage	V _{OP}	3.4 ~ 10	V

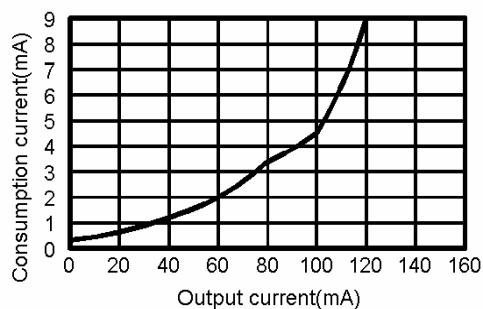
Electrical Characteristics (Except where noted otherwise, $T_a = 25^\circ\text{C}$)

Item	Symbol	Measurement conditions	Min.	Typ.	Max.	Units
Output voltage	V_O	$V_{IN} = V_O + 1\text{V}$, $I_O = 30\text{mA}$	$V_{OUT} - 2\%$	V_{OUT}	$V_{OUT} + 2\%$	V
No-load consumption current	I_{ccq1}	$V_{IN} = V_O + 1\text{V}$, $I_O = 0\text{mA}$		90	180	μA
Input current while off	I_{ccq2}	$V_{IN} = V_O + 1\text{V}$, $V_{CONT} = 0\text{V}$			0.1	μA
I/O voltage difference	$V_d \text{ min}$	$V_{IN} = V_O - 0.2\text{V}$, $I_O = 50\text{mA}$		0.1	0.2	V
Input fluctuations	$\Delta V1$	$V_{IN} = V_O + 1\text{V} \sim 10\text{V}$, $I_O = 50\text{mA}$		10	20	mV
Load fluctuation	$\Delta V2$	$V_{IN} = V_O + 1\text{V}$, $I_O = 0 \sim 100\text{mA}$		30	60	mV
Output voltage temperature coefficient	$\Delta V_O / \Delta T$	$T_j = -20 \sim +75^\circ\text{C}$, $V_{IN} = V_O + 1\text{V}$, $I_O = 30\text{mA}$		100		ppm/ $^\circ\text{C}$
Ripple rejection rate	RR	$V_{IN} = V_O + 1\text{V}$, $I_O = 30\text{mA}$, $V_{RIPPLE} = 1V_{P-P}$, $f = 120\text{Hz}$	50	70		dB
Output noise voltage	V_n	$V_{IN} = V_O + 1\text{V}$, $f = 20 \sim 80\text{kHz}$, $I_O = 30\text{mA}$, $C_n = 0.01 \mu\text{F}$		35 (3V item)		μV_{rms}
C_{CONT} pin current while on	I_{CONT}	$V_{CONT} = 1.6\text{V}$		5	15	μA
C_{CONT} pin high level	H		1.6		$V_{IN} + 0.3\text{V}$	V
C_{CONT} pin low level	L		-0.3		0.4	V

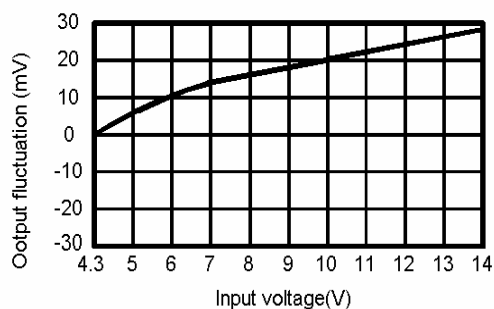
Measuring Circuit


Characteristics (33X,33XR Series)

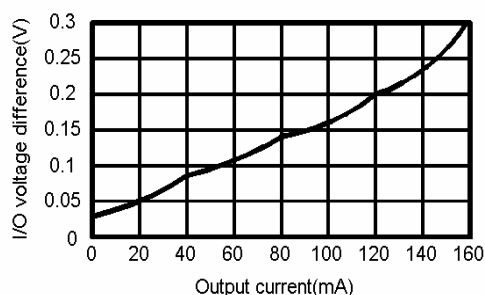
• **Consumption current ($V_{IN}=4.3V$)**



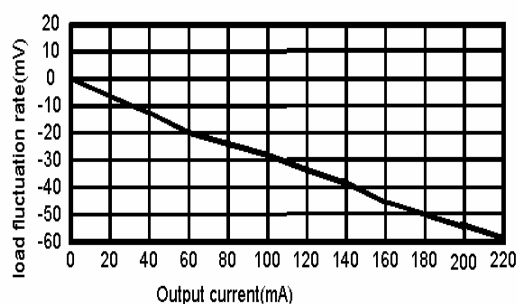
• **Output fluctuation ($I_O=30mA$)**



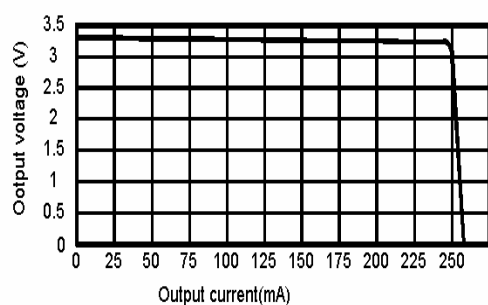
• **I/O voltage difference ($V_{IN}=3.1V$)**



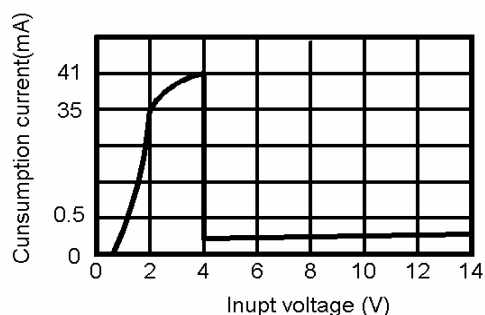
• **Load fluctuation ($V_{IN}=4.3V$)**



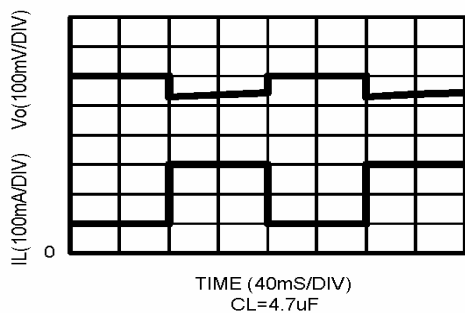
• **Current limit ($V_{IN}=4.3V$)**



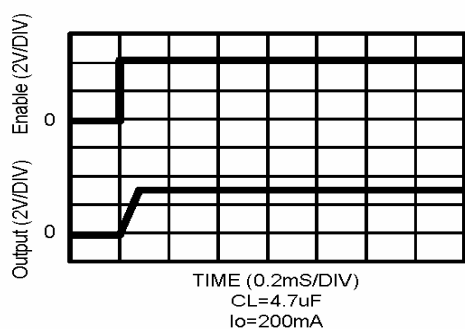
• **No-load input current**



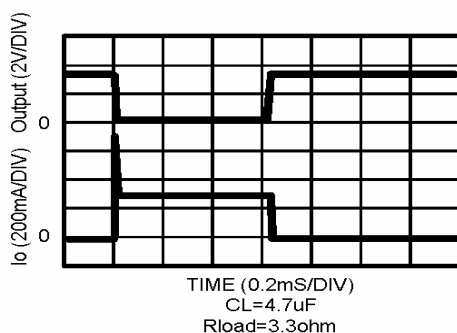
• Load step (1mA-200mA)



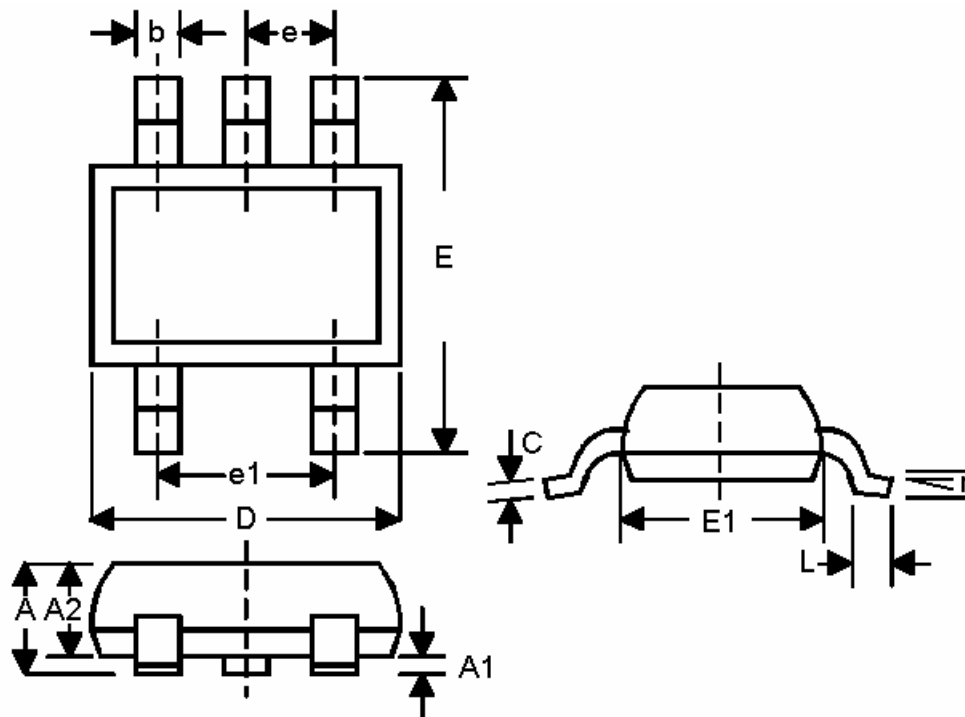
• Chip enable transient response



• Current limit response

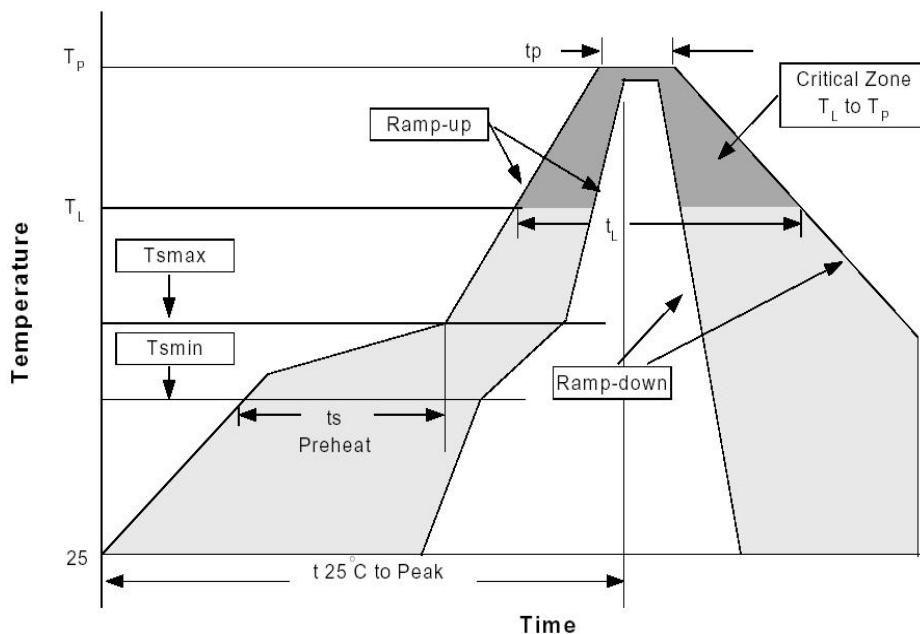


Small Outline SOT-25



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 Profiles



Profile Feature	Sn-Pb Eutectic Assembly		Pb-Free Assembly	
	Large Body Pkg. thickness ≥2.5mm or Pkg. volume ≥350mm ³	Small Body Pkg. thickness <2.5mm or Pkg. volume <350mm ³	Large Body Pkg. thickness ≥2.5mm or Pkg. volume ≥350mm ³	Small Body Pkg. thickness ≥2.5mm or Pkg. volume ≥350mm ³
Average ramp-up rate (T _L to T _P)	3°C/second max.		3°C/second max.	
Preheat -Temperature Min(T _{smin}) -Temperature Max (T _{smax}) -Time (min to max)(t _s)	100°C 150°C 60-120 seconds		150°C 200°C 60-180 seconds	
T _{smax} to T _L -Ramp-up Rate			3°C/second max.	
Time maintained above: -Temperature (T _L) -Time (t _L)	183°C 60-150 seconds		217°C 60-150 seconds	
Peak Temperature(T _P)	225+0/-5°C	240+0/-5°C	245+0/-5°C	250+0/-5°C
Time within 5°C of actual Peak Temperature (t _p)	10-30 seconds	10-30 seconds	10-30 seconds	20-40 seconds
Ramp-down Rate	6°C/second max.		3°C/second max.	
Time 25°C to Peak Temperature	6 minutes max.		8 minutes max.	

*All temperatures refer to topside of the package, measured on the package body surface.