



AP118, AP125, AP130, AP133

Low Power 200mA LDO Regulator

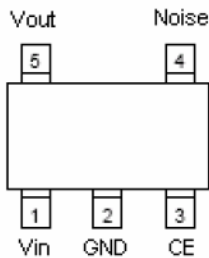
LOW POWER LDO REGULATOR

The AP1XX Series are CMOS-based voltage regulators with built-in voltage reference, error-amplifier, resistors, current limit circuit and chip enable circuit. The AP1XX is offered in 1.8V, 2.5V, 3.0V and 3.3V fixed-voltages: **AP118**:1.8V output; **AP125**:2.5V; **AP130**:3.0V; **AP133**:3.3V.

FEATURES

- Quiescent Current Typ. 85uA, Max. 100-150uA
- Quiescent Current at Shutdown Typical 2uA
- Output Voltage 1.8V, 2.5V, 3.0V & 3.3V
- Output Voltage Accuracy: 1.8~2.5V +/- 3%; 2.5~3.3V +/-2%
- Input Voltage (Vout+1) up to 5.5V
- Output Current Max. 200mA
- Dropout Voltage Typ. 200mV at 100mA; 100mV at 50mA
- Over Current Limitation Typ. 300mA
- Short Circuit Current Typ. 50mA
- Power Supply Rejection Ration Typ. 70dB at f=1kHz
- Output Noise Typ. 30uVrms at 10Hz<=f<=100kHz
- Package 5-pin SOT23

PIN ASSIGNMENTS (TOP VIEW)



PIN DESCRIPTION

<u>Symbol</u>	<u>Description</u>
Vin	Input Voltage
GND	Ground
CE	Chip Enable
Noise	Bypass Capacitor for better noise performance
Vout	Output Voltage



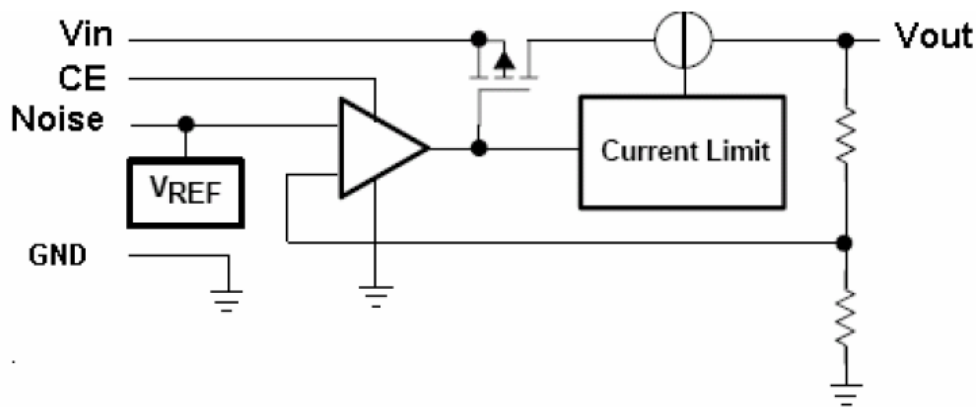
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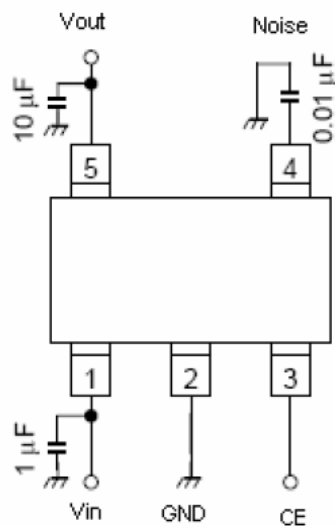
ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Units
Input Voltage	Vin	7	V
Output Current	Iout	400	mA
Operation Ambient Temperature	Topr	-40 ~ +85	C
Storage Temperature	Tstg	-55~ +150	C
ESD rating, HBM		2k	V

FUNCTIONAL BLOCK DIAGRAM



APPLICATION CIRCUIT



Control Level	Operation
HIGH	ON
LOW	OFF

The figure above shows the recommended configuration for the LDO. Capacitors are required at Vin, Vout and Noise pins for stable operation.



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ELECTRICAL CHARACTERISTICS

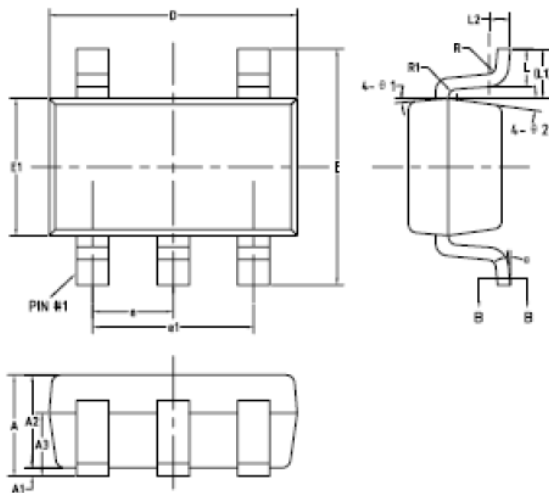
- **AP133** (unless otherwise specified, Typ.: $V_{out} = 3.3V$, $V_{IN} = V_{out} + 1$, $I_{out} = 50mA$, $C_{out} = 10\mu F$, $C_{noise} = 10nF$, $T_{emp} = 25C$)

Characteristics	Test Condition	Specifications	Min	Typ	Max	Unit
Output Voltage	Typ, $I_o = 50mA$	+/- 2%	x0.98	V_{out}	x1.02	V
Line Regulation	$V_{out} + 1 \leq V_{IN} \leq 5.5V$ $I_o = 1mA$	15mV	--	15	--	mV
Load Regulation	$1mA \leq I_{out} \leq 200mA$	70mV	--	70	--	mV
Quiescent Current	Typ	85uA Typical, 100-150uA Max	--	85	150	uA
Quiescent Current at Shutdown	$V_{ce} = 0V$	2uA Typical	--	2u		A
Input Voltage	Typ		$V_{out} + 1$	--	5.5	V
Output Current	Typ	200mA Max	200	--	--	mA
Dropout Voltage	Typ	200mV at 100mA Typical 100mV at 50mA Typical	--	200 100	--	mV
Short Circuit Current	$V_{out} = 0V$	50mA Typical	--	50	--	mA
Output Noise (See Note)	$10Hz \leq f \leq 100kHz$ $I_o = 10mA$	30uVrms at $10Hz \leq f \leq 100kHz$	--	32.7	--	uVrms
PSRR (See Note)	$F = 1kHz$, $V_{ripple} = 500mV_{p-p}$, $I_o = 10mA$	70dB at $f = 1kHz$ Typical	--	73.5	--	dB

* Notes: Output Noise and PSRR values are design guarantee

PACKAGE INFORMATION

- SOT23 – 5



COMMON DIMENSIONS
(UNITS OF MEASURE—MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	--	--	1.25
A1	0	--	0.15
A2	1.00	1.10	1.20
A3	0.60	0.65	0.70
b	0.36	--	0.50
b1	0.36	0.38	0.45
c	0.14	--	0.20
c1	0.14	0.15	0.18
D	2.826	2.926	3.026
E	2.60	2.80	3.00
E1	1.526	1.626	1.726
e	0.95BSC		
e1	1.90BSC		
L	0.35	0.45	0.60
L1	0.59REF		
L2	0.25BSC		
R	0.10	--	--
R1	0.10	--	0.25
B	0'	--	8'
B 1	3'	5'	7'
B 2	6'	8'	10'