

The AP131 is a 300mA, fixed output voltage, low dropout linear

regulator. The Device included pass element, error amplifier,

band-gap, current limit and thermal shutdown circuitry. The

The characteristics of low dropout voltage and less quiescent

current make it good for some critical current applications, for

example, some battery powered devices. The typical quiescent

current is approximately 50µA from zero to maximum load. Due

to the internal flexible design, it results in extensively fixed output

voltage versions and makes it convenient to use for applications.

Built-in current-limit and thermal-shutdown functions prevent any fault condition from IC damage. An external capacitor can be

device is ON when the EN pin is set to logic high level.

connected to the BP pin and reduce the output noise.

General Description

AP131

Features

- Input Voltage Range is from 2.7 to 5.5V
- Dropout Voltage 400mV at 300mA Output Current
- Guaranteed 300mA Output Current
- Internal Ron = 1.5Ω PMOS draws no Base Current
- Low Quiescent Current 50µA
- Output Voltage: 1.5V/1.8V/2.0V/2.5V/2.8V/
- 2.9V/3.0V/3.3V/ 3.5V; Accuracy 2%
- Active Low Shutdown Function (EN pin)
- Fast Transient Response
- Good Load Regulation
- Current Limit and Thermal Shutdown Protection
- Short Circuit Current Fold-Back
- Lead Free package: SOT25
- SOT25: Available in "Green" Molding Compound (No Br, Sb)
- Lead Free Finish/RoHS Compliant (Note 1)

Applications

- Battery Powered Device
- Wireless Communication
- CD-ROM, DVD, and LAN Card
- PC Peripheral

Ordering Information

	AP131 - <u>XX W</u>	X - 7	
Output Voltage	Package	Lead Free	Packing
15:1.5V	W : SOT25	L : Lead Free	7 : Tape & Reel
18:1.8V		G : Green	
20:2.0V			
25:2.5V			
28:2.8V			
29:2.9V			
30:3.0V			
33:3.3V			
35:3.5V			

	Dovico	Package Packaging		7" Tape and Reel		
	Device	Code	(Note 2)	Quantity	Part Number Suffix	
Pb	AP131-XXWL-7	W	SOT25	3000/Tape & Reel	-7	
PD ,	AP131-XXWG-7	W	SOT25	3000/Tape & Reel	-7	

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at

http://www.diodes.com/products/lead_free.html.

 Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.



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300mA LOW DROPOUT LINEAR REGULATOR WITH SHUTDOWN

Pin Assignment



Pin Description

Pin Name	Description
IN	Input Voltage
GND	Ground
EN	Enable Pin
BP	Band-gap
OUT	Output Voltage

Block Diagram





Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
V _{cc}	Input Voltage		+6	V
T _{OP}	Operating Junction Temperature Range		-40 to +125	°C
T _{ST}	Storage Temperature Range		-65 to +150	°C
PD	Power Dissipation, $P_D @ T_A = 25^{\circ}C$	SOT25	250	mW

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V _{IN}	Input Voltage	2.7	5.5	V
Ι _{ουτ}	Output Current	0	300	mA
T _A	Operating Ambient Temperature	-40	85	°C



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Electrical Characteristics

Symbol	Parameter	Conditions	Min	Тур.	Max	Unit
V _{DROP}	Dropout Voltage (Note 3)	I _L = 300mA	-	400	500	mV
I _{LIMIT}	Current Limit (Note 4)	$V_{IN} = 5V, V_{OUT} = 0V$	350	450	-	mA
I _{short}	Short Circuit Current	V _{OUT} < 1.05V	-	150	300	mA
ΔV_{LINE}	Line Regulation	I _{OUT} =1mA, V _{IN} =(V _{OUT} +1V) to 5.5V	-	0.1	0.3	%/V
ΔV_{LOAD}	Load Regulation (Note 5)	$I_L = 1 \sim 300 \text{mA}, V_{IN} = 5 \text{V}$	-	30	35	mV
	Output Voltage Accuracy	$I_{L} = 1mA, V_{IN} = 5V$	-2	-	+2	%
ΔV_{OUT}	Output Voltage Temperature Coefficient (Note 6)		-	50	150	PPM/ ⁰C
PSRR	Ripple Rejection	F = 100Hz, $C_{IN} = 1\mu F$, $C_O = 10uF$, $I_L = 100mA$	-	60	-	dB
I _{SB}	Standby Current	$I_L = 0mA, V_{IN} = 5V, EN = 0V$	-	-	5	μA
Ι _Q	Quiescent Current	$I_L = 0mA, V_{IN} = 5V, EN = 5V$	-	50	100	μA
I _{EN}	Enable Pin Current		-	-	< 0.1	μA
V _{ENON}	Enable Din Voltage	Output ON	1.5	-	V_{IN}	V
V_{ENOFF}	Enable Fill Vollage	Output OFF	0	-	0.8	V
T _{DELAY}	Enable Delay Time	$C_{BP} = 0.1 \mu F$, $C_{OUT} = 1 \mu F$, $I_{OUT} = 30 mA$	-	8	-	μS
θ_{JA}	Thermal Resistance Junction-to-Ambient	SOT25 (Note 7)		163		°C/W
θ _{JC}	Thermal Resistance Junction-to-Case	SOT25 (Note 7)		53		^o C/W

 $T_{4} = 25^{\circ}C_{1}C_{10} = 10E_{1}C_{2}$ - 10uF unless otherwise specified

 Dropout voltage is defined as the input to output differential voltage. Dropout is measured at constant junction temperature by using pulsed ON time, and the criterion is V_{OUT} inside target value ±2%. This test is skipped at the condition of V_{IN}<3V.
Current limit is measured at constant junction temperature by using pulsed testing with a low ON time.
Regulation is measured at constant junction temperature by using pulsed testing with a low ON time. Notes:

6. Guaranteed by design.

7. Test conditions for SOT25: Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.



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Typical Characteristics







Typical Application Circuit





Marking Information

(1) SOT25



Part Number	Package	Identification Code
AP131-15W	SOT25	DA
AP131-18W	SOT25	DD
AP131-20W	SOT25	DF
AP131-25W	SOT25	DK
AP131-28W	SOT25	DN
AP131-29W	SOT25	DO
AP131-30W	SOT25	DP
AP131-33W	SOT25	DS
AP131-35W	SOT25	DU

Package Information (All Dimensions in mm)





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