DESCRIPTION

This monolithic integrated circuit is an adjustable 3-terminal positive voltage regulator designed to supply more than 1A of load current with an output voltage adjustable over a 1.2 to 37V. It employs internal current limiting, thermal shut-down and safe area compensation.

The A317 is available in SOT-223 package.

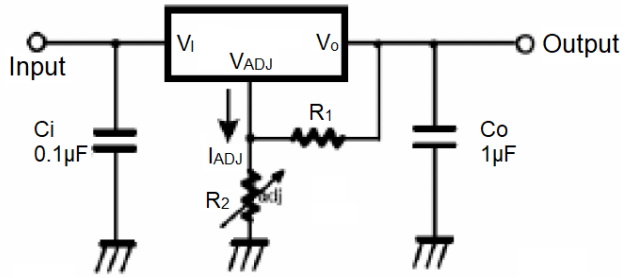
FEATURES

- Internal thermal overload protection
- Internal short circuit current limiting
- Output transistor safe operating area compensation
- Available in SOT-223 package

ORDERING INFORMATION

Package Type	Part Number	
SOT-223 SPQ: 2,500pcs/Reel	N	A317NR
		A317NVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

TYPICAL APPLICATION



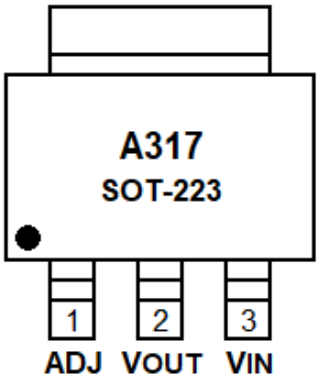
$V_O=1.25V(1+R_2/R_1)+I_{ADJ}R_2$

C_I is required when regulator is located an appreciable distance from power supply filter.

C_O is not needed for stability, however, it does improve transient response.

Since I_{ADJ} is controlled to less than 100μA, the error associated with this term is negligible in most applications.

PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	ADJ	Adjustable
2	V_{OUT}	Output
3	V_{IN}	Input

ABSOLUTE MAXIMUM RATINGS

V_{IN}-V_{OUT}, Input - Output Voltage Difference	40V
T_{LEAD}, Lead Temperature	230°C
P_D, Power Dissipation	Internal limited
T_J, Operating Junction Temperature Range	0°C~+150°C
T_{STG}, Storage Temperature Range	-55°C~150°C
$\Delta V_O / \Delta T$, Temperature Coefficient of Output Voltage	±0.02%/°C

Stresses above may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

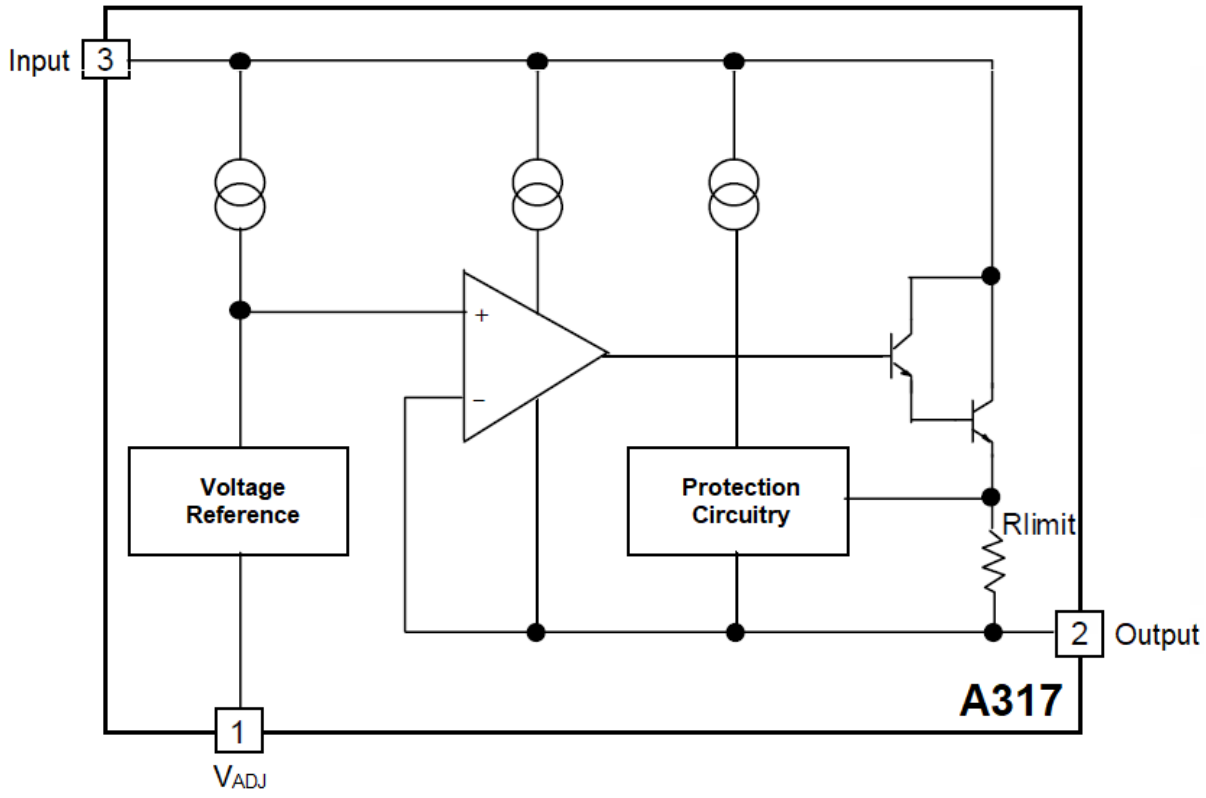
V_O-V_I=5V, I_O=0.5A, 0℃≤T_J≤+125℃, I_{MAX}=1.5A, P_{MAX}=20W,unless otherwise specified

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Line Regulation[NOTE1]	R_{LINE}	3V≤V_I-V_O≤40V, T_A=25℃		-	0.01	0.04	%/V
		3V≤V_I-V_O≤40V		-	0.02	0.07	
Load Regulation[NOTE1]	R_{LOAD}	10mA≤I_O≤I_{MAX}, T_A=25℃	V_O<5V	-	18	25	mV%/ V_O
			V_O≥5V		0.4	0.5	
		10mA≤I_O≤I_{MAX}	V_O<5V	-	40	70	
			V_O≥5V		0.8	1.5	
Adjustable Pin Current	I_{ADJ}			-	46	100	μA
Adjustable Pin Current Change	ΔI_{ADJ}	3V≤V_I-V_O≤40V 0mA≤I_O≤ I_{MAX}, P_D≤P_{MAX}		-	2.0	5.0	μA
Reference Voltage	V_{REF}	3V≤V_{IN}-V_O≤40V 10mA≤I_O≤I_{MAX}, P_D≤P_{MAX}		1.20	1.25	1.30	V
Temperature Stability	ST_T			-	0.7	-	%/V_O
Minimum Load Current to Maintain Regulation	$I_{L(MIN)}$	V_{IN}-V_{OUT} = 40V		-	3.5	12	mA
Maximum Output Current	$I_{O(MAX)}$	V_I-V_O≤15V, P_D≤P_{MAX}		1.0	2.2	-	A
		V_I-V_O≤40V, P_D≤P_{MAX}, T_A=25℃			0.3		
RMS Noise,% of V_{OUT}	en	T_A=25℃, 10Hz≤f≤10kHz		-	0.003	0.01	%/V_O
Ripple Rejection	RR	V_O=10V, f =120Hz					dB
		without C_{ADJ}			60	-	
		C_{ADJ}=10μF[NOTE2]		66	75		
Long-Term Stability, T_J=T_{HIGH}	ST	T_A=25℃ for end point mesasurements,1000HR		-	0.3	1	%
Thermal Resistance Junction to case	$R_{\theta JC}$			-	5	-	℃/W

NOTE1: Load and line regulation are specified at constant junction temperature. Change in V_D due to heating effects must be taken into account separately. Pulse testing with low duty is used.(P_{MAX}=20W)

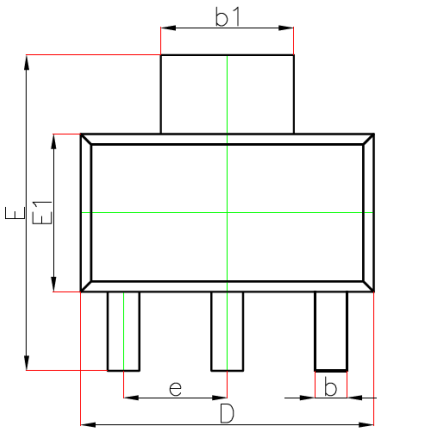
NOTE2: C_{ADJ}. when used, is connected between the adjustment pin and ground.

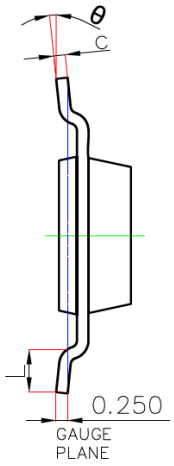
BLOCK DIAGRAM

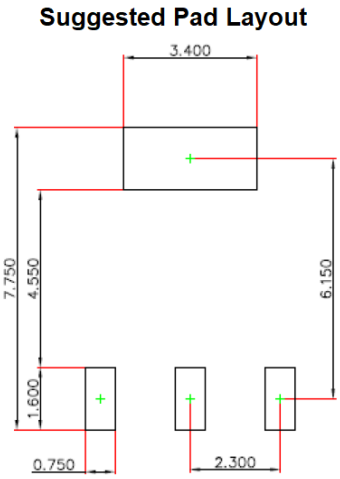


PACKAGE INFORMATION

Dimension in SOT-223 (Unit: mm)







Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	-	1.800	-	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300 BSC		0.091 BSC	
L	0.750	-	0.030	-
θ	0°	10°	0°	10°

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