

# Positive Voltage Regulator

## Adjustable 3 Terminal

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**RoHS  
Compliant**



### Features

- Internal thermal overload protection
- Internal short circuit current limiting
- Output transistor safe operating area compensation
- This monolithic integrated circuit is an adjustable 3-terminal positive voltage regulator designed to supply more than 1.5A 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.

### Absolute Maximum Ratings $T_a = 25^{\circ}\text{C}$

Parameter	Symbol	Rating
Input-Output Voltage Differential	$V_i - V_o$	40V
Temperature Coefficient of Output Voltage	$\Delta V_o / \Delta T$	$\pm 0.02\text{V}$
Power Dissipation	$P_D$	Internally limited (W)
Thermal Resistance Junction to Case	$R_{\theta JC}$	$5^{\circ}\text{C/W}$
Lead Temperature	$T_{LEAD}$	$230^{\circ}\text{C}$
Operating Temperature Range	$T_J$	$125^{\circ}\text{C}$
Storage Temperature Range	$T_{stg}$	$-55^{\circ}\text{C}$ to $+150^{\circ}\text{C}$

### Electrical Characteristics ( $V_o - V_i = 5\text{V}$ , $I_o = 0.5\text{A}$ , $0^{\circ}\text{C} \leq T_J \leq +125^{\circ}\text{C}$ , $I_{MAX} = 1.5\text{A}$ , $P_{MAX} = 20\text{W}$ , unless otherwise specified)

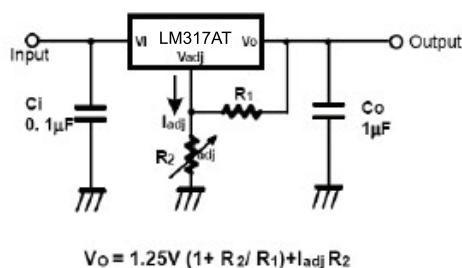
Parameter Name	Symbol	Test Conditions	Min	Typ	Max	Unit
Line Regulation	$R_{line}$	$3\text{V} \leq V_i - V_o \leq 40\text{V}$ $T_a = 25^{\circ}\text{C}$		0.01	0.04	% / V
		$3\text{V} \leq V_i - V_o \leq 40\text{V}$		0.02	0.07	
Load Regulation	$R_{load}$	$T_a = 25^{\circ}\text{C}$ , $10\text{mA} \leq I_o \leq I_{MAX}$ $V_o < 5\text{V}$ $V_o \geq 5\text{V}$		18	25	mV % / $V_o$
				0.4	0.5	
		$10\text{mA} \leq I_o \leq I_{MAX}$ $V_o < 5\text{V}$ $V_o \geq 5\text{V}$		40	70	
				0.8	1.5	
Adjustable Pin Current	$I_{ADJ}$			46	100	$\mu\text{A}$
Adjustable Pin Current Change	$\Delta I_{ADJ}$	$3\text{V} \leq V_i - V_o \leq 40\text{V}$ $10\text{mA} \leq I_o \leq I_{MAX}$ , $P_D \leq P_{MAX}$		2	5	
Reference Voltage	$V_{REF}$	$3\text{V} \leq V_i - V_o \leq 40\text{V}$ $10\text{mA} \leq I_o \leq I_{MAX}$ , $P_D \leq P_{MAX}$	1.2	1.25	1.3	V
Temperature Stability	$ST_T$			0.7	1.5	% / $V_o$
Minimum Load Current to Maintain Regulation	$I_{L(min)}$	$V_i - V_o = 40\text{V}$		3.5	12	mA

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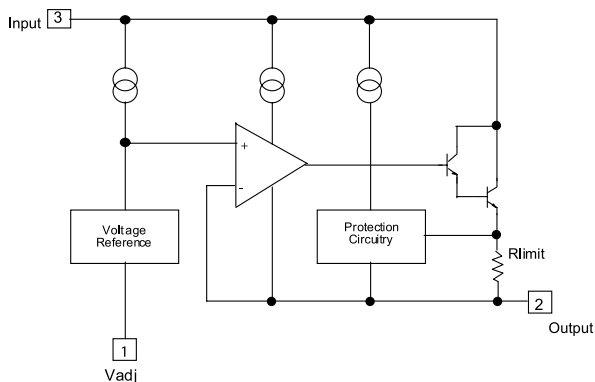
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Parameter Name	Symbol	Test Conditions	Min	Typ	Max	Unit
Maximum Output Current	I <sub>O(max)</sub>	V <sub>I</sub> -V <sub>O</sub> ≤15V, P <sub>D</sub> ≤P <sub>MAX</sub>	1	2.2		A
		V <sub>I</sub> -V <sub>O</sub> ≤40V, P <sub>D</sub> ≤P <sub>MAX</sub> Ta=25°C		0.3		
RMS Noise,% of V <sub>OUT</sub>	e <sub>N</sub>	Ta=25°C, 10Hz≤f≤10kHz		0.003	0.01	%/V <sub>O</sub>
Ripple Rejection	RR	V <sub>O</sub> =10V, f =120Hz without C <sub>ADJ</sub>		60		dB
		V <sub>O</sub> =10V, f =120Hz ,C <sub>ADJ</sub> =10uF	66	75		
Long-Term Stability,TJ=THIGH	ST	Ta=25°C for end point measurements,1000HR		0.3	1	%

## Typical Application



## Internal Block Diagram



## Part Number Table

Description	Part Number
Positive Voltage Regulator, 1.2 V to 37V, 1.5A, TO-220	LM317AT

Dimensions : Millimetres

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