



## 3-Terminal Positive Adjustable Regulator

## LM317

### Features

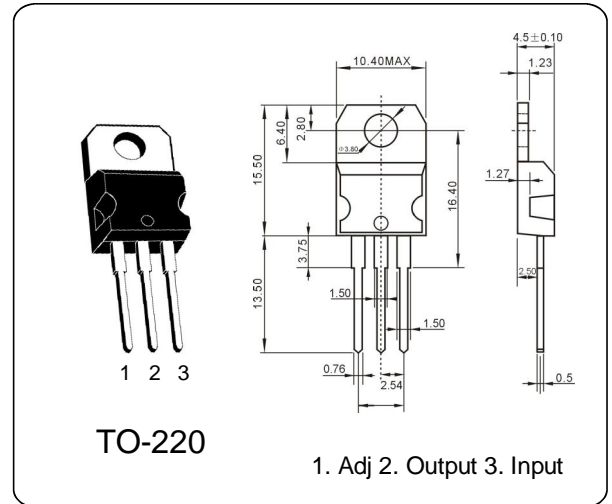
- Output Current In Excess of 1.5A
- Output Adjustable Between 1.2V and 37V
- Internal Thermal Overload Protection
- Internal Short Circuit Current Limiting
- Output Transistor Safe Operating Area Compensation
- TO-220 Package

### Description

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 (Ta = 25 °C)

Parameter	Symbol	Typ	Unit
Input-Output Voltage Differential	$V_I - V_O$	40	V
Lead Temperature	T <sub>LEAD</sub>	230	°C
Power Dissipation	P <sub>D</sub>	Internally limited	W
Operating Junction Temperature Range	T <sub>j</sub>	0~125	°C
Storage Temperature Range	T <sub>STG</sub>	-65~150	°C
Temperature Coefficient of Output Voltage	$V_O / T$	0.02	%/°C



### Electrical Characteristics (Ta = 25 °C)

( $V_I - V_O = 5V$ ,  $I_O = 0.5A$ ,  $0^\circ C$  T<sub>J</sub> +125°C, I<sub>MAX</sub> = 1.5A, P<sub>D</sub>MAX = 20W, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Line Regulation (Note1)	R <sub>line</sub>	TA = +25°C 3V V <sub>I</sub> - V <sub>O</sub> 40V	-	0.01	0.04	% / V
		3V V <sub>I</sub> - V <sub>O</sub> 40V	-	0.02	0.07	
Load Regulation (Note1)	R <sub>load</sub>	TA = +25°C, 10mA I <sub>O</sub> I <sub>MAX</sub> V <sub>O</sub> < 5V V <sub>O</sub> 5V	-	18 0.4	25 0.5	mV % / V <sub>O</sub>
		10mA I <sub>O</sub> I <sub>MAX</sub> V <sub>O</sub> < 5V V <sub>O</sub> 5V	-	40 0.8	70 1.5	
Adjustable Pin Current	I <sub>ADJ</sub>	-	-	46	100	A
Adjustable Pin Current Change	I <sub>ADJ</sub>	3V V <sub>I</sub> - V <sub>O</sub> 40V 10mA I <sub>O</sub> I <sub>MAX</sub> P <sub>D</sub> P <sub>MAX</sub>	-	2.0	5	A
Reference Voltage	V <sub>REF</sub>	3V V <sub>IN</sub> - V <sub>O</sub> 40V 10mA I <sub>O</sub> I <sub>MAX</sub> P <sub>D</sub> P <sub>MAX</sub>	1.20	1.25	1.30	V
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> V <sub>I</sub> - V <sub>O</sub> 40V, P <sub>D</sub> P <sub>MAX</sub>	1.0	2.0 0.3	-	A
Ripple Rejection	RR	V <sub>O</sub> = 10V, f = 120Hz without C <sub>ADJ</sub> C <sub>ADJ</sub> = 10 F (Note2)	66	60 75	-	dB

#### Note:

- Load and line regulation are specified at constant junction temperature. Change in V<sub>D</sub> due to heating effects must be taken into account separately. Pulse testing with low duty is used. (P<sub>MAX</sub> = 20W)
- C<sub>ADJ</sub>, when used, is connected between the adjustment pin and ground.