

# ADJUSTABLE VOLTAGE REGULATOR (POSITIVE)

LM317L

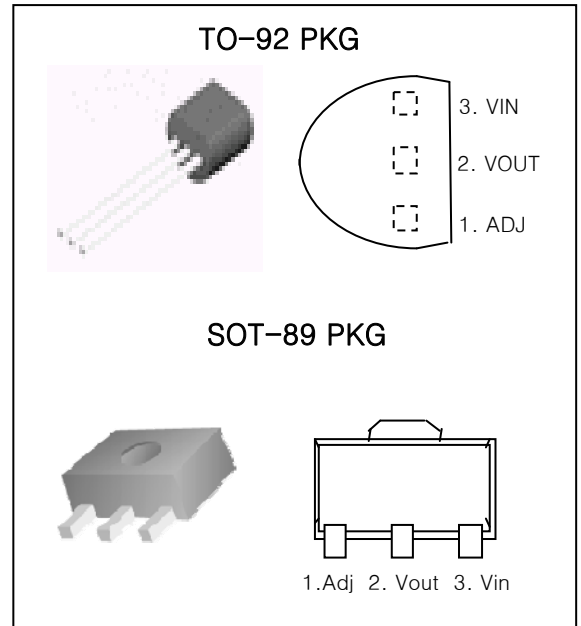
## 3-TERMINAL 100mA POSITIVE ADJUSTABLE REGULATOR

### FEATURES

- Output current in Excess of 100mA
- Output Adjustable Between 1.2V and 37V
- Internal Thermal-Overload Protection
- Internal Short-Circuit Current-Limiting
- Output Transistor Safe-Area Compensation
- Floating operation for high voltage applications
- Moisture Sensitivity Level 3

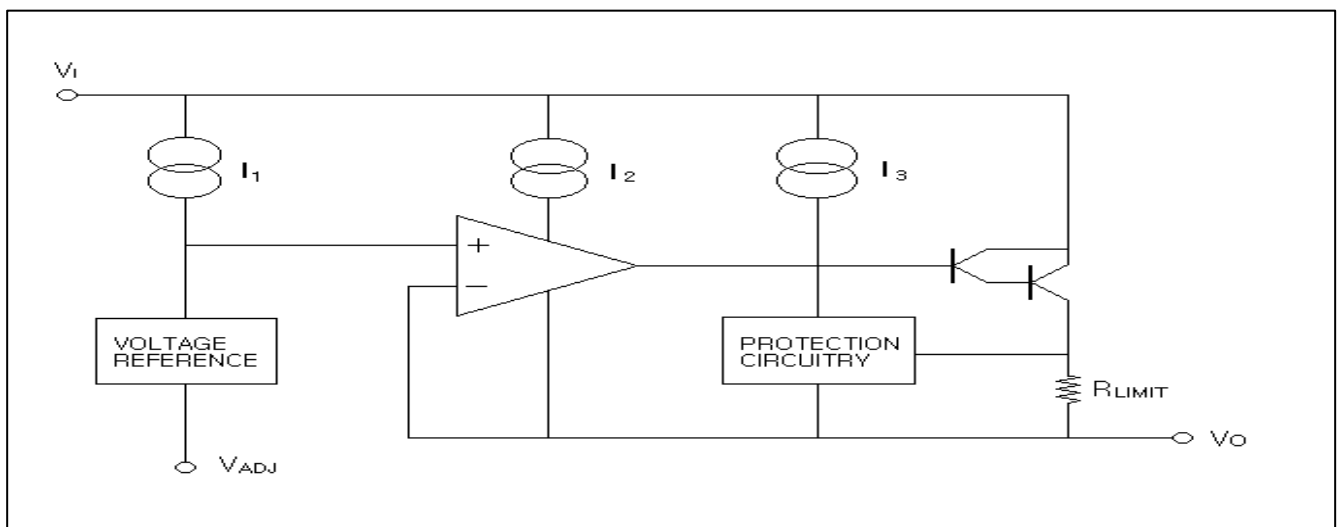
### DISCRIPTION

This monolithic integrated circuit is an adjustable 3-terminal positive voltage regulator designed to supply more than 100mA 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.



ORDERING INFORMATION		
Device	Marking	Package
LM317L	LM317L	TO-92
LM317F	317	SOT-89

### BLOCK DIAGRAM



TYPICAL APPLICATIONS

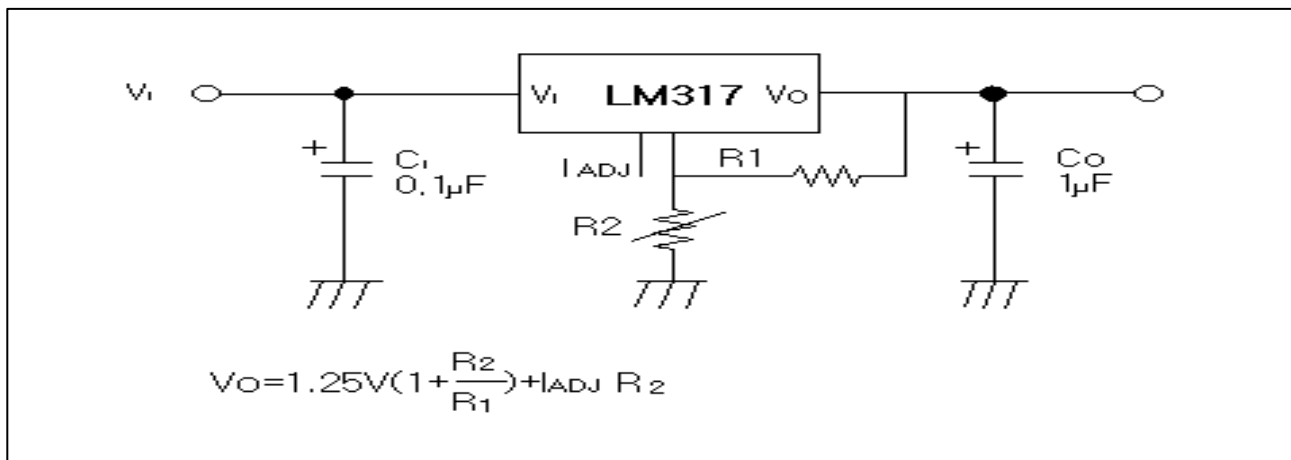


Fig.5 Programmable Regulator

$C_i$  is required when regulator is located in 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  $100\mu A$ , the error associated with this term is negligible in most applications.

## ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, unless otherwise specified)

Characteristic	Symbol	Value	Unit
Input-output Voltage Differential	V <sub>I</sub> -V <sub>O</sub>	40	V
Lead Temperature	T <sub>LEAD</sub>	230	°C
Power Dissipation	P <sub>D</sub>	Internally limited	—
Operating Temperature Range	T <sub>OPR</sub>	0 ~ +125	°C
Storage Temperature Range	T <sub>STG</sub>	-65 ~ +125	°C

## ELECTRICAL CHARACTERISTICS

(V<sub>I</sub>-V<sub>O</sub>=5V, I<sub>O</sub>=40mA, 0°C ≤ T<sub>J</sub> ≤ 125°C, I<sub>MAX</sub>=100mA, unless otherwise specified)

Characteristic	Symbol	Test condition	Min.	Typ.	Max.	Unit	
Line Regulation	ΔV <sub>O</sub>	T <sub>A</sub> =0 ~ 125°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	%/V
Load Regulation	ΔV <sub>O</sub>	T <sub>A</sub> =25°C, 10mA ≤ I <sub>O</sub> ≤ I <sub>MAX</sub>			10	25	mV
		V <sub>O</sub> ≤ 5V		0.1	0.5	%/V <sub>O</sub>	
		10mA ≤ I <sub>O</sub> ≤ I <sub>MAX</sub>			20	70	mV
		V <sub>O</sub> ≥ 5V		0.3	1.5	%/V <sub>O</sub>	
Adjustable Pin Current	I <sub>ADJ</sub>			46	100	μA	
Adjustable Pin Current Cha	ΔI <sub>ADJ</sub>	3V ≤ V <sub>I</sub> -V <sub>O</sub> ≤ 40V 10mA ≤ I <sub>O</sub> ≤ I <sub>MAX</sub> P ≤ P <sub>MAX</sub>		0.2	5	μA	
Reference Voltage	V <sub>REF</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>	1.20	1.25	1.30	V	
Temperature Stability	ST <sub>T</sub>			0.7		%/V <sub>O</sub>	
Minimum Load Current to Maintain Regulation	L <sub>(MIN)</sub>	V <sub>I</sub> -V <sub>O</sub> =40V		3.5	10	mA	
Maximum Output Current	I <sub>O(MAX)</sub>	V <sub>I</sub> -V <sub>O</sub> ≤ 5V, P <sub>D</sub> ≤ P <sub>MAX</sub>	100	200		mA	
		V <sub>I</sub> -V <sub>O</sub> ≤ 40V, P <sub>D</sub> ≤ P <sub>MAX</sub> , T <sub>A</sub> = 25°C	156	400		mA	
RMS Noise, % of V <sub>OUT</sub>	e <sub>N</sub>	T <sub>A</sub> =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	
		C <sub>ADJ</sub> =10 μF	66	75			
Long-Term Stability, T <sub>J</sub> =T <sub>HIGH</sub>	ST	T <sub>A</sub> =25°C, for end point measurements, 1000HR		0.3	1	%	

\* Load and line regulation are specified at constant junction temperature. Change in V<sub>O</sub> due to heating effects must be taken into account separately. Pulse testing with low duty is used.