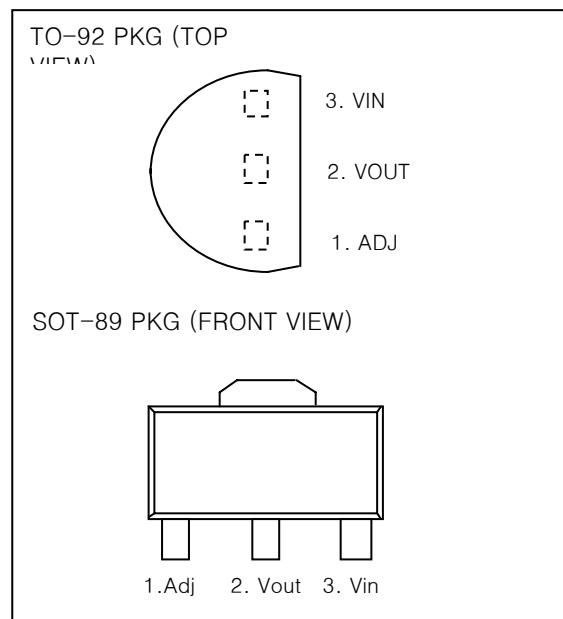


**3-TERMINAL 100mA POSITIVE ADJUSTABLE REGULATOR**

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.

**FEATURES**

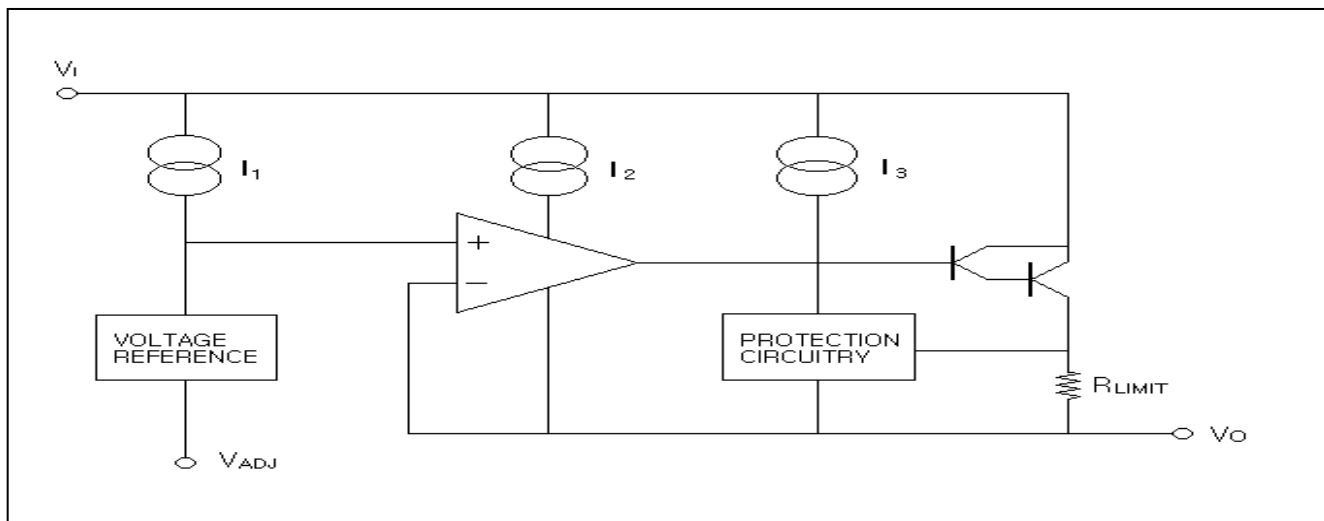
- ◇ Output current in Excess of 100mA
- ◇ Output Adjustable Between 1.2V and 37V
- ◇ Internal Thermal-Overload Protection
- ◇ Internal Short-Circuit Current-Limiting
- ◇ Output Transistor Safe-Area Compensation
- ◇ Floating operation for high voltage applications



**ORDERING INFORMATION**

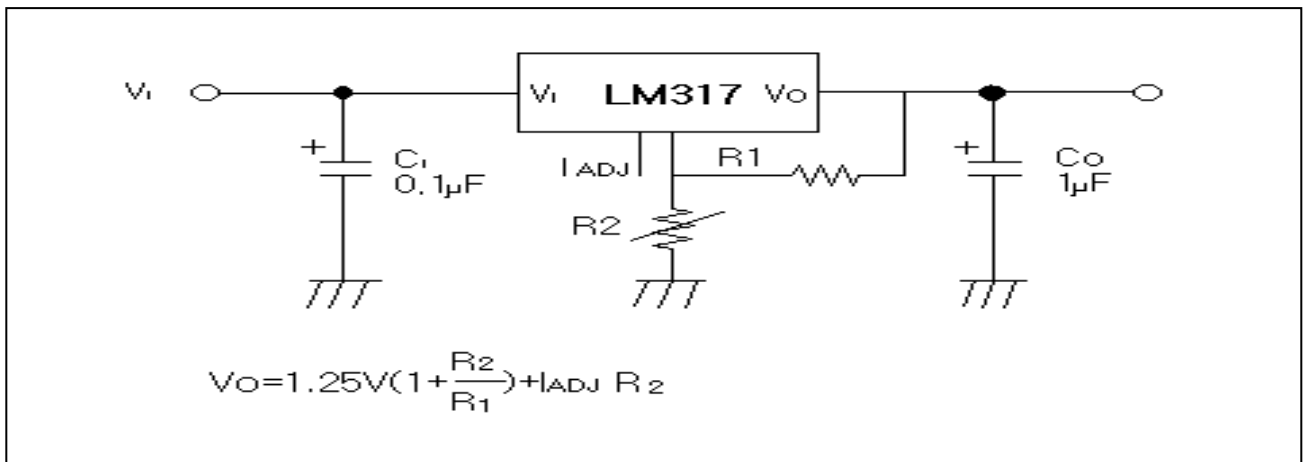
Device	Marking	Package
LM317L	LM317L	TO-92
LM317F	317	SOT-89

**BLOCK DIAGRAM**



TYPICAL APPLICATIONS

Fig.5 Programmable Regulator



C<sub>i</sub> is required when regulator is located in appreciable distance from power supply filter.

C<sub>o</sub> is not needed for stability, however, it does improve transient response.

Since I<sub>ADJ</sub> is controlled to less than 100µA, the error associated with this term is negligible in most applications.

# ADJUSTABLE VOLTAGE REGULATOR (POSITIVE)

LM317L

ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

Characteristic	Symbol	Value	Unit
Input-output Voltage Differential	$V_I-V_O$	40	V
Lead Temperature	$T_{LEAD}$	230	$^\circ\text{C}$
Power Dissipation	$P_D$	Internally limited	-
Operating Temperature Range	$T_{OPR}$	0 ~ +125	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-65 ~ +125	$^\circ\text{C}$

## ELECTRICAL CHARACTERISTICS

( $V_I-V_O=5\text{V}$ ,  $I_O=0.5\text{A}$ ,  $0^\circ\text{C}\leq T_J\leq 125^\circ\text{C}$ ,  $I_{MAX}=1.5\text{A}$ ,  $P_{MAX}=1.5\text{W}$ , unless otherwise specified)

Characteristic	Symbol	Test condition	Min.	Typ.	Max.	Unit
Line Regulation	$\Delta V_O$	$T_A=0 \sim 125^\circ\text{C}$		0.01	0.04	%/V
		$3\text{V}\leq V_I-V_O\leq 40\text{V}$		0.02	0.07	%/V
Load Regulation	$\Delta V_O$	$T_A=25^\circ\text{C}$ , $10\text{mA}\leq I_O\leq I_{MAX}$		10	25	mV
		$V_O\leq 5\text{V}$ $V_O\geq 5\text{V}$		0.1	0.5	%/V <sub>O</sub>
		$10\text{mA}\leq I_O\leq I_{MAX}$		20	70	mV
		$V_O\leq 5\text{V}$ $V_O\geq 5\text{V}$		0.3	1.5	%/V <sub>O</sub>
Adjustable Pin Current	$I_{ADJ}$			46	100	$\mu\text{A}$
Adjustable Pin Current Change	$\Delta I_{ADJ}$	$3\text{V}\leq V_I-V_O\leq 40\text{V}$ $10\text{mA}\leq I_O\leq I_{MAX}$ $P\leq P_{MAX}$		0.2	5	$\mu\text{A}$
Reference Voltage	$V_{REF}$	$3\text{V}\leq V_{IN}-V_{OUT}\leq 40\text{V}$ $10\text{mA}\leq I_O\leq I_{MAX}$ $P_D\leq P_{MAX}$	1.20	1.25	1.30	V
Temperature Stability	$ST_T$			0.7		%/V <sub>O</sub>
Minimum Load Current to Maintain Regulation	$L_{(MIN)}$	$V_I-V_O=40\text{V}$		3.5	10	mA
Maximum Output Current	$I_{O(MAX)}$	$V_I-V_O\leq 5\text{V}$ , $P_D\leq P_{MAX}$	100	200		mA
		$V_I-V_O\leq 40\text{V}$ , $P_D\leq P_{MAX}$ , $T_A=25^\circ\text{C}$	0.156	0.4		
RMS Noise, % of $V_{OUT}$	$e_N$	$T_A=25^\circ\text{C}$ , $10\text{Hz}\leq f\leq 10\text{KHz}$		0.003	0.01	%/V <sub>O</sub>
Ripple Rejection	RR	$V_O=10\text{V}$ , $f=120\text{Hz}$ without $C_{ADJ}$		60		dB
		$C_{ADJ}=10\ \mu\text{F}$	66	75		
Long-Term Stability, $T_J=T_{HIGH}$	ST	$T_A=25^\circ\text{C}$ , for end point measurements, 1000HR		0.3	1	%

\* Load and line regulation are specified at constant junction temperature. Change in  $V_O$  due to heating effects must be taken into account separately. Pulse testing with low duty is used. ( $P_{max} = 1500\text{ mW}$ )

HTC