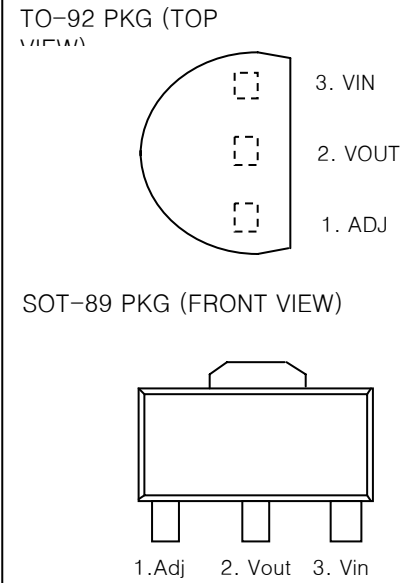


3-TERMINAL 100mA POSITIVE ADJUSTABLE REGULATOR

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

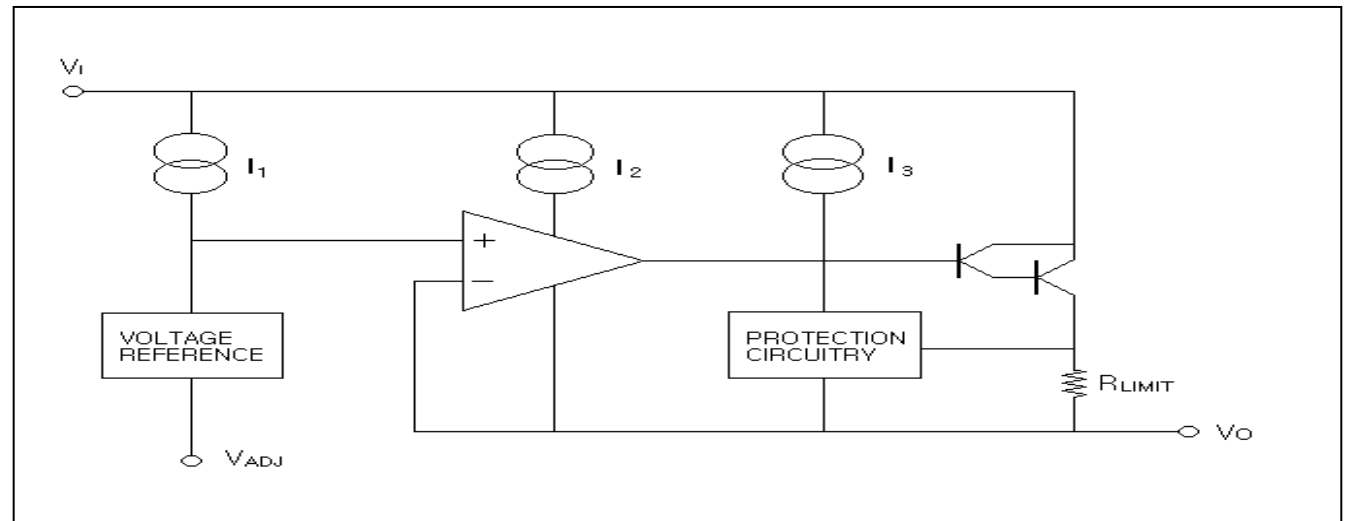
- ◇ Output current in Excess of 100mA
- ◇ Output Adjustable Between 1.2V and 37V
- ◇ Internal Thermal-Overload Protection
- ◇ Internal Short-Circuit Current-Limiting
- ◇ Output Transistor Safe-Area Compensation
- ◇ Floating operation for high voltage applications



ORDERING INFORMATION

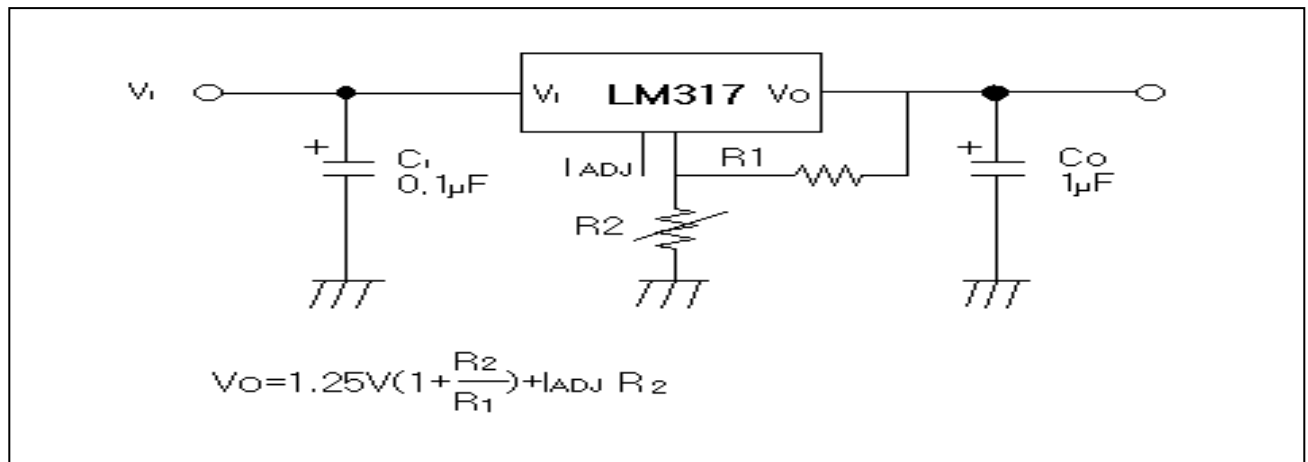
Device	Marking	Package
LM317L	LM317L	TO-92
LM317F	317	SOT-89

BLOCK DIAGRAM



TYPICAL APPLICATIONS

Fig.5 Programmable Regulator



C_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 ($T_A=25^{\circ}\text{C}$, 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}	$0 \sim +125$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-65 \sim +125$	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS

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

Characteristic	Symbol	Test condition	Min.	Typ.	Max.	Unit
Line Regulation	ΔV_O	$T_A=0 \sim 125^{\circ}\text{C}$ $3\text{V} \leq V_I-V_O \leq 40\text{V}$		0.01	0.04	%/V
		$3\text{V} \leq V_I-V_O \leq 40\text{V}$		0.02	0.07	%/V
Load Regulation	ΔV_O	$T_A=25^{\circ}\text{C}$, $10\text{mA} \leq I_O \leq I_{\text{MAX}}$ $V_O \leq 5\text{V}$ $V_O \geq 5\text{V}$		10 0.1	25 0.5	mV %/V _O
		$10\text{mA} \leq I_O \leq I_{\text{MAX}}$ $V_O \leq 5\text{V}$ $V_O \geq 5\text{V}$		20 0.3	70 1.5	mV %/V _O
Adjustable Pin Current	I_{ADJ}			46	100	μA
Adjustable Pin Current Change	ΔI_{ADJ}	$3\text{V} \leq V_I-V_O \leq 40\text{V}$ $10\text{mA} \leq I_O \leq I_{\text{MAX}}$ $P \leq P_{\text{MAX}}$		0.2	5	μA
Reference Voltage	V_{REF}	$3\text{V} \leq V_{\text{IN}}-V_{\text{OUT}} \leq 40\text{V}$ $10\text{mA} \leq I_O \leq I_{\text{MAX}}$ $P_D \leq P_{\text{MAX}}$	1.20	1.25	1.30	V
Temperature Stability	ST_T			0.7		%/V _O
Minimum Load Current to Maintain Regulation	$L_{(\text{MIN})}$	$V_I-V_O=40\text{V}$		3.5	10	mA
Maximum Output Current	$I_{O(\text{MAX})}$	$V_I-V_O \leq 5\text{V}$, $P_D \leq P_{\text{MAX}}$	100	200		mA
		$V_I-V_O \leq 40\text{V}$, $P_D \leq P_{\text{MAX}}$, $T_A=25^{\circ}\text{C}$	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 _O
Ripple Rejection	RR	$V_O=10\text{V}$, $f=120\text{Hz}$ without C_{ADJ}		60		dB
		$C_{\text{ADJ}}=10\mu\text{F}$	66	75		
Long-Term Stability, $T_J=T_{\text{HIGH}}$	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. ($P_{\text{max}} = 1500\text{ mW}$)