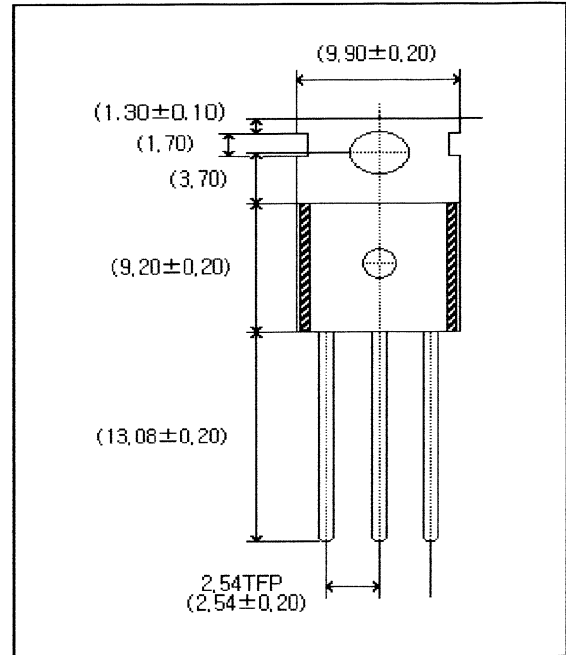


3-TERMINAL 1A POSITIVE ADJUSTABLE REGULATOR

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.

FEATURES

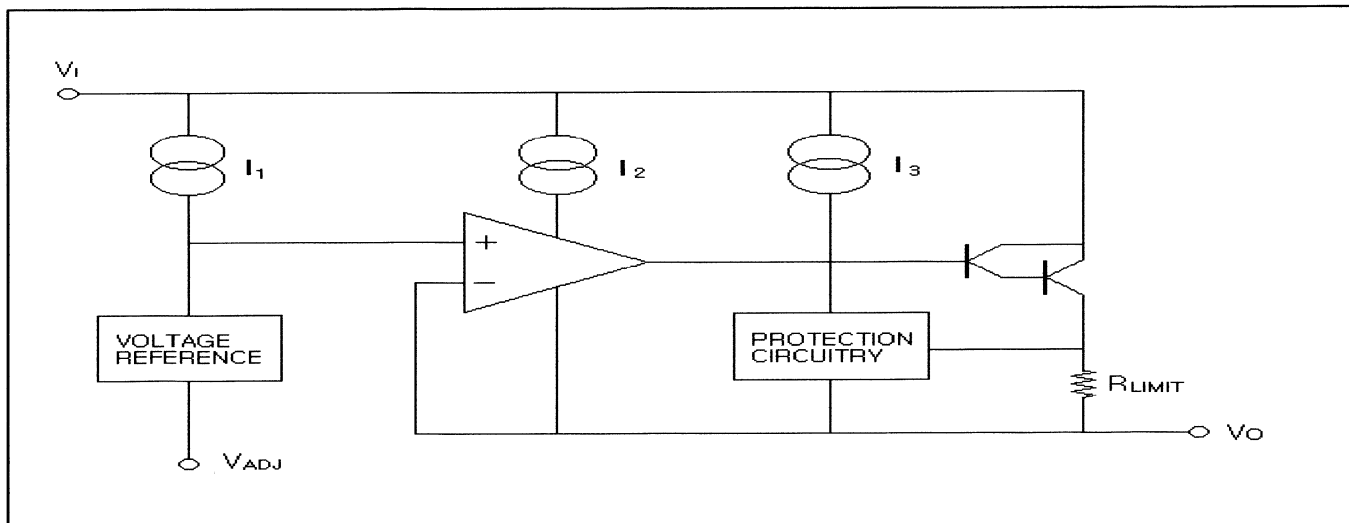
- ◇ Output current in Excess of 1.5A
- ◇ Output Adjustable Between 1.2V and 37V
- ◇ Internal Thermal-Overload Protection
- ◇ Internal Short-Circuit Current-Limiting
- ◇ Output Transistor Safe-Area Compensation



ORDERING INFORMATION

Device	Package	Operating Temperature
LM317	TO-220	0°C ~ 125°C

BLOCK DIAGRAM



For more information, or to purchase call 1-800-214-8769

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

($V_I-V_O=5\text{V}$, $I_O=0.5\text{A}$, $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$, $I_{MAX}=1.5\text{A}$, $P_{MAX}=20\text{W}$, unless otherwise specified)

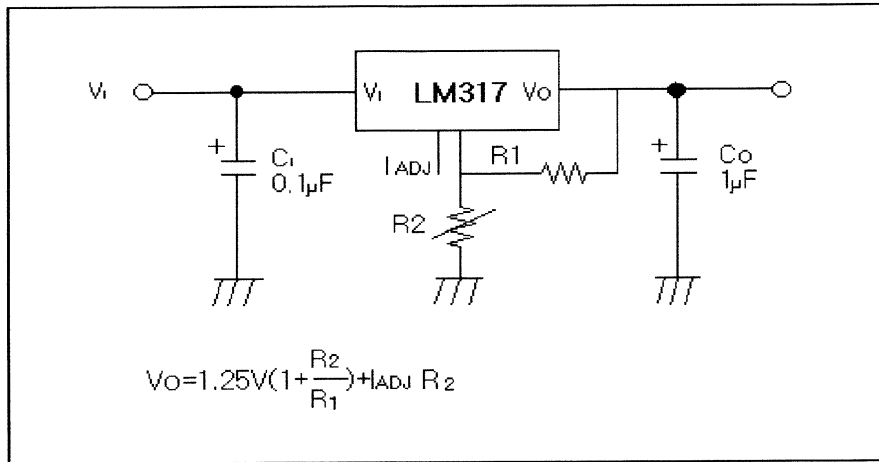
Characteristic	Symbol	Test condition	Min.	Typ.	Max.	Unit
Line Regulation	ΔV_O	$T_A=0 \sim 125^\circ\text{C}$ $3\text{V} \leq V_I-V_O \leq 40\text{V}$		0.01	0.04	%/V
		$3\text{V} \leq V_I-V_O \leq 40\text{V}$		0.02	0.07	%/V
Load Regulation	ΔV_O	$T_A=25^\circ\text{C}$, $10\text{mA} \leq I_O \leq I_{MAX}$ $V_O \leq 6\text{V}$ $V_O \geq 5\text{V}$		18	25	mV
		$10\text{mA} \leq I_O \leq I_{MAX}$ $V_O \leq 5\text{V}$ $V_O \geq 5\text{V}$		0.4	0.5	%/ V_O
Adjustable Pin Current	I_{ADJ}			46	100	μA
Adjustable Pin Current Change	ΔI_{ADJ}	$3\text{V} \leq V_I-V_O \leq 40\text{V}$ $10\text{mA} \leq I_O \leq I_{MAX}$ $P \leq P_{MAX}$		2.0	5	μA
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_O
Minimum Load Current to Maintain Regulation	$L_{(MIN)}$	$V_I-V_O=40\text{V}$		3.5	10	mA
Maximum Output Current	$I_{O(MAX)}$	$V_I-V_O \leq 15\text{V}$, $P_D \leq P_{MAX}$	1.5	2.2		A
		$V_I-V_O \leq 40\text{V}$, $P_D \leq P_{MAX}$, $T_A=25^\circ\text{C}$	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_O
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	%
Thermal Resistance Junction to Case	$R_{\theta JC}$			5		$^\circ\text{C/W}$

* 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. ($P_{MAX}=20\text{W}$)

For more information, or to purchase call 1-800-214-8769

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.