

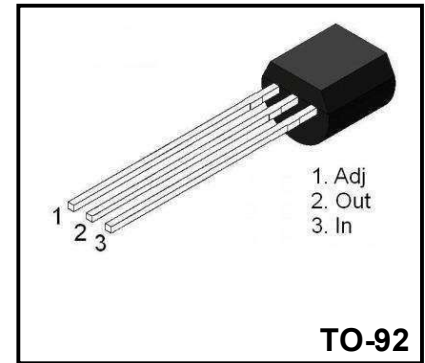
3-Terminal 0.1A Positive Adjustable Regulator

Description

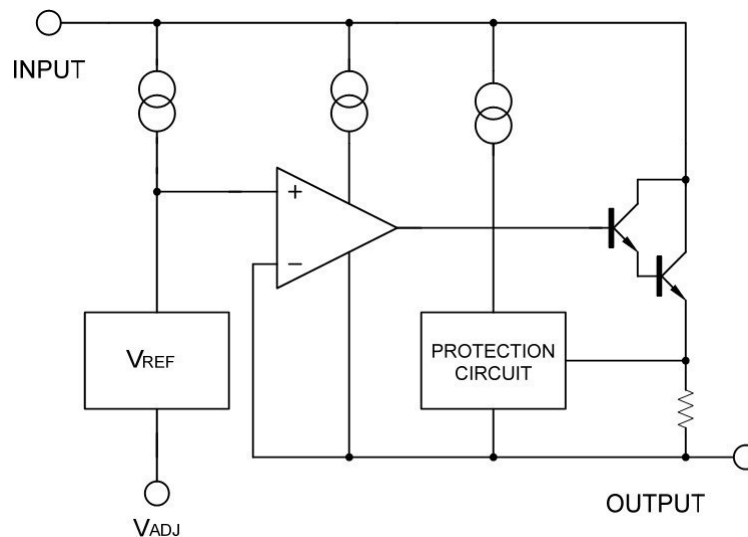
♦The LM317L is a monolithic integrated circuit, designed to supply 100mA of output current with voltage adjustable from 1.25V to 37V.

Features

- ♦Output Voltage adjustable from 1.25 to 37V
- ♦Output current in excess of 100mA
- ♦Internal thermal overload protection
- ♦Internal short circuit current limiting
- ♦Output transistor safe area compensation



Block Diagram



Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{i-o}	Input-output Differential Voltage	40	V
I_o	Output Current	Intenrally Limited	
V_o	Out put Voltage	5	V
T_{OP}	Operating Junction Temperature	$0 \sim +125$	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	$-60 \sim +150$	$^{\circ}\text{C}$

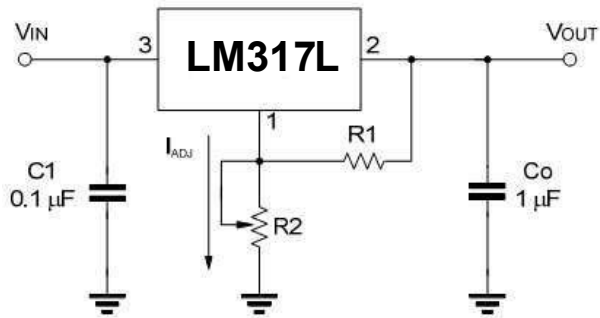
Electrical Characteristics

($V_i - V_o = 5\text{ V}$, $I_o = 500\text{ mA}$, $I_{MAX} = 1.5\text{ A}$ and $P_{MAX} = 20\text{ W}$, unless otherwise specified)

Parameter	Symbol	Conditions		Value			Unit
				Min	Typ	Max	
Line Regulation	ΔV_o	$V_i - V_o = 3\text{ to }40\text{ V}$, $I_{LOAD} \leq 20\text{ mA}$				0.04	%V
Load Regulation	ΔV_o	$I_o = 5\text{ mA} \sim 100\text{ mA}$	$V_{OUT} \leq 5\text{ V}$			25	mV
			$V_{OUT} \geq 5\text{ V}$			0.5	%
Adjustment Pin Current	I_{ADJ}	$T_j = 25^\circ\text{C}$				100	μA
Adjustment Pin Current	ΔI_{ADJ}	$V_i - V_o = 3\text{ to }40\text{ V}$, $I_o = 5\text{ mA} \sim 100\text{ mA}$				5	μA
Reference Voltage (between pin3 and pin1)	V_{REF}	$V_i - V_o = 3\text{ to }40\text{ V}$ $I_o = 5\text{ mA} \sim 100\text{ mA}$, $P_D \leq 625\text{ mW}$		1.20	1.25	1.30	V
Minimum Load Current	$I_{L(min)}$	$V_i - V_o = 40\text{ V}$				10	mA
Maximum Output Current	$I_{O(max)}$	$V_i - V_o = 40\text{ V}$, $P_D \leq 625\text{ mW}$				100	mA
RMS Noise vs. %of V_{OUT}	eN	$f = 10\text{ to }10\text{ KHz}$				0.01	%V
Ripple Rejection	RR	$V_{OUT} = 10\text{ V}$, $f = 120\text{ Hz}$	$C_{ADJ} = 0$		65		dB
			$C_{ADJ} = 10\mu\text{F}$	60			dB

Note: C_{ADJ} is connected between Adjust pin and Ground.

Application Circuits



$$V_{out} = 1.25 \cdot (1 + R2/R1) + I_{ADJ} \cdot R$$

C1 is required when regulator is located an appreciated distance from power supply. Co is needed to improve transient response.

Fig.1 Prgramable Voltage Regulator

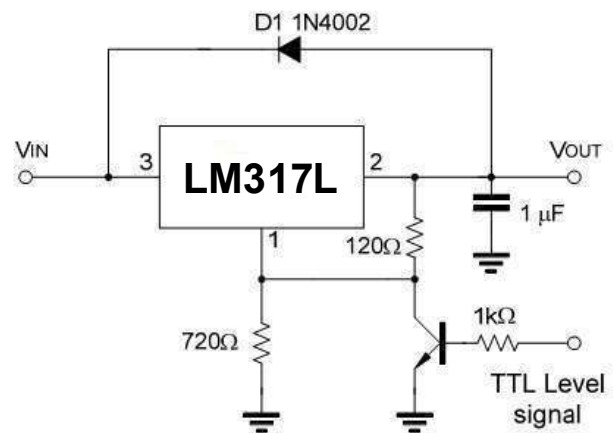


Fig.2 Regulator with ON-off control

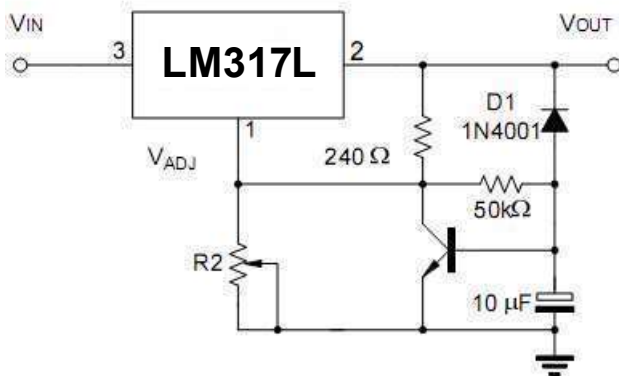
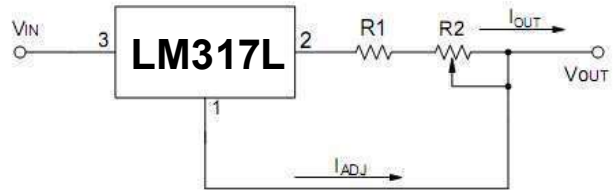


Fig.3 Soft Start Application



$$I_{O(MAX)} = \left(\frac{V_{REF}}{R1} \right) + I_{ADJ} = \frac{1.25V}{R1}$$

$$I_{O(MIN)} = \left(\frac{V_{REF}}{R1 + R2} \right) + I_{ADJ} = \frac{1.25V}{R1 + R2}$$

$$5mA < I_{OUT} < 100mA$$

Fig.4. Constant Current Application

Typical Characteristics

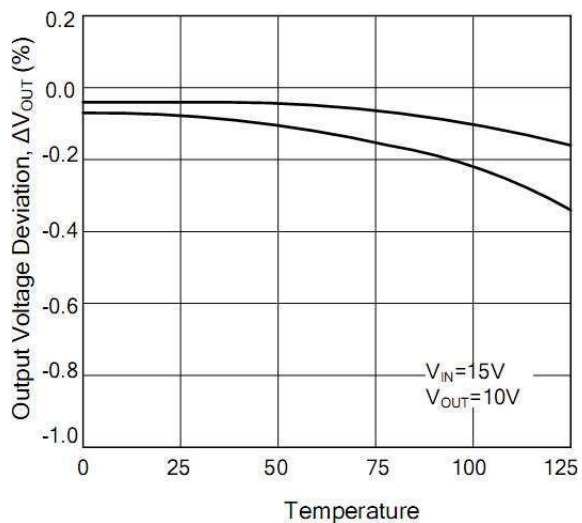


Fig.1. Load Regulation vs. temperature

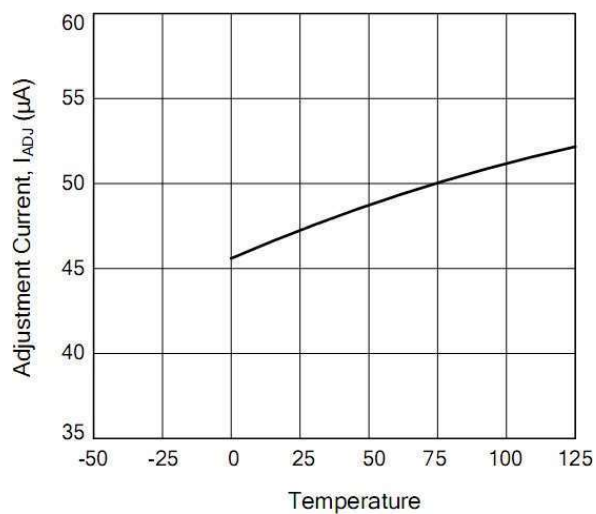


Fig.2. Adjustment Current vs. Temperature

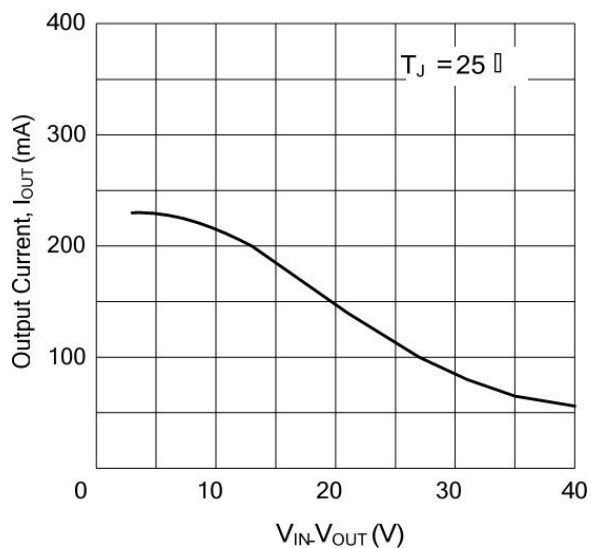


Fig.3. Currents Limit

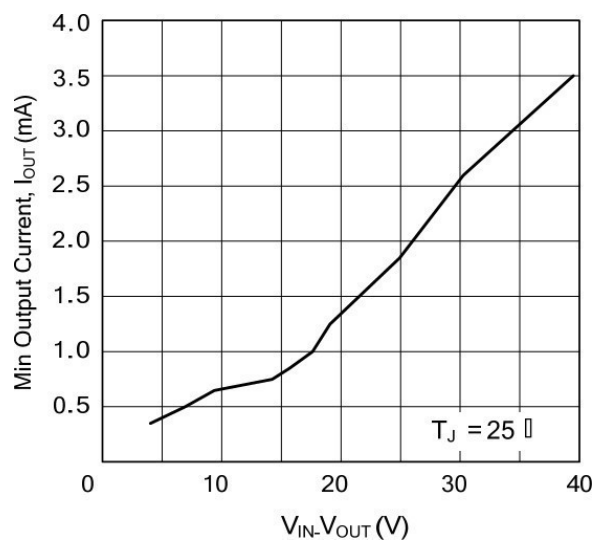
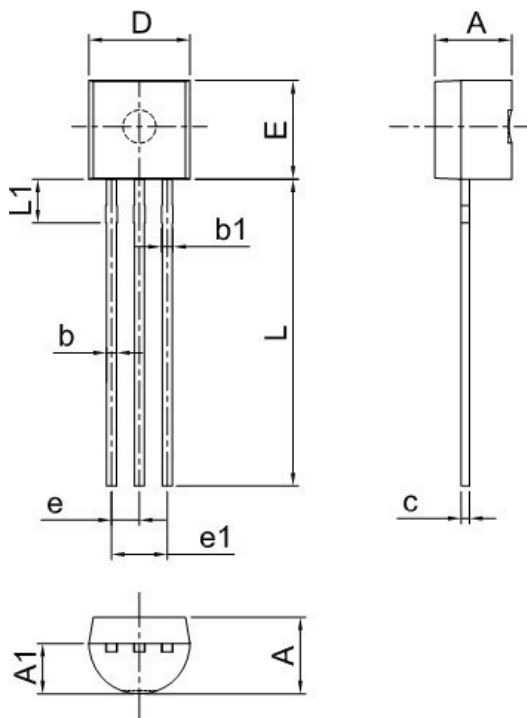


Fig.4. Minimum Operating Current

Package Dimensions

TO-92



Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	3.30	3.70	0.130	0.146
A1	2.30	2.70	0.091	0.106
b	0.40	0.50	0.016	0.020
b1	0.50	0.70	0.020	0.028
c	0.35	0.45	0.014	0.018
D	4.45	4.70	0.175	0.185
E	4.40	4.65	0.173	0.183
e	1.17	1.37	0.046	0.054
e1	2.34	2.64	0.092	0.104
L	13.50	14.50	0.531	0.571
L1	1.80	2.20	0.071	0.087

Package	Packing Method	Pack Quantity
TO-92	Bulk	1000pcs/Bag
TO-92	Tape	2000pcs/Box