

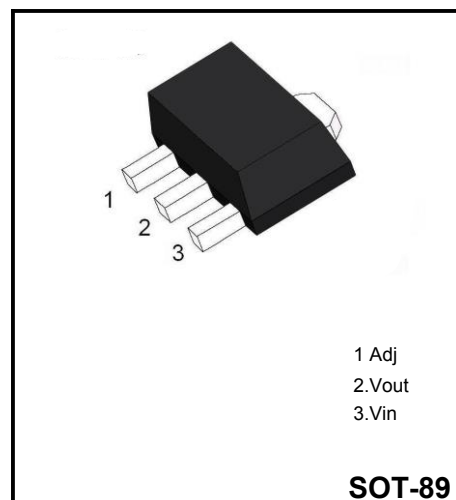
3-Terminal 0.1A Positive Adjustable Regulator

Description

The LM317 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

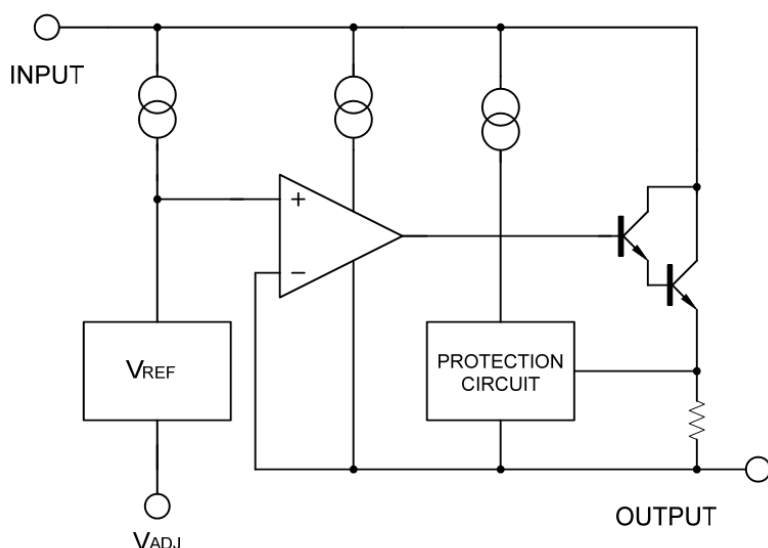


Marking Code

LM317SI

YFW LM317

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	$-60 \sim +150$	$^{\circ}\text{C}$

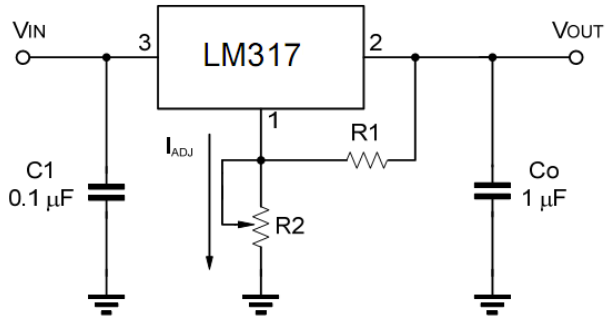
Electrical Characteristics

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

Parameter	Symbol	Conditions		Value			Unit
				Min	Typ	Max	
Line Regulation	ΔV_o	$V_i - V_o = 3\text{ to }40\text{ V}$, $I_{\text{LOAD}} \leq 20\text{ mA}$				0.04	%V
Load Regulation	ΔV_o	$I_o = 5\text{ mA} \sim 100\text{ mA}$	$V_{\text{OUT}} \leq 5\text{ V}$			25	mV
			$V_{\text{OUT}} \geq 5\text{ V}$			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	$I_{\text{L(min)}}$	$V_i - V_o = 40\text{ V}$				10	mA
Maximum Output Current	$I_{\text{O(max)}}$	$V_i - V_o = 40\text{ V}$, $P_D \leq 625\text{ mW}$				100	mA
RMS Noise vs. %of V_{OUT}	eN	$f = 10\text{ to }10\text{ KHz}$				0.01	%V
Ripple Rejection	RR	$V_{\text{OUT}} = 10\text{ V}$, $f = 120\text{ Hz}$	$C_{\text{ADJ}} = 0$		65		dB
			$C_{\text{ADJ}} = 10\mu\text{F}$	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 Programmable Voltage Regulator

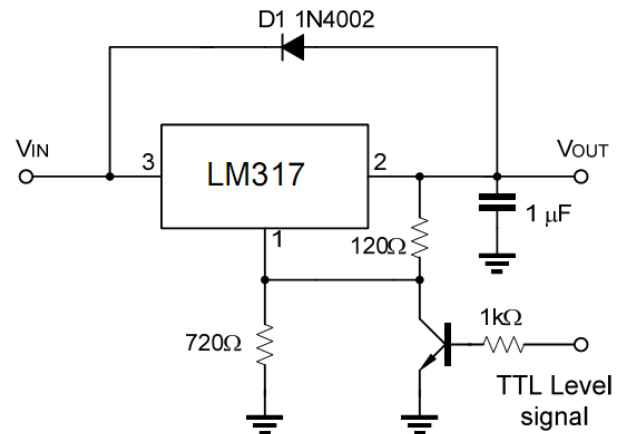


Fig.2 Regulator with ON-off controll

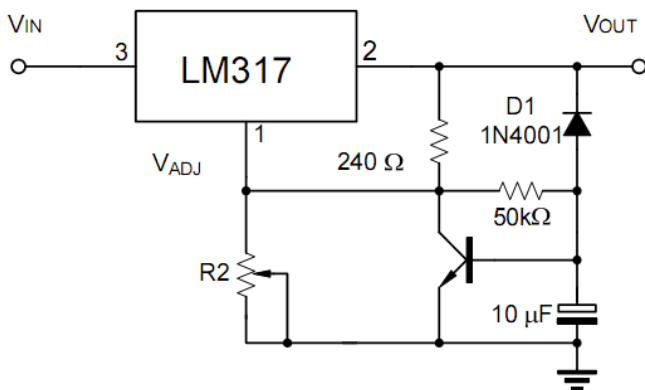
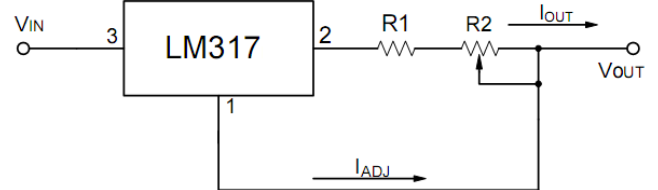


Fig.3 Soft Start Application



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

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

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

Fig.4. Constant Current Application

Typical Characteristic

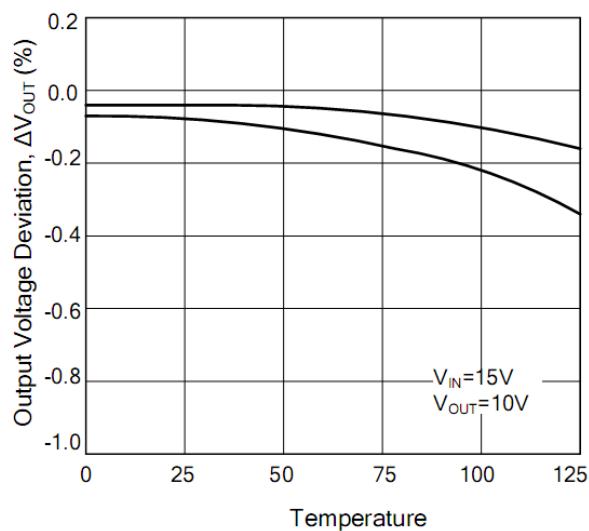


Fig.1. Load Regulation vs. temperature

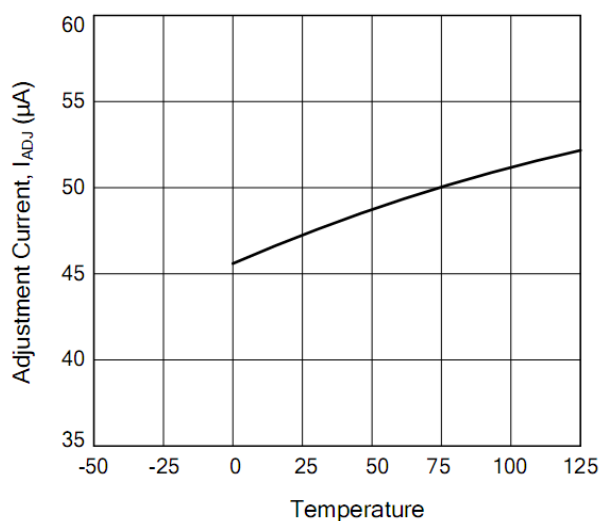


Fig.2. Adjustment Current vs. Temperature

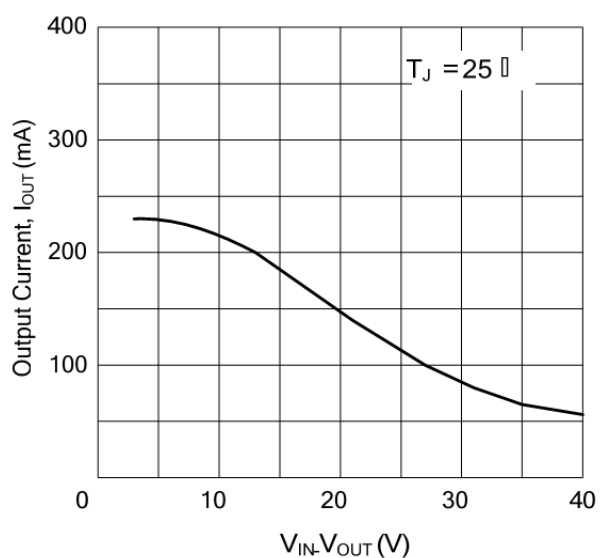


Fig.3. Currents Limit

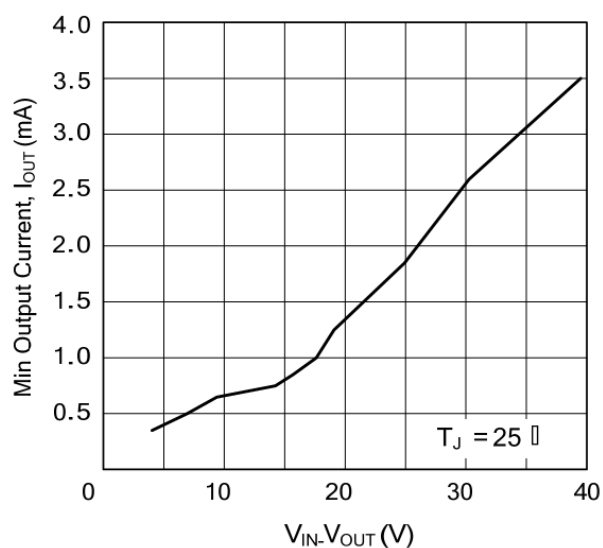


Fig.4. Minimum Operating Current

Ordering information

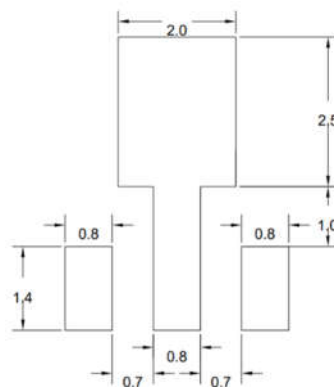
Package	Packing Description	Base Quantity	Packing Quantity
SOT-89	Tape/Reel, 7" reel	1000pcs/Reel	6000PCS/Box 30000PCS/Carton

Package Dimensions

SOT-89

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.40	1.60	0.055	0.063
b	0.32	0.52	0.013	0.020
b1	0.38	0.58	0.015	0.023
c	0.35	0.45	0.014	0.018
D	4.40	4.60	0.173	0.181
D1	1.45	1.65	0.057	0.065
D2	1.70	1.80	0.067	0.071
E	2.30	2.60	0.091	0.102
E1	3.95	4.25	0.156	0.167
E2	1.80	2.00	0.071	0.079
e	1.40	1.60	0.055	0.063
e1	2.80	3.20	0.110	0.126
L	0.90	1.20	0.035	0.047

The recommended mounting pad size



UNIT:MM

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