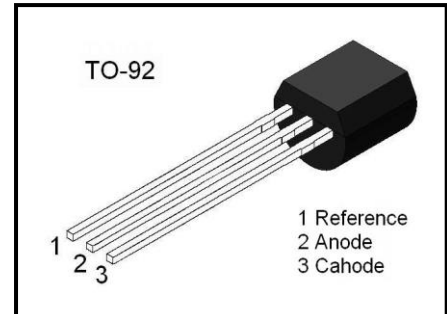


Description

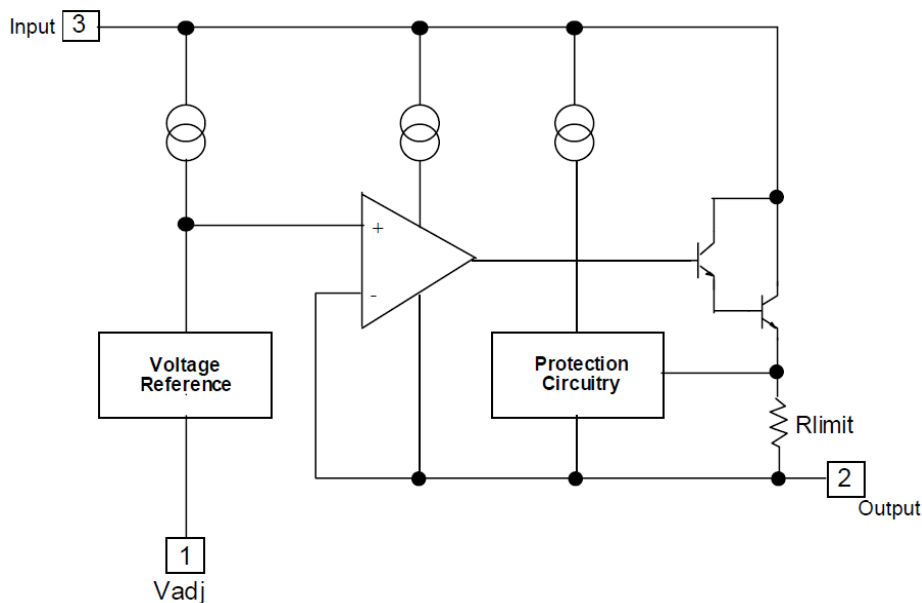
The LM317L is a 3-terminal adjustable positive voltage regulator capable of supplying in excess of 100mA over an output voltage range of 1.25V to 37V. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage.

Features

- Output Current in Excess of 100mA
- Output Adjustable Between 1.25V and 37V
- Internal Thermal Overload Protection
- Internal Short Circuit Current Limiting
- Output Transistor Safe Area Compensation
- Floating Operation For High Voltage Applications



Internal Block Diagram



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Value	Unit
Input-Output Voltage Differential	$V_I - V_O$	40	V
Power Dissipation	P_D	Internally limited	mV
Junction Temperature	T_J	125	°C
Operating Junction Temperature Range	T_{opr}	-40 ~ +85	°C
Storage Temperature Range	T_{stg}	-65 ~ +150	°C

Electrical Characteristics(V_I - V_O = 5V, I_O = 40mA, 0°C ≤ T_a ≤ 25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Line Regulation	$\Delta V_O/V_O$	$3V \leq V_I - V_O \leq 40V$ $I_{LOAD} < 20mA$			0.04	%/V
Load Regulation	R_{load}	$10mA \leq I_O \leq 100mA$	$V_O \leq 5V$		25	mV
			$V_O \geq 5V$		0.5	% V _O
Adjustment Pin Current	I_{ADJ}				100	μA
Adjustment Pin Current Change	ΔI_{ADJ}	$3V \leq V_I - V_O \leq 40V$ $5mA \leq I_O \leq 100mA$ $P_D < P_{DMAX}$			5	μA
Reference Voltage	V_{REF}	$3V < V_I - V_O < 40V$ $10mA \leq I_O \leq 100mA$ $P_D \leq P_{DMAX}$	1.2	1.25	1.3	V
Minimum Load Current to Regulation	$I_{L(MIN)}$	$V_I - V_O = 40V$			10	mA
Maximum output Current	$I_{O(MAX)}$	$V_I - V_O \leq 15V, P_D < P_{DMAX}$		50		mA
RMS Noise, %of V _{OUT}	eN	10Hz < f < 10KHz		0.003	0.1	%V _O
Ripple Rejection	RR	$V_O = 10V,$ $f = 120Hz$	$C_{ADJ} = 0$		65	dB
			$C_{ADJ} = 10\mu F$		80	

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

Application Circuits

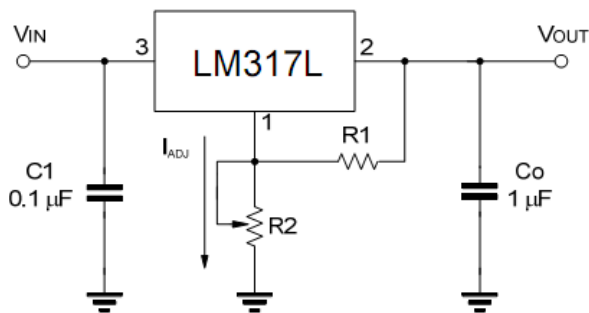


Figure.1 Programmable voltage regulator

$$V_{OUT} = 1.25V(1 + R2/R1) + I_{ADJ} \times R2$$

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

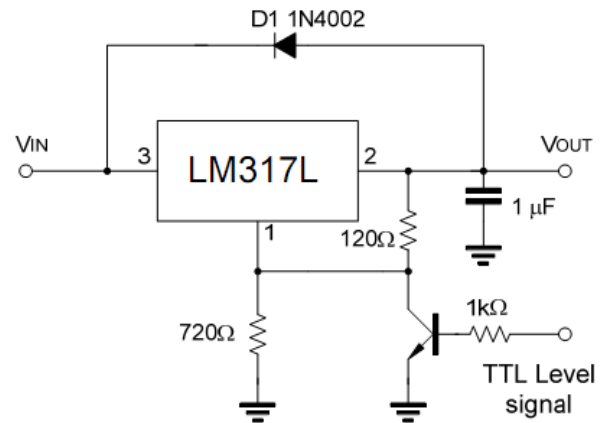


Figure.2 Regulator with On-off control

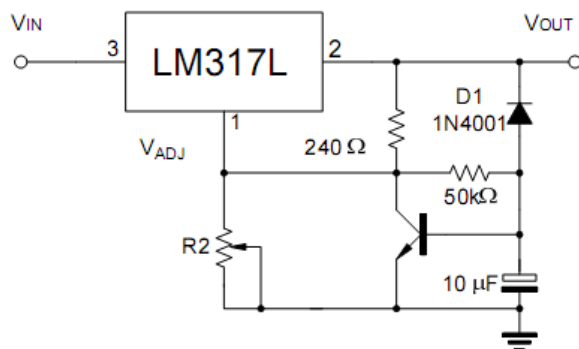
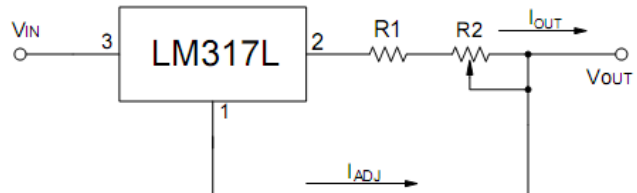


Figure.3 Soft Start Application



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

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

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

Figure.4 Constant Current Application

Typical Characteristics

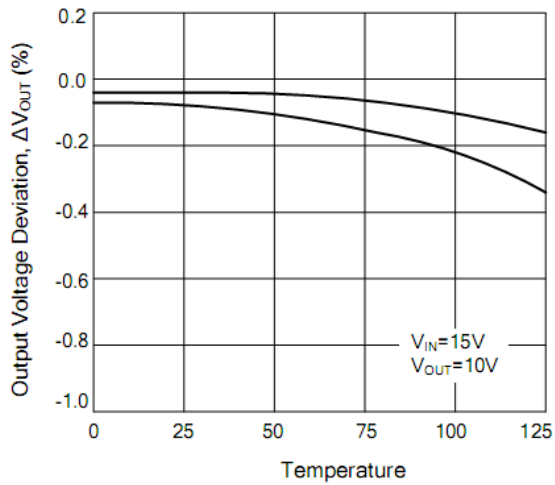


Figure 5. Load Regulation vs. temperature

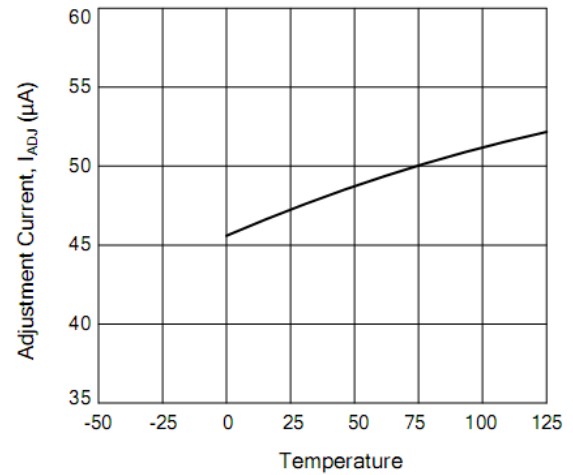


Figure 6. Adjustment Current vs. Temperature

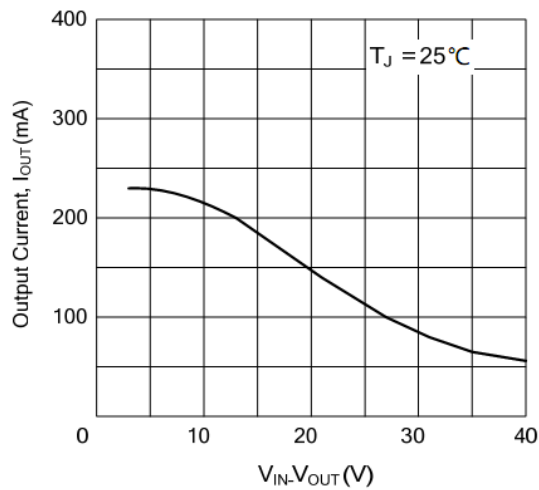


Figure 7. Current Limit

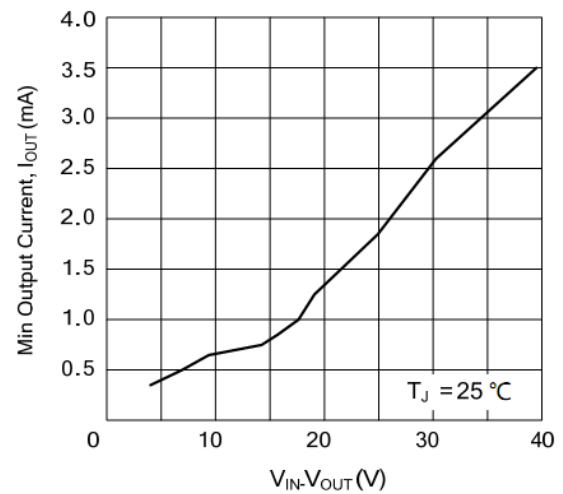


Figure 8. Minimum Operating Current

Package Dimensions

Dim	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