

# LM317L

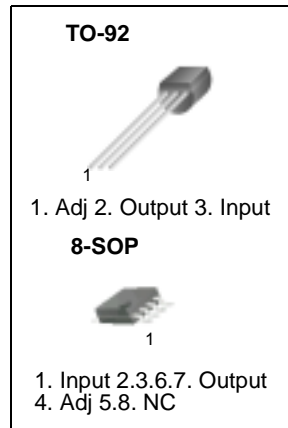
## 3-Terminal 0.1A Positive Adjustable Regulator

### Features

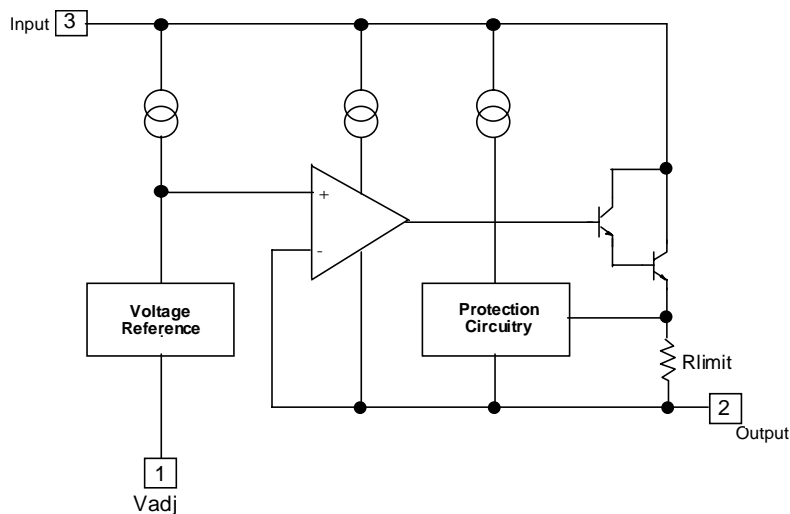
- Output Current in Excess of 100mA
- Output Adjustable Between 1.2V and 37V
- Internal Thermal Overload Protection
- Internal Short Circuit Current Limiting
- Output Transistor Safe Area Compensation
- Floating Operation For High Voltage Applications

### Description

The LM317L is a 3-terminal adjustable positive voltage regulator capable of supplying in excess of 100mA over an output voltage range of 1.2V to 37V. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage.



### Internal Block Diagram



## Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input-Output Voltage Differential	$V_I - V_O$	40	V
Power Dissipation	$P_D$	Internally limited	W
Operating Junction Temperature Range	$T_j$	0 ~ +125	°C
Storage Temperature Range	$T_{STG}$	-65 ~ +125	°C

## Electrical Characteristics

( $V_I - V_O = 5V$ ,  $I_O = 40mA$ ,  $0^\circ C \leq T_J \leq +125^\circ C$ ,  $P_{DMAX} = 625mW$ , unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
*Line Regulation	$R_{line}$	$T_A = +25^\circ C$ $3V \leq V_I - V_O \leq 40V$	-	0.01	0.04	%/ $V$
		$3V \leq V_I - V_O \leq 40V$	-	0.02	0.07	
*Load Regulation	$R_{load}$	$T_A = +25^\circ C$ $10mA \leq I_O \leq 100mA$ $V_O \leq 5V$ $V_O \geq 5V$	-	5 0.1	25 0.5	mV %/ $V_O$
		$10mA \leq I_O \leq 100mA$ $V_O \leq 5V$ $V_O \geq 5V$	-	20 0.3	70 1.5	mV %/ $V_O$
Adjustment Pin Current	$I_{ADJ}$	-	-	50	100	$\mu A$
Adjustment Pin Current Change	$\Delta I_{ADJ}$	$3V \leq V_I - V_O \leq 40V$ $10mA \leq I_O \leq 100mA$ $P_D < P_{DMAX}$	-	0.2	5	$\mu A$
Reference Voltage	$V_{REF}$	$3V < V_I - V_O < 40V$ $10mA \leq I_O \leq 100mA$ $P_D \leq P_{DMAX}$	1.20	1.25	1.30	V
Temperature Stability	$ST_T$	-	-	0.7	-	%
Minimum Load Current to Maintain Regulation	$I_{L(MIN)}$	$V_I - V_O = 40V$	-	3.5	10	mA
Maximum output Current	$I_{O(MAX)}$	$V_I - V_O \leq 15V$ , $P_D < P_{DMAX}$	100	200	-	mA
		$V_I - V_O \leq 40V$ $P_D < P_{DMAX}$ , $T_A = +25^\circ C$	25	50	-	
RMS Noise, % of $V_{OUT}$	$e_N$	$T_A = +25^\circ C$ , $10Hz < f < 10KHz$	-	0.003	-	%/ $V_O$
Ripple Rejection	RR	$V_O = 10V$ , $f = 120Hz$ without CADJ CADJ = 10 $\mu F$	66	65 80	-	dB
Long-Term Stability	ST	$T_J = +125^\circ C$ , 1000 Hours	-	0.3	-	%

- 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 cycle is used.

## Typical Application

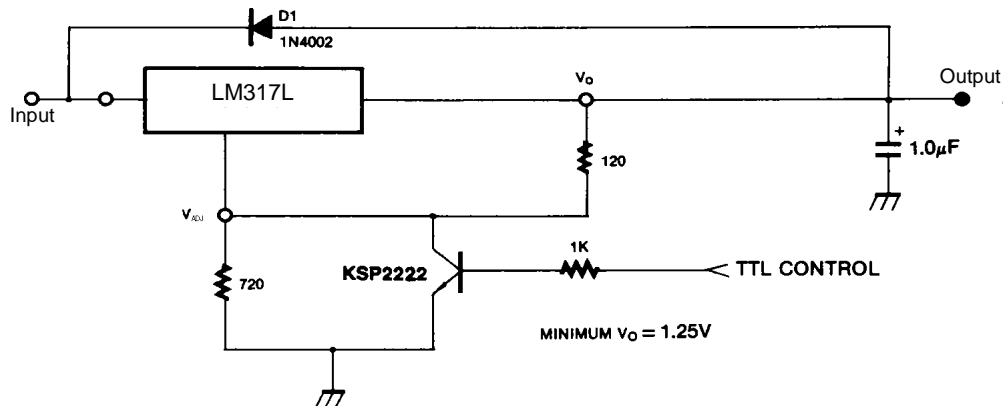


Figure 1. 5V Electronic Shutdown Regulator

D1 protects the device during an input short circuit.

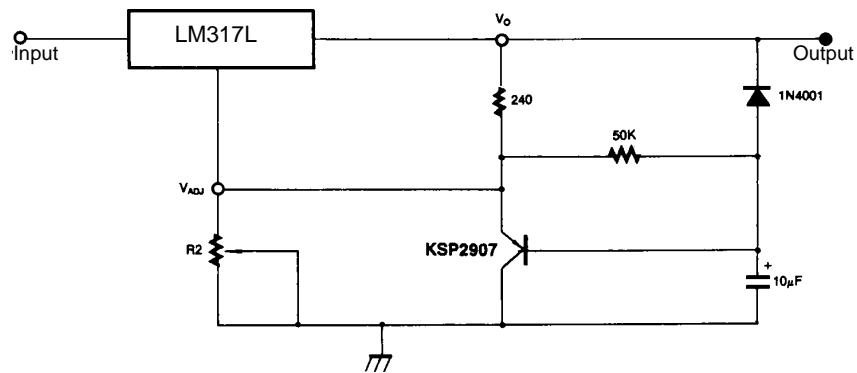
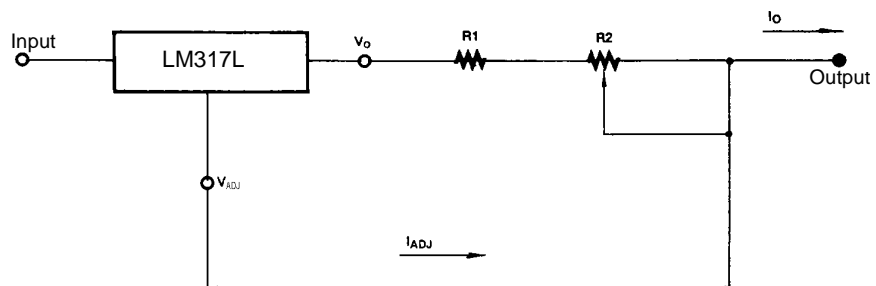


Figure 2. Slow Turn-On Regulator



$$I_{O\text{MAX}} = \left( \frac{V_{\text{REF}}}{R_1} \right) + I_{\text{ADJ}} \approx \frac{1.25\text{V}}{R_1}$$

$$I_{O\text{MIN}} = \left( \frac{V_{\text{REF}}}{R_1 + R_2} \right) + I_{\text{ADJ}} \approx \frac{1.25\text{V}}{R_1 + R_2}$$

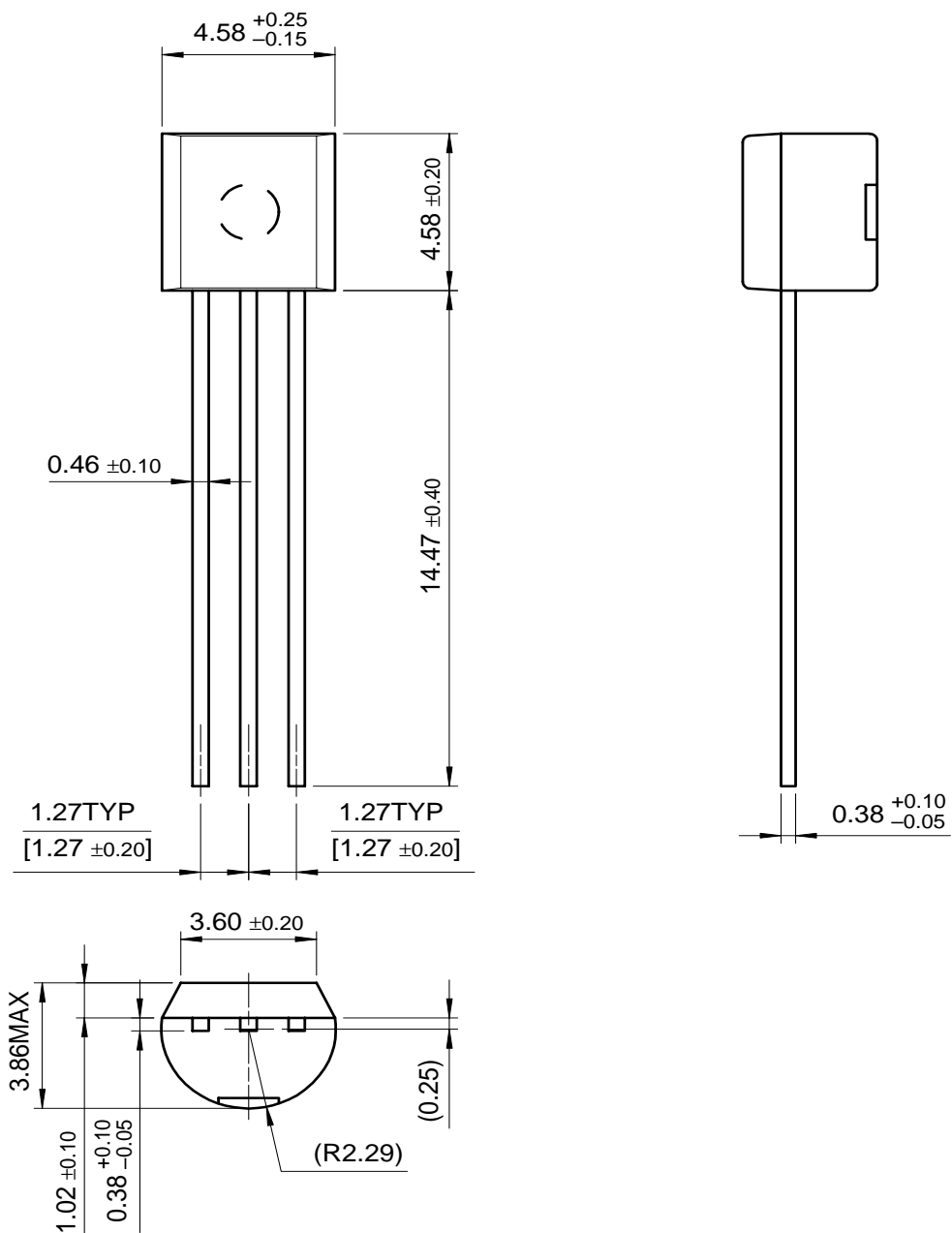
$$5\text{mA} < I_O < 500\text{mA}$$

Figure 3. Current Regulator

# Mechanical Dimensions

## Package

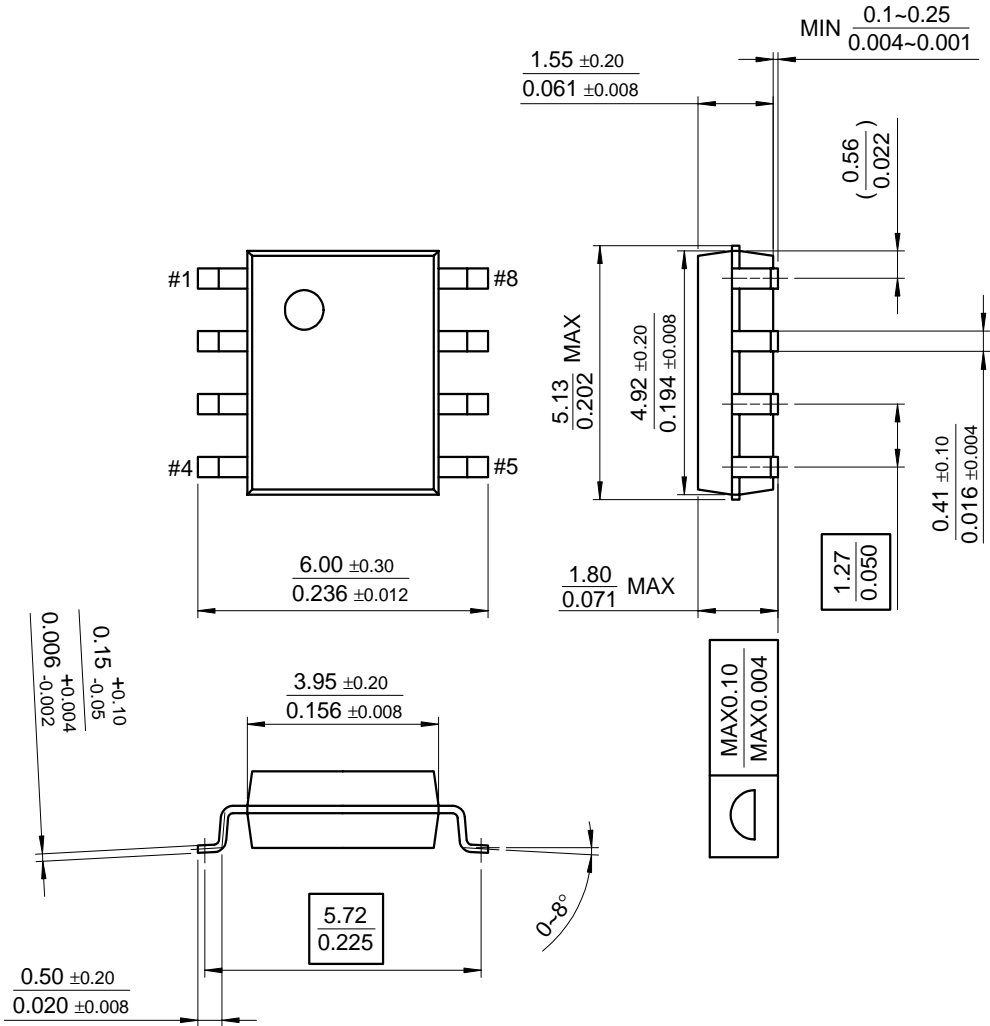
### TO-92



Mechanical Dimensions (Continued)

Package

8-SOP



**Ordering Information**

<b>Product Number</b>	<b>Package</b>	<b>Operating Temperature</b>
LM317LZ	TO-92	0°C to + 125°C
LM317LM	8-SOP	



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