

Description

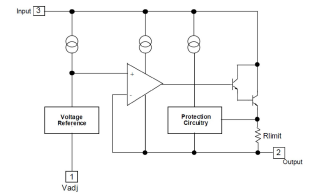
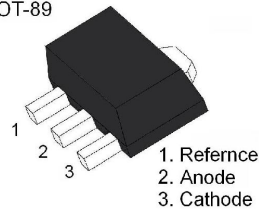
The LM317L is a 3-terminal adjustable positive voltage regulator capable of supplying in excess of 100mA over an output voltage range of 1.2V to 37V. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage.

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



SOT-89



Internal Block Diagram

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input-Output Voltage Differential	$V_I - V_O$	40	V
Power Dissipation	P_D	Internally limited	mV
Operating Junction Temperature Range	T_{opr}	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 (Note)	R_{line}	$T_A = +25^\circ C$ $3V < V_I - V_O < 40V$	-		0.04	%V
		$3V < V_I - V_O < 40V$	-		0.07	
Load Regulation (Note)	R_{load}	$T_A = +25^\circ C$ $10mA \leq I_O \leq 100mA$ $V_O \leq 5V$ $V_O \geq 5V$	-		25 0.5	mV %/ V_O
		$10mA \leq I_O \leq 100mA$ $V_O \leq 5V$ $V_O \geq 5V$	-		70 1.5	
Adjustment Pin Current	I_{ADJ}				100	μA
Adjustment Pin Current Change	ΔI_{ADJ}	$3V \leq V_I - V_O \leq 40V$ $10mA \leq I_O \leq 100mA$ $P_D < P_{DMAX}$			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		1.3	V
Minimum Load Current to Maintain Regulation	$I_{L(MIN)}$	$V_I - V_O = 40V$			10	mA
Maximum output Current	$I_{O(MAX)}$	$V_I - V_O \leq 15V$, $P_D < P_{DMAX}$	100			mA
		$V_I - V_O \leq 15V$, $P_D < P_{DMAX}$, $T_A = +25^\circ C$	25			
RMS Noise, %of V_{OUT}	eN	$T_A = +25^\circ C$, $10Hz < f < 10KHz$		0.003		% V_O
Ripple Rejection	RR	$V_O = 10V$, $f = 120Hz$ without C_{ADJ} $C_{ADJ} = 10\mu F$	66	80		dB

Note: 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

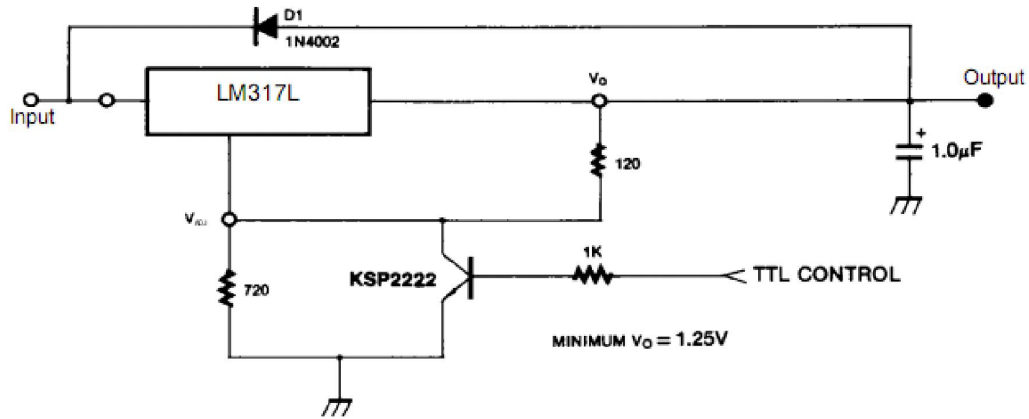


Figure 1.5V Electronic Shutdown Regulator

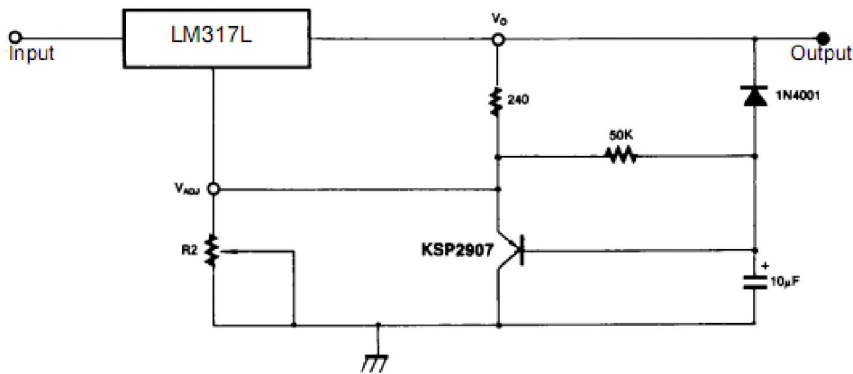
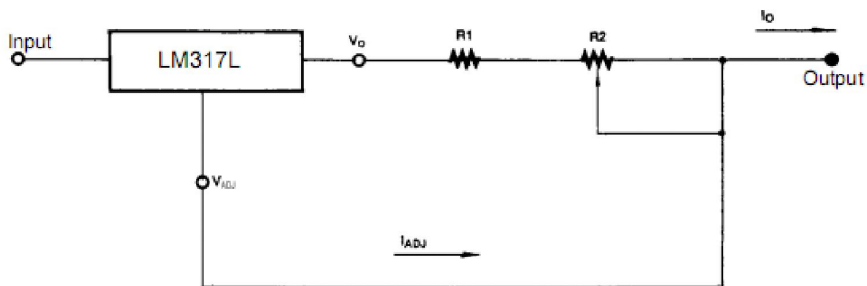


Figure 2.Slow Turn-On Regulator



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

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

5mA < I_O < 500mA

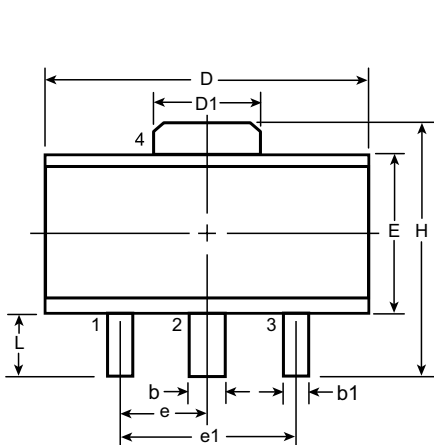
Figure 3.Current Regulator

Soldering parameters

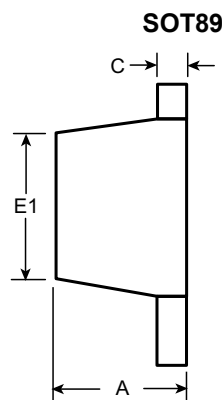
Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



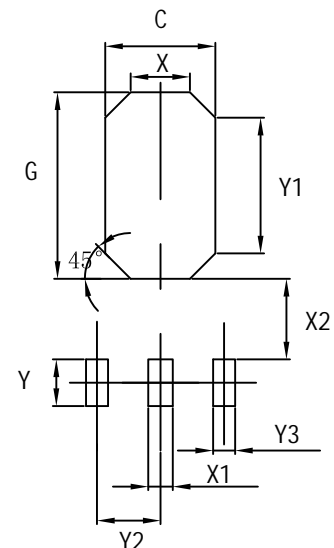
Package Dimensions & Suggested Pad Layout



Top View



Side View



Symbol	A	b	b1	C	D	D1	E	E1	e	e1	H	L		
Dimensions (mm)	MIN	1.40	0.44	0.36	0.3	4.40	1.50	2.29	2.00 [†]	1.50 BSC	3.00 BSC	3.94	0.89	
	NOM	-	-	-	-	-	-	-	-			-	-	-
	MAX	1.60	0.56	0.48	0.5	4.60	1.75	2.60	2.29			-	-	4.25

Dimensions	Value (in mm)
C	2.50
G	3.60
X	1.40
X1	0.90
X2	0.90
Y	1.40
Y1	2.60
Y2	1.50
Y3	0.90

Tape & reel specification

Tape		Symbol	Dimension (mm)
		P0	4.00±0.20
		P1	8.00±0.20
		P2	2.00±0.20
		D0	1.60±0.20
		D1	1.60±0.20
		E	1.75±0.20
		F	7.50±0.15
		W	16.00±0.20
		A0	6.30±0.20
		B0	8.25±0.20
		K0	2.60±0.20
		T	0.23±0.10
		D2	180.0±5.0
		D3	60Min.
13" Reel		D4	R32.0±2.0
		G	R86.5±2.0
		H	R30.0±2.0
		I	13.0±2.0
		W1	13.20±2.0
		W2	16.50±2.0
		Quantity: 1000PCS	