

Description

The LM317L is an adjustable 3-terminal positive voltage regulator, designed to supply 100mA of output current with voltage adjustable from 1.25V~37V.

Features

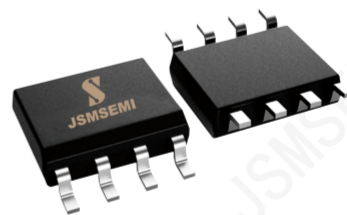
- ◆ Typical 1% Output Voltage Tolerance
- ◆ Output Voltage Adjustable from 1.25V~37V
- ◆ Output Current in Excess of 100mA
- ◆ Internal Short Circuit Protection
- ◆ Internal Over Temperature Protection
- ◆ Output Transistor Safe Area Compensation

Application

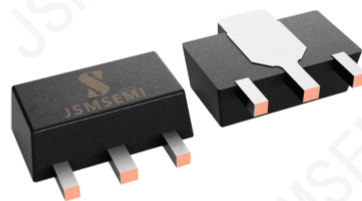
- ◆ PC Motherboard
- ◆ LCD Monitor
- ◆ Graphic Card
- ◆ DVD Player
- ◆ Network Interface Card/Switch
- ◆ Telecom Equipment
- ◆ Printer and other Peripheral Equipment



TO-92



SOP-8

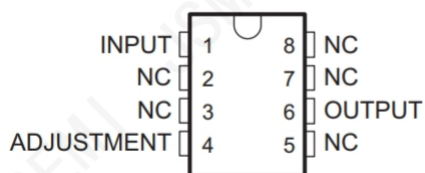


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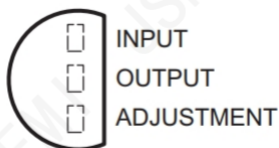
Ordering Information

Order number	Package	Marking	Operation Temperature Range	MSL Grade	Ship, Quantity	Green
LM317L-JSM	TO-92	LM317	-40 to 125°C	3	TUBE, 1000	Rohs
LM317LZ-JSM	TO-92	LM317	-40 to 125°C	3	TUBE, 1000	Rohs
LM317LG-T92-B-JSM	TO-92	LM317	-40 to 125°C	3	TUBE, 1000	Rohs
LM317LBDR2G-JSM	SOP-8	LM317	-40 to 125°C	3	T&R, 2500	Rohs
LM317LDR2G-JSM	SOP-8	LM317	-40 to 125°C	3	T&R, 2500	Rohs
LM317LIDR-JSM	SOP-8	LM317	-40 to 125°C	3	T&R, 2500	Rohs
LM317LG-S08-R-JSM	SOP-8	LM317	-40 to 125°C	3	T&R, 2500	Rohs
LM317LCPK-JSM	SOT-89-3L	317	-40 to 125°C	3	T&R, 4000	Rohs
LM317LIPK-JSM	SOT-89-3L	317	-40 to 125°C	3	T&R, 4000	Rohs

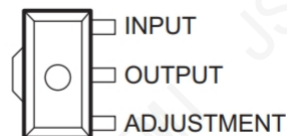
Pin Configuration(Top View)



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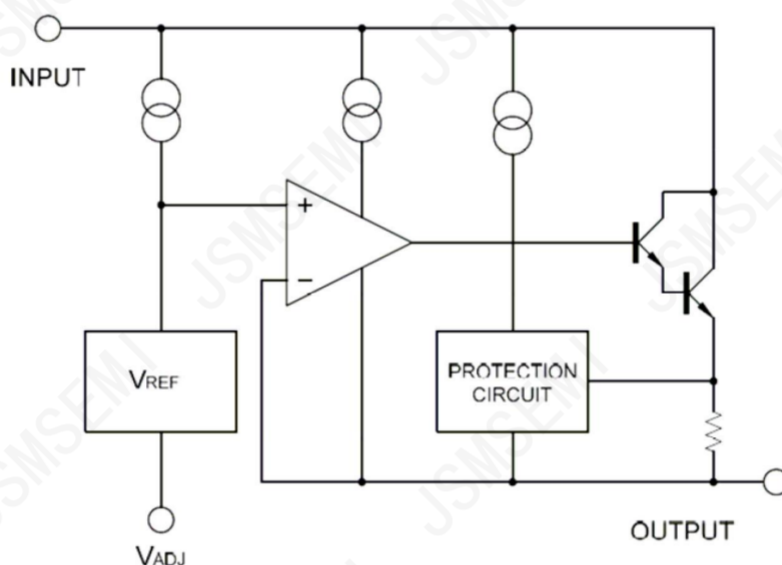


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SOT-89-3L

Block Diagram



Absolute Maximum Ratings($T_a=25^{\circ}\text{C}$)*

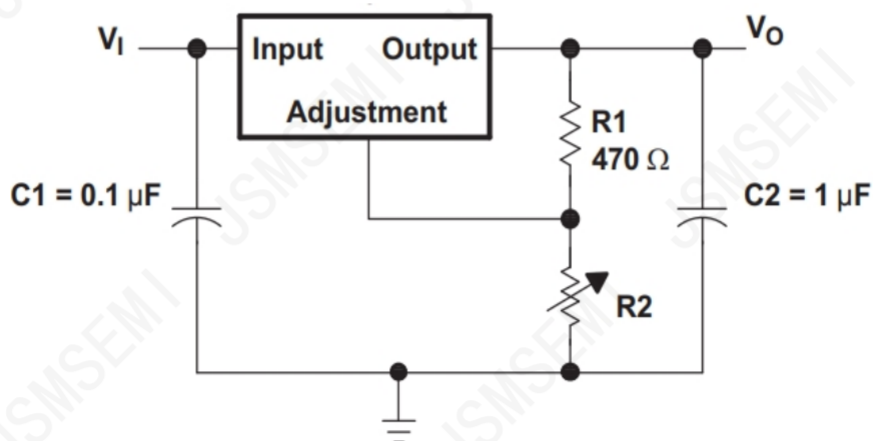
Parameter	Symbol	Min.	Max.	Unit
Input-Output Voltage Differential	$V_{in}-V_{out}$		40	V
Power Dissipation	P_D	Internally Limited		
Maximum Operating Junction Temperature	T_J	-40	125	$^{\circ}\text{C}$
Lead Temperature(Soldering,10seconds)	T_{LEAD}		150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-40	+150	$^{\circ}\text{C}$
ESD(human body model)	ESD		4000	V

*:Absolute maximum ratings are stress ratings only and functional device operation is not implied.
The device could be damaged beyond Absolute maximum ratings.

Electrical Characteristics(Unless otherwise specified: $V_i - V_o = 5.0V$; $I_o = 10mA$; $T_a = 25^\circ C$)

Parameter	Test conditions	Symbol	Min.	Typ.	Max.	Unit
Reference Voltage	$2.5mA \leq I_o \leq 100mA$ $5V \leq V_{IN} - V_o \leq 35V$ $P_d \leq \text{rated dissipation}$	VREF	1.20	1.25	1.30	V
Line Regulation	$5V \leq V_{IN} - V_o \leq 35V$	LNR		0.01	0.02	%/V
Load Regulation	$2.5mA \leq I_o \leq 100mA$	LDR		0.02	0.5	%/V
Adjust Pin Current		I_{adj}		50	100	μA
Adjust Pin Current Change	$2.5mA \leq I_o \leq 100mA$ $3V \leq V_{IN} - V_o \leq 35V$, $P_d \leq \text{rated dissipation}$	ΔI_{adj}		0.2	5.0	μA
Minimum Load Current	$V_{IN} - V_o = 35V$	$I_L(\text{MIN})$		1.5	2.5	mA
Current Limit	$V_{IN} - V_o = 3V$	I_{LIMIT}	100	200		mA
Ripple Rejection	$f = 120Hz$, $V_{IN} - V_o = 3V$, Cour = $1\mu F$ Tantalum, $I_o = 100mA$	PSRR	60	75		dB
Temperature Stability	$T_{MIN} \leq T_j \leq T_{MAX}$			0.7		%
RMS Output Noise (% of V_o)	$T_a = 25^\circ C$, $10Hz \leq f \leq 10kHz$	E_n		0.003		%/ V_o
Thermal Resistance, Junction to Ambient	SOP-8	θ_{jc}		97.1		C/W
	TO-92			139.5		
	SOT-89-3L			51.5		

Maximum Power Dissipation is Package Type and Case Temperature dependent.

Application Circuit


* = C_{IN} is required if the regulator is located near power supply filter.

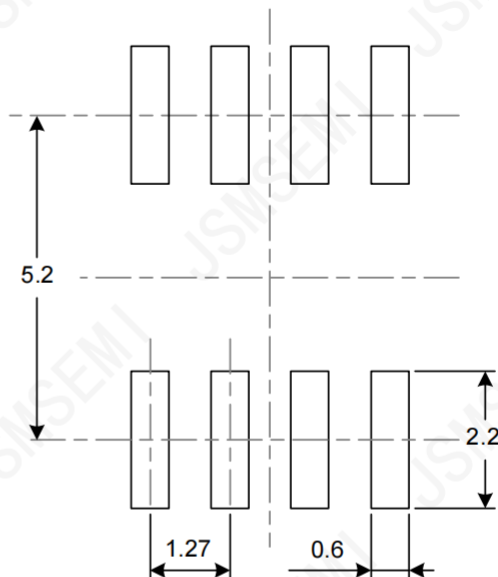
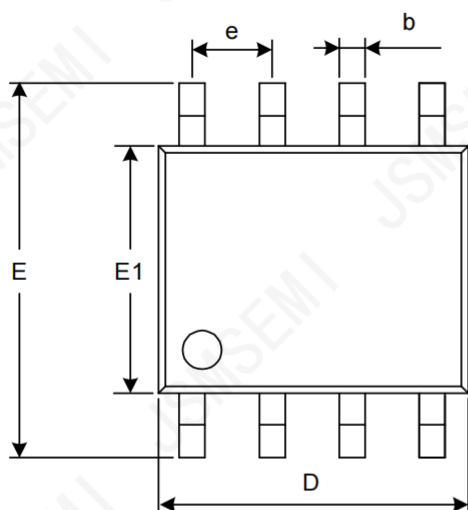
** = C_O is needed for stability and it improves transient response.

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

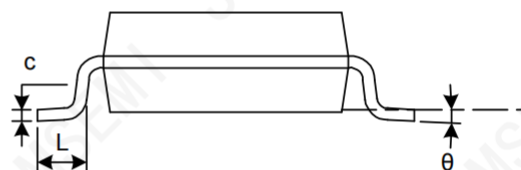
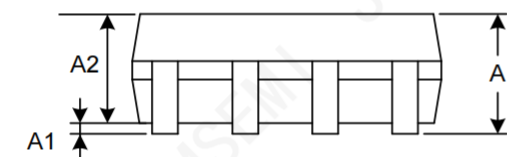
Since I_{ADJ} is controlled to less than $100\mu A$, the error associated with this term is negligible in most applications.

Package Information

SOP-8



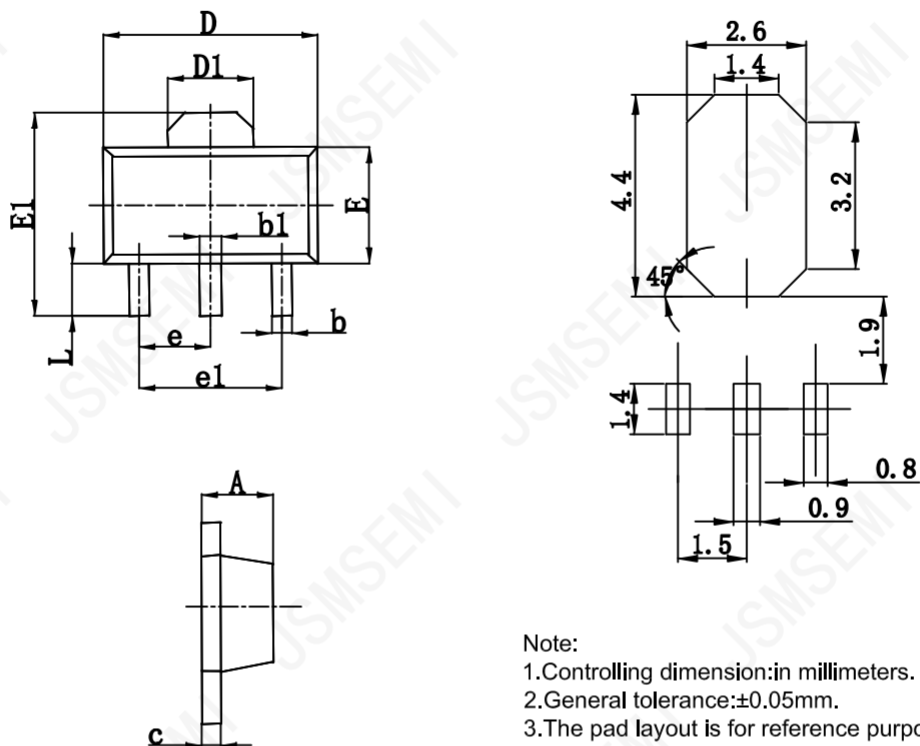
RECOMMENDED LAND PATTERN (Unit: mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Package Information

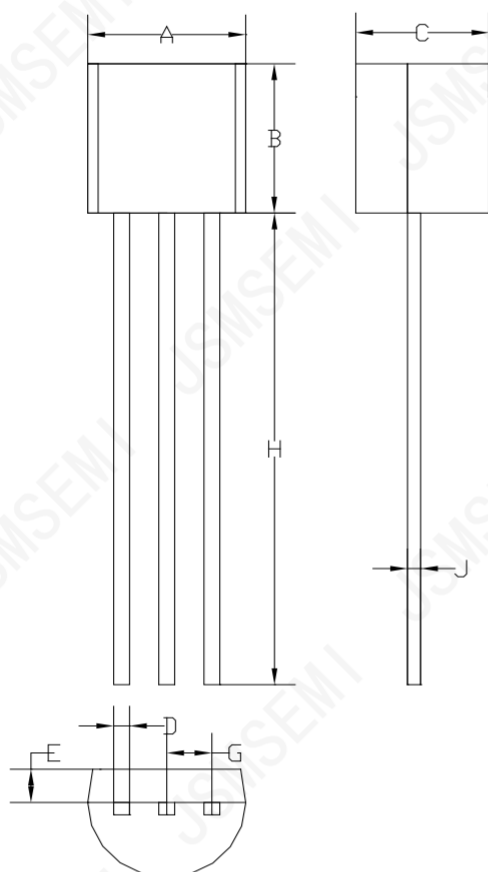
SOT-89-3L



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047

TO-92



Unit:mm

TO-92		
Dim	Min	Max
A	4.4	4.7
B	4.3	4.7
C	3.43 Typical	
D	0.38	0.55
E	1.1	1.4
G	1.27 Typical	
H	14.1	14.5
J	0.36	0.51
All Dimensions in mm		

Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2024
V1.1	Add Ordering Information	7/26/2025

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