100mA Adjustable Voltage Regulators

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

SOP-8

TO-92


SOT-89-3

Ordering Information

DEVICE	Package Type	MARKING	Packing	Packing Qty
LM317ALZ	TO-92	LM317AL	BAG	1000pcs/box
LM317ALM/TR	SOP-8	LM317AL	REEL	2500pcs/reel
LM317ALMK/TR	SOT-89-3	317AL	REEL	1000pcs/reel

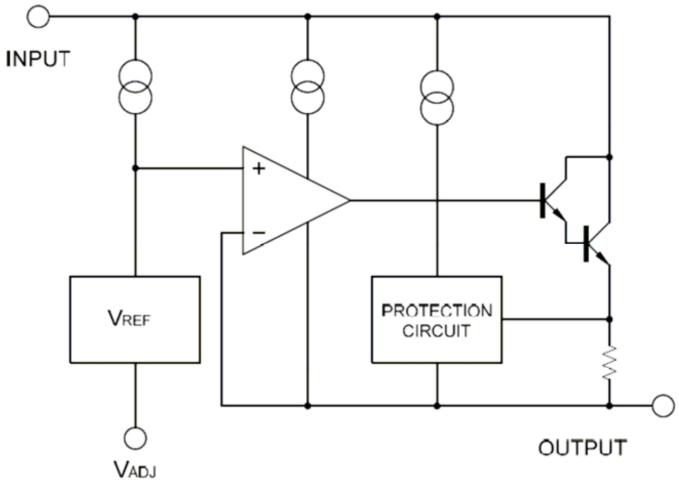
Description

The LM317AL is an adjustable 3-terminal positive voltage regulator, designed to supply 100mA of output current with voltage adjustable from 1.25V~37V.

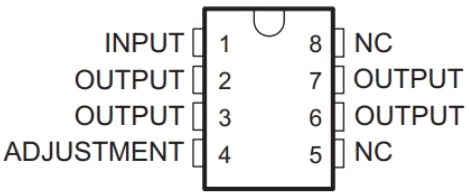
Application

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

Block Diagram



Pin Configuration



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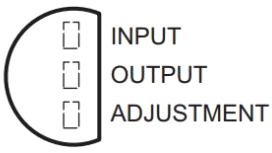

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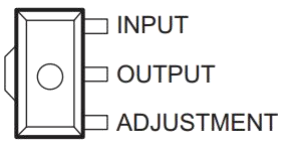


SOT-89-3

Absolute Maximum Ratings

(Ta=25℃)

Parameter	Symbol	Min.	Max.	Unit
Input-Output Voltage Differential	Vin-Vout		40	V
Power Dissipation	P_D	Internally Limited		
Maximum Operating Junction Temperature	Tj	-40	125	℃
Lead Temperature (Soldering, 10 seconds)	T_{LEAD}		260	℃
Storage Temperature Range	Tstg	-65	150	℃
ESD (human body model)	ESD		4000	V

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

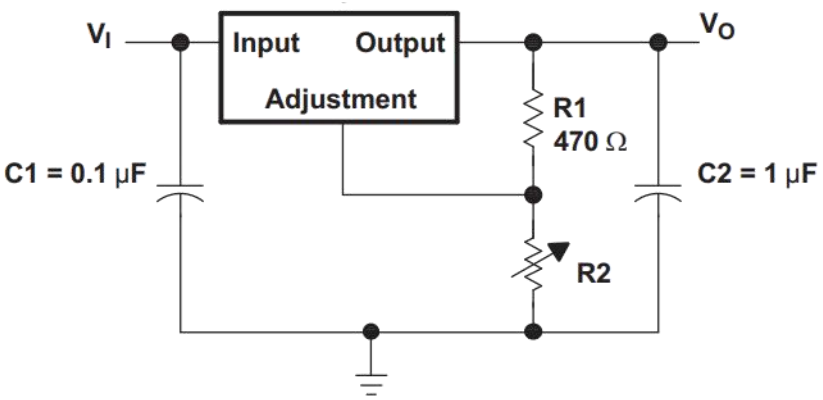
Electrical Characteristics

(Unless otherwise specified: Vi-Vo=5.0V; Io=10mA; Ta=25℃)

Parameter	Test conditions	Symbol	Min.	Typ.	Max.	Unit
Reference Voltage	2.5mA≤I_{OUT}≤100mA 5V≤V_{IN}-V_{OUT}≤35V Pd≤rated dissipation	V_{REF}	1.20	1.25	1.30	V
Line Regulation	5V≤V_{IN}-V_{OUT}≤35V	LNR	-	0.01	0.02	% /V
Load Regulation	2.5mA≤I_{OUT}≤100mA	LDR	-	0.02	0.5	% /V
Adjust Pin Current		Iadj	-	50	100	μA
Adjust Pin Current Change	2.5mA≤I_{OUT}≤100mA 3V≤V_{IN}-V_{OUT}≤35V, Pd≤rated dissipation	Δ Iadj	-	0.2	5.0	μA
Minimum Load Current	V_{IN}-V_{OUT}=35V	$I_{L(MIN)}$		1.5	2.5	mA
Current Limit	V_{IN}-V_{OUT}=3V	I_{LIMIT}	100	200		mA
Ripple Rejection	f=120Hz, V_{IN}-V_{OUT}=3V, C_{OUT}=1μF Tantalum, I_{OUT}=100mA	PSRR	60	75		dB
Temperature Stability	T_{MIN}≤T_J≤T_{MAX}			0.7		%
RMS Output Noise (% of V_{OUT})	Ta=25°C, 10Hz≤f≤10kHz	En		0.003		%/Vo
Thermal Resistance, Junction to Ambient	SOP-8	θ_{JC}		97.1		°C/W
	TO-92			139.5		
	SOT-89-3			51.5		

Note: 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.

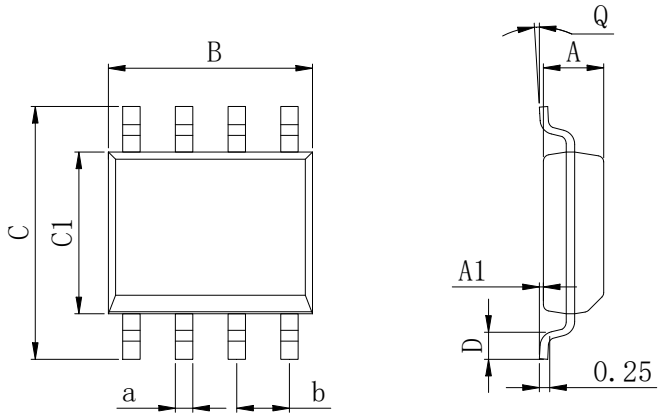
**= C_O is needed for stability and it improves transient response.

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

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

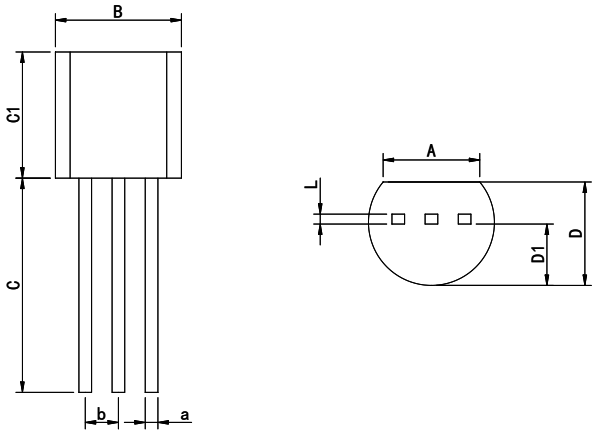
Physical Dimensions

SOP-8 (150mil)



Dimensions In Millimeters(SOP-8)									
Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	1.35	0.05	4.90	5.80	3.80	0.40	0°	0.35	1.27 BSC
Max:	1.55	0.20	5.10	6.20	4.00	0.80	8°	0.45	

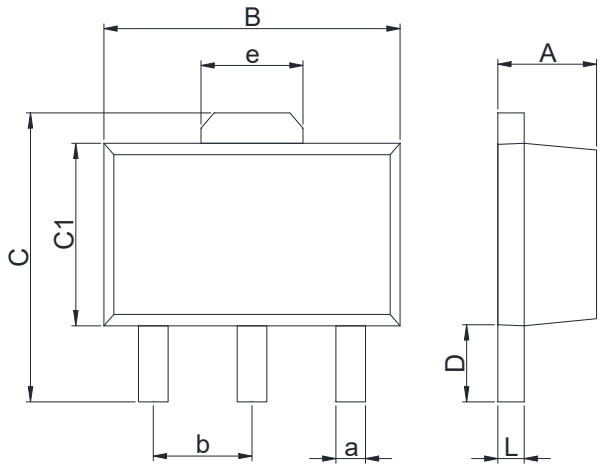
TO-92



Dimensions In Millimeters(TO-92)									
Symbol:	A	B	C	C1	D	D1	L	a	b
Min:	3.43	4.44	13.5	4.32	3.17	2.03	0.33	0.40	1.27BSC
Max:	4.13	5.21	15.3	5.34	4.19	2.67	0.42	0.52	

Physical Dimensions

SOT-89-3



Dimensions In Millimeters(SOT-89-3)									
Symbol:	A	B	C	C1	D	L	a	b	e
Min:	1.40	4.40	3.94	2.30	0.90	0.35	0.40	1.50	1.55
Max:	1.60	4.60	4.25	2.60	1.20	0.44	0.55	BSC	BSC

Revision History

REVISION NUMBER	DATE	REVISION	PAGE
V1.0	2019-11	New	1-6
V1.1	2025-6	Document Reformatting	1-8

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