

芯伯乐®
X I N B O L E

Product Specification

XBLW LM317L

100 mA Adjustable Voltage Regulators

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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. The LM317L serves a wide variety of applications including local, on card regulation. This device can also be used to make a programmable output regulator, or by connecting a fixed resistor between the adjustment and output, the LM317L can be used as a precision current regulator.

Features

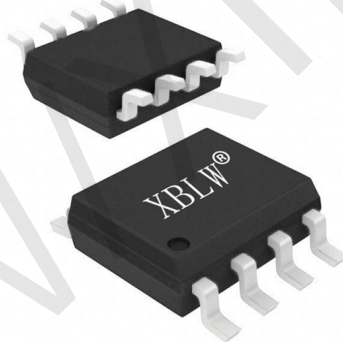
- Typical 1% Output Voltage Tolerance
- Output Voltage Adjustable from 1.25V~37V
- Output Current in Excess of 100mA
- Internal Short Circuit Protection
- Internal Over Temperature Protection
- Output Transistor Safe Area Compensation
- Packaging information: TO-92/SOT-89-3/SOP-8

Application

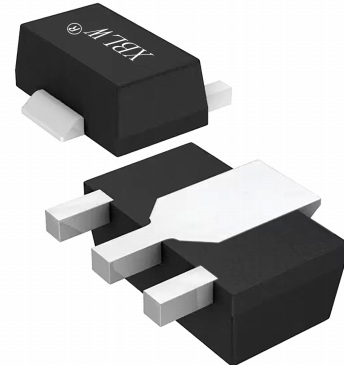
- PC Motherboard
- LCD Monitor
- Graphic Card
- DVD Player
- Network Interface Card/Switch
- Telecom Equipment
- Printer and other Peripheral Equipment



TO-92



SOP-8

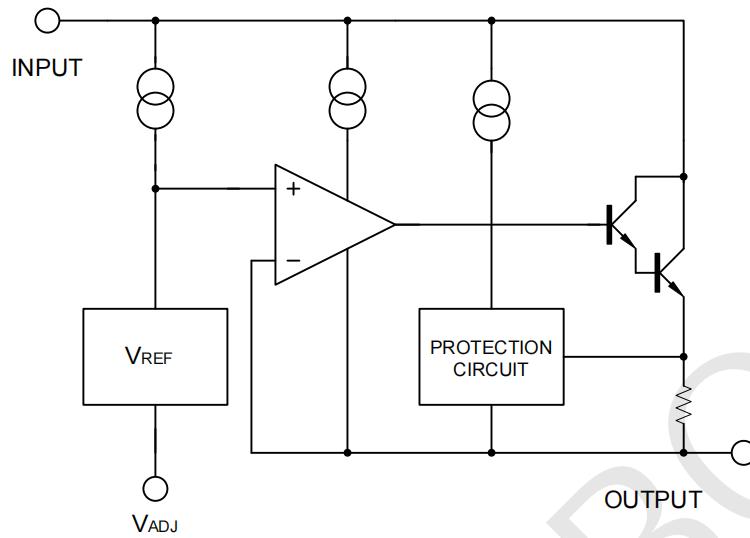


SOT-89-3

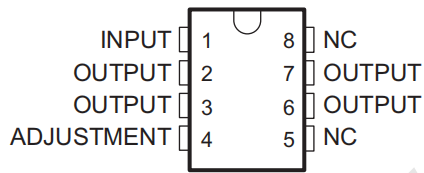
Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
XBLW LM317LZ	TO-92	LM317LZ	Bag	1000PCS/Bag
XBLW LM317LSDTR	SOP-8	LM317L	Tape	2500PCS/Reel
XBLW LM317LTDTR	SOT-89-3	LM317L	Tape	4000PCS/Reel

Block Diagram

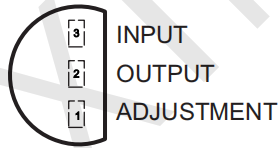


Pin Configuration (Top View)

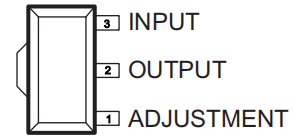


NC – No internal connection
OUTPUT terminals are all internally connected.

SOP-8



TO-92



SOT-89-3

Pin Functions

NAME	SOP-8	SOT-89/TO-92	TYPE	DESCRIPTION
ADJUSTMENT	4	1	I	Output feedback voltage
INPUT	1	3	I	Input supply voltage
NC	5	—	—	No connect
	8			
OUTPUT	2	2	O	Regulated output voltage
	3			
	6			
	7			

ABSOLUTE MAXIMUM RATINGS (Ta=25°C) *

Parameter	Symbol	Min.	Max.	Unit
Input-Output Voltage Differential	V _{in-Vout}		40	V
Power Dissipation	P _D	Internally Limited		
Maximum Operating Junction Temperature	T _j	-40	125	°C
Lead Temperature (Soldering, 10 seconds)	T _{LEAD}		150	°C
Storage Temperature Range	T _{stg}	-65	+150	°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.

Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted)

		MIN	MAX	UNIT
Operating Temperature Range	LM317L	-20	125	°C

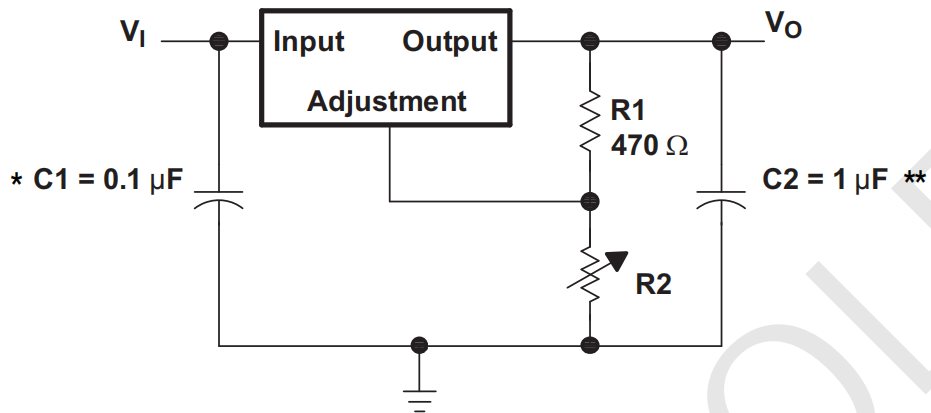
Electrical Characteristics

(Unless otherwise specified: V_i-V_o=5.0V; I_o=10mA; Ta=25°C)

Parameter	Test conditions	Symbol	Min.	Typ.	Max.	Unit
Reference Voltage	2.5mA ≤ I _{OUT} ≤ 100mA 5V ≤ V _{IN-VOUT} ≤ 35V P _d ≤ rated dissipation	V _{REF}	1.20	1.25	1.30	V
Line Regulation	5V ≤ V _{IN-VOUT} ≤ 35V	LNR	-	0.01	0.02	% /V
Load Regulation	2.5mA ≤ I _{OUT} ≤ 100mA	LDR	-	0.02	0.5	% /V
Adjust Pin Current		I _{adj}	-	50	100	μA
Adjust Pin Current Change	2.5mA ≤ I _{OUT} ≤ 100mA 3V ≤ V _{IN-VOUT} ≤ 35V, P _d ≤ rated dissipation	Δ I _{adj}	-	0.2	5.0	μA
Minimum Load Current	V _{IN-VOUT} =35V	I _{L(MIN)}		1.5	2.5	mA
Current Limit	V _{IN-VOUT} =3V	I _{LIMIT}	100	200		mA
Ripple Rejection	f=120Hz, V _{IN-VOUT} =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	E _n		0.003		%/V _o
Thermal Resistance, Junction to Ambient	SOP8	θ _{JC}		97.1		°C/W
	TO92			139.5		
	SOT89-3			51.5		

Maximum Power Dissipation is Package Type and Case Temperature dependent.

Application Circuit



* C_{in} is required if regulator is located an appreciable distance from power supply filter.
** C_O is not needed for stability, however, it does improve transient response.

$$V_{out} = 1.25 V \left(1 + \frac{R_2}{R_1} \right) + I_{Adj} R_2$$

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

Typical performance

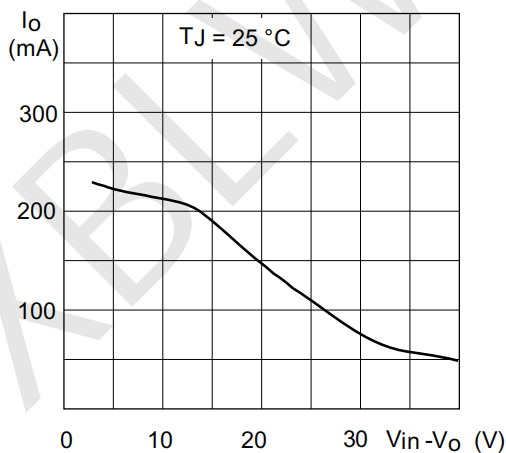


Figure 1. Current limit

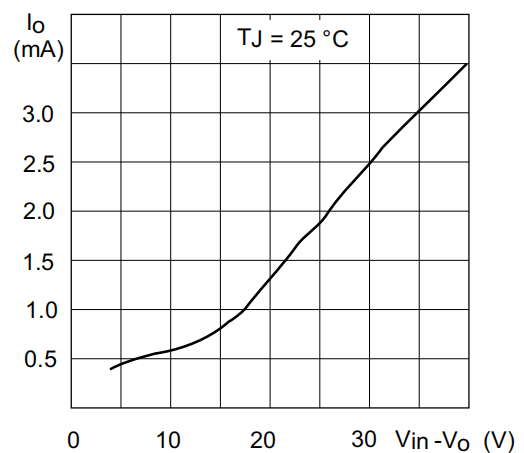
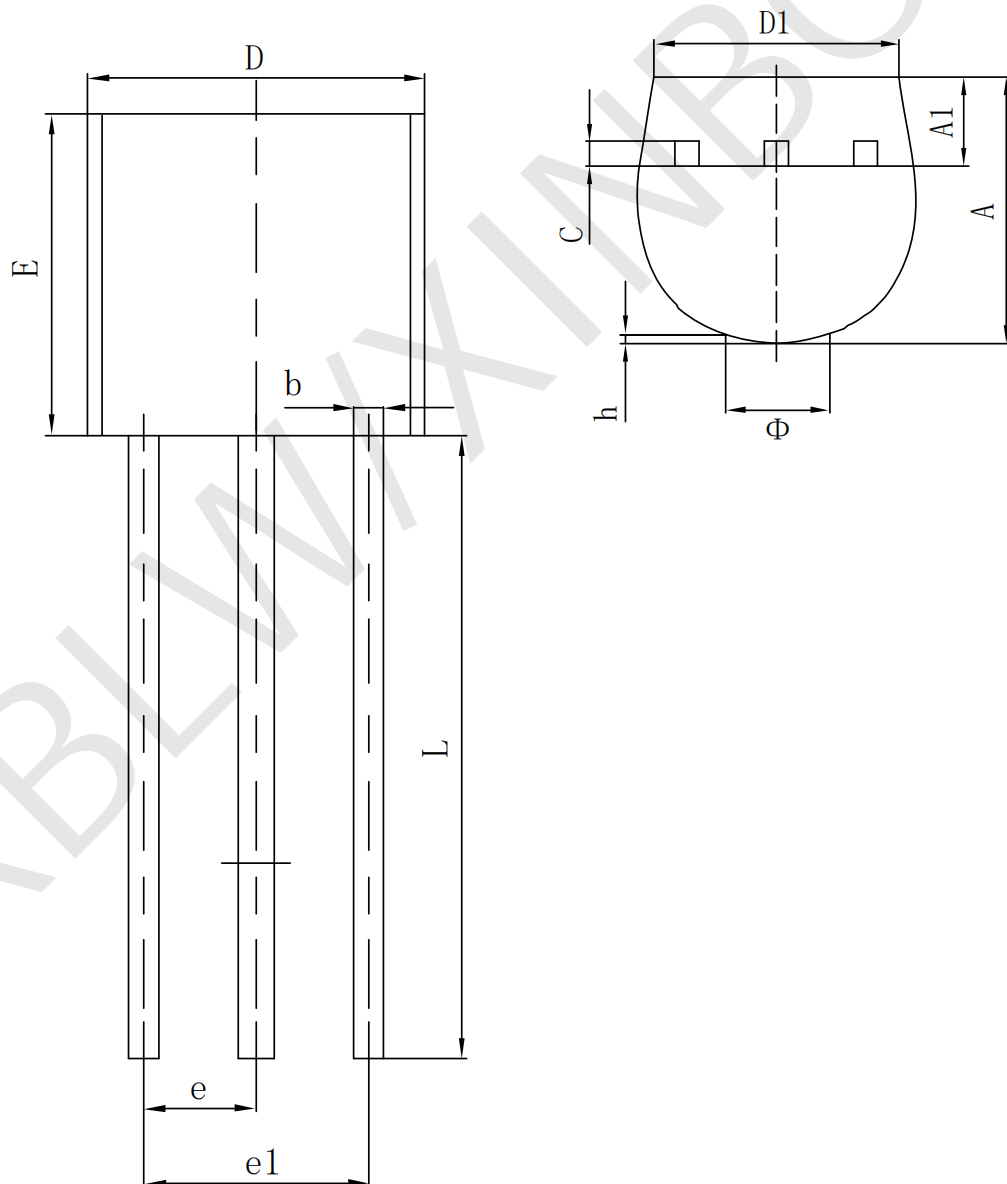


Figure 2. Minimum operating current

Package Information

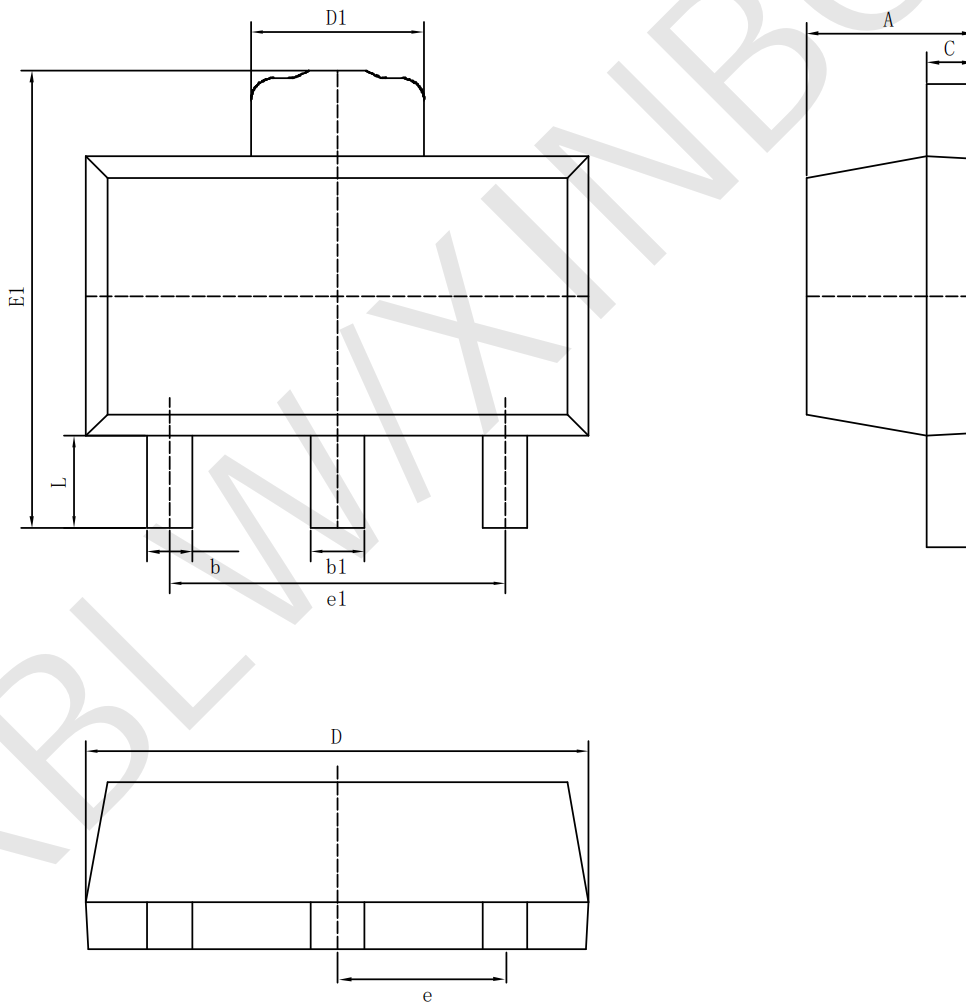
· T0-92

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Inches	
	Min (mm)	Max (mm)		Min (in)	Max (in)
A	3.300	3.700	A	0.130	0.146
A1	1.100	1.400	A1	0.043	0.055
b	0.380	0.550	b	0.015	0.022
c	0.360	0.510	c	0.014	0.020
D	4.300	4.700	D	0.169	0.185
D1	3.430		D1	0.135	
E	4.300	4.700	E	0.169	0.185
e	1.270 (TYP)		e	0.050 (TYP)	
e1	2.440	2.640	e1	0.096	0.104
L	14.10	14.50	L	0.555	0.571
Φ		1.600	Φ		0.063
h	0.000	0.380	h	0.000	0.015



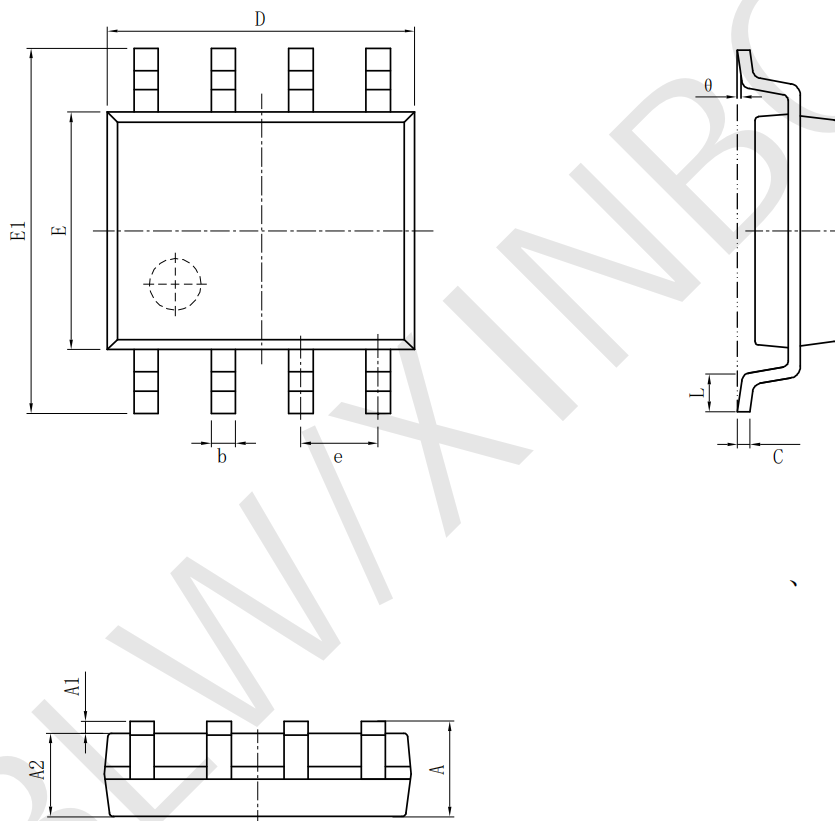
· SOT-89-3

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Inches	
	Min (mm)	Max (mm)		Min (in)	Max (in)
A	1.400	1.600	A	0.055	0.063
b	0.320	0.520	b	0.013	0.020
b1	0.400	0.580	b1	0.016	0.023
c	0.350	0.440	c	0.014	0.017
D	4.400	4.600	D	0.173	0.181
D1	1.550 (REF)		D1	0.61 (REF)	
E	2.300	2.600	E	0.091	0.102
E1	3.940	4.250	E1	0.155	0.167
e	1.500 (TYP)		e	0.060 (TYP)	
e1	3.000 (TYP)		e1	0.118 (TYP)	
L	0.900	1.200	L	0.035	0.047



• SOP-8

Size Symbol	Dimensions In Millimeters		Size Symbol	Dimensions In Inches	
	Min (mm)	Max (mm)		Min (in)	Max (in)
A	1.350	1.750	A	0.053	0.069
A1	0.100	0.250	A1	0.004	0.010
A2	1.350	1.550	A2	0.053	0.061
b	0.330	0.510	b	0.013	0.020
c	0.170	0.250	c	0.006	0.010
D	4.700	5.100	D	0.185	0.200
E	3.800	4.000	E	0.150	0.157
E1	5.800	6.200	E1	0.228	0.224
e	1.270 (BSC)		e	0.050 (BSC)	
L	0.400	1.270	L	0.016	0.050
θ	0°	8°	θ	0°	8°



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