

Product Specification

XBLW LM317LD13TR

100 mA Adjustable Voltage Regulators

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Description

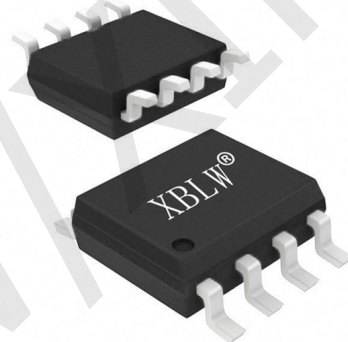
The LM317L is an adjustable 3-terminal positive voltage regulator, designed to supply 100mA of output current with voltage adjustable from 1.25V ~ 37V. The LM317L serves a wide variety of applications including local, on card regulation. This device can also be used to make a programmable output regulator, 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: SOP-8

Application

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

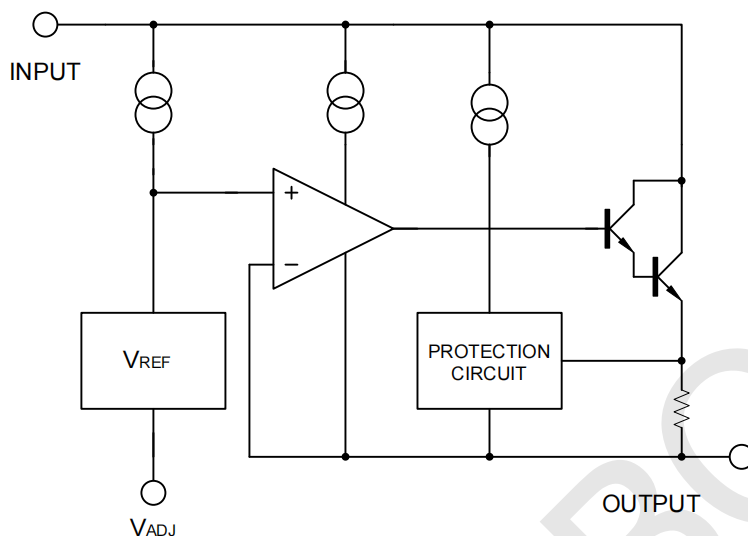


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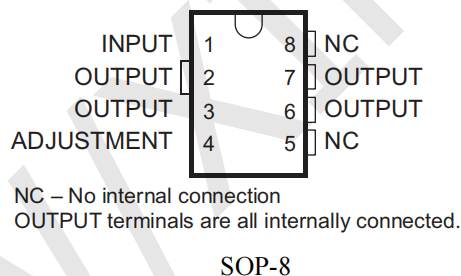
Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
XBLW LM317LD13TR	SOP-8	LM317L	Tape	4000PCS/Reel

Block Diagram



Pin Configuration (Top View)



SOP-8

Pin Functions

NAME	SOP-8	TYPE	DESCRIPTION
ADJUSTMENT	4	I	Output feedback voltage
INPUT	1	I	Input supply voltage
NC	5	—	No connect
	8		
OUTPUT	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} -V _{out}		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

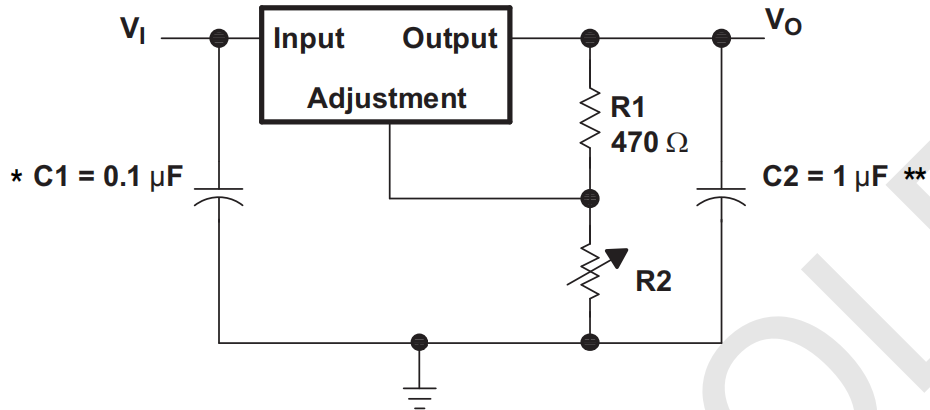
Electrical Characteristics

(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} -V _{OUT} ≤ 35V P _d ≤ 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		I _{adj}	-	50	100	μA
Adjust Pin Current Change	2.5mA ≤ I _{OUT} ≤ 100mA 3V ≤ V _{IN} -V _{OUT} ≤ 35V, P _d ≤ rated dissipation	Δ I _{adj}	-	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		%/V _o
Thermal Resistance, Junction to Ambient	SOP8	θ _{JC}		97.1		°C/W

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.

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

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

Typical performance

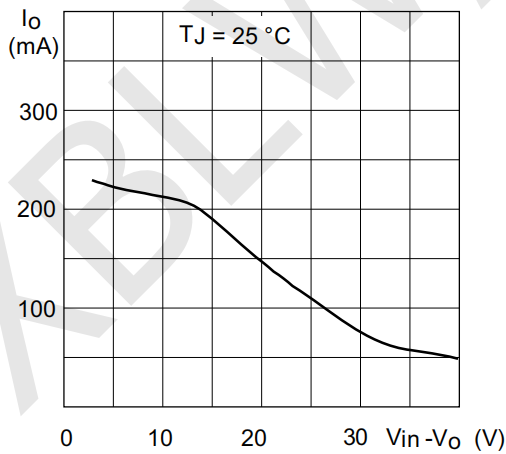


Figure 1. Current limit

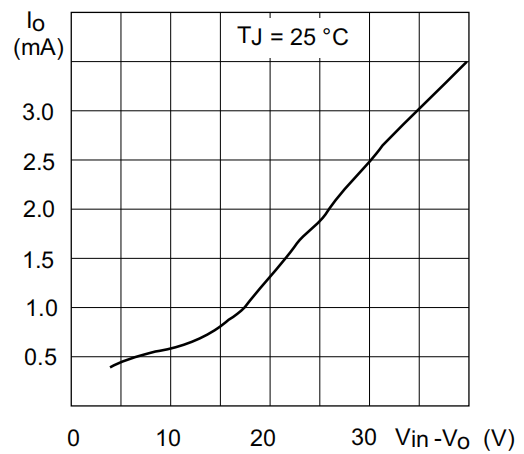
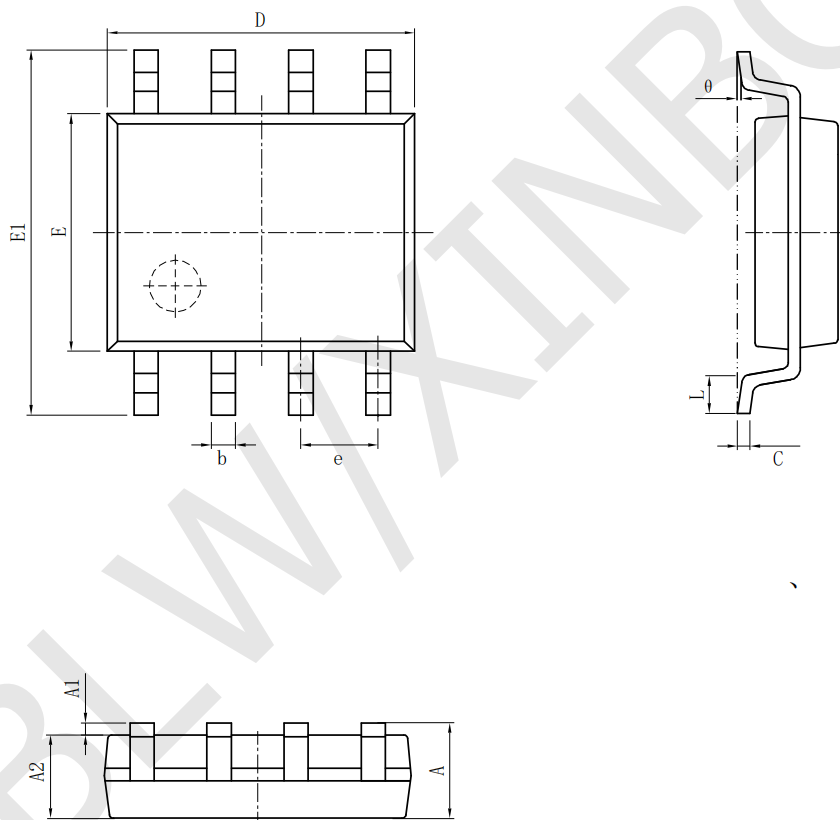


Figure 2. Minimum operating current

Package Information

• 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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