

100mA Adjustable Positive Voltage Regulator

General Description

- The LM317L is a monolithic integrated circuit, designed to supply 100mA of output current with voltage adjustable from 1.25V ~ 37V.
- The LM317L is available in standard TO-92 and SOP-8 packages.



TO-92



SOP-8



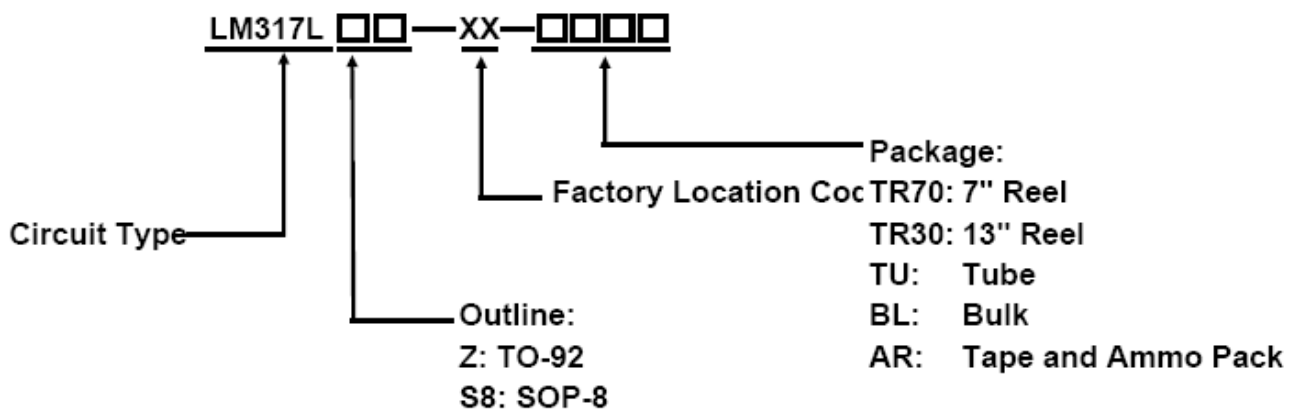
Features

- Output voltage adjustable from 1.25V ~ 37V
- Output current in excess of 100mA
- Internal thermal overload protection
- Internal short circuit current limiting
- Output transistor safe area compensation
- RoHS Compliance

Applications

- High Efficiency Linear Regulators
- Post Regulation for Switching Supplies
- Microprocessor Power Supply
- Mother Board I/O Power Supply

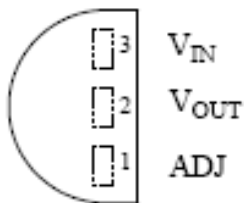
Ordering Information



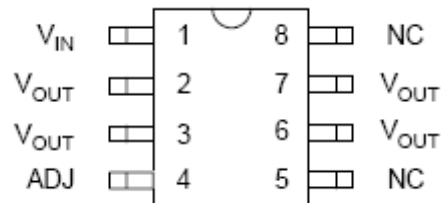
100mA Adjustable Positive Voltage Regulator

LM317L

Pin Configuration

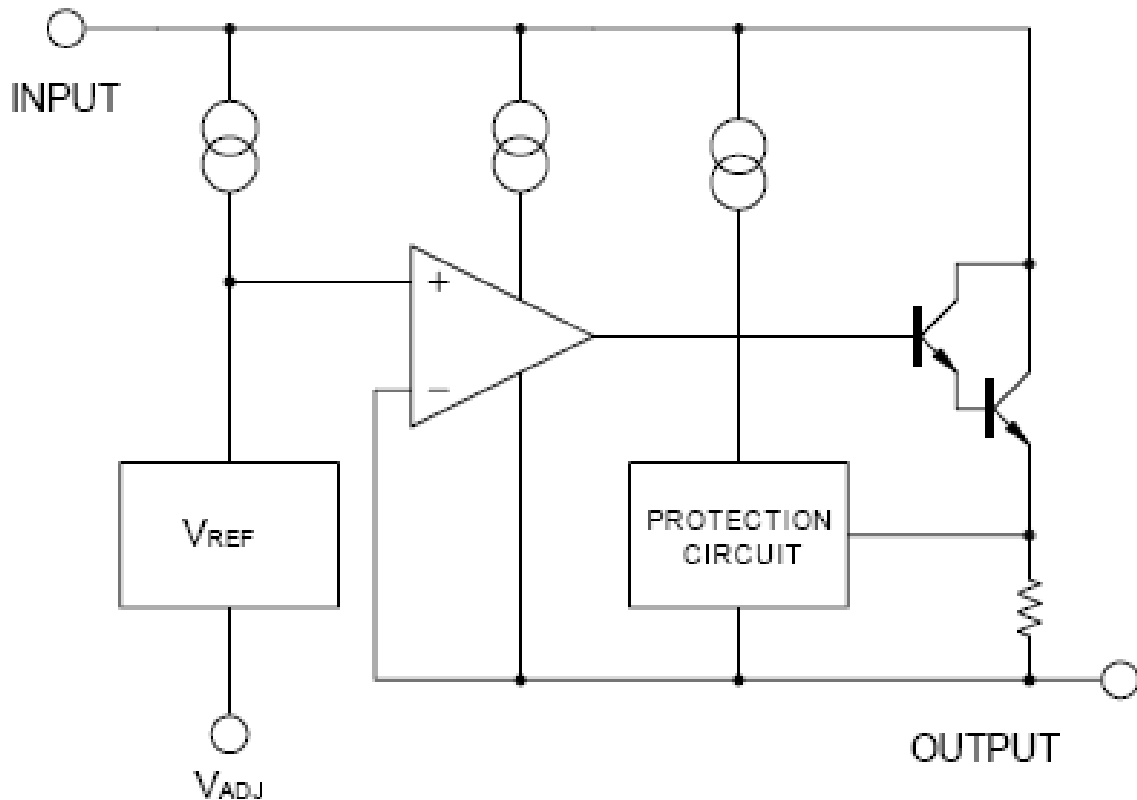


Outline: Z
TO-92



Outline: S8
SOP-8

Block Diagram



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LM317L

Absolute Maximum Ratings (Ta=25° C, unless otherwise specified)

Symbol	Description	Ratings	Unit
V _{IN-V_{OUT}}	Input - Output Voltage Differential	40	V
I _o	Max. Output Current	100	mA
P _d	Power Dissipation	Internally Limited	mW
T _J	Operating Junction Temperature	125	° C
T _{OPR}	Operating Temperature Range	0 ~ 125	° C
T _{STG}	Storage Temperature Range	-40 ~ 150	° C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

Electrical Characteristics

(V_{IN-V_{OUT}}=5V, I_{OUT}=40mA, Ta=25°C, unless otherwise specified)

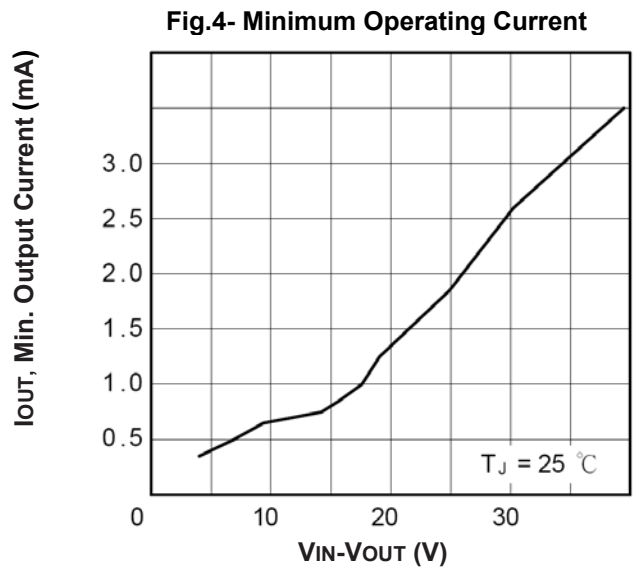
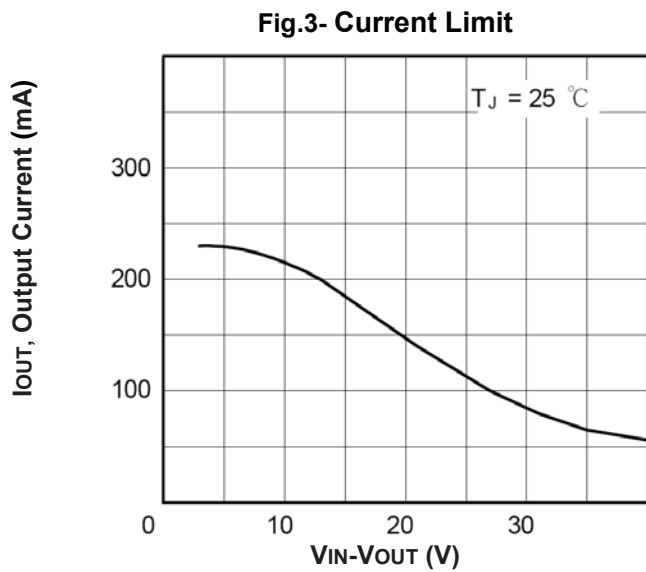
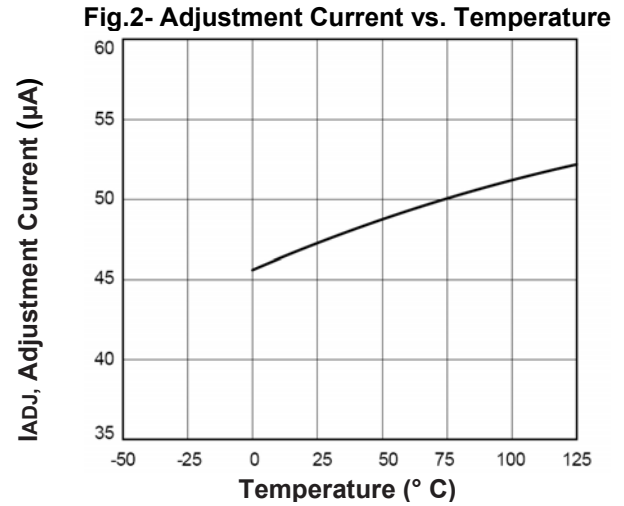
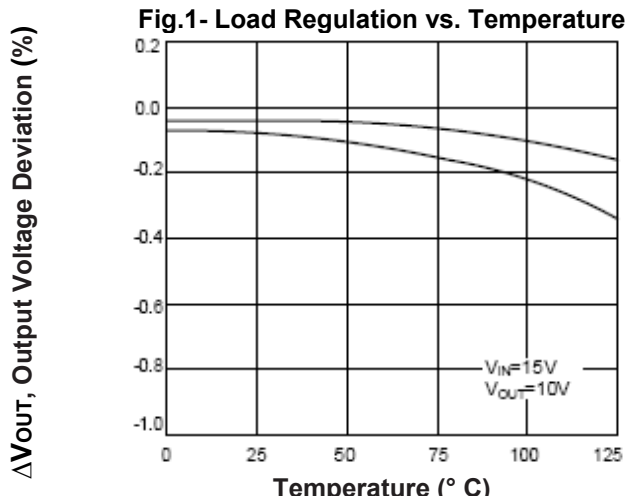
Symbol	Description	LM317L			Unit	Conditions
		Min.	Typ.	Max.		
ΔV _{OUT} /V _{OUT}	Line Regulation	-	0.01	0.04	%/V	3V ≤ V _{IN-V_{OUT}} ≤ 40V, I _{OUT} ≤ 20mA
ΔV _{OUT}	Load Regulation	-	5	25	%	5mA ≤ I _{OUT} ≤ 100mA, V _{OUT} ≥ 5V
		-	0.1	0.5	%	5mA ≤ I _{OUT} ≤ 101mA, V _{OUT} ≤ 5V
I _{ADJ}	Adjustable Pin Current	-	50	100	μA	-
ΔI _{ADJ}	Adjustable Pin Current Change	-	0.2	5	μA	3V ≤ V _{IN-V_{OUT}} ≤ 40V, 5mA ≤ I _{OUT} ≤ 100mA, P _d < 625mW
V _{REF}	Reference Input Voltage	1.20	1.25	1.30	V	3V ≤ V _{IN-V_{OUT}} ≤ 15V, 5mA ≤ I _{OUT} ≤ 100mA, P _d < 625mW
-	Temperature Stability	-	0.7	-	%/V _{OUT}	T _{MIN} ≤ T _J ≤ T _{MAX}
I _{L(MIN)}	Minimum Load Current for Regulation	-	3.5	10	mA	V _{IN-V_{OUT}} = 40V
I _{O(MAX)}	Maximum Output Current	-	50	-	mA	V _{IN-V_{OUT}} = 40V, P _d ≤ 625mW
e _N	RMS Noise vs. % of V _{out}	-	0.003	0.01	%/V _{out}	10Hz ≤ f ≤ 10KHz
PSRR	Ripple Rejection	-	65	-	dB	V _{OUT} = 10V, f = 120Hz, C _{ADJ} = 0μF
		66	80	-		V _{OUT} = 10V, f = 120Hz, C _{ADJ} = 10μF

Note: C_{ADJ} is connected between Adjust pin and Ground.

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LM317L

Typical Characteristics Curves



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Typical Application

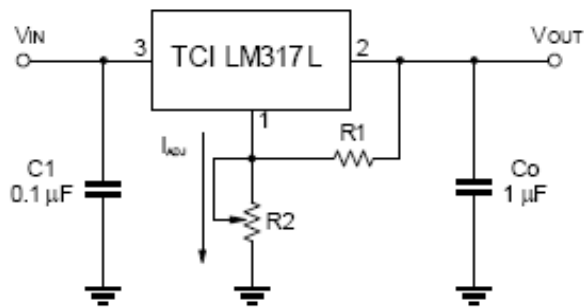


Fig.1 Programmable voltage regulator

$$V_{OUT} = 1.25V * (1 + R2/R1) + I_{ADJ} * R2$$

C 1 is required when regulator is located an appreciated distance from power supply . Co is needed to improve transient response .

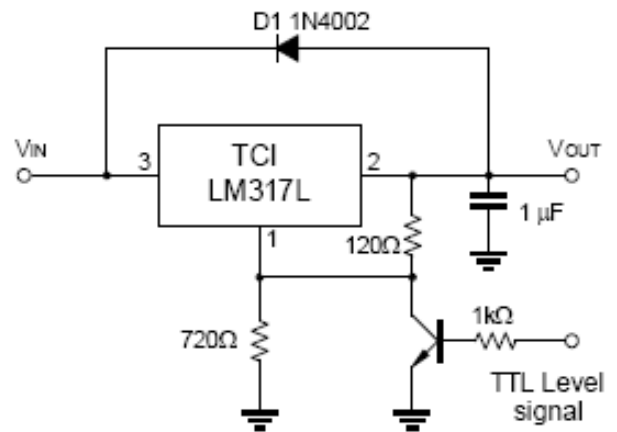


Fig.6- Regulator with On-off Control

Fig.5-Programmable Voltage Regulator

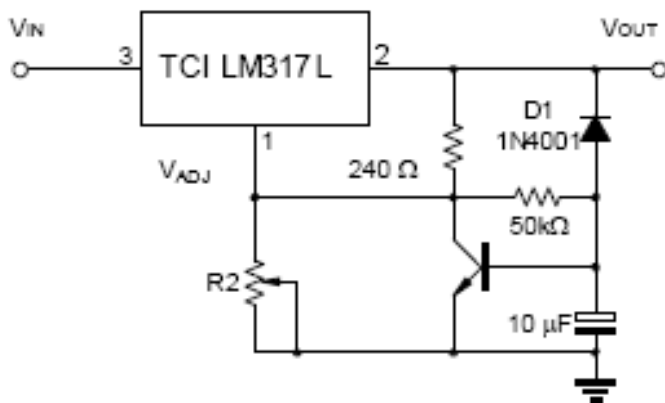
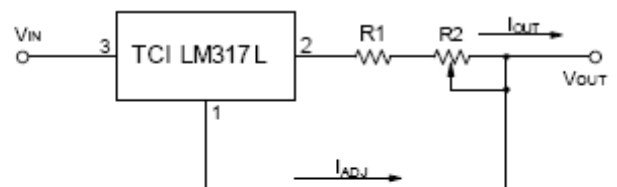


Fig.7- Soft Start Application



$$I_{O\text{MAX}} = \left(\frac{V_{REF}}{R1} \right) + I_{ADJ} = \frac{1.25V}{R1}$$

$$I_{O\text{MIN}} = \left(\frac{V_{REF}}{R1+R2} \right) + I_{ADJ} = \frac{1.25V}{R1+R2}$$

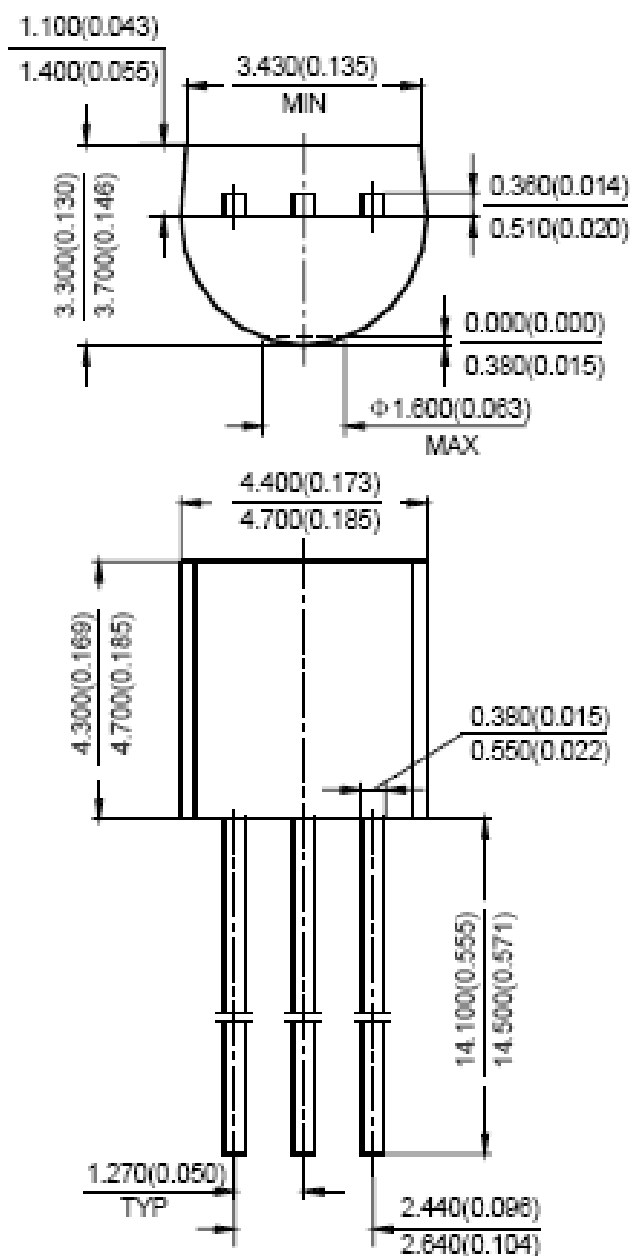
$$5\text{mA} < I_{OUT} < 100\text{mA}$$

Fig.8- Constant Current Application

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LM317L

Dimensions in mm (inches)



TO-92

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How to contact us:

US HEADQUARTERS

28040 WEST HARRISON PARKWAY, VALENCIA, CA 91355-4162

Tel: (800) TAITRON (800) 824-8766 (661) 257-6060

Fax: (800) TAITFAX (800) 824-8329 (661) 257-6415

Email: taitron@taitroncomponents.com

Http://www.taitroncomponents.com

TAITRON COMPONENTS MEXICO, S.A .DE C.V.

BOULEVARD CENTRAL 5000 INTERIOR 5 PARQUE INDUSTRIAL ATITALAQUIA, HIDALGO C.P.
42970 MEXICO

Tel: +52-55-5560-1519

Fax: +52-55-5560-2190

TAITRON COMPONETS INCORPORATED E REPRESENTAÇÕES DO BRASIL LTDA

RUA DOMINGOS DE MORAIS, 2777, 2.ANDAR, SALA 24 SAÚDE - SÃO PAULO-SP 04035-001 BRAZIL

Tel: +55-11-5574-7949

Fax: +55-11-5572-0052

TAITRON COMPONETS INCORPORATED, SHANGHAI REPRESENTATIVE OFFICE

CROSS REGION PLAZA, 899 LINGLING ROAD, SUITE 18C, SHANGHAI, 200030, CHINA

Tel: +86-21-5424-9942

Fax: +86-21-5424-9931