

3-Terminal 100mA Positive Adjustable Regulator LM317L

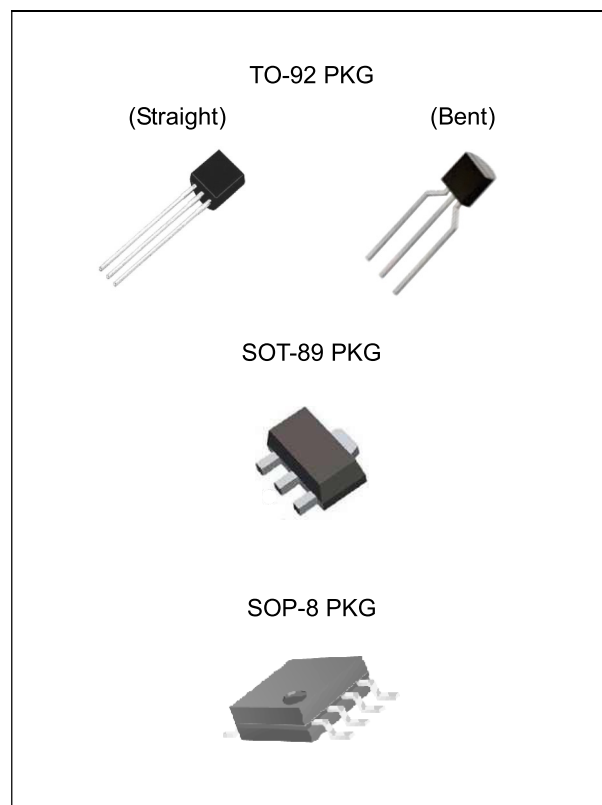
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FEATURES

- Output Current Excess of 100mA
- Output Adjustable Between 1.2V and 37V
- Internal Thermal Overload Protection
- Internal Short-Circuit Current Limiting
- Output Transistor Safe-Area Compensation
- Moisture Sensitivity Level 3

DESCRIPTION

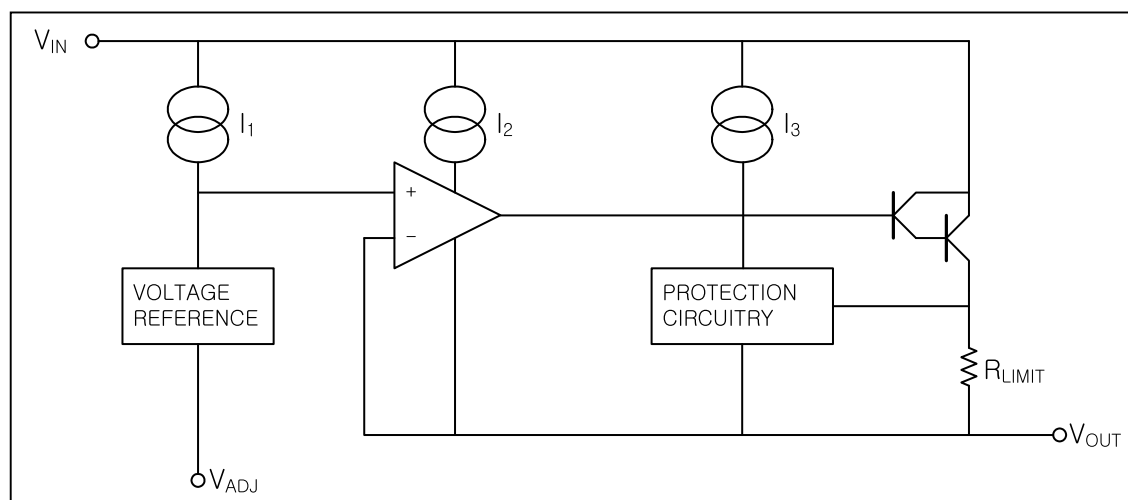
This monolithic integrated circuit is an adjustable 3-terminal positive voltage regulator designed to supply more than 100mA of load current with an output voltage adjustable over a 1.2 to 37V. It employs internal current limiting, thermal shut-down and safe area compensation.



ORDERING INFORMATION

Device	Package
LM317L	TO-92 (Bulk, Straight)
LM317LTA	TO-92 (Tape, Bent)
LM317LF	SOT-89
LM317LD	SOP-8

BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	Value	UNIT
Input-output Voltage Differential	$V_I - V_O$	40	V
Lead Temperature (Soldering, 10 sec)	T_{SOL}	230	°C
Power Dissipation	P_D	Internally limited	-
Operating Junction Temperature Range	T_{JOPR}	-40 ~ 125	°C
Storage Temperature Range	T_{STG}	-65 ~ 125	°C

RECOMMENDED OPERATING RATINGS ($V_I - V_O = 5V$, $I_O = 40mA$, $-40^\circ C \leq T_J \leq 125^\circ C$, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	Unit
Line Regulation	ΔV_O	$T_A = -40 \sim 125^\circ C$	$3V \leq V_I - V_O \leq 40V$	0.01	0.04	%/V
			$3V \leq V_I - V_O \leq 40V$	0.02	0.07	%/V
Load Regulation	ΔV_O	$T_A = 25^\circ C$, $10mA \leq I_O \leq I_{MAX}$				
		$V_O \leq 5V$		10	25	mV
		$V_O \geq 5V$		0.1	0.5	%/V
		$10mA \leq I_O \leq I_{MAX}$				
		$V_O \leq 5V$		20	80	mV
		$V_O \geq 5V$		0.3	1.7	%/V
Adjustable Pin Current	I_{ADJ}			46	100	μA
Adjustable Pin Current Change	ΔI_{ADJ}	$3V \leq V_I - V_O \leq 40V$ $10mA \leq I_O \leq I_{MAX}$ $P \leq P_{MAX}$		0.2	5	μA
Reference Voltage	V_{REF}	$3V \leq V_{IN} - V_{OUT} \leq 40V$ $10mA \leq I_O \leq I_{MAX}$ $P_D \leq P_{MAX}$	1.20	1.25	1.30	V
Temperature Stability	ST_T			0.7		%/V _O
Minimum Load Current to Maintain Regulation	$L_{(MIN)}$	$V_I - V_O = 40V$		3.5	10	mA
Maximum Output Current	$I_{O(MAX)}$	$V_I - V_O \leq 5V$, $P_D \leq P_{MAX}$	100	200		mA
		$V_I - V_O \leq 40V$, $P_D \leq P_{MAX}$, $T_A = 25^\circ C$	0.156	0.4		
RMS Noise, % of V _{OUT}	e_N	$T_A = 25^\circ C$, $10Hz \leq f \leq 10KHz$		0.003	0.01	%/V _O
Ripple Rejection	RR	$V_O = 10V$, $f = 120Hz$ without C_{ADJ}		60		dB
		$C_{ADJ} = 10\mu F$	66	75		
Long-Term Stability, $T_J = T_{HIGH}$	ST	$T_A = 25^\circ C$, for end point measurements, 1000HR		0.3	1	%

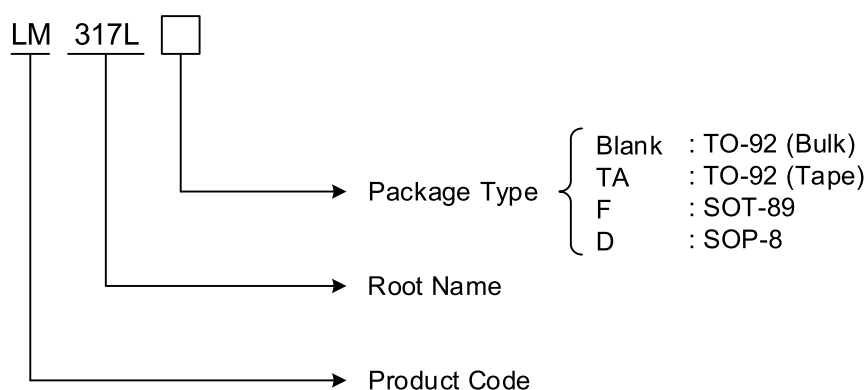
* Load and line regulation are specified at constant junction temperature. Change in V_D due to heating effects must be taken into account separately. Pulse testing with low duty is used.

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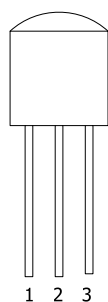
PACKAGE	ORDER NO.	DESCRIPTION	SUPPLIED AS	STATUS
TO-92	LM317L	100mA, Adjustable, Positive	Bulk	Active
TO-92	LM317LTA	100mA, Adjustable, Positive	Tape	Active
SOT-89	LM317LF	100mA, Adjustable, Positive	Reel	Active
SOP-8	LM317LD	100mA, Adjustable, Positive	Reel	Active



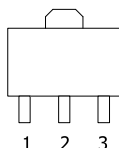
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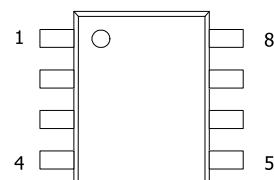
PIN CONFIGURATION



TO-92



SOT-89



SOP-8

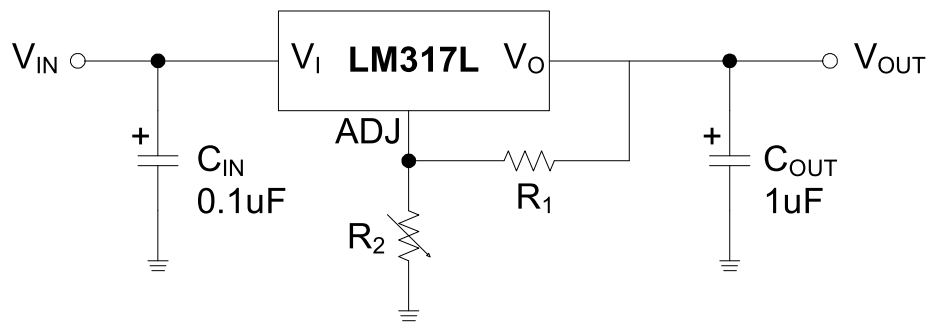
PIN DESCRIPTION

PIN NO.	TO-92 / SOT-89 3 LEAD		SOP-8 8LEAD	
	NAME	FUNCTION	NAME	FUNCTION
1	ADJ	Adjustable	V _{IN}	Input Voltage
2	V _{OUT}	Output Voltage	V _{OUT}	Output Voltage
3	V _{IN}	Input Voltage	V _{OUT}	Output Voltage
4	-	-	ADJ	Adjustable
5	-	-	-	N.C.
6	-	-	V _{OUT}	Output Voltage
7	-	-	V _{OUT}	Output Voltage
8	-	-	-	N.C.

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TYPICAL APPLICATION



$$V_{OUT} = 1.25V(1+R_2/R_1)+I_{ADJ}R_2$$

Note 1. C_{IN} is required when regulator is located in appreciable distance from power supply filter.

Note 2. C_{OUT} is not needed for stability, however, it does improve transient response.

Note 3. I_{ADJ} is controlled to less than 100uA, the error associated with this term is negligible in most applications.

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REVISION NOTICE

The description in this datasheet is subject to change without any notice to describe its electrical characteristics properly.