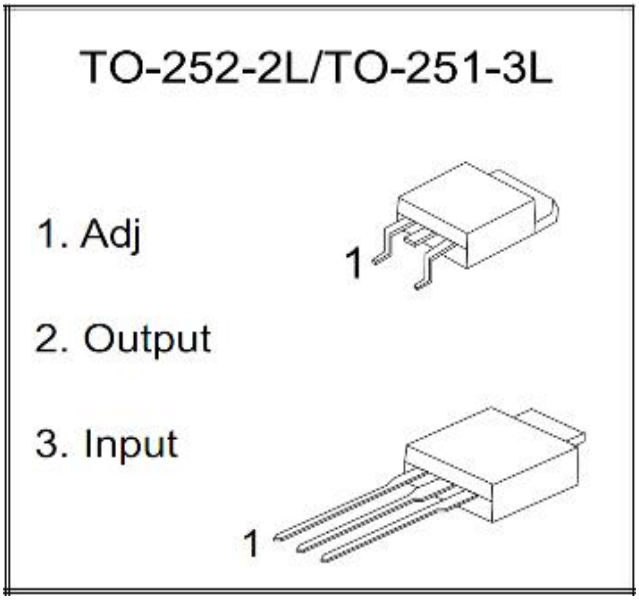
LM317 Three-terminal positive voltage regulator

DESCRIPTION:

This monolithic integrated circuit is an adjustable 3-terminal positive voltage regulator designed to supply more than 1.5A of load current with an output voltage adjustable over a 1.2V to 37V. It employs internal current limiting , thermal shut-down and safe area compensation.



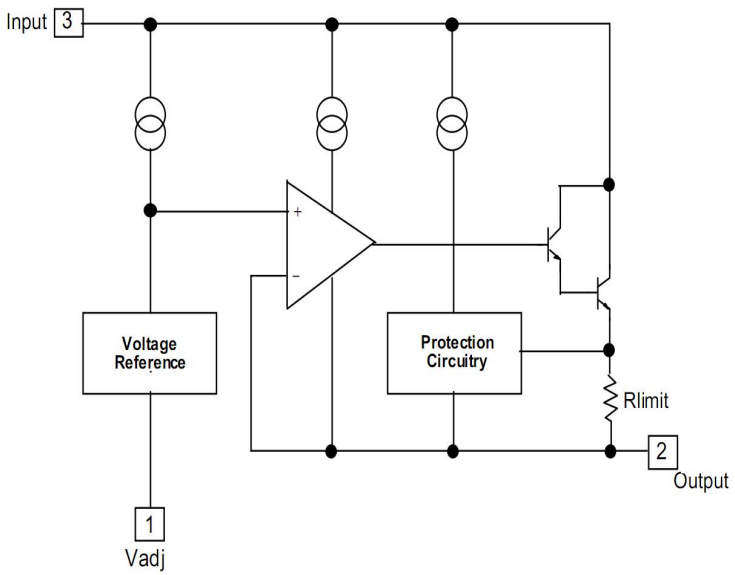
FEATURES:

※ Internal thermal overload protection

※ Internal short circuit current limiting

※ Output transistor safe operating area compensation

Internal Block Diagram:

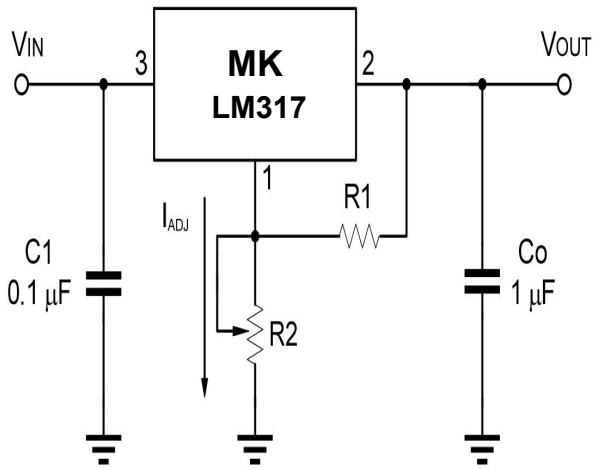


MARKING:

MK LM317 MKD / U ****

MK→logo (D→252) / (U→251) ****→Date

Typical Application:



Ci is required when regulator is located an appreciable distance from power supply filte

Co is not needed for stability , however, it does improve transient response. µF

Since IADJ is controlled to less than 100µA, the error associated with this term is negligible in most ap

Absolute Maximum ratings (Operating temperature range applies unless otherwise specified)

Parameter	Symbol	Value	Unit
Input-Output Voltage Differential	VI-VO	40	V
Lead Temperature	TLEAD	230	℃
Power Dissipation	PD	Internally limited	W
Operating Junction Temperature Range	TJ	-25~+125	℃
Storage Temperature Range	Tstg	-55~+150	℃
Temperature Coefficient of Output Voltage	ΔVO /ΔT	±0.02	%/℃

Electrical Characteristics At Specified Virtual Jinction Temperature
(Vo-Vi=5V, Io=0A, 0℃≤Tj≤+125℃,IMAX=1.5A, PMAX=20W. Unless Otherwise Specified)

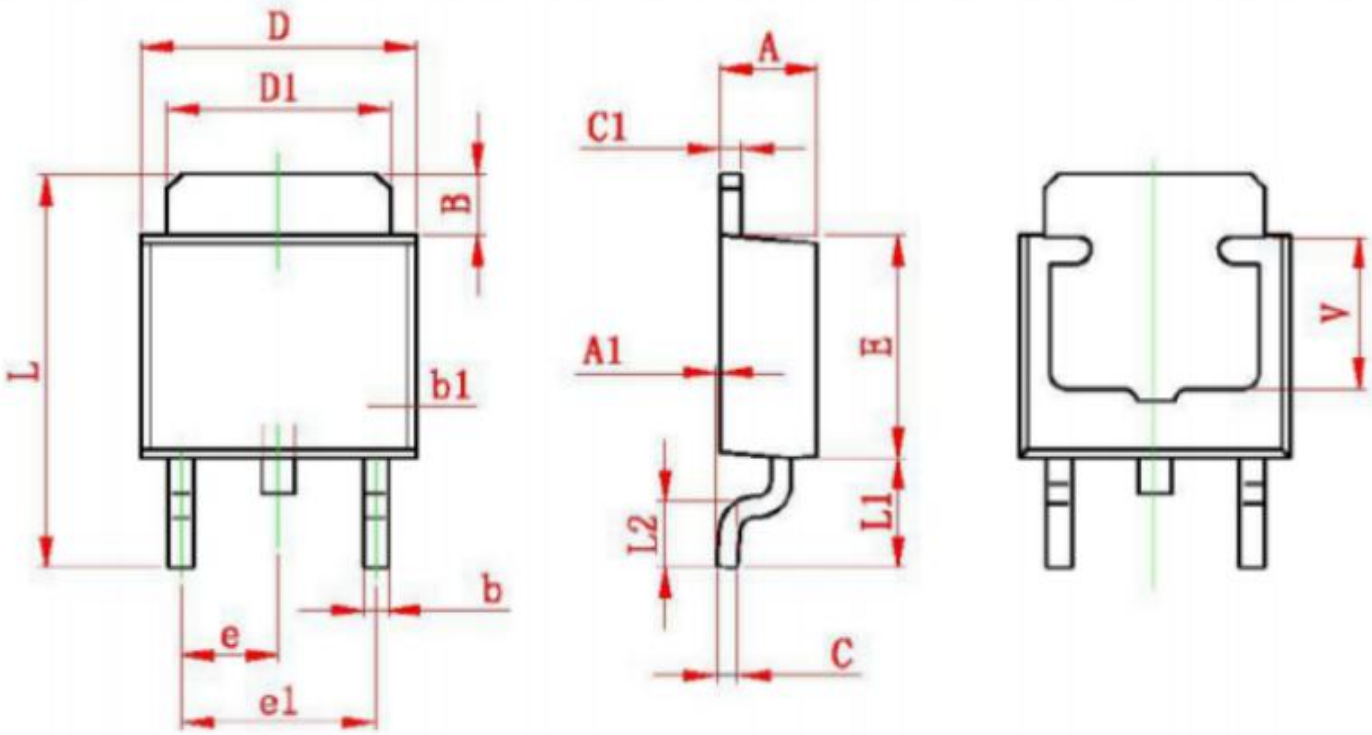
Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Line Regulation(note1)	Rline	$3V \le V_I - V_O \le 40V$	25℃		0.01	0.04	%/ V
		$3V \le V_I - V_O \le 40V$	-25~+125		0.02	0.07	%/ V
Load Regulation(note1)	Rload	10mA≤IO≤IMAX ,VO<5V VO≥5V	25℃		18 0.4	25 0.5	mV
		10mA≤IO≤IMAX ,VO<5V VO≥5V	25℃		40 0.8	70 1.5	%/ Vo
Adjustable Pin Current	IADJ		25℃		46	100	μA
Adjustable Pin Current Change	ΔIADJ	3V≤VI-VO≤40V 10mA≤IO≤IMAX, PD≤PMAX	25℃		2.0	5	μA
Reference Voltage	VREF	3V≤VI-VO≤40V 10mA≤IO≤IMAX, PD≤PMAX	25℃	1.2	1.25	1.3	V
Temperature Stability	STT		-25~+125		0.7		%/ Vo
Minimum Load Current to Maintain Regulation	IL(MIN)	Vo-Vi=40V	-25~+125		3.5	12	mA
Maximum Output Current	IO(MAX)	VI-VO≤15V, PD≤PMAX VI-VO≤40V, PD≤PMAX	25℃	1.0	2.2 0.3		A
RMS Noise,% of VOUT	eN	10Hz≤f≤10KHz	-25~+125		0.003	0.01	%/ Vo
Ripple Rejection	RR	VO=10V, f =120Hz without CADJ,	25℃	66	60 75		dB
Long-Term Stability, TJ=THIGH	ST	TA=25℃ for end point mesasurements,1000H	25℃		0.3	1	%
Thermal Resistance Junction to case	$R\theta JC$		25℃		5		℃/W

Note :

1.Load and line regulation are specified at constant junction temperature. Change in VD due to heating effects must be taken into account separately. Pulse testing with low duty is used.(PMAX=20W)

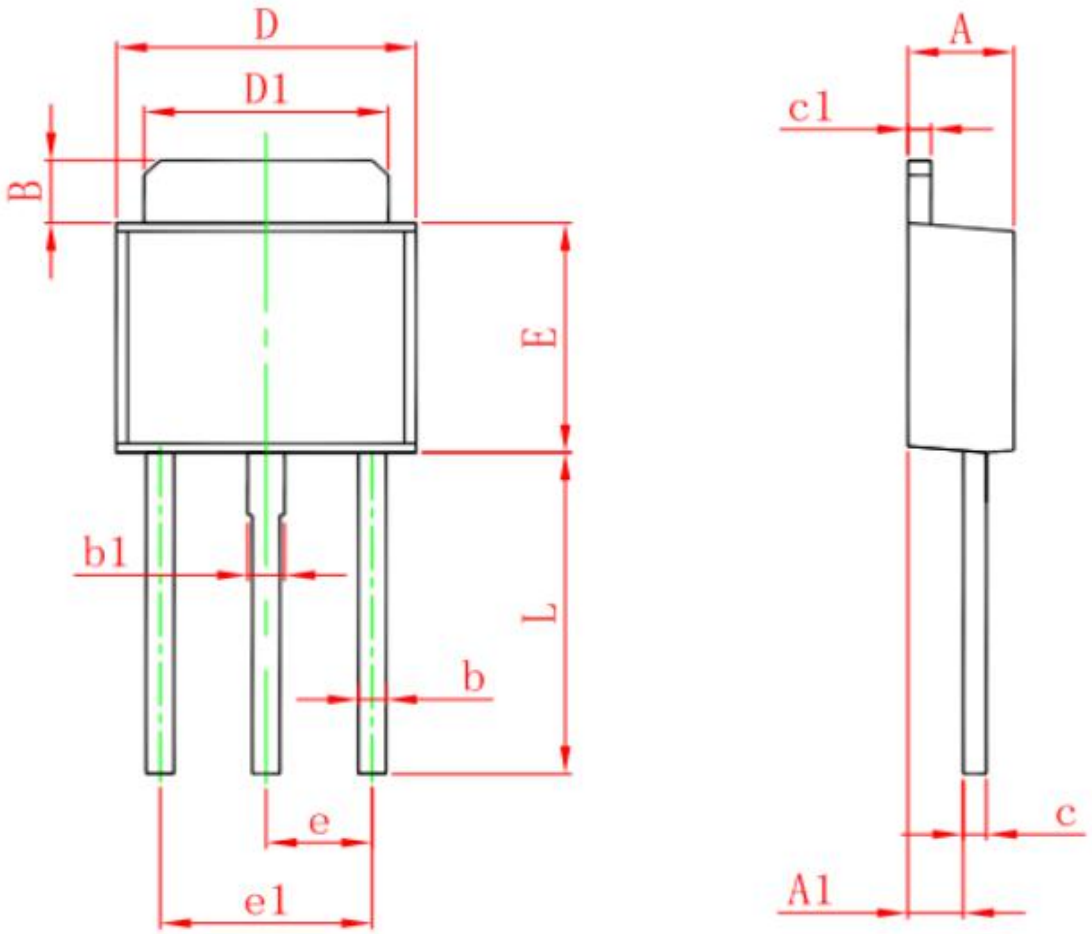
2.CADJ. when used, is connected between the adjustment pin and ground.

Package Dimensians:



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP		0.091 TYP	
e1	4.500	4.700	0.177	0.185
L	9.500	9.900	0.374	0.390
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
V	3.80 REF		0.150 REF	

Package Dimensians:



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	1.050	1.350	0.042	0.054
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	7.500	7.900	0.295	0.311