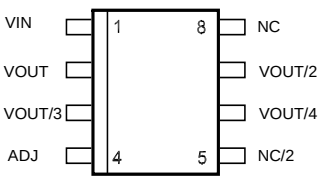
DESCRIPTION

This monolithic integrated circuit is an adjustable 3-terminal positive voltage regulator designed to supply more than 0.1A 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.



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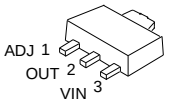

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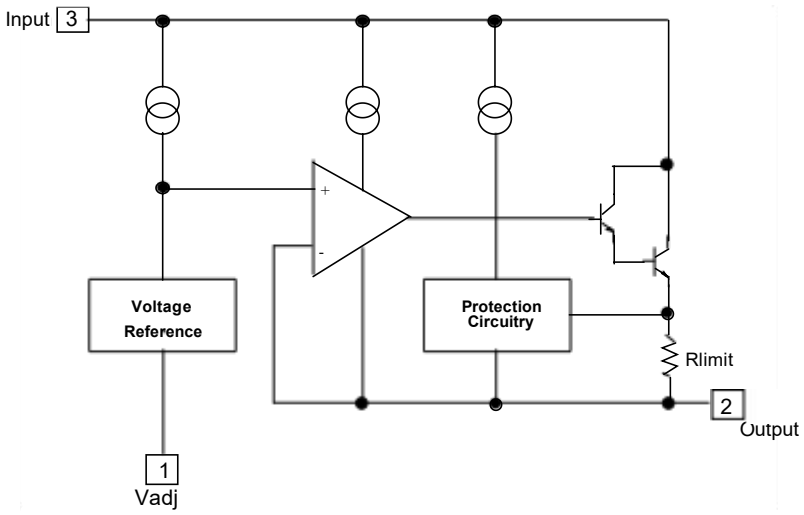
FEATURE

- ⌘ Internal thermal overload protection
- ⌘ Internal short circuit current limiting
- ⌘ Output transistor safe operating area compensation

Internal Block Diagram



Absolute Maximum Ratings

Symbol	Parameter		Value	Unit
V_I-V_O	Input-Output Voltage Differential		40	V
T_{LEAD}	Lead Temperature		230	℃
P_D	Power Dissipation	SOT-89	400	mW
		SOP-8	400	
T_J	Operating Junction Temperature Range		0~125	℃
T_{stg}	Storage Temperature Range		-55~125	
$\Delta V_O/\Delta T$	Temperature Coefficient of Output Voltage		±0.02	%/℃

ELECTRICAL CHARACTERISTICS

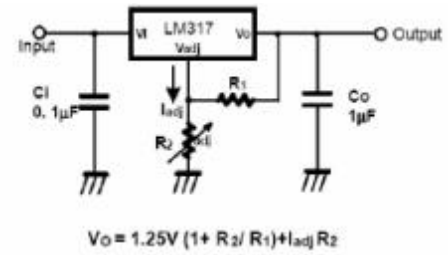
(V_O-V_I=5V,I_O=0.5A,0℃≤T_J≤+125℃ ,I_{MAX}=1.5A,P_{DMAX}=20W,unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Line Regulation(note1)	R_{line}	T_A=25℃ 3V≤V_I-V_O≤40V		0.01	0.04	%/V
		3V≤V_I-V_O≤40V		0.02	0.07	
Load Regulation(note1)	R_{load}	T_A=25℃ , 10mA≤ I_O≤ I_{MAX} V_O<5V V_O ⩾5V		18 0.4	25 0.5	mV
		10mA≤ I_O≤ I_{MAX} V_O<5V V_O≥5V		40 0.8	70 1.5	%V_O
Adjustable Pin Current	I_{ADJ}	-		46	100	μA
Adjustable Pin Current Change	ΔI_{ADJ}	3V≤V_I-V_O≤40V 10mA≤ I_O≤ I_{MAX} , P_D≤ P_{MAX}		0.2	5	
Reference Voltage	V_{REF}	3V≤V_{IN}-V_O≤40V 10mA≤ I_O≤ I_{MAX} , P_D≤ P_{MAX}	1.20	1.25	1.30	V
Temperature Stability	ST_T	-		0.7		%/ V_O
Minimum Load Current to Maintain Regulation	$I_{L(MIN)}$	V_I-V_O=40V		3.5	5	mA
Maximum Output Current	$I_{O(MAX)}$	V_I-V_O≤3-13V, P_D≤ P_{MAX} V_I-V_O≤40V, P_D≤ P_{MAX}	100	200 50		mA
RMS Noise,% of V_{OUT}	e_N	T_A=25℃ T_A=25℃ ,10Hz≤f≤10KHz		0.003	0.01	%/ V_O
Ripple Rejection	RR	V_O=10V, f =120Hz without C_{ADJ} C_{ADJ}=10μF(note2)	66	65 80		dB
Long-Term Stability,T_J=T_{HIGH}	ST	T_A=25℃ for end point mesasurements, 1000 HR		0.3	1	%
Thermal Resistance Junction to case	$R_{\theta JC}$	-		5		℃/W

Notes:

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.(P_{MAX}=20W)
2. C_{ADJ} . when used, is connected between the adjustment pin and ground.

Typical Application



C_i is required when regulator is located an appreciable distance from power supply filter.

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

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

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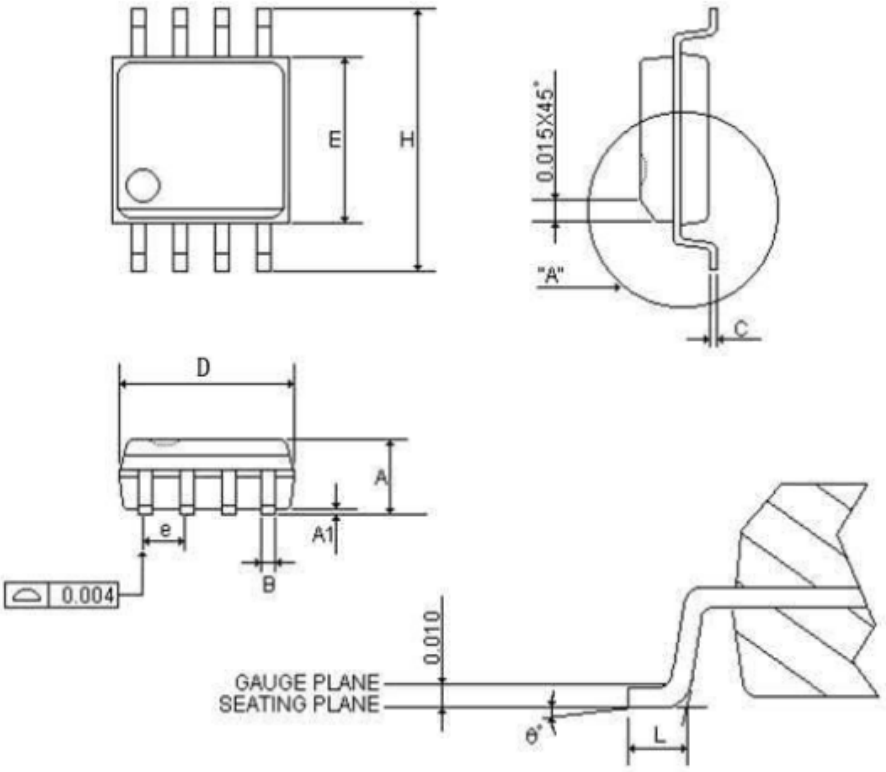

SYMBOLS	MIN	NOR	MAX	MIN	NOR	MAX
	(inch)			(mm)		
A	0.058	0.064	0.068	1.4732	1.6256	1.7272
A1	0.004	-	0.010	0.1016	-	0.254
B	0.013	0.016	0.020	0.3302	0.4064	0.508
C	0.0075	0.008	0.0098	0.1905	0.2032	0.2490
D	0.186	0.191	0.196	5.9944	6.1214	6.1976
E	0.150	0.154	0.157	3.81	3.9116	3.9878
e	-	0.050	-	-	1.27	-
H	0.228	0.236	0.244	5.7912	5.9944	6.1976
L	0.015	0.025	0.050	0.381	0.635	1.27
0^{O}	0^{O}	-	8^{O}	0^{O}	-	8^{O}

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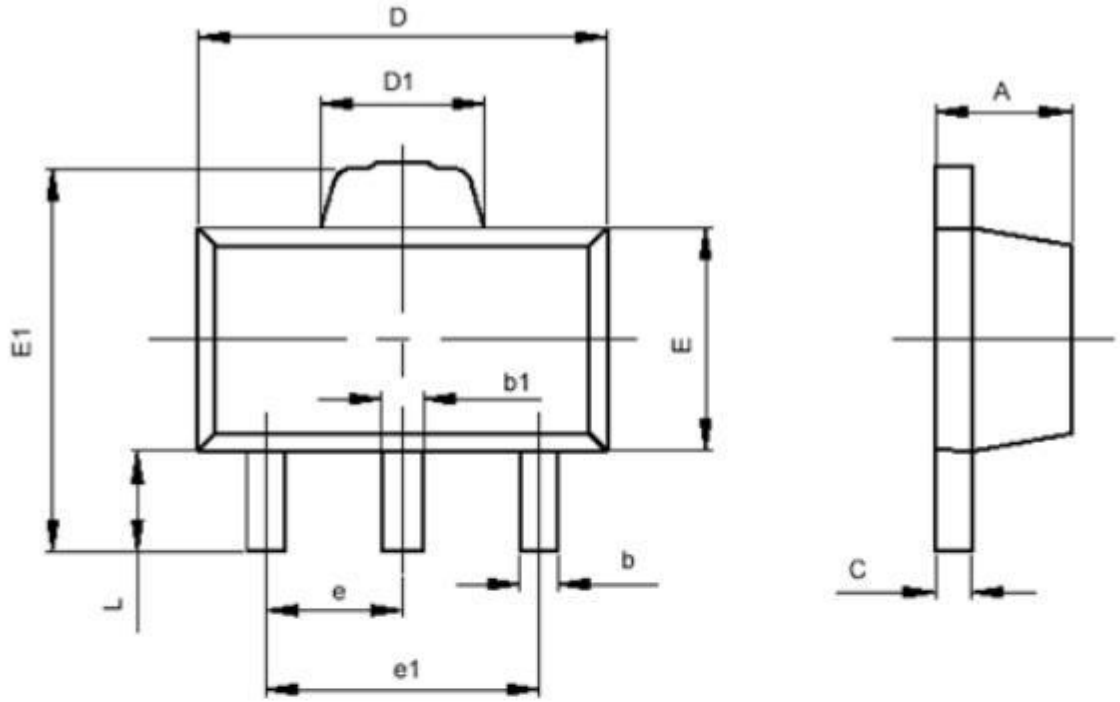

符号	最小值（mm）	最大值（mm）
A	1.400	1.600
b	0.320	0.520
b1	0.360	0.560
c	0.350	0.440
D	4.400	4.600
D1	1.400	1.800
E	2.300	2.600
E1	3.940	4.250
e	1.500TYP	
e1	2.900	3.100
L	0.900	1.100

Ordering information

Order Code	Package	Baseqty	Deliverymode
LM317LD	SOP-8	2500	Tape and reel
LM317LIPK	SOT-89	1000	Tape and reel

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