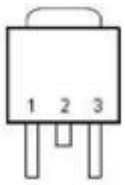
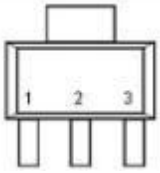
DESCRIPTION

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 1.2 to 37V. It employs internal current limiting , thermal shut-down and safe area compensation.

TO-220-3L



TO-252



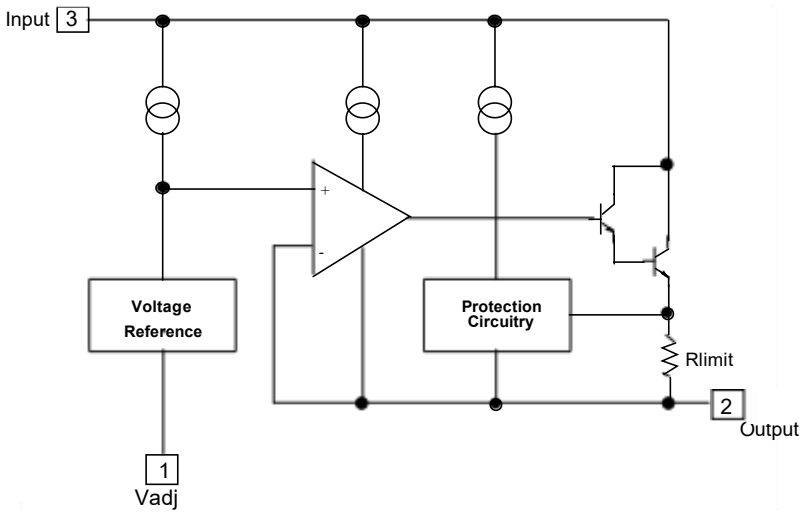
SOT-223

1. Adj
2. Output
3. Input

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	TO-220	Internally limited	W
		TO-252	2	
		SOT-223	1	
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

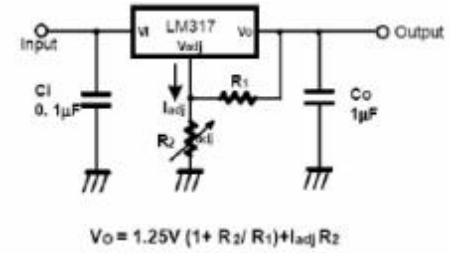
(V_O-V_I=5V,I_O=0.5A,0℃≤T_J≤+125℃ ,I_{MAX}=1.5A,P_{DMAX}=20W,unless otherwise specified)

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}		2.0	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	12	mA
Maximum Output Current	$I_{O(MAX)}$	V_I-V_O≤15V, P_D≤ P_{MAX} V_I-V_O≤40V, P_D≤ P_{MAX} T_A=25℃	1.0	2.2 0.3		A
RMS Noise,% of V_{OUT}	e_N	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	60 75		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

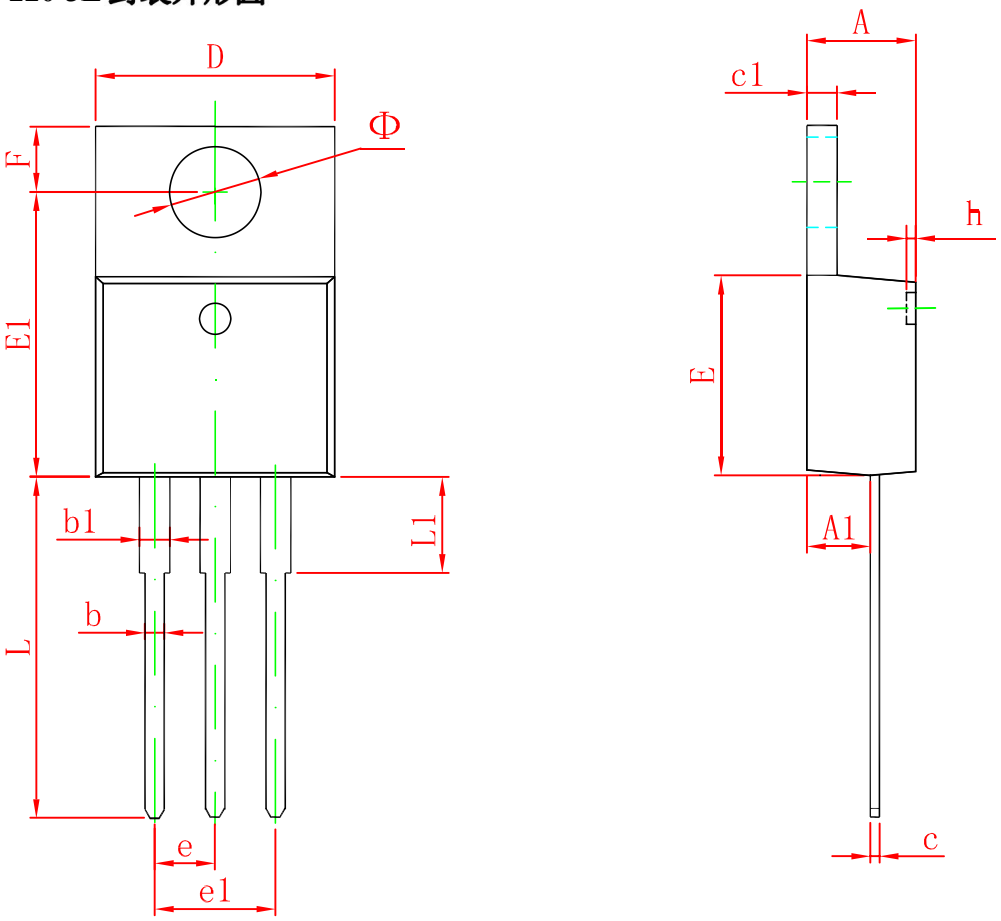


C_i is required when regulator is located an appreciable distance from power supply filter.

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

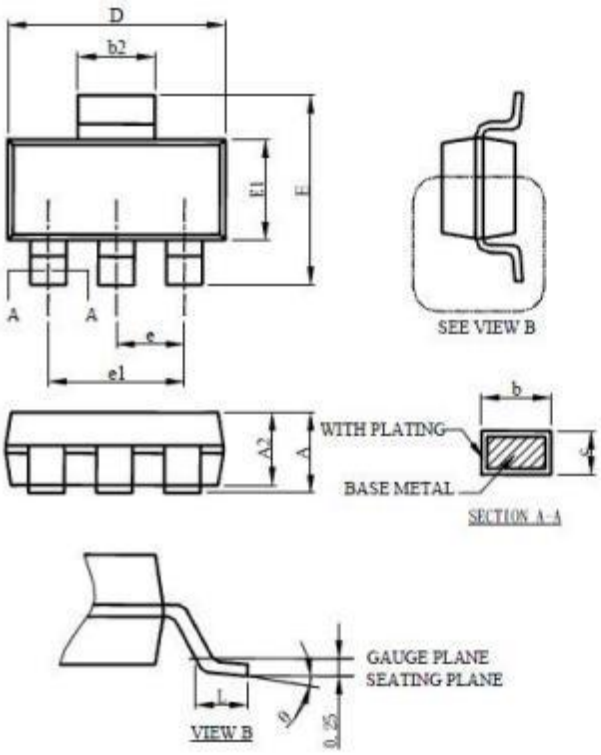
Since I_{ADJ} is controlled to less than 100μA, the error associated with this term is negligible in most applications.

■ TO-220-3L 封装外形圖



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155

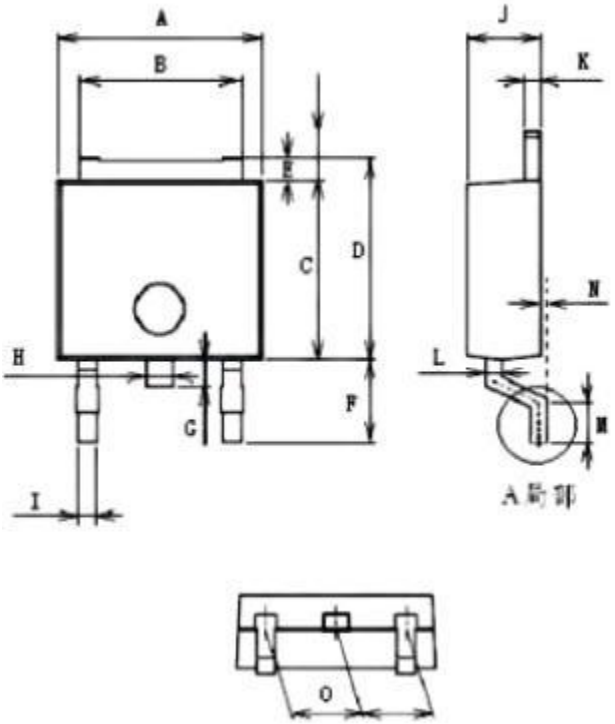
■ SOT223 封裝外形圖



SYMBOL	SOT-223	
	MILLIMETERS	
	MIN.	MAX.
A		1.80
A1	0.02	0.10
A2	1.55	1.65
b	0.66	0.84
b2	2.90	3.10
c	0.23	0.33
D	6.30	6.70
E	6.70	7.30
E1	3.30	3.70
e	2.30 BSC	
e1	4.60 BSC	
L	0.90	
θ	0°	8°

Note:
1.Refer to JEDEC TO-261AA.
2.Dimension D and E1 are determined at the outermost extremes of the plastic body exclusive of mold flash, tie bar burrs, gate burrs, and interlead flash, but including any mismatch between the top and bottom of the plastic body.
3.Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

■ **TO-252 封裝外形圖**



Unit: mm

Item	Min	Max
A	6. 40	6. 70
B	5. 20	5. 40
C	6. 00	6. 30
D	6. 55	6. 85
E	0. 45	0. 60
F	3. 07	3. 35
G	0. 85	1. 05
H	0. 75	0. 95
I	0. 55	0. 75
J	2. 20	2. 40
K	0. 43	0. 58
L	0. 43	0. 58
M	0. 90	1. 10
N	0. 90	1. 10
O	2. 20	2. 40

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