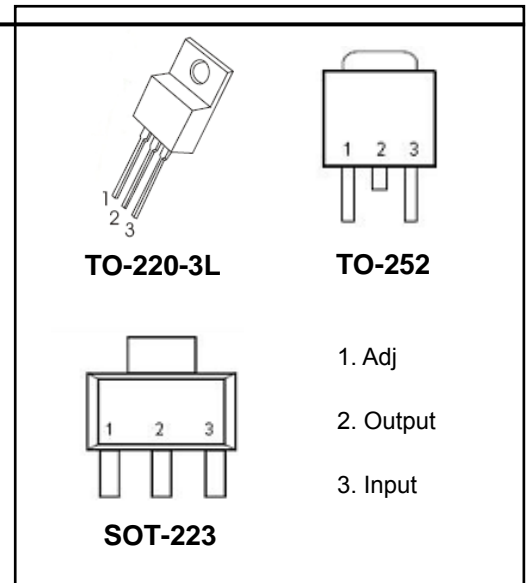


**DESCRIPTION**

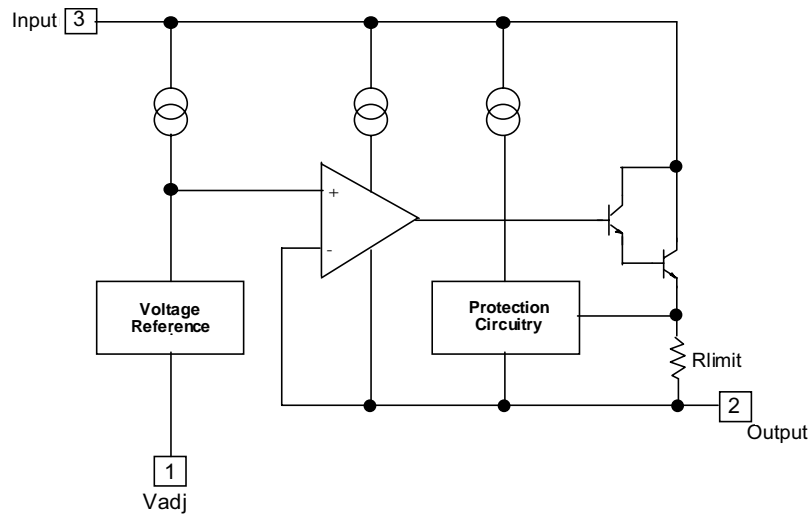
This monolithic integrated circuit is an adjustable 3-terminal positive voltage regulator designed to supply more than 1.5A of load current with an output voltage adjustable over a 1.2 to 37V. It employs internal current limiting, thermal shut-down and safe area compensation.

**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	°C
$P_D$	Power Dissipation	Internally limited	W
$T_J$	Operating Junction Temperature Range	0~125	°C
$T_{stg}$	Storage Temperature Range	-55~125	
$\Delta V_O / \Delta T$	Temperature Coefficient of Output Voltage	±0.02	%/°C

**ELECTRICAL CHARACTERISTICS**

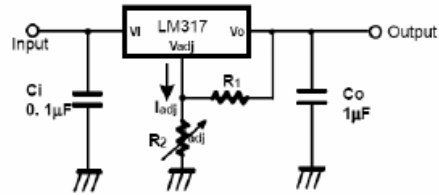
( $V_O-V_I=5V, I_O=0.5A, 0^\circ C \leq T_J \leq +125^\circ C, I_{MAX}=1.5A, P_{DMAX}=20W$ , unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Line Regulation(note1)	$R_{line}$	$T_A=25^\circ C$ $3V \leq V_I-V_O \leq 40V$		0.01	0.04	%V
		$3V \leq V_I-V_O \leq 40V$		0.02	0.07	
Load Regulation(note1)	$R_{load}$	$T_A=25^\circ C, 10mA \leq I_O \leq I_{MAX}$ $V_O < 5V$ $V_O \geq 5V$		18 0.4	25 0.5	mV
		$10mA \leq I_O \leq I_{MAX}$ $V_O < 5V$ $V_O \geq 5V$		40 0.8	70 1.5	% $V_O$
Adjustable Pin Current	$I_{ADJ}$	-		46	100	$\mu A$
Adjustable Pin Current Change	$\Delta I_{ADJ}$	$3V \leq V_I-V_O \leq 40V$ $10mA \leq I_O \leq I_{MAX}, P_D \leq P_{MAX}$		2.0	5	
Reference Voltage	$V_{REF}$	$3V \leq V_{IN}-V_O \leq 40V$ $10mA \leq I_O \leq I_{MAX}, P_D \leq P_{MAX}$	1.20	1.25	1.30	V
Temperature Stability	$ST_T$	-		0.7		%/ $V_O$
Minimum Load Current to Maintain Regulation	$I_{L(MIN)}$	$V_I-V_O=40V$		3.5	12	mA
Maximum Output Current	$I_{O(MAX)}$	$V_I-V_O \leq 15V, P_D \leq P_{MAX}$ $V_I-V_O \leq 40V, P_D \leq P_{MAX}$ $T_A=25^\circ C$	1.0	2.2 0.3		A
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 $C_{ADJ}$ $C_{ADJ}=10\mu F$ (note2)	66	60 75		dB
Long-Term Stability, $T_J=T_{HIGH}$	ST	$T_A=25^\circ C$ for end point measurements, 1000HR		0.3	1	%
Thermal Resistance Junction to case	$R_{\theta JC}$	-		5		°C/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



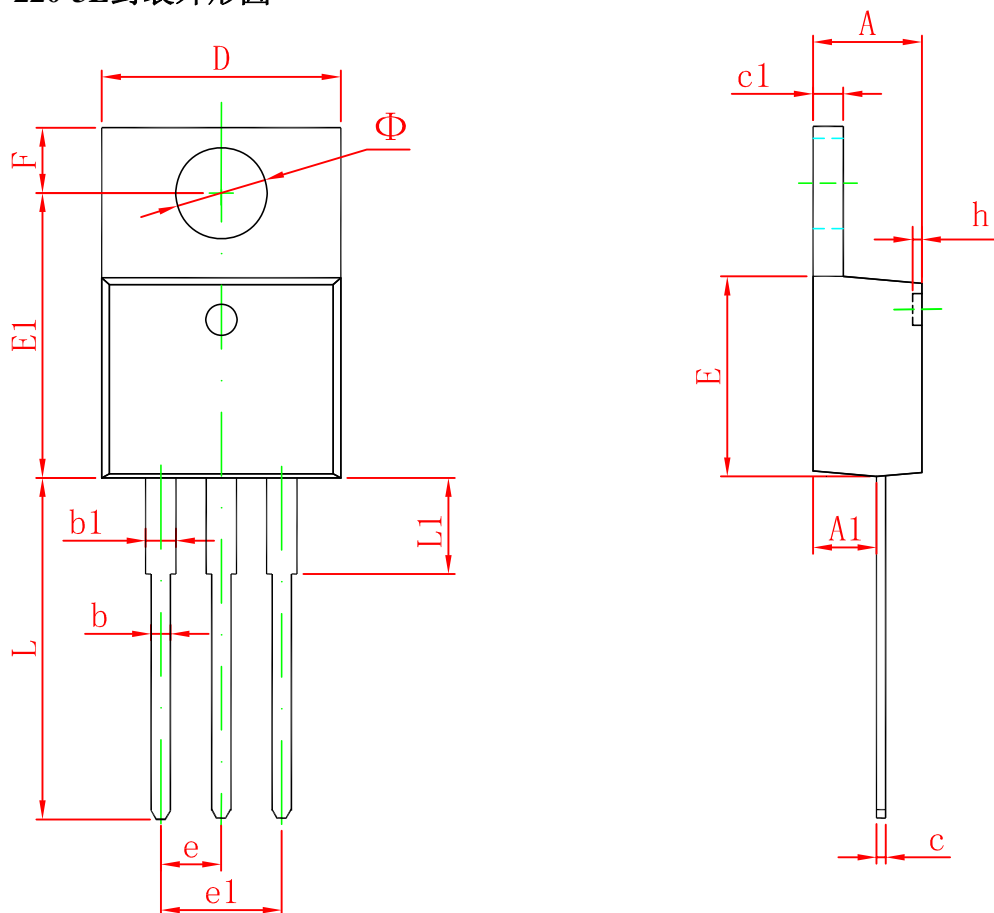
$$V_O = 1.25V (1 + R_2 / R_1) + I_{adj} R_2$$

$C_i$  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.

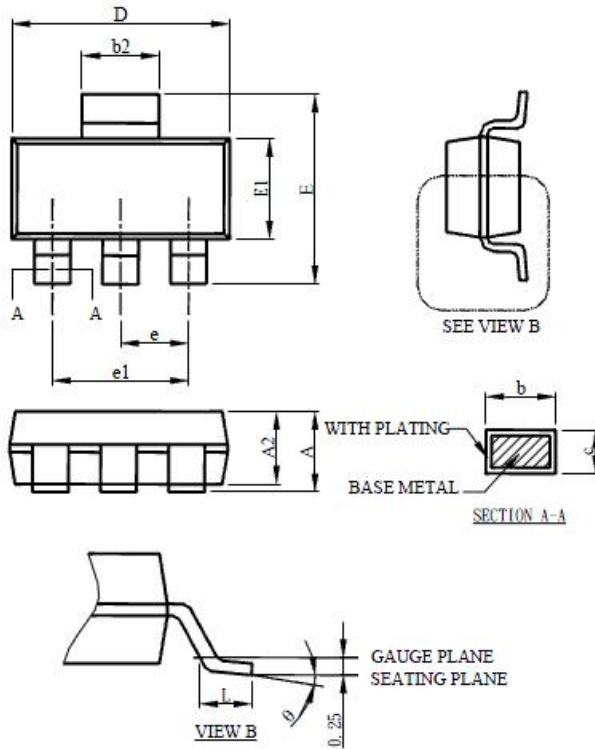
Since  $I_{ADJ}$  is controlled to less than  $100\mu A$ , the error associated with this term is negligible in most applications.

■ TO-220-3L封装外形图



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
$\Phi$	3.735	3.935	0.147	0.155

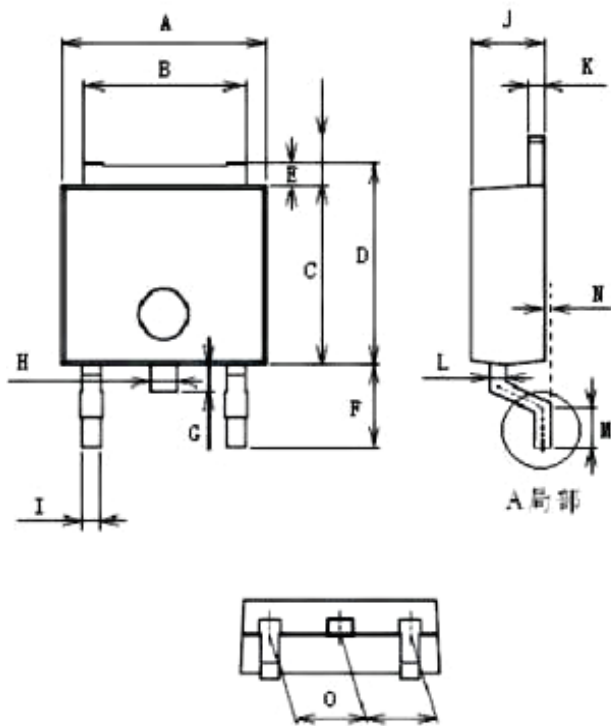
■ SOT223 封装外形图



SOT-223		
MILLIMETERS		
SYMBOL	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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