

SOT-223 Plastic-Encapsulate Voltage Regulator

LM317 Three-terminal positive voltage regulator

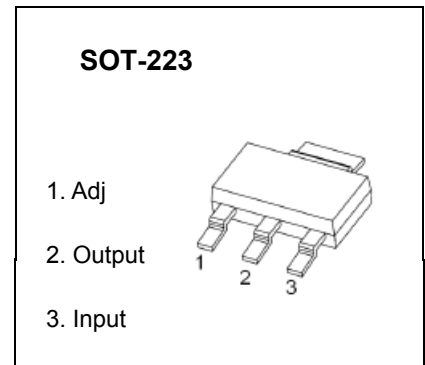
DESCRIPTION

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 1.2 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

MARKING



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~+150	
$\Delta V_O / \Delta T$	Temperature Coefficient of Output Voltage	±0.02	%/°C

ELECTRICAL CHARACTERISTICS

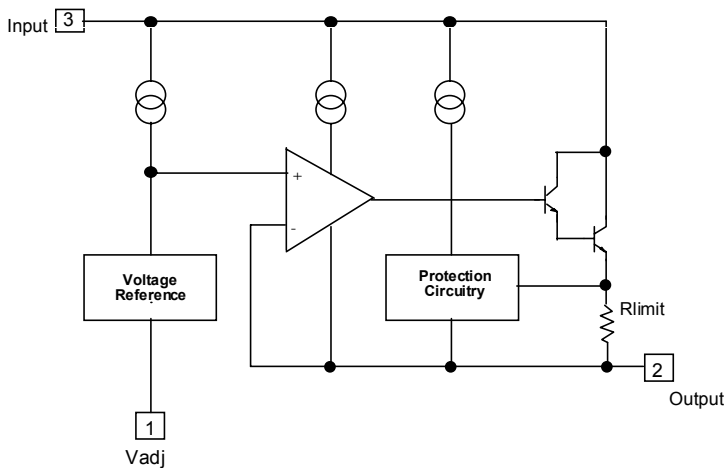
($V_O - V_I = 5V, I_O = 0.5A, 0^\circ C \leq T_J \leq +125^\circ C, I_{MAX} = 1.5A, P_{MAX} = 20W$, unless otherwise specified)

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	μA
Adjustable Pin Current Change	ΔI_{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		$^\circ C/W$

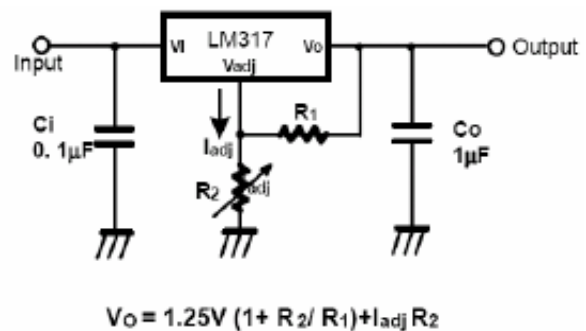
Notes:

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.

Internal Block Diagram



Typical Application

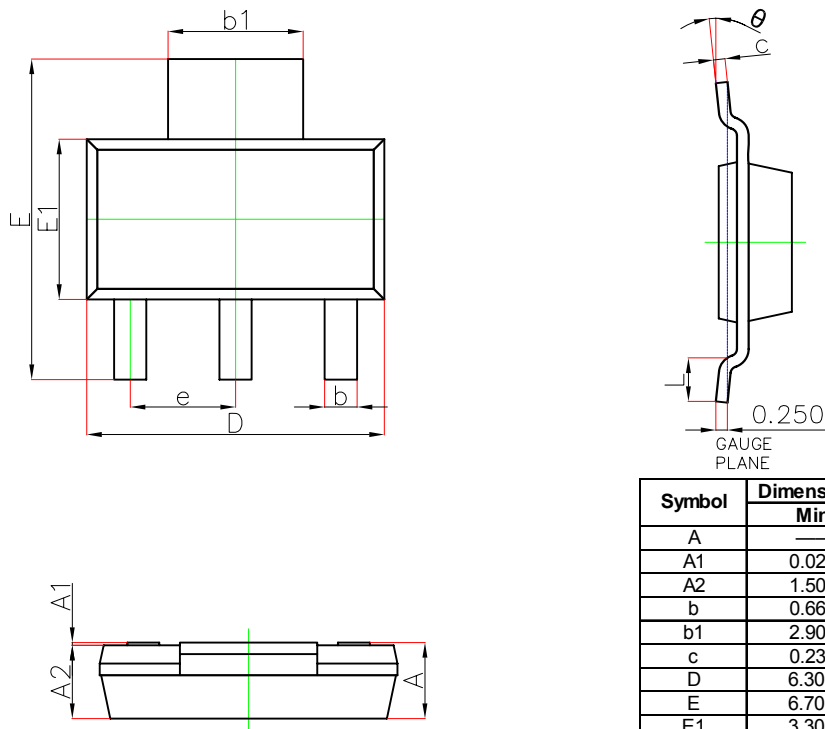


C_i is required when regulator is located an appreciable distance from power supply filter.

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

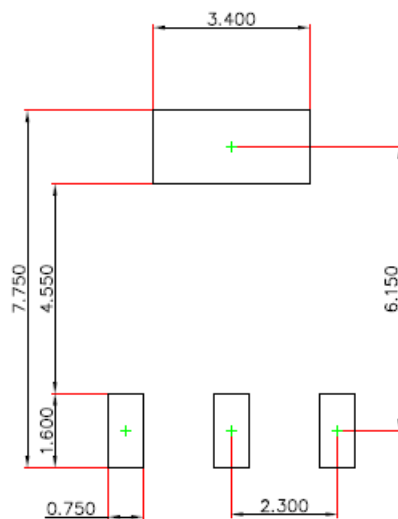
Since I_{ADJ} is controlled to less than 100 μA , the error associated with this term is negligible in most applications.

SOT-223 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	—	1.800	—	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b_1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E_1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	—	0.030	—
θ	0°	10°	0°	10°

SOT-223 Suggested Pad Layout



Note:

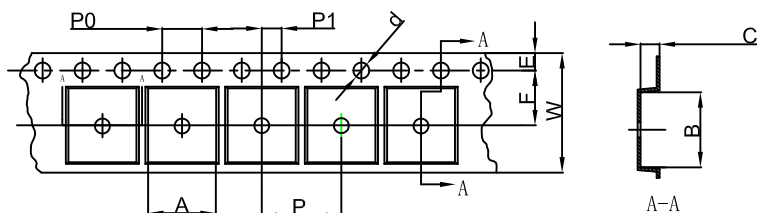
1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.050 mm.
3. The pad layout is for reference purposes only.

NOTICE

JCET reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JCET does not assume any liability arising out of the application or use of any product described herein.

SOT-223 Tape and Reel

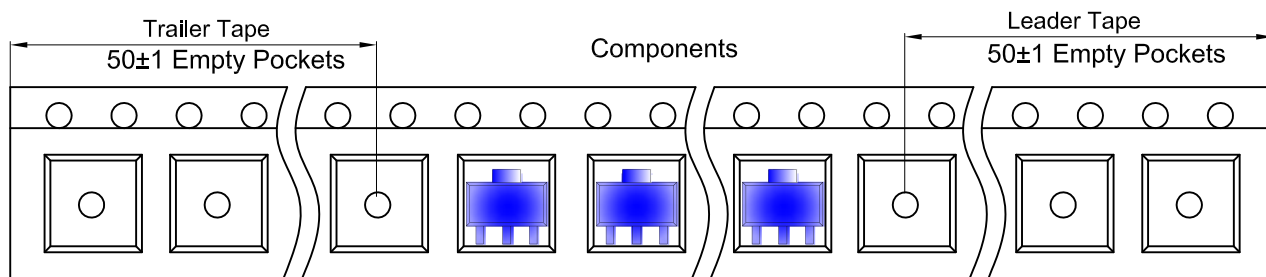
SOT-223 Embossed Carrier Tape



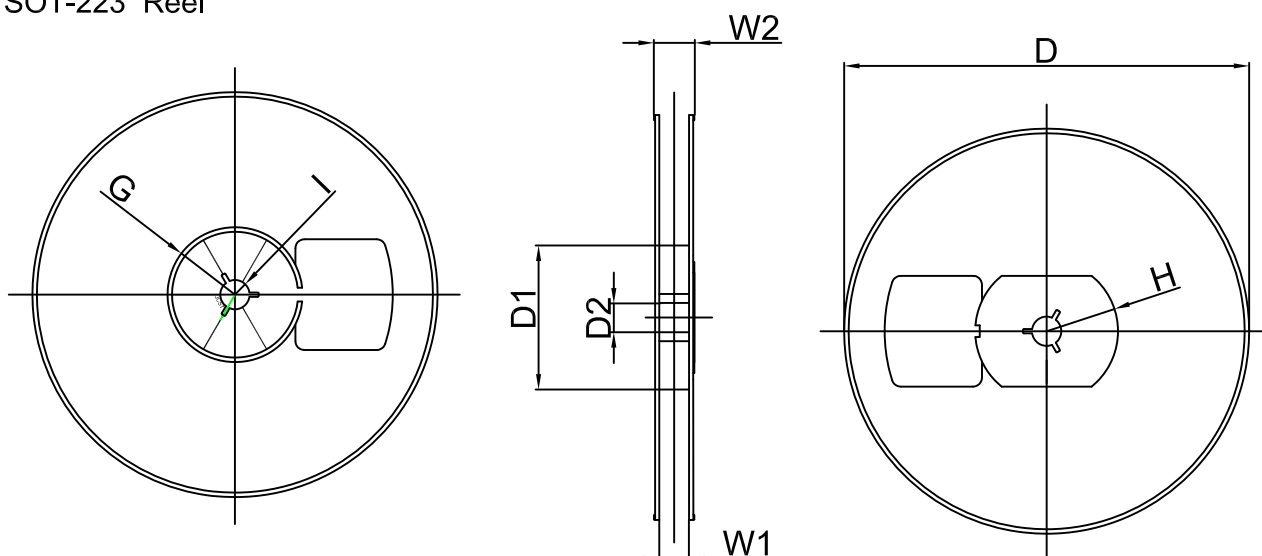
Packaging Description:
 SOT-223 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 1,000 units per 7" or 18.0cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-223	6.765	7.335	1.88	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOT-223 Tape Leader and Trailer



SOT-223 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø180.00	60.00	13.00	R30.00	R32.00	R6.50	13.20	16.50

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
1000 pcs	7 inch	10,000 pcs	203×203×195	40,000 pcs	438×438×220	