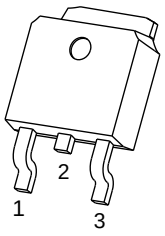
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD

TO-252-2L Plastic-Encapsulate Voltage Regulator

LM317 Three-terminal positive voltage regulator

TO-252-2L

1. Adj
2. Output
3. Input



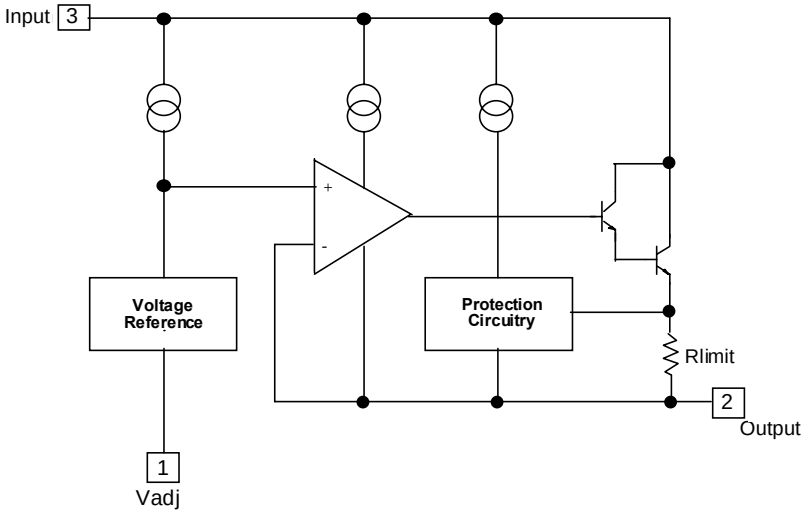
DESCRIPTION

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.

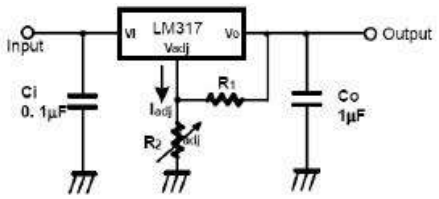
FEATURE

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

Internal Block Diagram



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 100μA, the error associated with this term is negligible in most applications.

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_I-V_O	Input-Output Voltage Differential	40	V
T_{LEAD}	Lead Temperature	230	℃
P_D	Power Dissipation	Internally limited	W
T_J	Operating Junction Temperature Range	-40~125	℃
T_{stg}	Storage Temperature Range	-55~125	
ΔV_O /ΔT	Temperature Coefficient of Output Voltage	±0.02	%/℃

ELECTRICAL CHARACTERISTICS

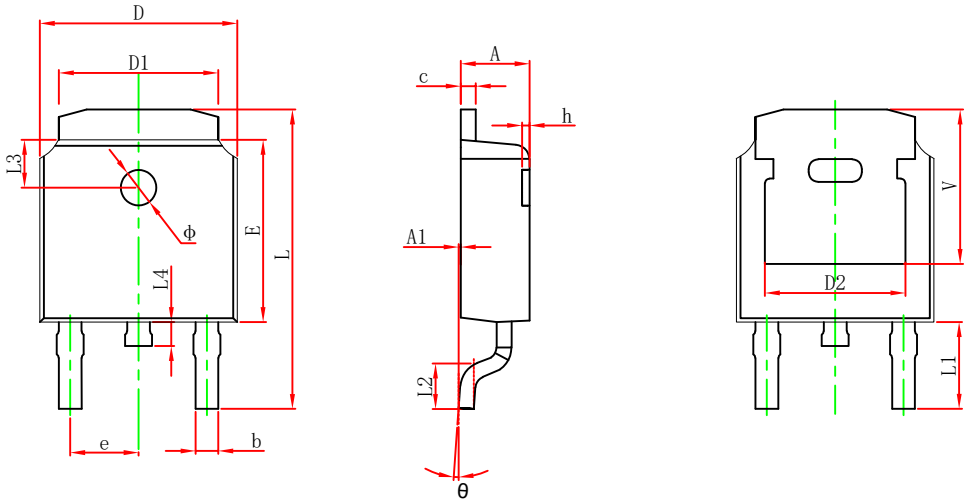
(V_O-V_I=5V,I_O=0.5A,0℃≤T_J≤+125℃,I_{MAX}=1.5A,P_{DMAX}=20W,unless otherwise specified)

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,1000HR		0.3	1	%
Thermal Resistance Junction to case	$R_{\theta JC}$	-		5		℃/W

Notes:

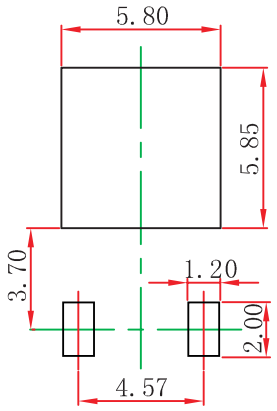
1. Load and line regulation are specified at constant junction temperature. Change in V_D due to heating effects must be taken into account separately. Pulse testing with low duty is used.(P_{MAX}=20W)
2. C_{ADJ}. when used, is connected between the adjustment pin and ground.

TO-252-2L Package Outline Dimensions



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	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

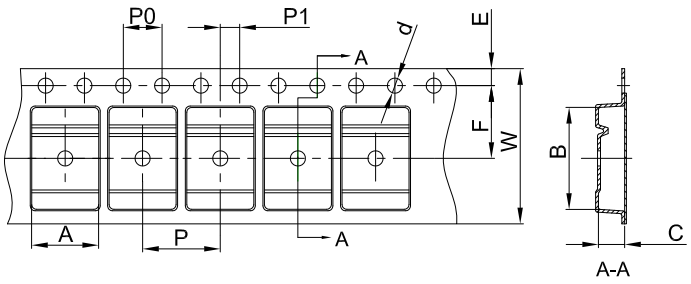
TO-252-2L Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

TO-252-2L Tape and Reel

TO-252 Embossed Carrier Tape

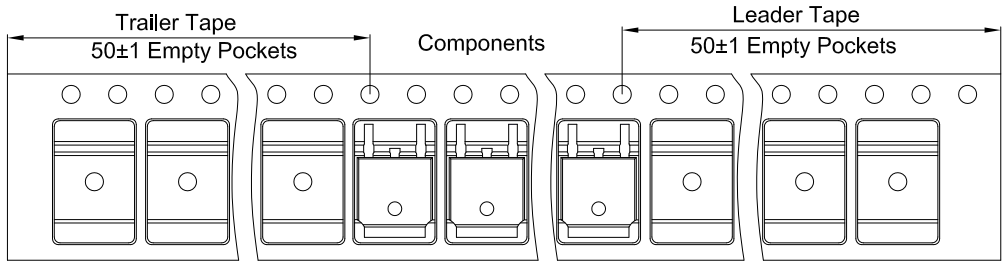


Packaging Description:

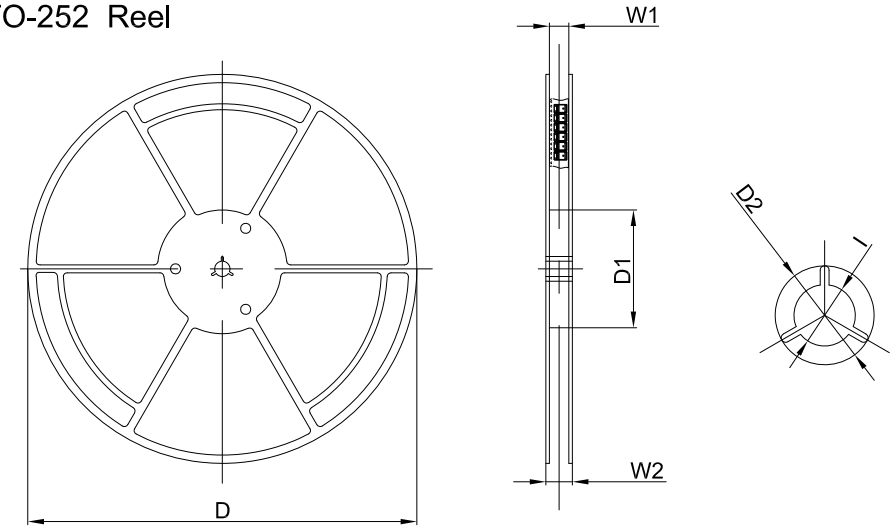
TO-252 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 25,00 units per 13" or 33.0 cm 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
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00

TO-252 Tape Leader and Trailer



TO-252 Reel



Dimensions are in millimeter						
Reel Option	D	D1	D2	W1	W2	I
13"Dia	330.00	100.00	Ø21.00	16.40	21.00	Ø13.00

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
2,500 pcs	13inch	2,500 pcs	340×336×29	25,000 pcs	353×346×365	

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