

Description

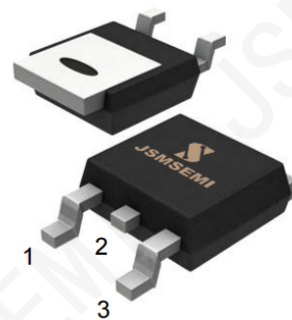
The LM317 is an adjustable 3-terminal positive voltage regulator, designed to supply 1.5A of output current with voltage adjustable from 1.25V~32V.

Features

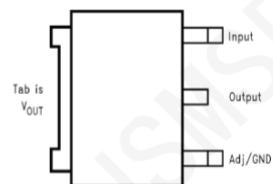
- ◆ Typical 1% Output Voltage Tolerance
- ◆ Output Voltage Adjustable from 1.25V~32V
- ◆ Output Current in Excess of 1.5A
- ◆ Internal Short Circuit Protection
- ◆ Internal Over Temperature Protection
- ◆ Output Transistor Safe Area Compensation

Application

- ◆ PC Motherboard
- ◆ LCD Monitor
- ◆ Graphic Card
- ◆ DVD Player
- ◆ Network Interface Card/Switch
- ◆ Telecom Equipment
- ◆ Printer and other Peripheral Equipment

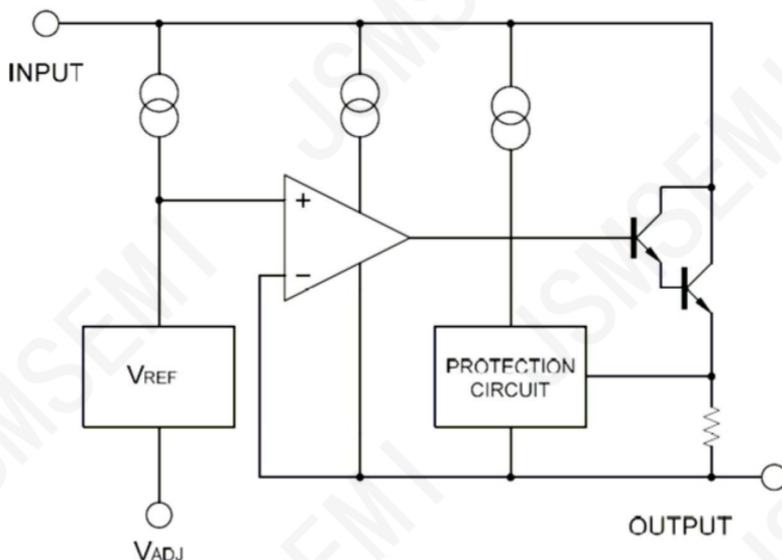


TO-252



1. Adj
2. Output
3. Input

Block Diagram



Absolute Maximum Ratings($T_a=25^{\circ}\text{C}$)*

Parameter	Symbol	Min.	Max.	Unit
Input-Output Voltage Differential	$V_{in}-V_{out}$		32	V
Power Dissipation	P_D	Internally Limited		
Maximum Operating Junction Temperature	T_j	0	125	$^{\circ}\text{C}$
Lead Temperature(Soldering, 10seconds)	T_{LEAD}		260	$^{\circ}\text{C}$
Storage TemperatureRange	T_{stg}	-40	+150	$^{\circ}\text{C}$
ESD(human body model)	ESD		4000	V

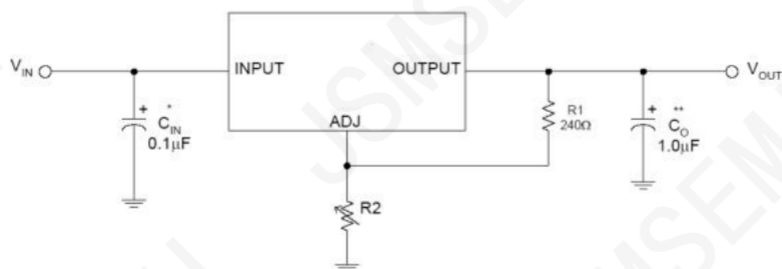
*:Absolute maximum ratings are stress ratings only and functional device operation is not implied.
The device could be damaged beyond Absolute maximum ratings.

Electrical Characteristics(Unless otherwise specified: $V_i - V_o = 5.0V$; $I_o = 10mA$; $T_a = 25^\circ C$)

Parameter	Test conditions	Symbol	Min.	Typ.	Max.	Unit
Reference Voltage	$10mA \leq I_{OUT} \leq 1.5A$ $3V \leq V_{IN} - V_{OUT} \leq 32V$ $P_d \leq 20W$	V_{REF}	1.20	1.25	1.30	V
Line Regulation	$3V \leq V_{IN} - V_{OUT} \leq 32V$	LNR	-	0.01	0.04	%/V
Load Regulation	$10mA \leq I_{OUT} \leq 1.5A$	LDR	-	0.2	0.4	%
Adjust Pin Current		I_{adj}	-	50	100	μA
Adjust Pin Current Change	$10mA \leq I_{OUT} \leq 1.5A$ $3V \leq V_{IN} - V_{OUT} \leq 32V$, $P_d \leq 20W$	ΔI_{adj}	-	0.2	5.0	μA
Minimum Load Current	$V_{IN} - V_{OUT} = 32V$	$I_{L(MIN)}$		3.5	10.0	mA
Current Limit	$V_{IN} - V_{OUT} = 3V$	I_{LIMIT}	1.8	2.2		A
Ripple Rejection	$f = 120Hz$, $V_{IN} - V_{OUT} = 3V$, $C_{OUT} = 1\mu F$ Tantalum, $I_{OUT} = 1.5A$	PSRR	60	75		dB
Temperature Stability	$T_{MIN} \leq T_J \leq T_{MAX}$			0.7		%
RMS Output Noise (% of V_{OUT})	$T_a = 25^\circ C$, $10Hz \leq f \leq 10kHz$	E_n		0.003		%/V _o
Thermal Shutdown Hysteresis		Thys		25		$^\circ C$

Maximum Power Dissipation is Package Type and Case Temperature dependent.

Application Circuit



* = C_{IN} is required if the regulator is located near power supply filter.

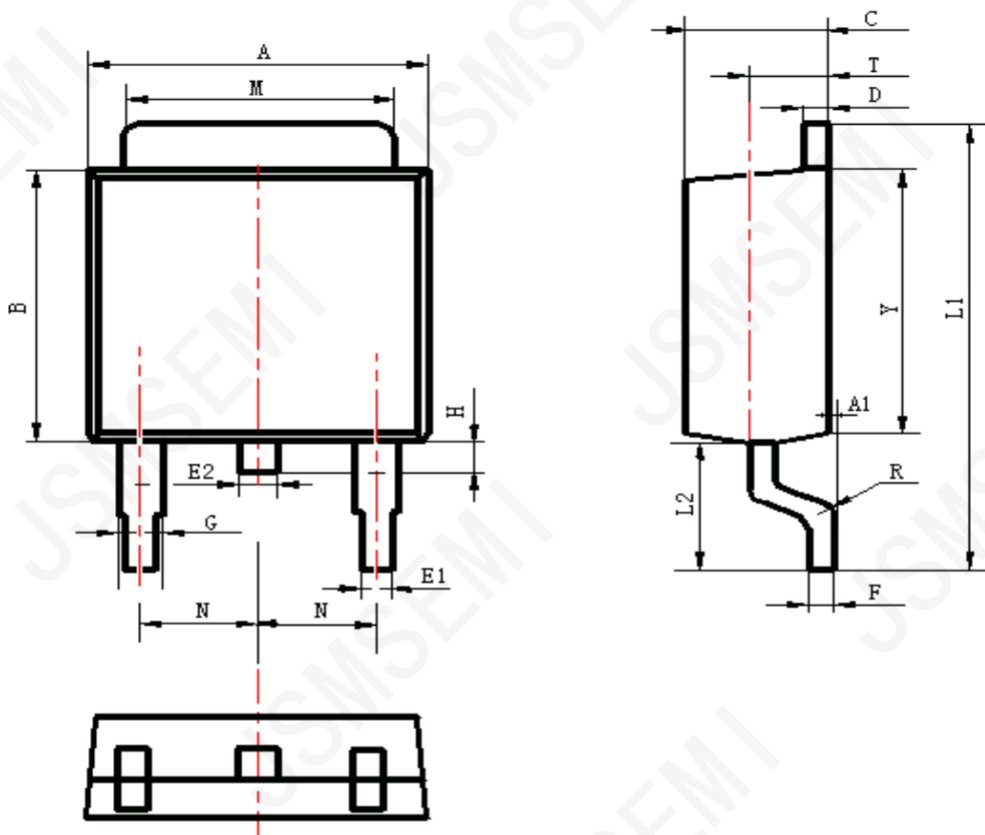
**= C_O is needed for stability and it improves transient response.

$$V_{OUT} = V_{REF} \times (1 + R2/R1) + I_{ADJ} \times R2$$

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

Package Information

TO-252



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	6.30	6.90	0.248	0.272
A1	0.00	0.16	0.000	0.006
B	5.70	6.30	0.224	0.248
C	2.10	2.50	0.083	0.098
D	0.30	0.70	0.012	0.028
E1	0.60	0.90	0.024	0.035
E2	0.70	1.00	0.028	0.039
F	0.30	0.60	0.012	0.024
G	0.70	1.20	0.028	0.047
L1	9.60	10.50	0.378	0.413
L2	2.70	3.10	0.106	0.122
H	0.40	1.00	0.016	0.039
M	5.10	5.50	0.201	0.217
N	2.09	2.49	0.082	0.098
R	0.30		0.012	
T	1.40	1.60	0.055	0.063
Y	5.10	6.30	0.201	0.248