



# 3-Terminal 1.5A Positive Adjustable Voltage Regulator

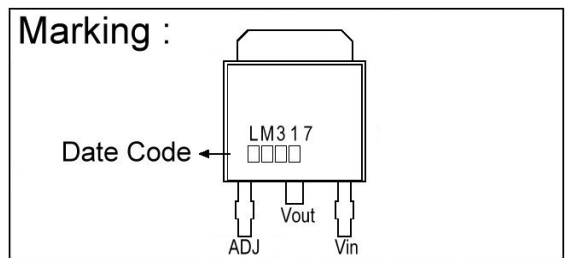
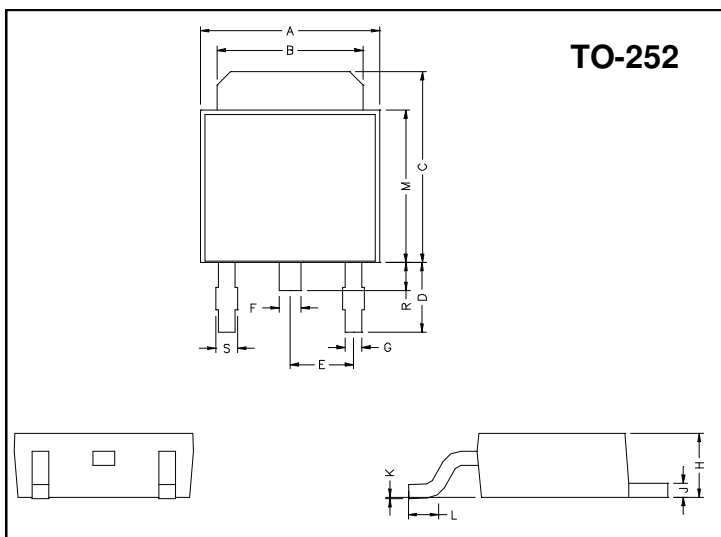
## Description

The GJLM317 is an adjustable 3-terminal positive voltage regulator, designed to supply more than 1.5A of output current with voltage adjustable from 1.3 to 37V.

## Features

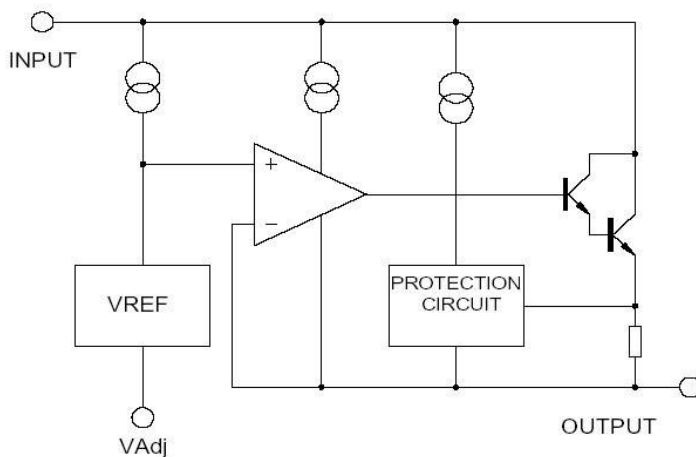
- Output current up to 1.5A.
- Output voltage adjustable from 1.3V to 37V.
- Internal short circuit protection.
- Internal over temperature protection.
- Safe-Area compensation for output transistor.

## Package Dimensions



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.40	6.80	G	0.50	0.70
B	5.20	5.50	H	2.20	2.40
C	6.80	7.20	J	0.45	0.55
D	2.40	3.00	K	0	0.15
E	2.30 REF.		L	0.90	1.50
F	0.70	0.90	M	5.40	5.80
S	0.60	0.90	R	0.80	1.20

## Block Diagram



## Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Ratings	Unit
Input-Output Voltage Difference	Vi-Vo	40	V
Load Temperature	Tlead	230	°C
Power Dissipation	PD	Internal limited	
Operating Temperature Range	Topr	0~+125	°C
Storage Temperature Range	Tstg	-65~+150	°C

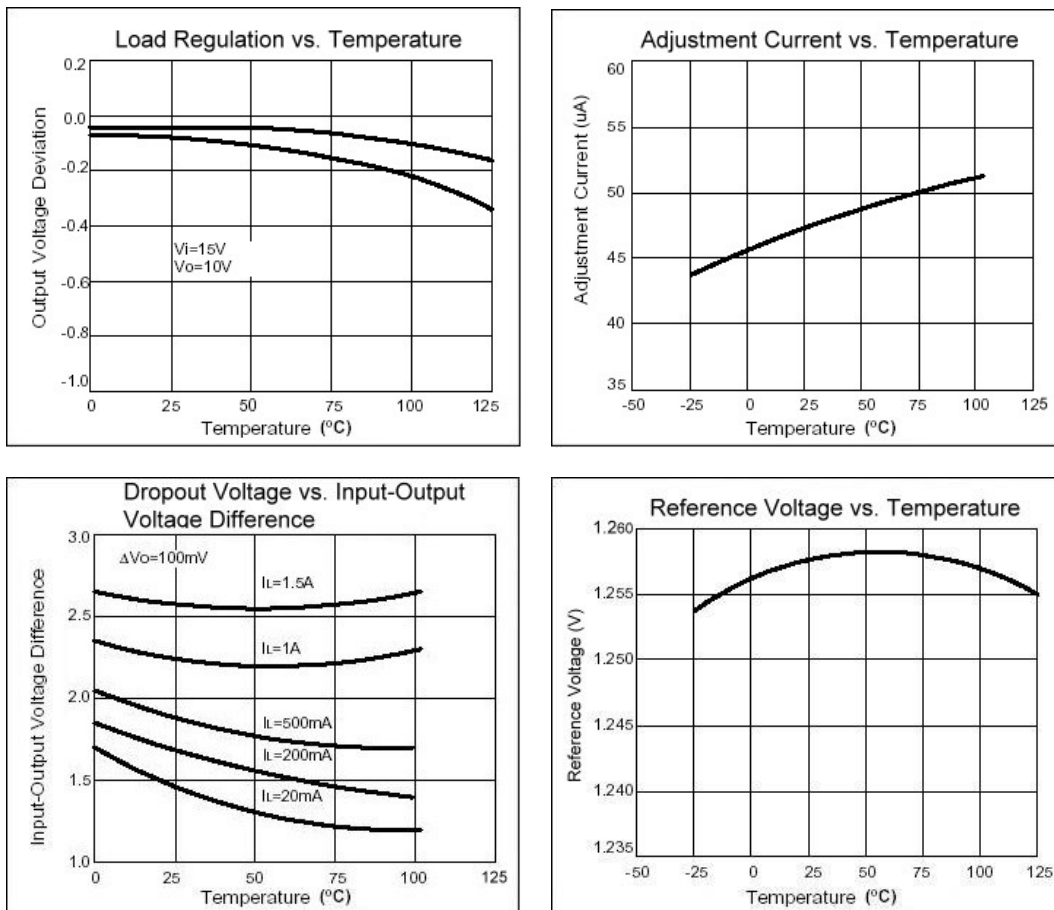
## Electrical Characteristics

( $V_i - V_o = 5V$ ,  $0^\circ C < T_j < 125^\circ C$ ,  $I_o = 500mA$ ,  $I_{Max} = 1.5A$ ,  $P_{Max} = 10W$ , unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	TYP	Max	Unit	
Line Regulation	$\Delta V_o$	$T_a = 25^\circ C$ , $3V \leq V_i - V_o \leq 40V$	-	0.01	0.04	%/V	
		$T_a = 0 \sim 125^\circ C$ , $3V \leq V_i - V_o \leq 40V$	-	0.02	0.07	%/V	
Load Regulation	$\Delta V_o$	$T_a = 25^\circ C$	-	18	25	mV	
		$10mA \leq I_o \leq I_{Max}$	-	0.4	0.5	%/V <sub>o</sub>	
		$10mA \leq I_o \leq I_{Max}$	$V_o \leq 5V$	-	40	70	mV
			$V_o \geq 6V$	-	0.8	1.5	%/V <sub>o</sub>
Adjustable Pin Current	IADJ		-	46	100	$\mu A$	
Adjustable Pin Current Change	$\Delta IADJ$	$2.5V \leq V_i - V_o \leq 40V$ , $10mA \leq I_o \leq I_{Max}$ , $PD \leq P_{Max}$	-	2.0	5	$\mu A$	
Reference Voltage	VREF	$3V \leq V_i - V_o \leq 40V$ , $10mA \leq I_o \leq I_{Max}$ , $PD \leq P_{Max}$	1.20	1.25	1.30	V	
Temperature Stability	STT		-	0.7	-	%/V <sub>o</sub>	
Minimum Load Current for Regulation	$I_L(\text{Min})$	$V_i - V_o = 40V$	-	3.5	10	mA	
Maximum Output Current	$I_o(\text{Max})$	$V_i - V_o \leq 15V$ , $PD < P_{Max}$	1.5	2.2	-	A	
		$V_i - V_o = 40V$ , $PD < P_{Max}$ , $T_j = 25^\circ C$	0.15	0.4	-		
RMS Noise vs. % of V <sub>out</sub>	eN	$T_a = 25^\circ C$ , $10Hz \leq f \leq 10KHz$	-	0.003	0.01	%/V <sub>o</sub>	
Ripple Rejection	RR	$V_o = 10V$ , $f = 120Hz$	-	60	-	dB	
		$V_o = 10V$ , $f = 120Hz$ , $C_{adj} = 10\mu F$	66	75	-		
Long-term Stability, $T_j = \text{Thigh}$	ST	$T_a = 25^\circ C$ , 1000hr	-	0.3	1	%	
Junction to Case Thermal Resistance	$R\theta_{jc}$	-	-	10	-	$^\circ C/W$	

\*Note: Testing with low duty pulse should be used to avoid heating effect.

## Characteristics Curve





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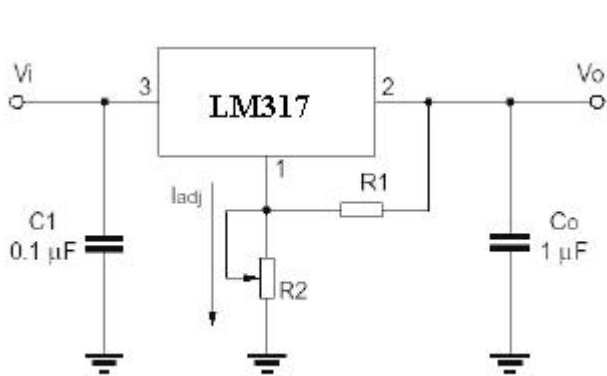


Fig.1 Programmable voltage regulator

$$V_o = 1.25V \cdot (1 + R_2/R_1) + I_{adj} \cdot R_2$$

C1 is required when regulator is located an appreciated distance from power supply. Co is needed to improve transient response.

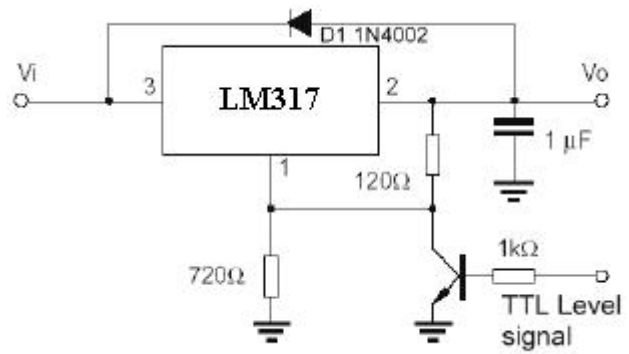


Fig.2 Regulator with On-off control

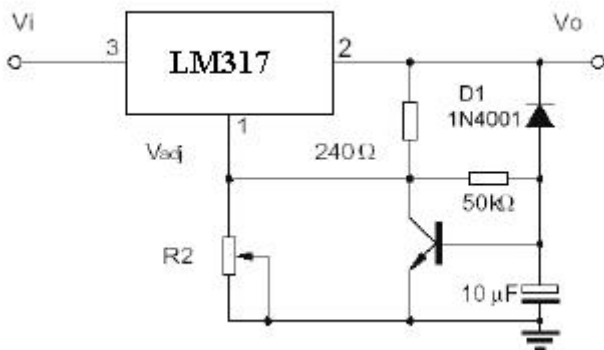


Fig.3 Soft start application

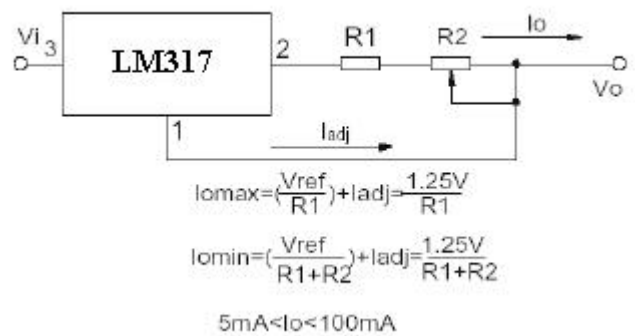


Fig.4 Constant current application