

LM337

3-Terminal 1.5A Negative Adjustable Regulator

Features

- Output current in excess of 1.5A
- Output voltage adjustable between -1.2V and -37V
- Internal thermal overload protection
- Internal short circuit current limiting
- Output transistor safe area compensation
- Floating operation for high voltage applications
- Standard 3-pin TO-220 package

Description

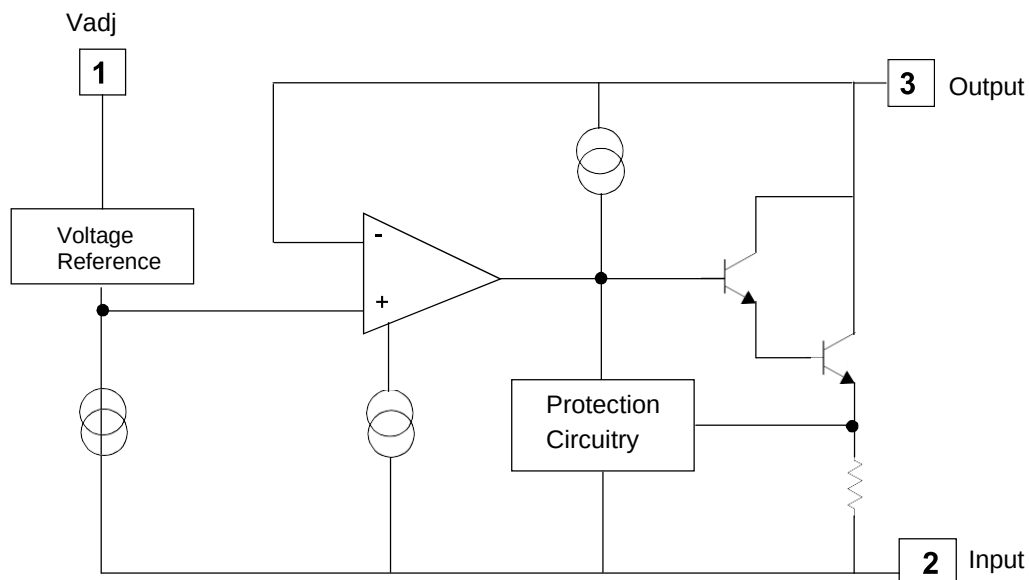
The LM337 is a 3-terminal negative adjustable regulator. It supplies in excess of 1.5A over an output voltage range of -1.2V to -37V. This regulator requires only two external resistors to set the output voltage. Included on the chip are current limiting, thermal overload protection and safe area compensation.

TO-220



1. Adj 2. Input 3. Output

Internal Block Diagram



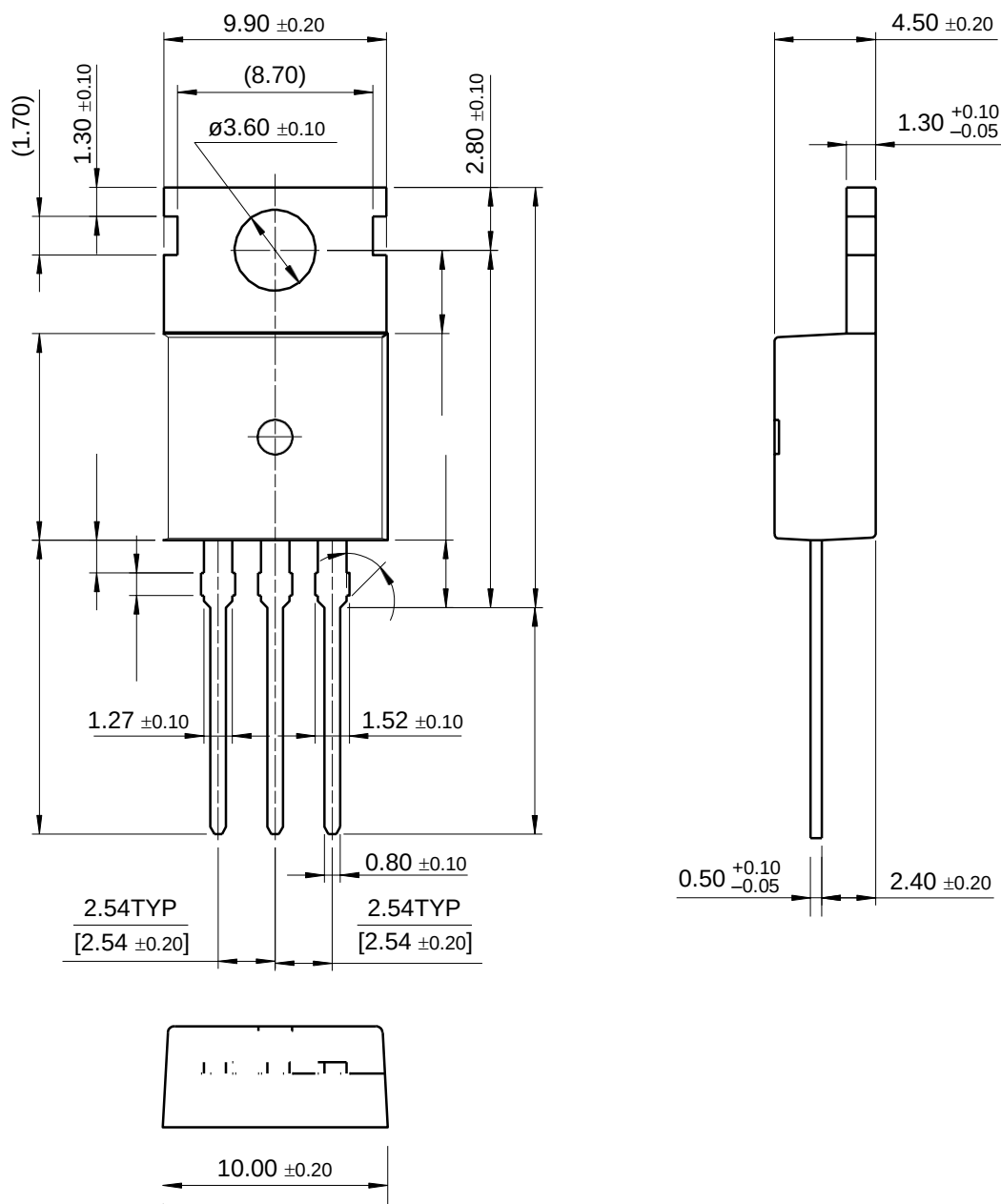
Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input-Output Voltage Differential	$ V_I - V_O $	40	V
Power Dissipation	P_D	Internally limited	W
Operating Temperature Range	TOPR	0 ~ +125	°C
Storage Temperature Range	TSTG	-65 ~ +125	°C

Mechanical Dimensions

Package

TO-220



Parameter	Symbol	Conditions	Min	Typ.	Max.	Unit
Line Regulation (Note1)	R _{line}	T _A = +25°C 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°C 10mA ≤ I _O ≤ 0.5A	-	15	50	mV
		10mA ≤ I _O ≤ 1.5A	-	15	150	
Adjustable Pin Current	I _{ADJ}	-	-	50	100	μA
Adjustable Pin Current Change	ΔI _{ADJ}	T _A = + 25°C 10mA ≤ I _O ≤ 1.5A 3V ≤ V _I - V _O ≤ 40V	-	2	5	μA
Reference Voltage	V _{REF}	T _A = + 25°C	-1.213	-1.250	-1.287	V
		3V ≤ V _I - V _O ≤ 40V 10mA ≤ I _O ≤ 1.5A	-1.200	-1.250	-1.300	
Temperature Stability	ST _T	0°C ≤ T _J ≤ +125°C	-	0.6	-	%
Minimum Load Current to Maintain Regulation	I _{L(MIN)}	3V ≤ V _I - V _O ≤ 40V	-	2.5	10	mA
		3V ≤ V _I - V _O ≤ 10V	-	1.5	6	
Output Noise	e _N	T _A = +25°C 10Hz ≤ f ≤ 10KHz	-	0.003	-	V/10 ⁶
Ripple Rejection Ratio	RR	V _O = -10V, f = 120Hz	-	60	-	dB
		C _{ADJ} = 10μF (Note2)	66	77	-	
Long Term Stability	ST	T _J = 125°C ,1000Hours	-	0.3	1	%
Thermal Resistance Junction to Case	R _{θJC}	-	-	4	-	°C/ W

Electrical Characteristics

(V_I - V_O = 5V, I_O = 40mA, 0°C ≤ T_J ≤ +125°C, P_DMAX = 20W, unless otherwise specified)

Note:

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

Typical Application

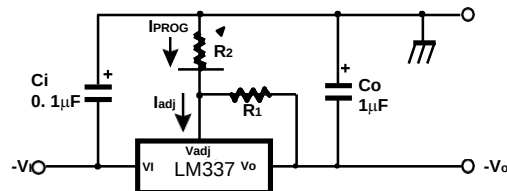


Figure 1. Programmable Regulator

- C_i is required if regulator is located more than 4 inches from power supply filter. A $1.0\mu\text{F}$ solid tantalum or $10\mu\text{F}$ aluminum electrolytic is recommended.
 C_o is necessary for stability. A $1.0\mu\text{F}$ solid tantalum or $10\mu\text{F}$ aluminum electrolytic is recommended.
- $V_O = -1.25V (1 + R_2/R_1)$