

# LM337

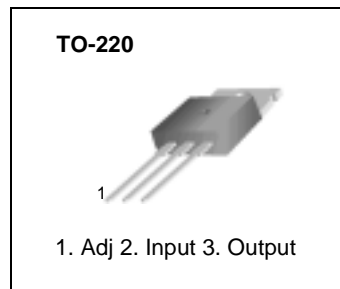
## 3-Terminal 1.5A Negative Adjustable Regulator

### Features

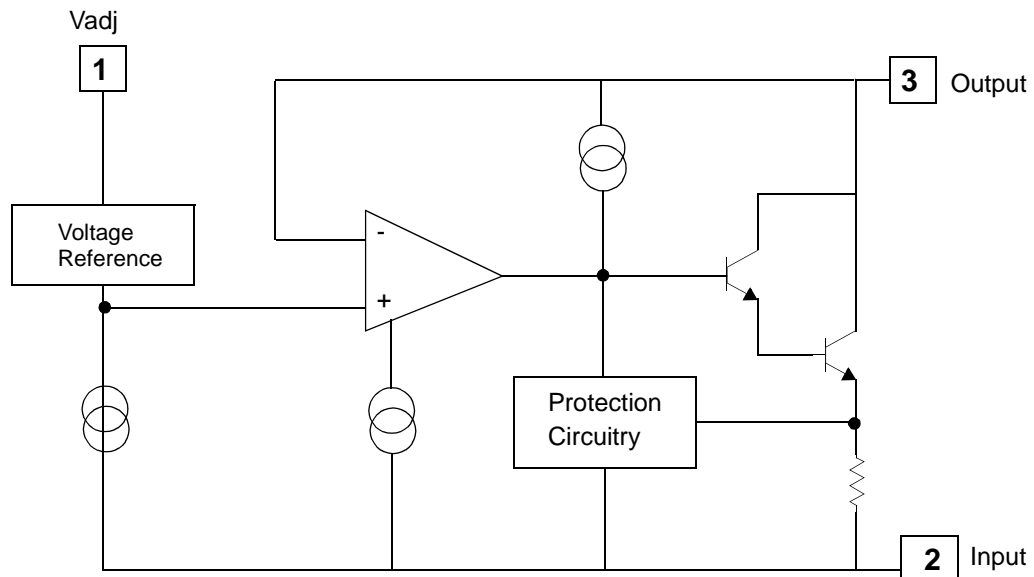
- Output current in excess of 1.5A
- Output voltage adjustable between -1.2V and -37V
- Internal thermal overload protection
- Internal short circuit current limiting
- Output transistor safe area compensation
- Floating operation for high voltage applications
- Standard 3-pin TO-220 package

### 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.



### 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	$T_{OPR}$	0 ~ +125	°C
Storage Temperature Range	$T_{STG}$	-65 ~ +125	°C

## Electrical Characteristics

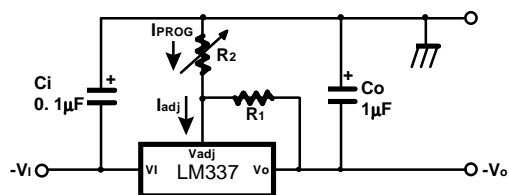
( $V_I - V_O = 5V$ ,  $I_O = 40mA$ ,  $0^\circ C \leq T_J \leq +125^\circ C$ ,  $P_{DMAX} = 20W$ , unless otherwise specified)

Parameter	Symbol	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)	$R_{load}$	$T_A = +25^\circ C$ $10mA \leq I_O \leq 0.5A$	-	15	50	mV
		$10mA \leq I_O \leq 1.5A$	-	15	150	
Adjustable Pin Current	$I_{ADJ}$	-	-	50	100	$\mu A$
Adjustable Pin Current Change	$\Delta I_{ADJ}$	$T_A = +25^\circ C$ $10mA \leq I_O \leq 1.5A$ $3V \leq  V_I - V_O  \leq 40V$	-	2	5	$\mu A$
Reference Voltage	$V_{REF}$	$T_A = +25^\circ C$	-1.213	-1.250	-1.287	V
		$3V \leq  V_I - V_O  \leq 40V$ $10mA \leq I_O \leq 1.5A$	-1.200	-1.250	-1.300	
Temperature Stability	$ST_T$	$0^\circ C \leq T_J \leq +125^\circ C$	-	0.6	-	%
Minimum Load Current to Maintain Regulation	$I_{L(MIN)}$	$3V \leq  V_I - V_O  \leq 40V$	-	2.5	10	mA
		$3V \leq  V_I - V_O  \leq 10V$	-	1.5	6	
Output Noise	$e_N$	$T_A = +25^\circ C$ $10Hz \leq f \leq 10KHz$	-	0.003	-	$V/10^6$
Ripple Rejection Ratio	RR	$V_O = -10V$ , $f = 120Hz$	-	60	-	dB
		$C_{ADJ} = 10\mu F$ (Note2)	66	77	-	
Long Term Stability	ST	$T_J = 125^\circ C$ , 1000Hours	-	0.3	1	%
Thermal Resistance Junction to Case	$R_{\theta JC}$	-	-	4	-	°C / W

### Note:

- 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.
- $C_{ADJ}$ , when used, is connected between the adjustment pin and ground.

## Typical Application



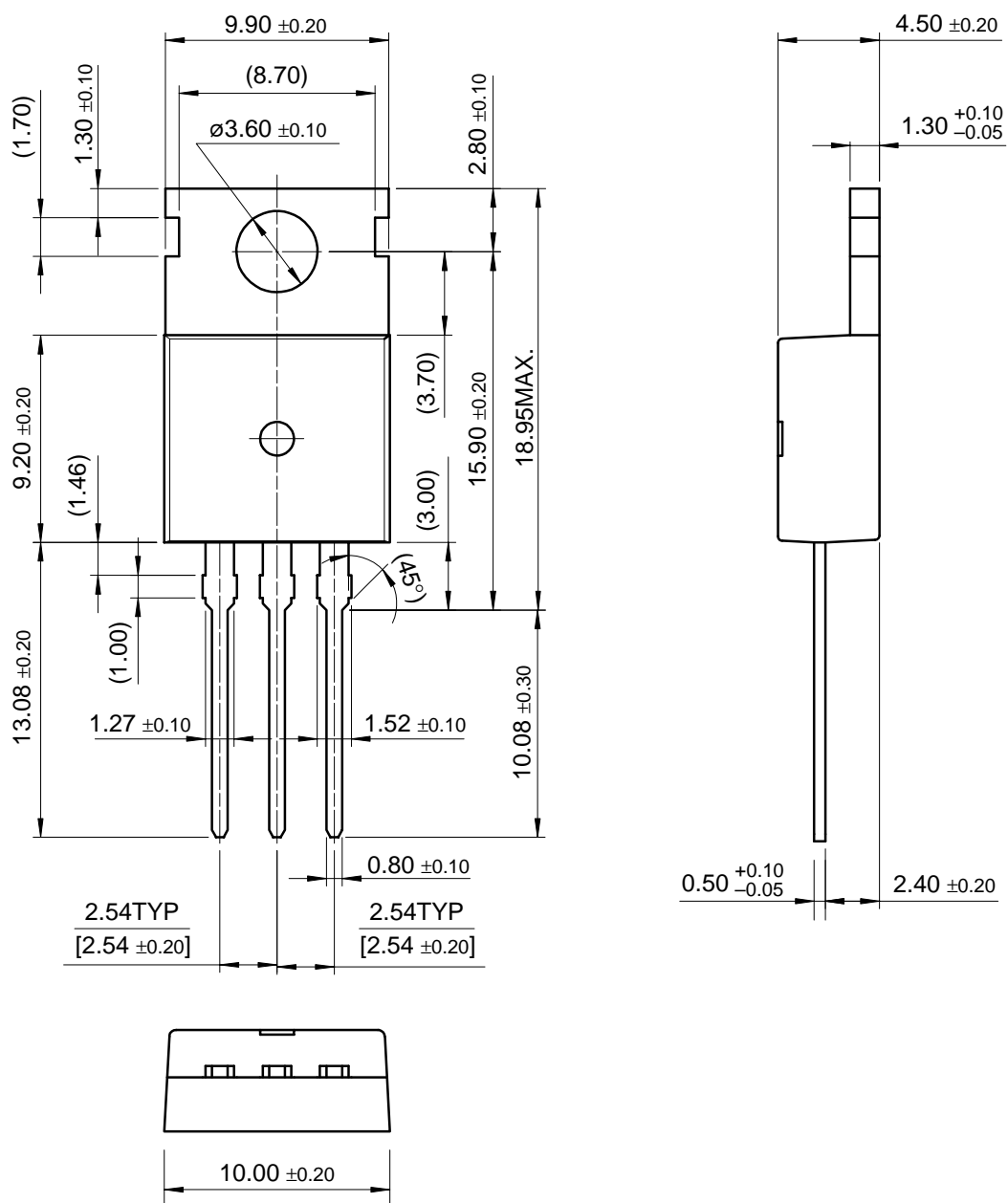
**Figure 1. Programmable Regulator**

- $C_i$  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.
- $V_O = -1.25\text{V} (1 + R_2/R_1)$

# Mechanical Dimensions

## Package

### TO-220



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## Ordering Information

Product Number	Package	Operating Temperature
LM337T	TO-220	0°C to + 125°C