

LM337

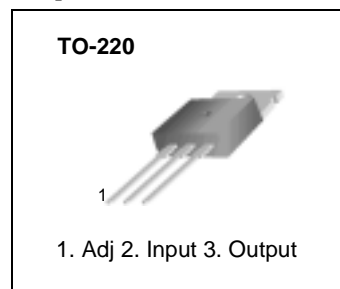
3-Terminal 1.5A Negative Adjustable Regulator

Features

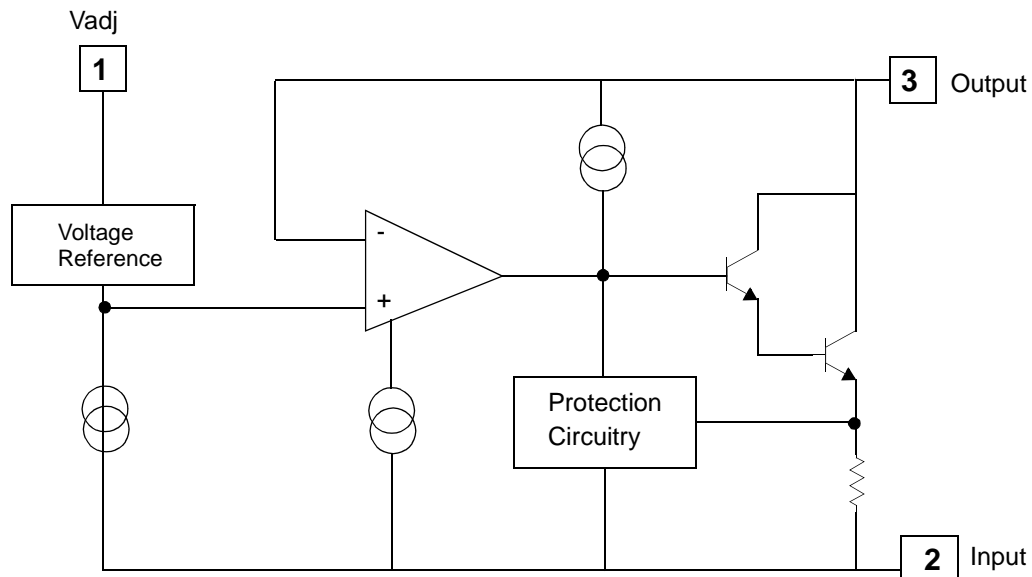
- Output current in excess of 1.5A
- Output voltage adjustable between -1.2V and -37V
- Internal thermal overload protection
- Internal short circuit current limiting
- Output transistor safe area compensation
- Floating operation for high voltage applications
- Standard 3-pin TO-220 package

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

($V_I - V_O = 5V$, $I_O = 40mA$, $0^\circ C \leq T_J \leq +125^\circ C$, $P_{D_{MAX}} = 20W$, 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	μA
Adjustable Pin Current Change	ΔI_{ADJ}	$T_A = +25^\circ C$ $10mA \leq I_O \leq 1.5A$ $3V \leq V_I - V_O \leq 40V$	-	2	5	μA
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

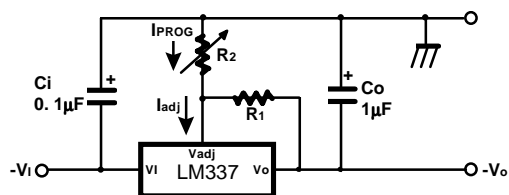


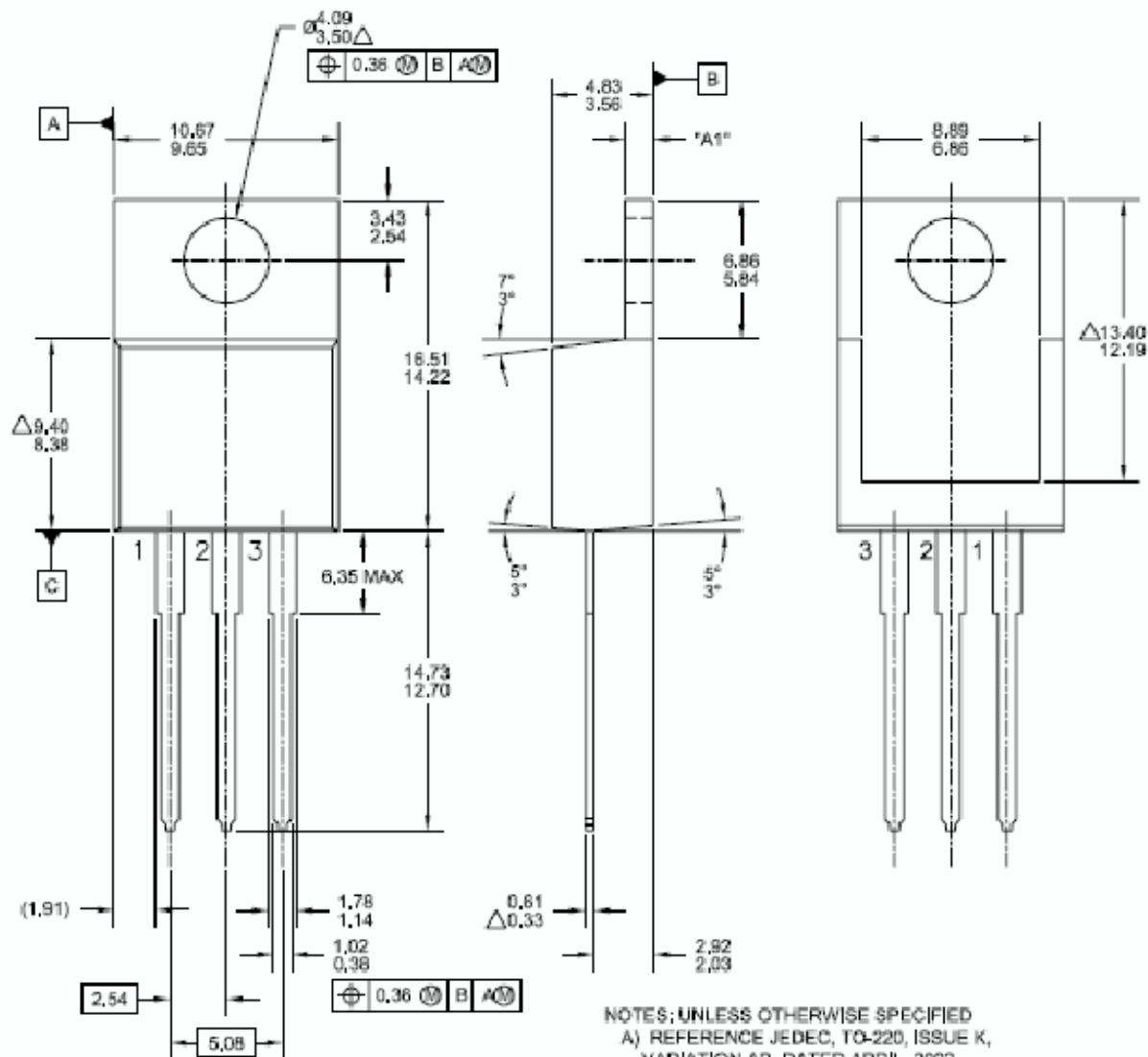
Figure 1. Programmable Regulator

- 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



- NOTES: UNLESS OTHERWISE SPECIFIED
- A) REFERENCE JEDEC, TO-220, ISSUE K, VARIATION AB, DATED APRIL, 2002.
 - B) ALL DIMENSIONS ARE IN MILLIMETERS.
 - C) DIMENSIONING AND TOLERANCING PER ANSI Y14.5 - 1973
 - D) LOCATION OF THE PIN HOLE MAY VARY (LOWER LEFT CORNER, LOWER CENTER AND CENTER OF THE PACKAGE)
 - E) DOES NOT COMPLY JEDEC STANDARD VALUE.
 - F) "A1" DIMENSIONS REPRESENT LIKE BELOW:
 SINGLE GAUGE = 0.51 - 0.61
 DUAL GAUGE = 1.14 - 1.40
 - G) DRAWING FILE NAME: TO220B03REV6

Ordering Information

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

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