Description

The LM337 is adjustable 3-terminal negative voltageregulators capable of supplying -1.5 A or more currents over an output voltage range of -1.25 V to -37 V. it reguires only two external resistors to set the output voltage and one output capacitor for freguency compensation. The circuit design has been optimized for excellent regulation and low thermal transients. Further, the LM337 feature internal current limiting, thermal shutdown and safe-area compensation,making it virtually blowout-proof against overloads.

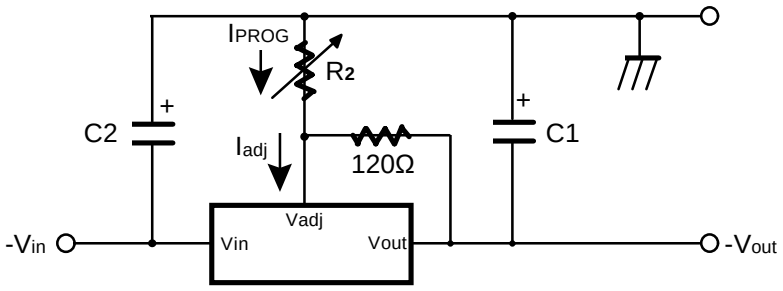
Features

- 1.5A Output Current
- Line Regulation 0.01%/V(Typical)
- Load Regulation 0.3%(Typical)
- 77-dB Ripple Rejection
- 50ppm/°C Temperature Coefficient
- Thermal Overload Protection
- Internal Short-Circuit Current Limiting Protections

Applications

- Industrial Power Supplies
- Factory Automation Systems
- Building Automation Systems
- PLC Systems
- Instrumentation
- IGBTDrive Negative Gate Supplies
- Networking
- Set-Top Boxes

Adjustable Negative Voltage Regulator



Full output current not available at high input-output voltages

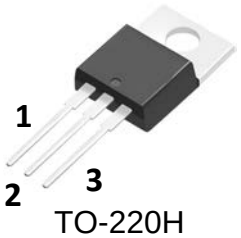
$$-V_{OUT} = -1.25V\left(1+\frac{R2}{120}\right)+\left(-I_{ADJ}\times R2\right)$$

C1 = 1-μF solid tantalum or 10-μF aluminum electrolytic required for stability

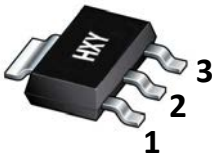
C2 = 1-μF solid tantalum is required only if regulator is more than 4″ from power-supply filter capacitor

Output capacitors in the range of 1-μF to 1000-μF of aluminum or tantalum electrolytic are commonly used to provide improved output impedance and rejection of transients

Pin Configuration and Functions



TO-220H
(TO-220AB)



SOT-223

PIN No.		Name	Functions Description
SOT-223	TO-220H (TO-220AB)		
1	1	ADJ	Adjustable
2	2	V_{IN}	Input Voltage
3	3	V_{OUT}	Output Voltage

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

Ordering Information

Device	Package Type	Packing	Packing Qty
LM337IMP/NOPB	SOT-223	Tape	2500
LM337BTG	TO-220H(TO-220AB)	Tube	50

Electrical Characteristics

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

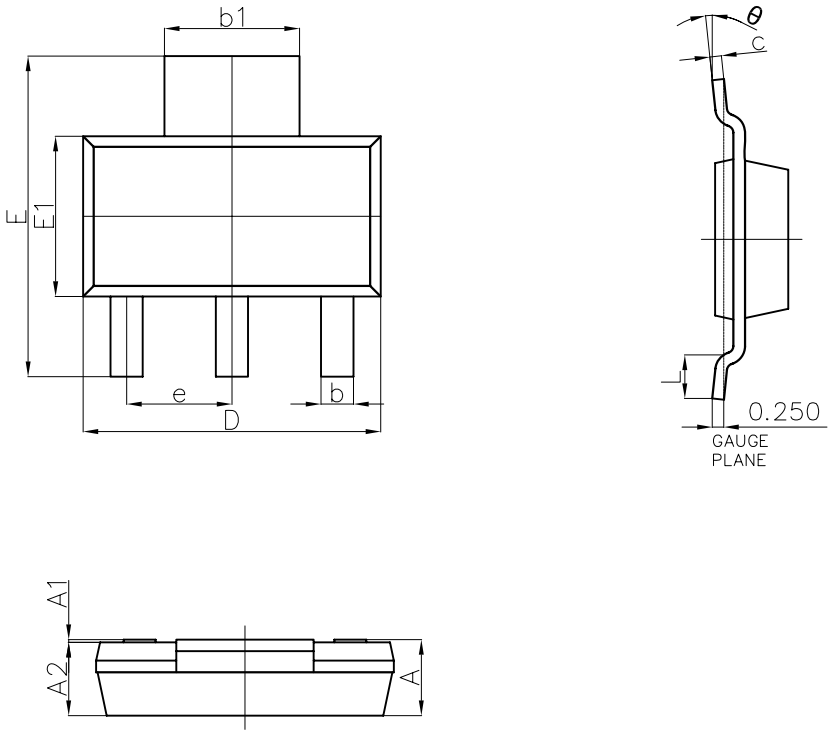
Parameter	Symbol	Conditions	Min	Typ.	Max.	Unit
Line Regulation (Note1)	R_{line}	T_A = +25°C 3V ≤ I V_I - V_O I ≤ 40V	-	0.01	0.05	%/ V
		3V ≤ I V_I - V_O I ≤ 40V	-	0.02	0.07	
Load Regulation (Note1)	R_{load}	T_A = +25°C 10mA ≤ I_O ≤ 0.5A	-	0.3%	1%	
		10mA ≤ I_O ≤ 1.5A	-	0.3%	1.5%	
Adjustable Pin Current	I_{ADJ}	-	-	65	100	μA
Adjustable Pin Current Change	ΔI_{ADJ}	T_A =+ 25°C 10mA ≤ I_O ≤ 1.5A 3V ≤I V_I - V_O I ≤ 40V	-	2	5	μA
Reference Voltage	V_{REF}	T_A =+ 25°C	-1.225	-1.25	-1.275	V
		3V ≤ I V_I - V_O I ≤ 40V 10mA ≤ I_O ≤ 1.5A	-1.2	-1.25	-1.3	
Temperature Stability	ST	0°C ≤ TJ ≤ +125°C	-	0.6	-	%
Minimum Load Current to Maintain Regulation	$I_{L(MIN)}$	3V ≤I V_I - V_O I ≤ 40V	-	2.5	5	mA
		3V ≤I V_I - V_O I ≤ 10V	-	1.2	3	
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	$R_{\theta JC}$	-	-	4	-	°C/ W

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 detween the adjustment pin and ground.

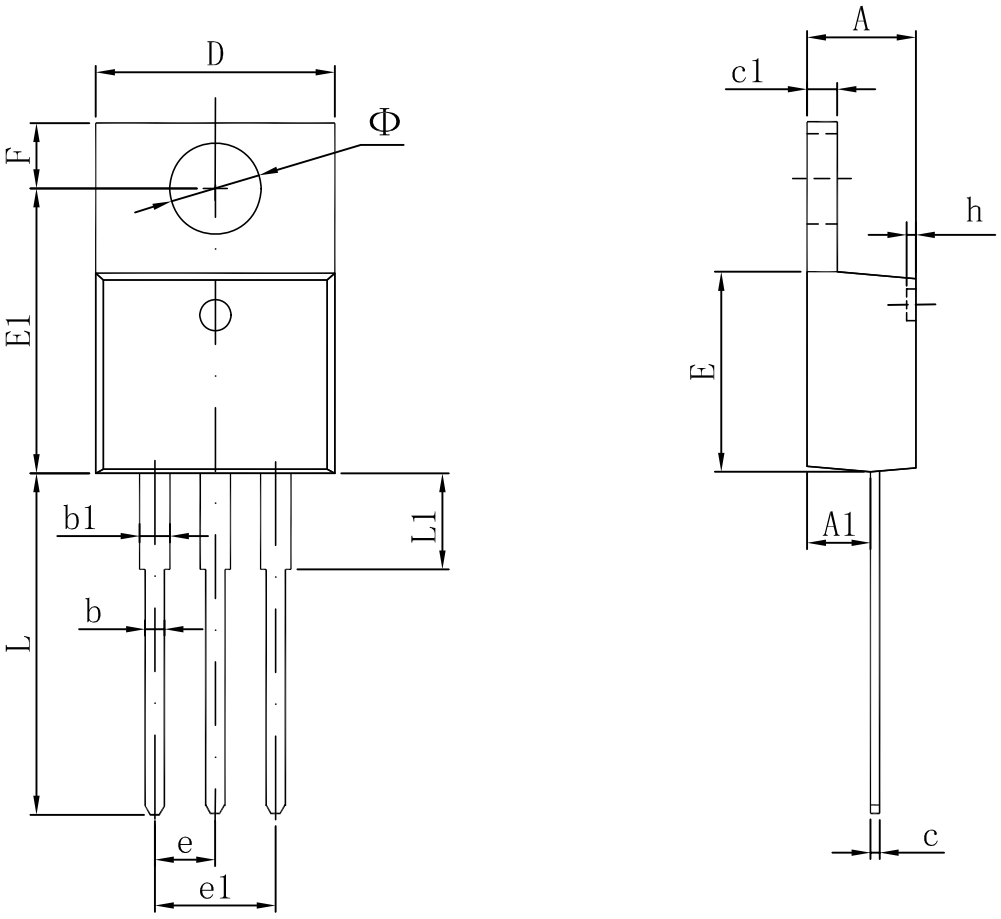
Package Dimensions

SOT-223



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	——	1.800	——	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	——	0.030	——
θ	0°	10°	0°	10°

Package Information
TO-220H(TO-220AB)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155

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