

Features

- Output Adjustable between -1.2V and -37V
- output current up to 1.5A
- Internal Thermal Overload Protection
- internal thermal overload protection and short-circuit limiting

Applications

- HVAC Systems
- SMPS Post Regulation
- Test and Measurement Equipment
- Industrial Power Supplies

PIN CONFIGURATION



**SOP8
(TOP VIEW)**

Pin Number	Pin Name	Pin Function
4	ADJ	Adjust pin
2,3,6,7	VIN	Input of Supply Voltage
1	VOUT	Output of the Regulator
5,8	NC	No connection

Absolute Maximum Ratings

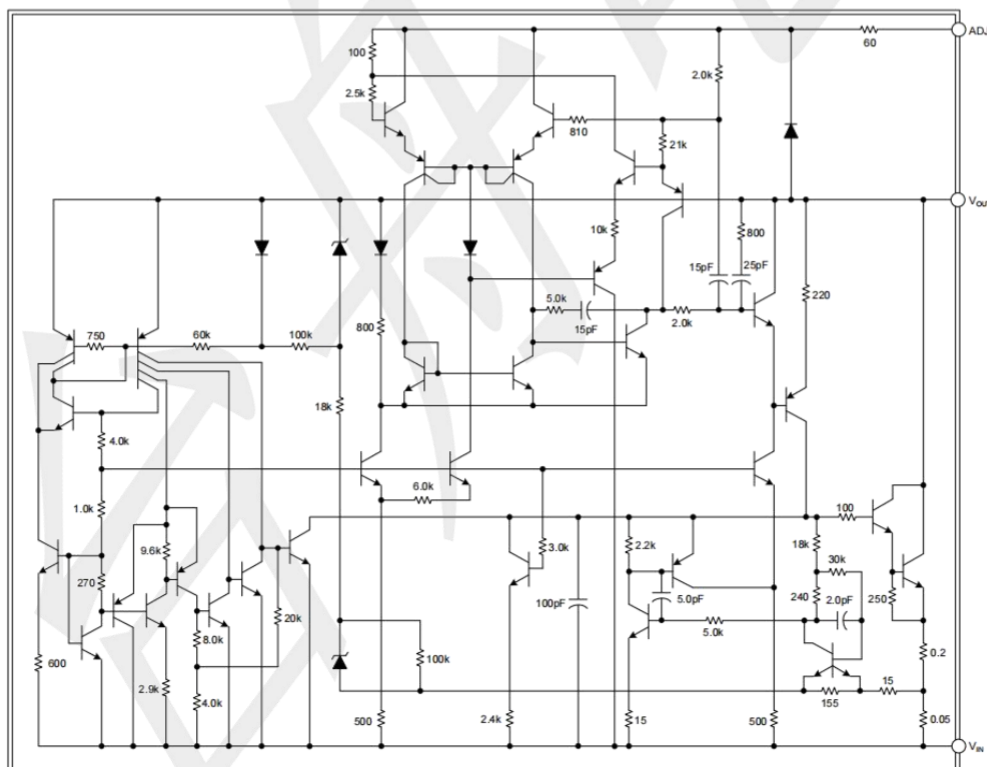
over operating free-air temperature range (unless otherwise noted)

SYMBOL	PARAMETER	RATINGS	UNIT
V _I - V _O	Input-Output Voltage Differential	40	V
P _D	Power Dissipation	Internally Limited	W
T _J	Operating Junction Temperature Range	-40 ~ +125	°C
T _{stg}	Storage temperature range	-65~150	°C

THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	111.3	°C/W
Junction to Case	θ_{JC}	56.1	°C/W

BLOCK DIAGRAM



Electrical Characteristics

($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions		MIN	TYP	MAX	UNIT
Line Regulation (Note 1)	ΔV_{OUT}	$T_A = +25^{\circ}\text{C}$, $3.0\text{V} \leq V_I - V_O \leq 40\text{V}$		--	0.01	0.04	%/V
Load Regulation (Note 1)	ΔV_{OUT}	$T_A = +25^{\circ}\text{C}$, $10\text{mA} \leq I_O \leq I_{MAX}$	$ V_O \leq 5.0\text{V}$	--	15	50	mV
			$ V_O \geq 5.0\text{V}$	--	0.3	1.0	% V_O
Adjustment Pin Current	I_{ADJ}			--	65	100	μA
Adjustment Pin Current Change	ΔI_{ADJ}	$2.5\text{V} \leq V_I - V_O \leq 40\text{V}$, $10\text{mA} \leq I_L \leq I_{MAX}$, $P_D \leq P_{MAX}$, $T_A = +25^{\circ}\text{C}$		--	2.0	5.0	μA
Reference Voltage	V_{REF}	$T_A = +25^{\circ}\text{C}$, $3.0\text{V} \leq V_I - V_O \leq 40\text{V}$		-1.213	-1.250	-1.287	V
		$10\text{mA} \leq I_O \leq I_{MAX}$, $P_D \leq P_{MAX}$, $T_J = T_{LOW}$ to T_{HIGH}		-1.20	-1.25	-1.30	V
Line Regulation (Note 1)	ΔV_{OUT}	$3.0\text{V} \leq V_I - V_O \leq 40\text{V}$		--	0.02	0.07	%/V
Load Regulation (Note 1)	ΔV_{OUT}	$10\text{mA} \leq I_O \leq I_{MAX}$	$ V_O \leq 5.0\text{V}$	--	20	70	mV
			$ V_O \geq 5.0\text{V}$	--	0.3	1.5	% V_O
Temperature Stability	T_S	$T_{LOW} \leq T_J \leq T_{HIGH}$		--	0.6	--	% V_O
Minimum Load Current to Maintain Regulation	I_{LMIN}	$ V_I - V_O \leq 10\text{V}$		--	1.5	6.0	mA
		$ V_I - V_O \leq 40\text{V}$		--	2.5	10	mA
Maximum Output Current	I_{MAX}	$ V_I - V_O \leq 15\text{V}$, $P_D \leq P_{MAX}$		--	1.5	2.2	A
		$ V_I - V_O \leq 40\text{V}$, $P_D \leq P_{MAX}$, $T_J = +25^{\circ}\text{C}$		--	0.15	0.4	A
RMS Noise	N	% of V_O , $T_A = +25^{\circ}\text{C}$, $10\text{Hz} \leq f \leq 10\text{kHz}$		--	0.003	--	% V_O
Ripple Rejection	RR	$V_O = -10\text{V}$, $f = 120\text{Hz}$ (Note 2)	Without C_{ADJ}	--	60	--	dB
			$C_{ADJ} = 10\mu\text{F}$	66	77	--	dB
Long-Term Stability	S	$T_J = T_{HIGH}$ (Note 4), $T_A = +25^{\circ}\text{C}$ for Endpoint Measurements			0.3	1.0	%/1.0k Hrs.
Thermal Regulation		$T_A = +25^{\circ}\text{C}$ (Note 3), 10ms Pulse			0.003	0.4	% V_O/W

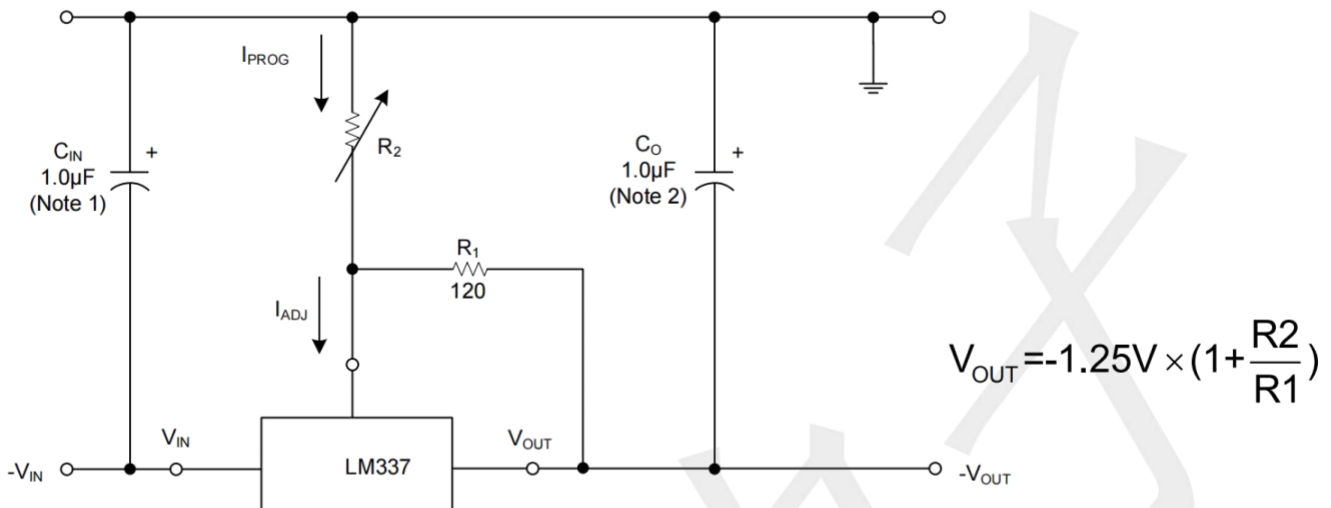
Notes: 1. Load and line regulation are specified at constant junction temperature. Change in V_O because of heating effects is covered under the Thermal Regulation specification. Pulse testing with a low duty cycle is used.

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

3. Power dissipation within an IC voltage regulator produces a temperature gradient on the die, affecting individual IC components on the die. These effects can be minimized by proper integrated circuit design and layout techniques. Thermal Regulation is the effect of these temperature gradients on the output voltage and is expressed in percentage of output change per watt of power change in a specified time.

4. Since Long Term Stability cannot be measured on each device before shipment, this specification is an engineering estimate of average stability from lot to lot.

Typical Application Circuit



Notes: 1. C_{IN} is required if regulator is located more than 4 inches from power supply filter.

A 1.0 μ F aluminum electrolytic is recommended.

2. C_O is necessary for stability. A 1.0 μ F aluminum electrolytic is recommended.

Figure 1. Standard Application

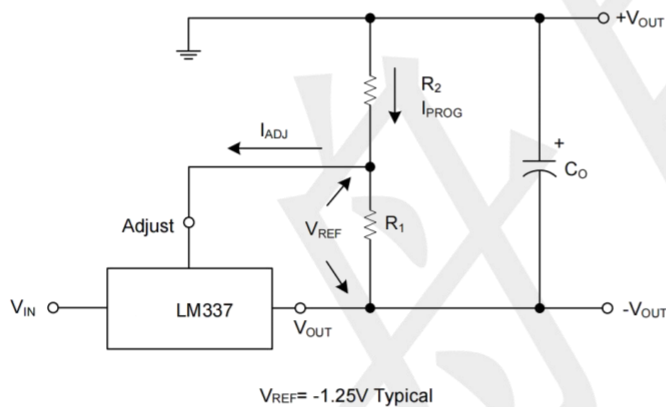


Figure 2. Basic Circuit Configuration

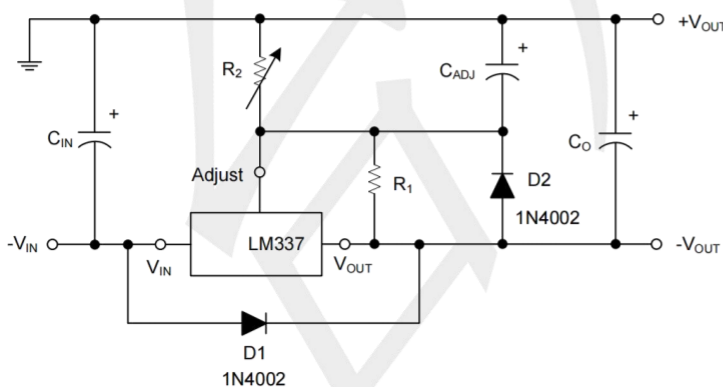
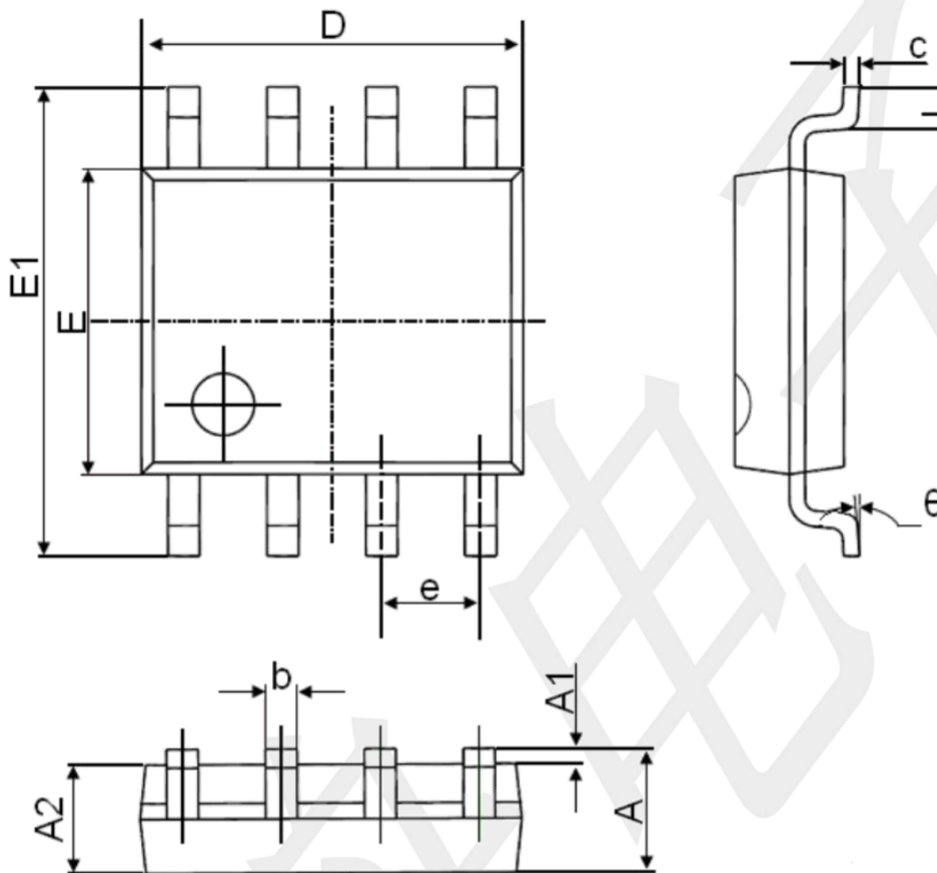


Figure 3. Voltage Regulator with Protection Diodes

Package Outline Dimensions (unit: mm)

SOP8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°