

Product Specification

XBLW LM337IMPX

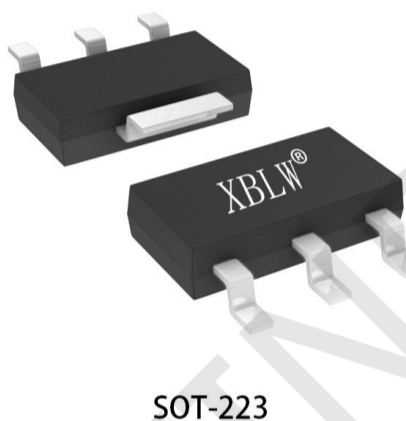
3-Terminal Adjustable Negative Regulators

WEB | www.xinboleic.com



Descriptions

The LM337 is adjustable 3-terminal negative voltage regulators capable of supplying 1.5 A or more currents over an output voltage range of -1.25 V to -37 V . It requires only two external resistors to set the output voltage and one output capacitor for frequency 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.



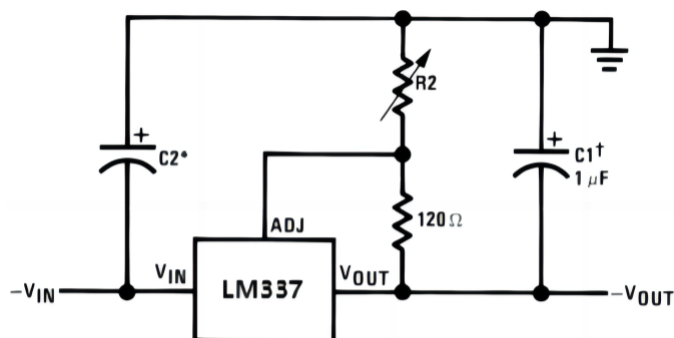
Feature

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

Applications

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

Adjustable Negative Voltage Regulator



Full output current not available at high input-output voltages

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

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

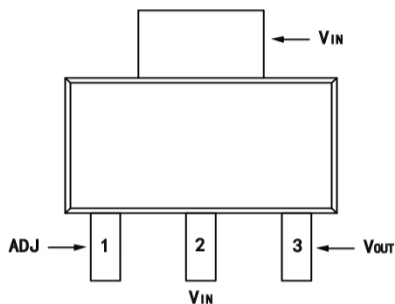
*C2 = 1-μF solid tantalum is required only if regulator is more than 4" from power-supply filter capacitor

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

Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
XBLW LM337IMPX	SOT-223	N02A	Tape	2500Pcs/Reel

Pin Configuration and Functions



SOT-223

Pin Functions

PIN		TYPE	DESCRIPTION
NAME	NO.		
ADJUSTMENT	1	I	Adjustment pin for the output voltage. Connect two external resistors to adjust the output voltage.
INPUT	2	I	Input voltage. The input voltage and current will be designated V_I and I_I respectively.
OUTPUT	3	O	Output voltage. The output voltage and current will be designated V_O and I_O respectively.

Absolute Maximum Ratings

	MIN	MAX	UNIT
Power dissipation	Internally Limited		
Input-output voltage differential	-0.3	40	V
Operating junction temperature	-40	125	°C
Storage temperature, Tstg	-65	150	°C

Recommended Operating Conditions

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

		MIN	MAX	UNIT
Operating junction temperature	LM337	-20	125	°C

Electrical Characteristics

PARAMETER	TEST CONDITIONS		LM337			UNIT
			MIN	TYP	MAX	
Line regulation	$T_J = 25^{\circ}\text{C}$, $3\text{ V} \leq V_{\text{IN}} - V_{\text{OUT}} \leq 40\text{ V}$ (1) $I_L = 10\text{ mA}$			0.01	0.04	% / V
Load regulation	$T_J = 25^{\circ}\text{C}$, $10\text{ mA} \leq I_{\text{OUT}} \leq I_{\text{MAX}}$			0.3%	1%	
Thermal regulation	$T_J = 25^{\circ}\text{C}$, 10-ms Pulse			0.003	0.04	% / W
Adjustment pin current				65	100	μA
Adjustment pin current charge	$10\text{ mA} \leq I_L \leq I_{\text{MAX}}$ $3\text{ V} \leq V_{\text{IN}} - V_{\text{OUT}} \leq 40\text{ V}$, $T_A = 25^{\circ}\text{C}$			2	5	μA
Reference voltage	$3\text{ V} \leq V_{\text{IN}} - V_{\text{OUT}} \leq 40\text{ V}$, (2) $10\text{ mA} \leq I_{\text{OUT}} \leq I_{\text{MAX}}$, $P \leq P_{\text{MAX}}$	$T_J = 25^{\circ}\text{C}$ (2)	-1.213	-1.25	-1.287	V
		$-55^{\circ}\text{C} \leq T_J \leq 150^{\circ}\text{C}$	-1.2	-1.25	-1.3	V
Line regulation	$3\text{ V} \leq V_{\text{IN}} - V_{\text{OUT}} \leq 40\text{ V}$, (1)			0.02	0.07	% / V
Load regulation	$10\text{ mA} \leq I_{\text{OUT}} \leq I_{\text{MAX}}$, (1)			0.3%	1.5%	
Temperature stability	$T_{\text{MIN}} \leq T_J \leq T_{\text{MAX}}$			0.6%		
Minimum load current	$ V_{\text{IN}} - V_{\text{OUT}} \leq 40\text{ V}$			2.5	10	mA
	$ V_{\text{IN}} - V_{\text{OUT}} \leq 10\text{ V}$			1.5	6	mA
Current limit	$ V_{\text{IN}} - V_{\text{OUT}} \leq 15\text{ V}$	SOT-223 package	1.5	2.2	3.7	A
	$ V_{\text{IN}} - V_{\text{OUT}} = 40\text{ V}$, $T_J = 25^{\circ}\text{C}$	SOT-223 package	0.15	0.4		A
RMS output noise, % of V_{OUT}	$T_J = 25^{\circ}\text{C}$, $10\text{ Hz} \leq f \leq 10\text{ kHz}$			0.003%		
Ripple rejection ratio	$V_{\text{OUT}} = -10\text{ V}$, $f = 120\text{ Hz}$			60		dB
	$C_{\text{ADJ}} = 10\text{ }\mu\text{F}$		66	77		dB
Long term stability	$T_J = 125^{\circ}\text{C}$ 1000 Hours			0.3%	1%	

- (1) Regulation is measured at constant junction temperature, using pulse testing with a low duty cycle. Changes in output voltage due to heating effects are covered under the specification for thermal regulation. Load regulation is measured on the output pin at a point $\frac{1}{2}$ in. below the base of the TO packages.
- (2) Selected devices with tightened tolerance reference voltage available.

Typical Characteristics

(NDE Package)

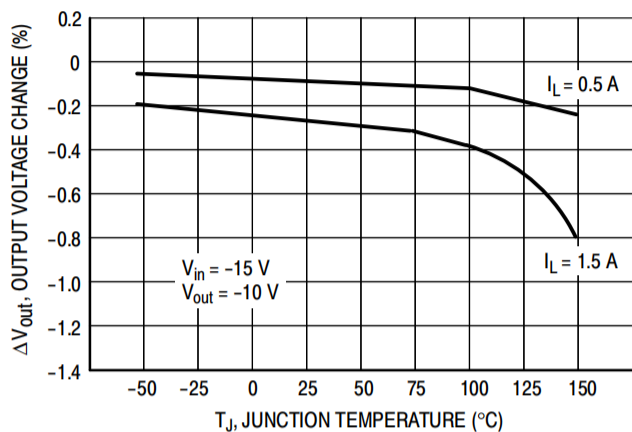


Figure 1. Load Regulation

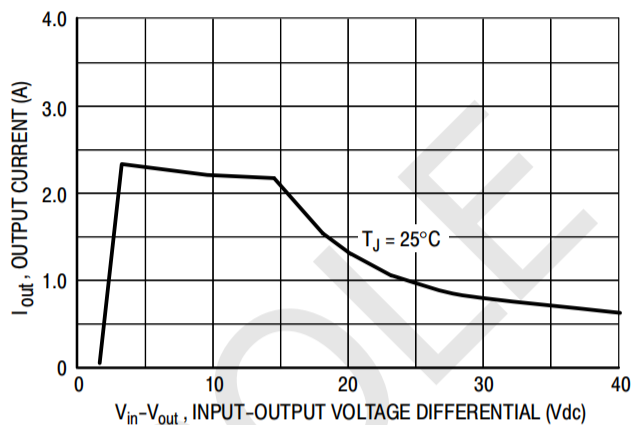


Figure 2. Current Limit

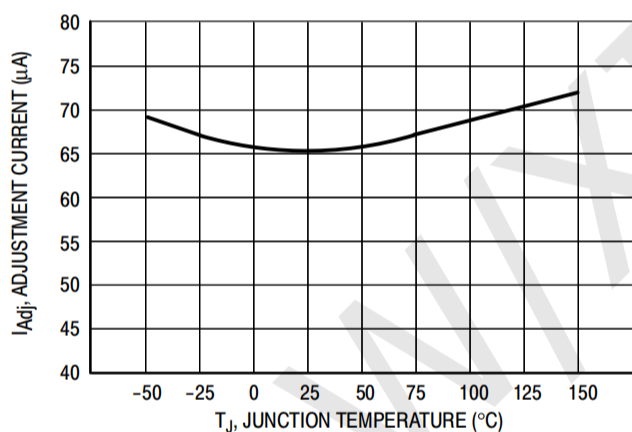


Figure 3. Adjustment Pin Current

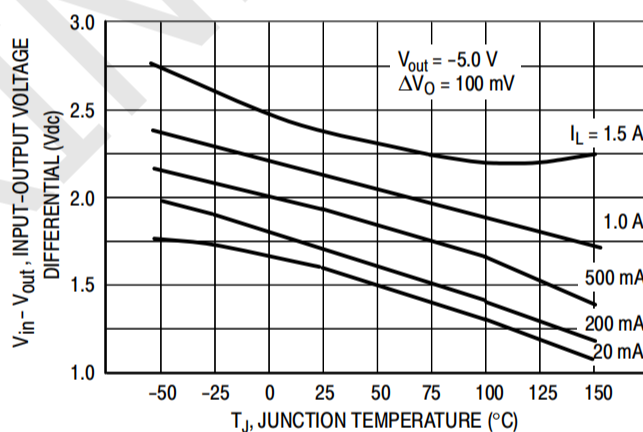


Figure 4. Dropout Voltage

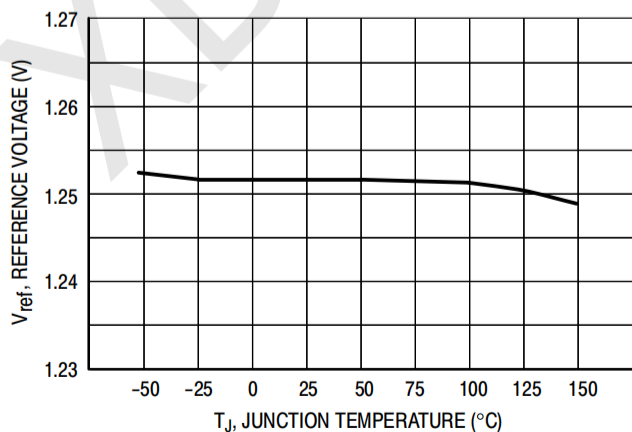


Figure 5. Temperature Stability

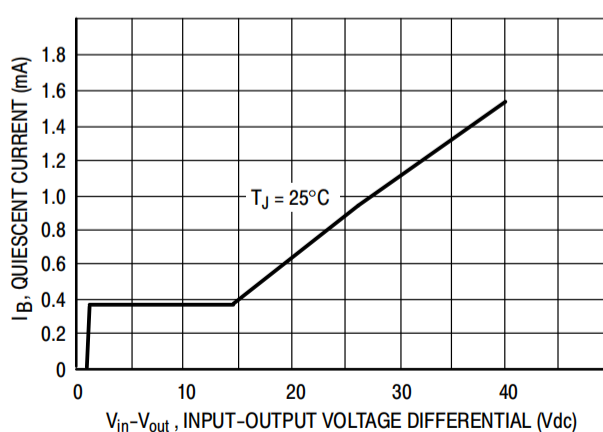


Figure 6. Minimum Operating Current

Typical Characteristics (continued)

(NDE Package)

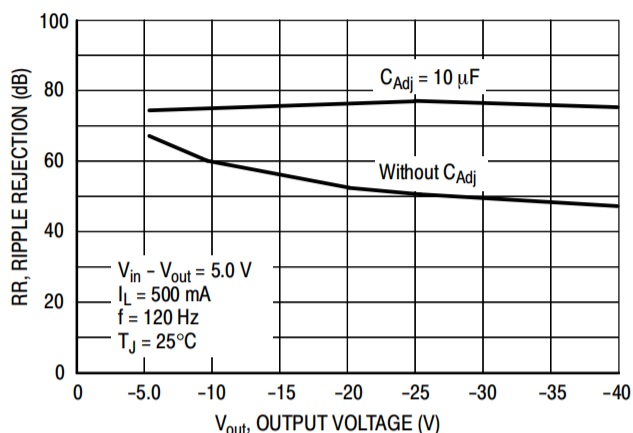


Figure 7. Ripple Rejection versus Output Voltage

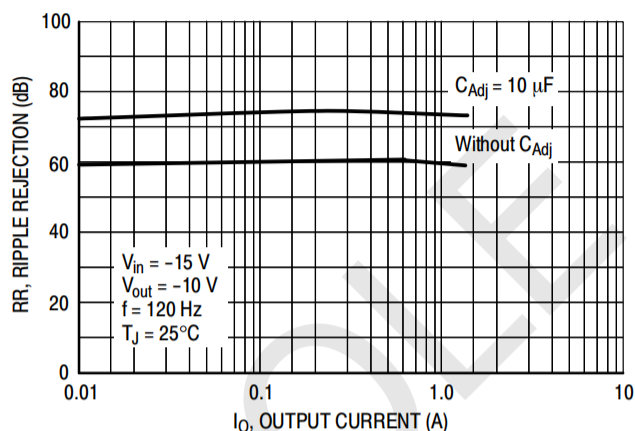


Figure 8. Ripple Rejection versus Output Current

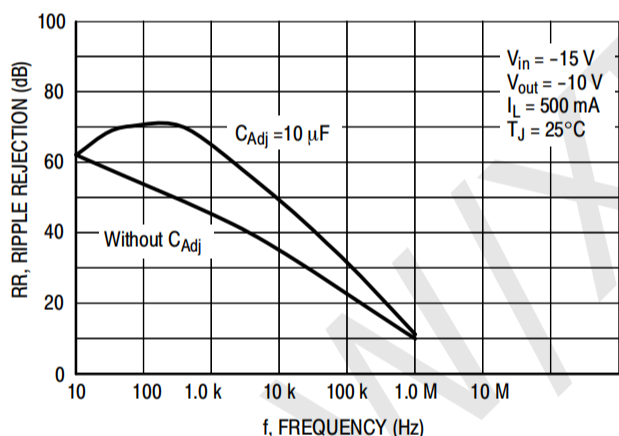


Figure 9. Ripple Rejection versus Frequency

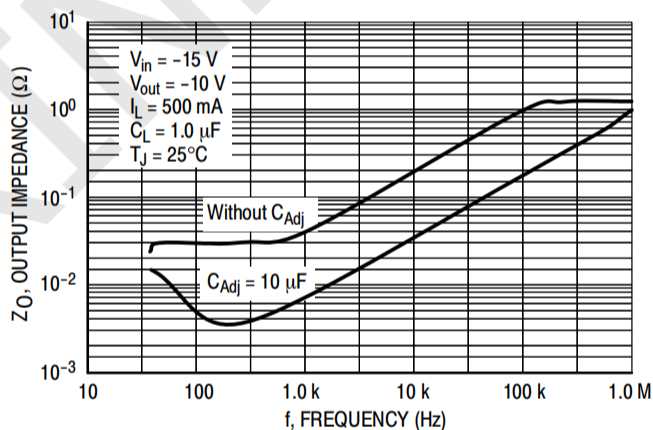


Figure 10. Output Impedance

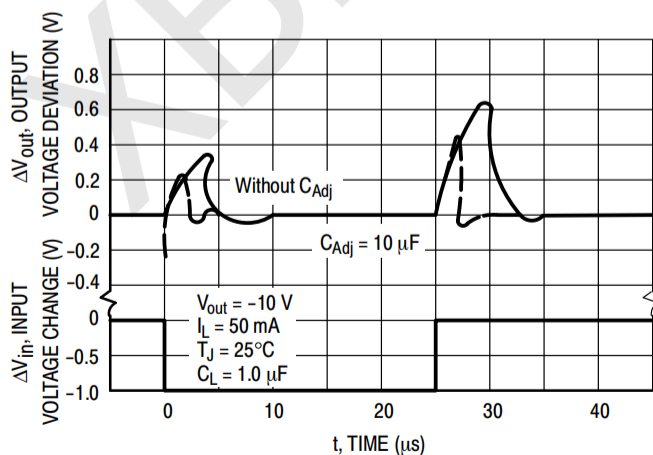


Figure 11. Line Transient Response

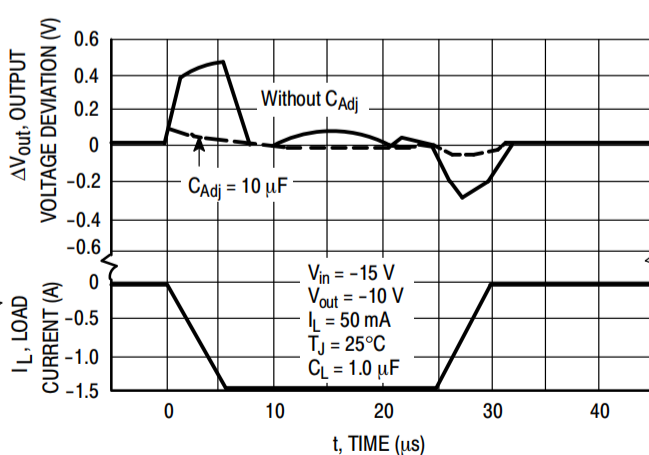
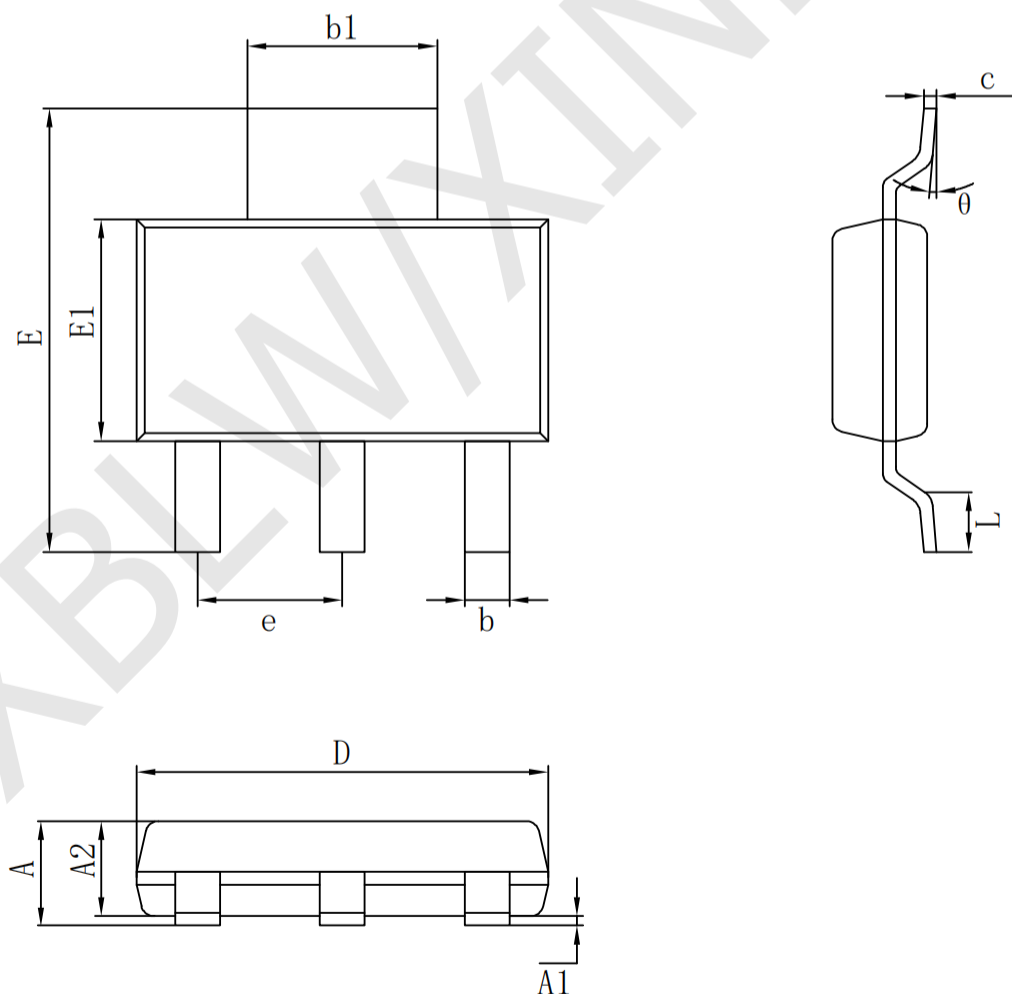


Figure 12. Load Transient Response

Package Information

· SOT-223

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



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