WS337L 3-TERMINAL ADJUSTABLE REGULATORS

General description

The WS337L is an adjustable 3-terminal negative voltage regulator capable of supplying 100mA over a 1.2V to 37V output range. It is exceptionally easy to use and requires only two external resistors to set the output voltage. Furthermore, both line and load regulation are better than standard fixed regulators, Also, the WS337L is packaged in a standard TO-92 transistor package which is easy to use.

In addition to higher performance than fixed regulators, the WS337L offers full overload protection. Included on the chip are current limit, thermal overload protection and safe area protection. All overload protection circuitry remains fully functional even if the adjustment terminal is disconnected.

Normally, only a single 1 μF solid tantalum output capacitor is needed unless the device is situated more than 6 inches from the input filter capacitors, in which case an input bypass is needed. A larger output capacitor can be added to improve transient response, the adjustment terminal can be bypassed to achieve very high ripple rejection ratios which are difficult to achieve with standard 3-terminal regulators.

Besides replacing fixed regulators, the WS337L is useful in a wide variety of other applications. Since the regulator is “floating” and sees only the input-to-output differential is not exceeded.

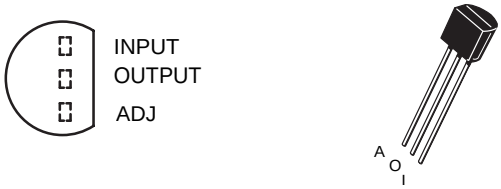
Also, it makes an especially simple adjustable switching regulator, a programmable output regulator, or by connecting a fixed resistor between the adjustment and output, the WS337L can be used as a precision current regulator. Supplies with electronic shutdown can be achieved by clamping the adjustment terminal to ground that program the output to 1.2V where most loads draw little current.

The WS337L is available in a standard TO-92 transistor package and a SO-8 surface mount package. The WS337 is rated for operation over a 0℃ to + 70℃ range.

FEATURES

- **Adjustable output down to 1.2V**
- **Guaranteed 100mA output current**
- **Line regulation typically 0.01%/V**
- **Load regulation typically 0.1%**
- **Current limit constant with temperature**
- **Eliminates the need to stock many voltages**
- **Standard 3-lead transistor package**
- **80 dB ripple rejection**
- **Output is short circuit protected**

TO-92 WS337L



ELECTRICAL CHARACTERISTICS ♠1

Power dissipation **Internally Limited**
Input-Output Voltage Differential **40v**
Operating Junction Temperature Range **–0℃ to +70℃**

Storage Temperature **–55℃ to +150℃**
Lead Temperature
Plastic Package (Soldiering 4 sec.) **260℃**
ESD rating to be determined.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
ADJUSTMENT PIN CURRENT			50	100	μA
ADJUSTMENT PIN CURRENT CHANGE	5mA≦I_{OUT}≦100mA 3V≦$\|V_{IN}-V_{OUT}\|$≦40V		0.2	5	μA
REFERENCE VOLTAGE	3V≦$\|V_{IN}-V_{OUT}\|$≦40V,♠3 10mA≦I_{OUT}≦100mA,P≦625MW	-1.3	-1.25	-1.2	V
LINE REGULATION	3V≦$\|V_{IN}-V_{OUT}\|$≦40V♠2		0.02	0.07	%/V
LOAD REGULATION	5mA≦I_{OUT}≦100mA♠2		0.3	1.5	%
TEMPERATURE STABILITY	T_{MIN}≦T_J≦T_{MAX}		0.65		%
MINIMUM LOAD CURRENT	$\|V_{IN}-V_{OUT}\|$≦40V		3.5	5	mA
	3V≦$\|V_{IN}-V_{OUT}\|$≦15V		2.2	3.5	mA
CURRENT LIMIT	3V≦$\|V_{IN}-V_{OUT}\|$≦13V	100	200	320	mA
	$\|V_{IN}-V_{OUT}\|$=40V	25	50	120	mA
RMS OUTPUT NOISE, % OF VOUT	T_A=25℃, 10H_Z-f-10KH_Z		0.03		%
RIPPLE REJECTION RATIO	V_{OUT}=-10V,F=120HZ, C_{ADJ}=0		65		dB
	C_{ADJ}=10 μF	66	80		dB
LONG-TERM STABILITY	T_A=70℃		0.3	1	%

♠1 : Unless otherwise specified, these specifications apply 0℃≤ T_J ≤ 70 ℃ for the WS337L; V_{IN}-V_{OUT} = 5v and I_{OUT} = 40mA. Although power dissipation is internally limited, these specifications are applicable for power dissipation up to 625mW. I_{MAX} is 100mA.

♠2 : 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.

♠3 : Thermal resistance of the TO-92 package is 180℃/W junction to ambient with 0.4” leads from a PC board and 160℃/W junction to ambient with 0.125” lead length to PC board. The M package θ_{JA} is 180℃/W in still air

Wing Shing Computer Components Co., (H.K.)Ltd. Tel:(852)2341 9276 Fax:(852)2797 8153
Homepage: http://www.wingshing.com E-mail: wsccltd@hkstar.com