



## DESCRIPTION

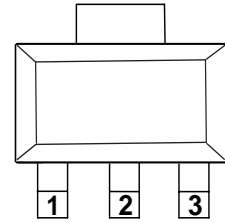
This monolithic integrated circuit is an adjustable 3-terminal positive voltage regulator designed to supply more than 100mA of load current with an output voltage adjustable over a 1.2 to 37V. It employs internal current limiting, thermal shut-down and safe area compensation.

## PIN CONFIGURATION

SOT-89



Pin 1



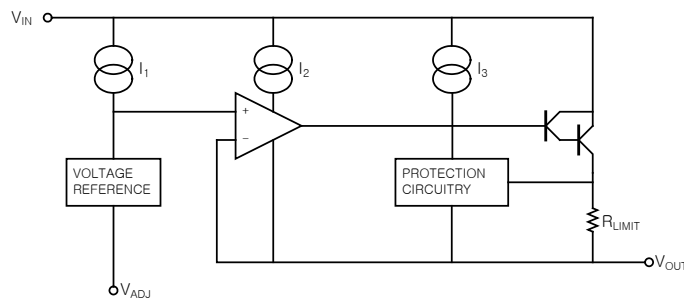
## FEATURES

- Output Current Excess of 100mA
- Output Adjustable Between 1.2V and 37V
- Internal Thermal Overload Protection
- Internal Short Current Limiting
- Output Transistor Safe-Area Compensation
- Moisture Sensitivity Level 3

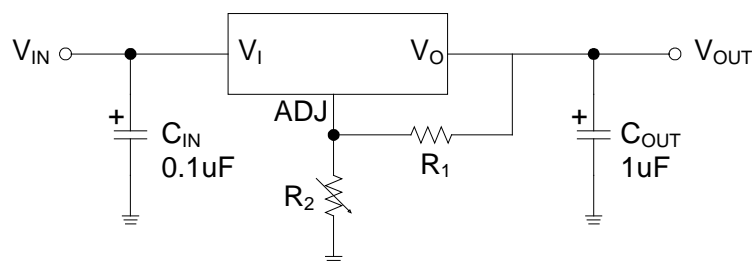
## PIN DESCRIPTION

PIN No.	Name	Functions Description
SOT-89		
1	ADJ	Adjustable
2	V <sub>OUT</sub>	Output Voltage
3	V <sub>IN</sub>	Input Voltage

## BLOCK DIAGRAM



## TYPICAL APPLICATION



$$V_{OUT} = 1.25V(1+R_2/R_1)+I_{ADJ}R_2$$

Note 1. C<sub>IN</sub> is required when regulator is located in appreciable distance from power supply filter.

Note 2. C<sub>OUT</sub> is not needed for stability, however, it does improve transient response.

Note 3. I<sub>ADJ</sub> is controlled to less than 100uA, the error associated with this term is negligible in most applications.



### ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	Value	UNIT
Input-output Voltage Differential	$V_I-V_O$	40	V
Lead Temperature (Soldering, 10 sec)	$T_{SOL}$	230	°C
Power Dissipation	$P_D$	Internally limited	-
Operating Junction Temperature Range	$T_{JOPR}$	-40 ~ 125	°C
Storage Temperature Range	$T_{STG}$	-65 ~ 125	°C

### RECOMMENDED OPERATING RATINGS ( $V_I-V_O=5V$ , $I_O=40mA$ , $-40^{\circ}C \leq T_J \leq 125^{\circ}C$ , unless otherwise specified)

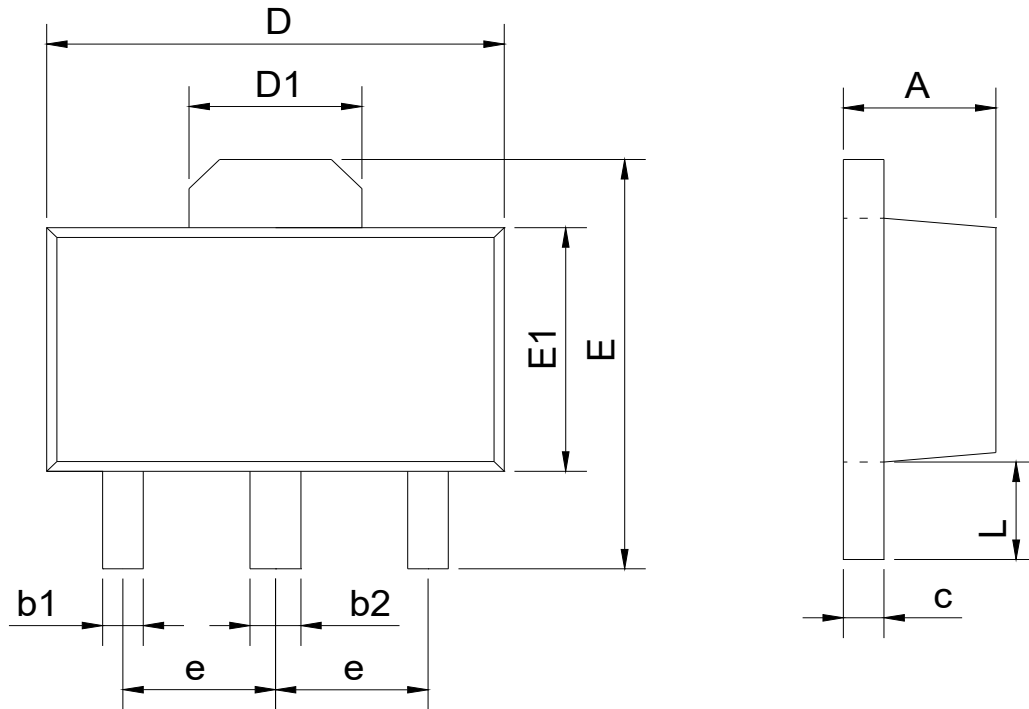
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	Unit	
Line Regulation	$\Delta V_O$	$T_A=-40 \sim 125^{\circ}C$	$3V \leq V_I-V_O \leq 40V$		0.01	0.04	%/V
			$3V \leq V_I-V_O \leq 40V$		0.02	0.07	%/V
Load Regulation	$\Delta V_O$	$T_A=25^{\circ}C$ , $10mA \leq I_O \leq I_{MAX}$	$V_O \leq 5V$		10	25	mV
				$V_O \geq 5V$		0.1	0.5
			$10mA \leq I_O \leq I_{MAX}$		20	80	mV
				$V_O \geq 5V$		0.3	1.7
Adjustable Pin Current	$I_{ADJ}$			46	100	$\mu A$	
Adjustable Pin Current Change	$\Delta I_{ADJ}$	$3V \leq V_I-V_O \leq 40V$ $10mA \leq I_O \leq I_{MAX}$ $P \leq P_{MAX}$		0.2	5	$\mu A$	
Reference Voltage	$V_{REF}$	$3V \leq V_{IN}-V_{OUT} \leq 40V$ $10mA \leq I_O \leq I_{MAX}$ $P_D \leq P_{MAX}$	1.20	1.25	1.30	V	
Temperature Stability	$ST_T$			0.7		%/V <sub>O</sub>	
Minimum Load Current to Maintain Regulation	$L_{(MIN)}$	$V_I-V_O=40V$		3.5	10	mA	
Maximum Output Current	$I_{O(MAX)}$	$V_I-V_O \leq 5V$ , $P_D \leq P_{MAX}$	100	200		mA	
		$V_I-V_O \leq 40V$ , $P_D \leq P_{MAX}$ , $T_A=25^{\circ}C$	0.156	0.4			
RMS Noise, % of V <sub>OUT</sub>	$e_N$	$T_A=25^{\circ}C$ , $10Hz \leq f \leq 10KHz$		0.003	0.01	%/V <sub>O</sub>	
Ripple Rejection	RR	$V_O=10V$ , $f=120Hz$ without $C_{ADJ}$ $C_{ADJ}=10\mu F$		60		dB	
				66	75		
Long-Term Stability, $T_J=T_{HIGH}$	ST	$T_A=25^{\circ}C$ , for end point measurements, 1000HR		0.3	1	%	

\* Load and line regulation are specified at constant junction temperature. Change in VD due to heating effects must be taken into account separately. Pulse testing with low duty is used.



**PACKAGE INFORMATION**

**SOT-89**



SYMBOL	mm	
	min	max
A	1.40	1.60
b1	0.35	0.50
b2	0.45	0.60
c	0.36	0.46
D	4.30	4.70
D1	1.40	1.80
E	4.00	4.40
E1	2.30	2.70
e	1.50BSC	
L	0.80	1.20



### Attention

- Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.
- HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.
- Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of HUA XUAN YANG ELECTRONICS CO.,LTD.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.