



钜地半导体
Tudi Semiconductor

Product Specification

TUDI-AZ1084C

5A Low Dropout Positive Voltage Regulator

网址 www.sztdbdt.com Q

用芯智造 · 卓越品质

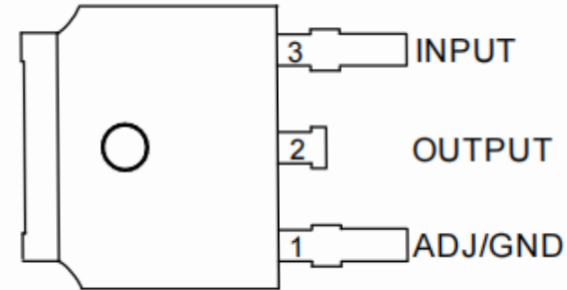
**semiconductor device
manufacturer**

- Design
- research and development
- production
- and sales



Features

- Low Dropout Voltage: 1.35V typical at 5A
- Current Limiting and Thermal Protection
- Output Current: 5A
- Current Limit: 6.5A
- Operating Junction Temperature Range: 0°C to +125°C
- Compatible with Low ESR Ceramic Capacitor
- Line Regulation (Adj Version): 0.015% (typ)
- Load Regulation (Adj Version): 0.1% (typ)
- Totally Lead-Free & Fully RoHS Compliant



TO252-2 Pin Diagram

Explanation

The AZ1084C is a series of low-dropout positive-voltage regulators with a maximum dropout of 1.5V at 5A of load current. The series features on-chip thermal limiting, which provides protection against any combination of overload and ambient temperatures that would create excessive junction temperatures. It also includes a trimmed bandgap reference and a current-limiting circuit. The AZ1084C is available in 3.3V and 5.0V versions. The fixed versions integrate the adjust resistors. It is also available in an adjustable version which can set the output voltage with two external resistors.

The AZ1084C series is available in the standard packages of TO252-2 .

Applications

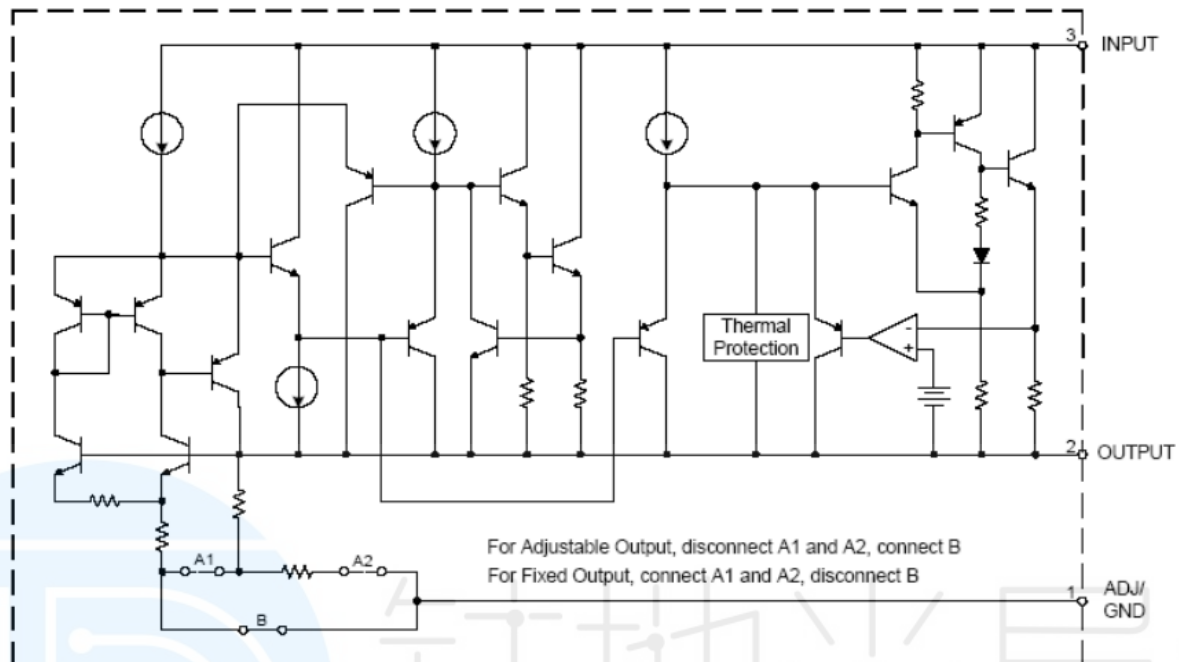
- High-efficiency linear regulators
- Battery chargers
- Post-regulation for switching supplies
- Microprocessor supplies
- Desktop PCs, RISC and embedded processors' supplies

Pin description

Pin number	Pin name	I/O	Function
1	ADJ/GND	G/O	The earth /ADJ
2	OUTPUT	O	Output voltage
3	INPUT	I	Input operating voltage



Functional Block Diagram



Limit Parameter

Parameter		Symbol	Scope	Unit
Input operating voltage		VIN	20	V
Pin temperature (welded 10 seconds)	TO252-2	TLEAD	245	
			260	
Working temperature range		TJ	150	
Storage temperature		TS	-65 ~ +150	V
Power dissipation		PD	Internal restrictions (Note 2)	mW
ESD capability(minimum)		ESD	2000	V

Note 1: Any attempt to apply anything above the absolute maximum rated value may cause permanent damage to the product. The absolute maximum rated value does not mean that the product will work properly under conditions other than the calibrated electrical characteristics.

2、 The maximum allowable power dissipation is a function of the maximum operating junction temperature $T_{J(max)}$, junction-to-air thermal resistance J_A , and ambient temperature T_{amb} . Under given ambient conditions, the maximum allowable power dissipation is calculated as: $PD(max) = (T_{J(max)} - T_{amb}) / J_A$. Exceeding this threshold will cause excessive chip temperature, triggering the regulator to enter an overheat shutdown state. The junction-to-air thermal resistance J_A varies across different packaging types, as it is determined by the specific packaging technology



Electrical Characteristics

(Unless Otherwise Specified, $T_{amb}=25^{\circ}\text{C}$, Normal Operating Junction Temperature Range 0°C to 125°C)

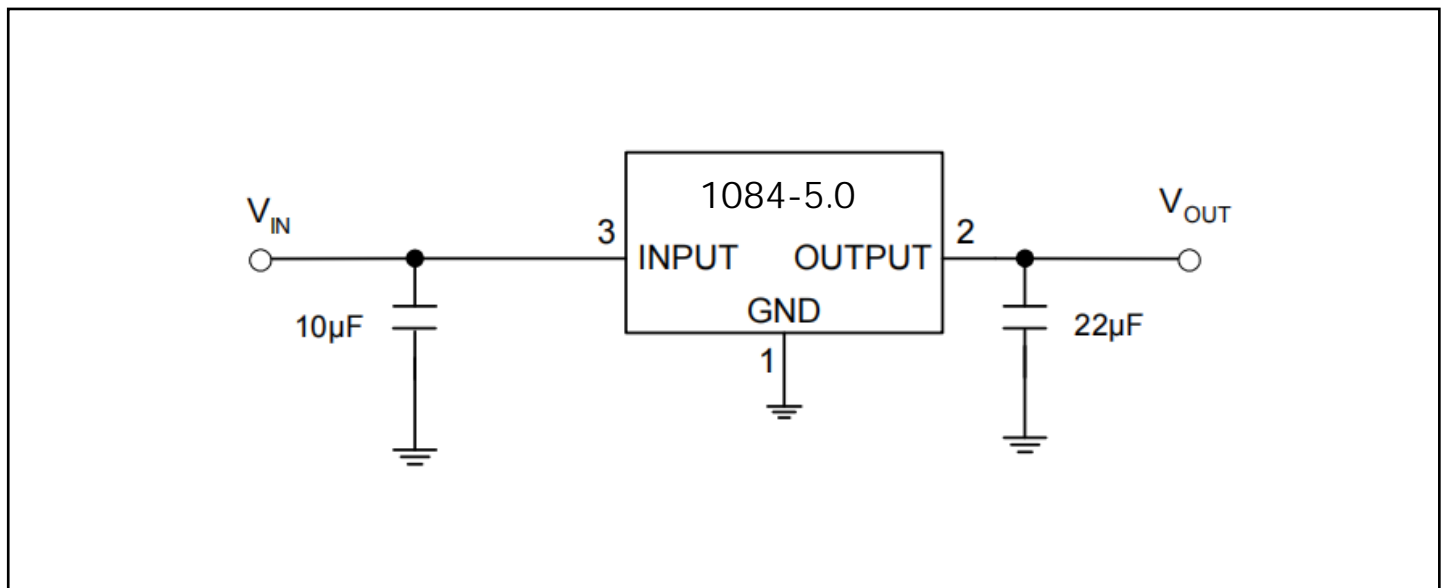
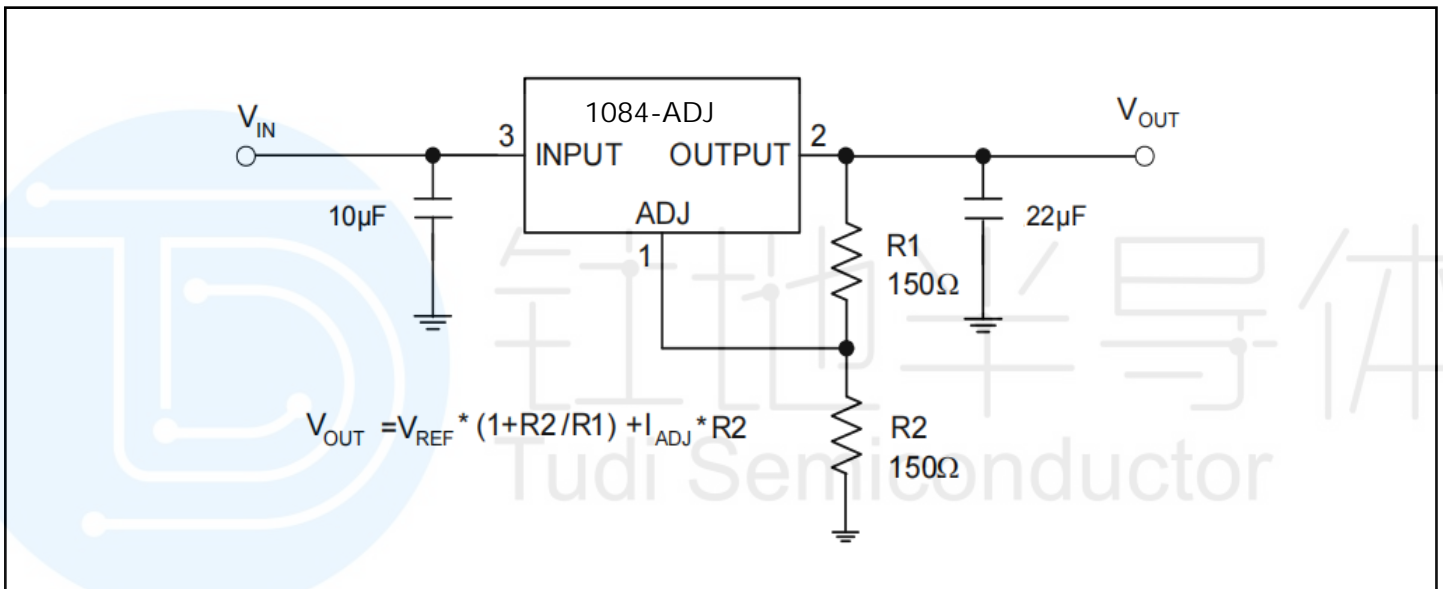
Parameter	Symbol	Test condition	Least value	Typical value	Crest value	Unit
Reference voltage	VREF	1084-ADJ, $I_{OUT}=10\text{mA}$, $V_{IN}-V_{OUT}=3\text{V}$, $10\text{mA}\leq I_{OUT}\leq 5\text{A}$, $1.5\text{V}\leq V_{IN}-V_{OUT}\leq 5\text{V}$	1.231 1.225	1.250 1.250	1.269 1.275	V
Output voltage	VOUT	1084-3.3, $I_{OUT}=10\text{mA}$, $V_{IN}=6.3\text{V}$, $10\text{mA}\leq I_{OUT}\leq 5\text{A}$, $4.8\text{V}\leq V_{IN}\leq 8\text{V}$	3.225 3.234	3.3 3.3	3.350 3.366	V
		1084-5.0, $I_{OUT}=10\text{mA}$, $V_{IN}=8\text{V}$, $10\text{mA}\leq I_{OUT}\leq 5\text{A}$, $6.5\text{V}\leq V_{IN}\leq 10\text{V}$	4.925 4.9	55	5.075 5.1	V
Linearity control	ΔV_{OUT}	1084-ADJ, $I_{OUT}=10\text{mA}$, $2.85\text{V}\leq V_{IN}\leq 10\text{V}$		0.015 0.035	0.2 0.2	%
		1084-3.3, $I_{OUT}=10\text{mA}$, $4.8\text{V}\leq V_{IN}\leq 10\text{V}$		0.51	66	mV
		1084-5.0, $I_{OUT}=10\text{mA}$, $6.5\text{V}\leq V_{IN}\leq 10\text{V}$		0.51	1010	mV
Load regulation	ΔV_{OUT}	1084-ADJ, $0\text{mA}\leq I_{OUT}\leq 5\text{A}$, $V_{IN}-V_{OUT}=3\text{V}$		0.1 0.2	0.3 0.4	%
		1084-3.3, $0\text{mA}\leq I_{OUT}\leq 5\text{A}$, $V_{IN}-V_{OUT}=3\text{V}$		37	1520	mV
		1084-5.0, $0\text{mA}\leq I_{OUT}\leq 5\text{A}$, $V_{IN}-V_{OUT}=3\text{V}$		5 10	2035	mV
Differential pressure	VDROP	$I_{OUT}=5\text{A}$, ΔV_{REF} , $\Delta V_{OUT}=1\%$		1.45	1.5	V
Cut-off current	ILIMIT	$V_{IN}-V_{OUT}=3\text{V}$	5.5	6.5		A
Minimum load current	ILOAD(MIN)	$V_{IN}=10\text{V}$ (1084-ADJ)		3	10	mA
Quiescent current	IQ	$V_{IN}=10\text{V}$ (1084)		5	10	mA
Ripple rejection ratio	PSRR	fRIPPLE=120 Hz, $C_{OUT}=25\mu\text{F}$ tantalum, capacitor, $I_{OUT}=5\text{A}$, $V_{IN}-V_{OUT}=3\text{V}$	60	72		dB
Adjustable pin current	IADJ	$V_{IN}=4.25\text{V}$, $I_{OUT}=10\text{mA}$		55	120	μA
Adjustable pin current variation	ΔI_{ADJ}	$10\text{mA}\leq I_{OUT}\leq 5\text{A}$, $1.5\text{V}\leq (V_{IN}-V_{OUT})\leq 4.5\text{V}$		0.2	5	μA
Temperature stability		$I_{OUT}=10\text{mA}$, $V_{IN}-V_{OUT}=1.5\text{V}$		0.5		%
Long term stability		$T_{amb}=125^{\circ}\text{C}$, 1000Hrs		0.5		%
RMS noise (%ofVOUT)		$10\text{Hz}\leq f\leq 10\text{kHz}$		0.003		%
Thermal resistance	θ_{JA}	TO252-2		60		$^{\circ}\text{C/W}$
				60		



Recommended Working Conditions

Parameter	Symbol	Scope	Unit
Input voltage	V _{IN}	12	V
Working temperature range	T _J	-40 to 125	

Typical Applications Circuit





Order information

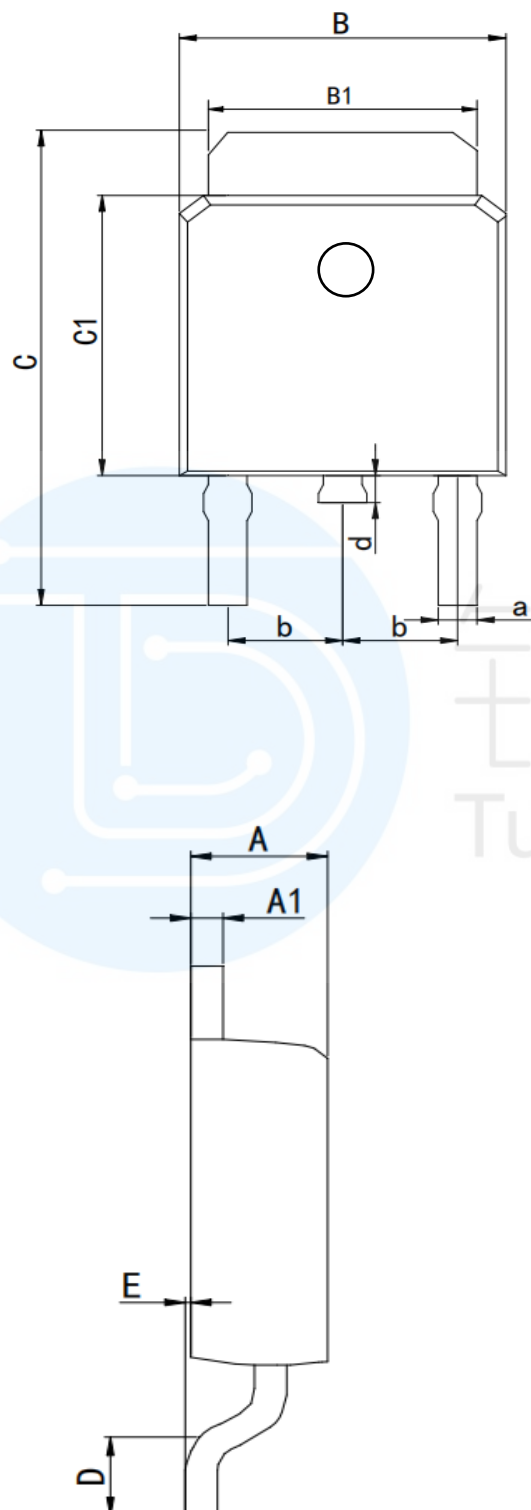
Order Number	Package	Package Quantity	Marking On The park	Temperature
AZ1084CD-3.3TRG1-TUDI	TO252-2	Tape,Reel,2500	AZ1084CD-3.3G1	- 40°C to 125°C
AZ1084CD-5.0TRG1-TUDI	TO252-2	Tape,Reel,2500	AZ1084CD-5.0G1	
AZ1084CD-ADJTRG1-TUDI	TO252-2	Tape,Reel,2500	AZ1084CD-ADJG1	



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Package TO252-2



Symbol:	Min:	Max:
A	2.1	2.5
A1	0.45	0.7
B	6.4	6.8
B1	5.1	5.5
C	9.2	10.6
C1	5.3	6.3
D	0.9	1.75
E	0	0.23
a	0.5	0.8
d	0.6	1.2
b	2.28BSC	



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