钍地半导体
Tudi Semiconductor

Product SPecification

TUDI-LM1084

5A Low Dropout Positive Voltage Regulator

网址 www.sztdbdt.com

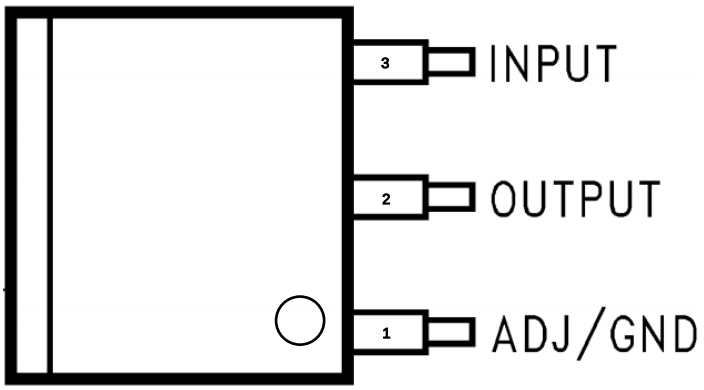
用芯智造·卓越品质

semiconductor device manufacturer

- Design
- research and development
- production
- and sales

Features

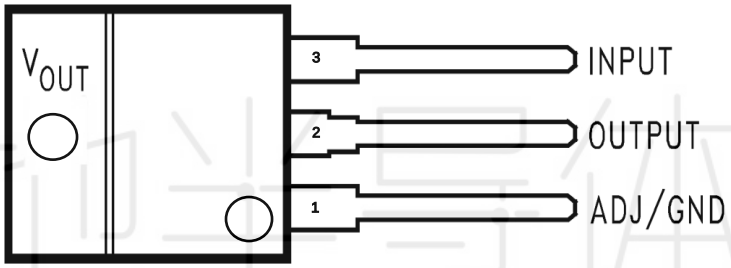
- Supply 3.3V, 5.0V and adjustable version
- Current limit and thermal protection
- Output current: 5A
- Industrial temperature range: -40°C to 125°C
- Line regulation 0.015% (typical)
- Load regulation .1% (typical)



TO263-3 Pin Diagram

Explanation

The LM1084 is a voltage regulator with a maximum dropout voltage of 1.5V at a load current of 5A.
Two resistors are required to set the output voltage of the adjustable output voltage version of the1084. The fixed output voltage versions have the regulating resistor integrated .The LM1084 circuit contains a zener trimmed bandgap reference, current limiting and thermal shutdown functions.



TO220-3 Pin Diagram

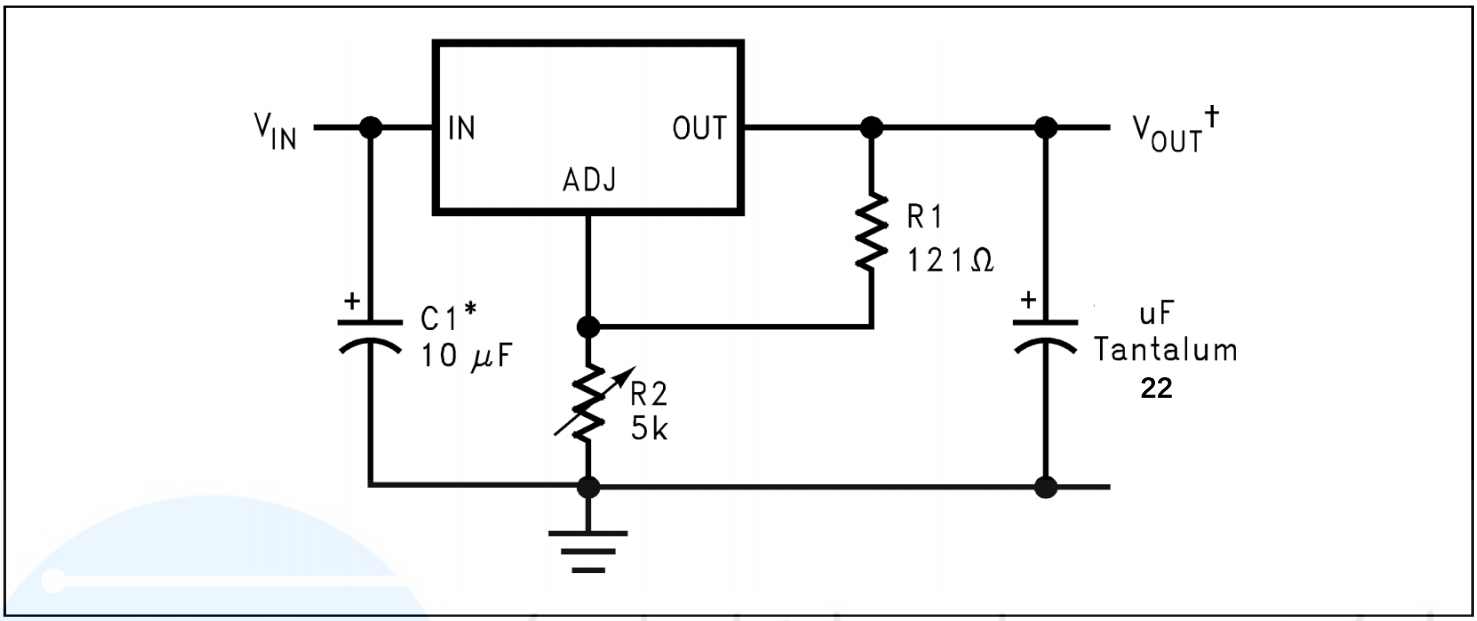
Applications

- Post-regulator for switch-mode DC/DC converters
- Efficient linear regulator
- Battery charger

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

Typical application circuit diagram



*NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS

†$V_{OUT} = 1.25V\left(1 + \frac{R2}{R1}\right)$

Limit Parameter

Parameter		Symbol	Scope	Unit
Input operating voltage		VIN	20	V
Pin temperature (welded 10 seconds)	TO-263/TO-220	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 TJ(max), junction-to-air thermal resistance θJA, and ambient temperature Tamb. Under given ambient conditions, the maximum allowable power dissipation is calculated as:PD (max) = (TJ(max) -Tamb)/θJA. Exceeding this threshold will cause excessive chip temperature, triggering the regulator to enter an overheat shutdown state. The junction-to-air thermal resistance θJA varies across different packaging types, as it is determined by the specific packaging technology

Electrical Characteristics

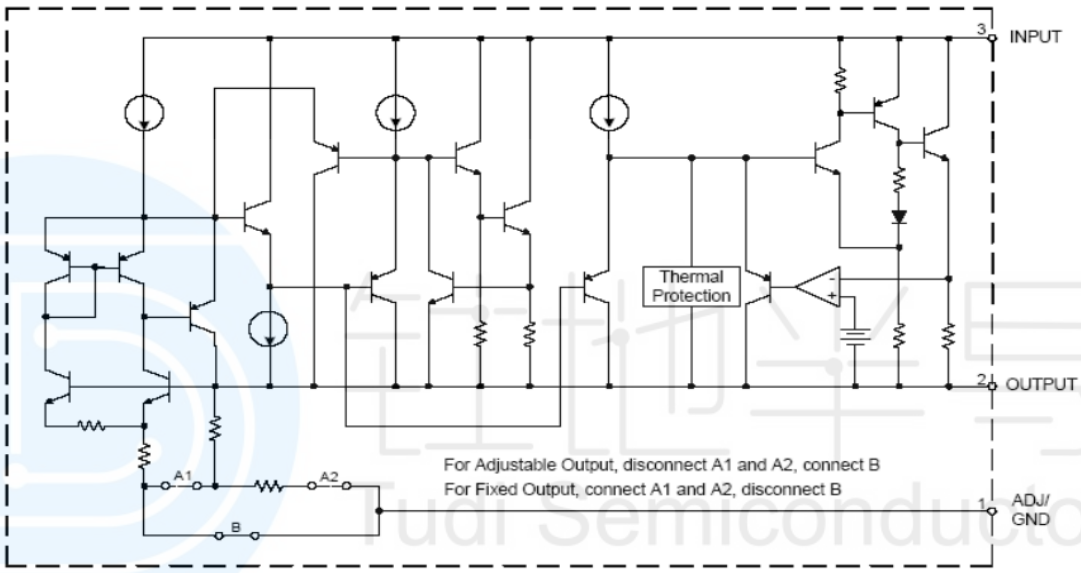
(Unless Otherwise Specified,Tamb=25°C, Normal Operating Junction Temperature Range 0°C to 125°C)

Parameter	Symbol	Test condition	Least value	Typical value	Crest value	Unit
Reference voltage	VREF	1084-ADJ,IOUT=10mA, VIN-VOUT=3V,10mA≤IOUT≤5A,1.5V≤VIN-VOUT≤5V	1.231 1.225	1.250 1.250	1.269 1.275	V
Output voltage	VOUT	1084-3.3,IOUT=10mA, VIN=6.3V,10mA≤IOUT≤5A, 4.8V≤VIN≤8V	3.225 3.234	3.3 3.3	3.350 3.366	V
		1084-5.0,IOUT=10mA, VIN=8V,10mA≤IOUT≤5A, 6.5V≤VIN≤10V	4.925 4.9	55	5.075 5.1	V
Linearity coetrol	△VOUT	1084-ADJ, IOUT=10mA,2.85V≤VIN≤10V		0.015 0.035	0.2 0.2	%
		1084-3.3, IOUT=10mA,4.8V≤VIN≤10V		0.51	66	mV
		1084-5.0, IOUT=10mA,6.5V≤VIN≤10V		0.51	1010	mV
Load regulation	△VOUT	1084-ADJ,OmA≤IOUT≤5A,VIN-VOUT=3V		0.1 0.2	0.3 0.4	%
		1084-3.3,OmA≤IOUT≤5A,VIN-VOUT=3V		37	1520	mV
		1084-5.0,OmA≤IOUT≤5A, VIN-VOUT=3V		5 10	2035	mV
Differential pressure	VDROP	IOUT=5A,△VREF,△VOUT=1%		1.45	1.5	V
Cut-off current	ILIMIT	VIN-VOUT=3V	5.5	6.5		A
Minimum load current	ILOAD(MIN)	VIN=10V(1084-ADJ)		3	10	mA
Quiescent current	IQ	VIN=10V (1084)		5	10	mA
Ripple rejection ratio	PSRR	fRIPPLE=120 Hz,COUT=25μF tantalum,capacitor,IOUT=5A, VIN-VOUT=3V	60	72		dB
Adjustable pin current	IADJ	VIN=4.25V,IOUT=10mA		55	120	μA
Adjustable pin current variation	△IADJ	10mA≤IOUT≤5A,1.5V≤(VIN-VOUT)≤4.5V		0.2	5	μA
Temperature stability		IOUT=10mA,VIN-VOUT=1.5V		0.5		%
Long term stability		Tamb=125℃,100OHrs		0.5		%
RMS noise (%ofVOUT)		10Hz≤f≤10kHz		0.003		%
Thermal resistance	θJA	TO-263-3		60		℃W
		TO-220-3		60		

Recommended Working Conditions

Parameter	Symbol	Scope	Unit
Input voltage	VIN	12	V
Working temperature range	TJ	-40 to 125	℃

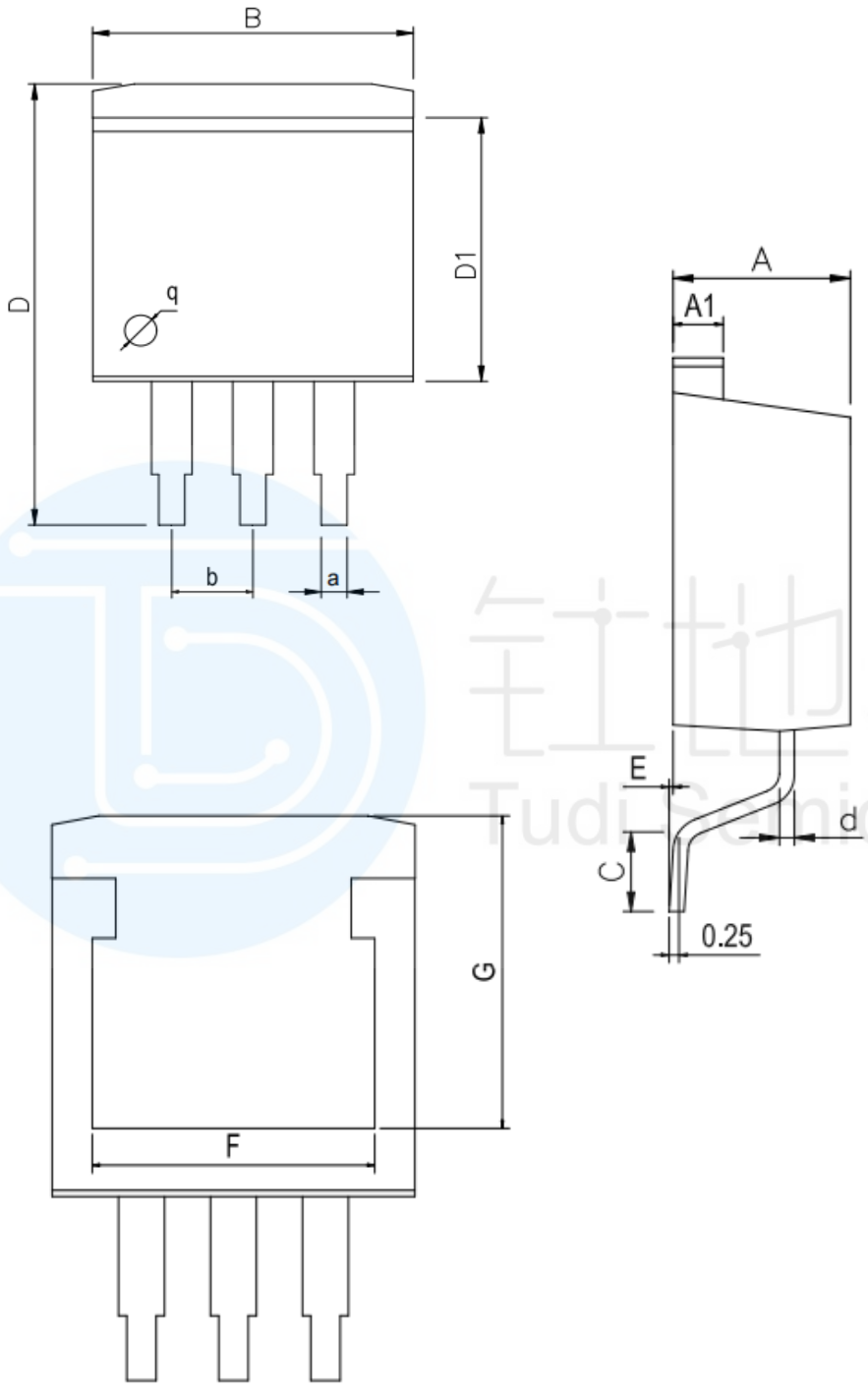
Functional Block Diagram



Order information

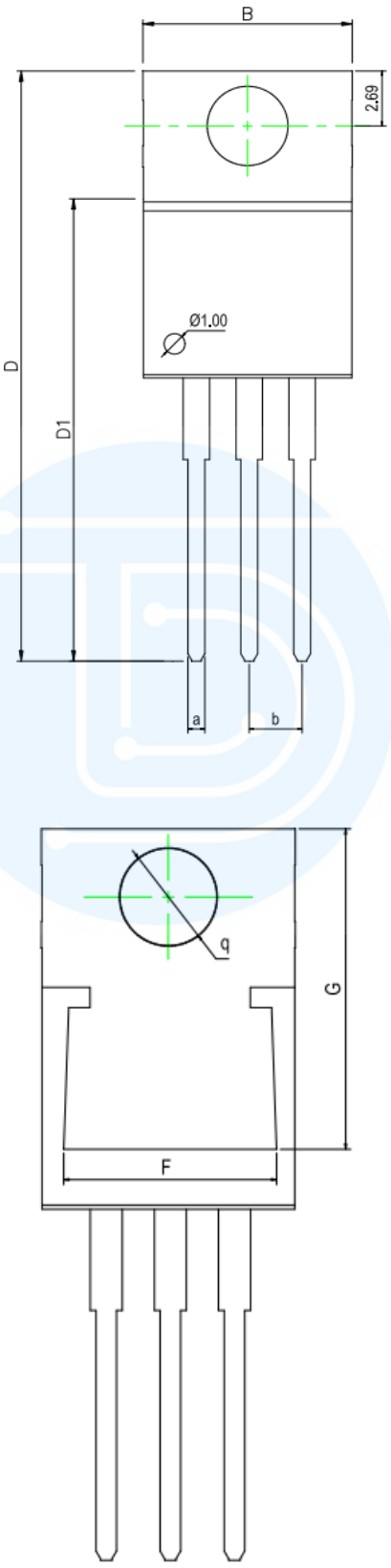
Order Number	Package	Package Quantity	Marking On The park	Temperature
LM1084ISX-3.3/NOPB-TUDI	TO263-3	Tape,Reel,500	LM1084IS-3.3	- 40°C to 125°C
LM1084IT-3.3/NOPB-TUDI	TO220-3	Tube,50,A box of 2000	LM1084IT-3.3	
LM1084ISX-5.0/NOPB-TUDI	TO263-3	Tape,Reel,500	LM1084IS-5.0	
LM1084IT-5.0/NOPB-TUDI	TO220-3	Tube,50,A box of 2000	LM1084IT-5.0	
LM1084ISX-ADJ/NOPB-TUDI	TO263-3	Tape,Reel,500	LM1084IS-ADJ	
LM1084IT-ADJ/NOPB-TUDI	TO220-3	Tube,50,A box of 2000	LM1084IT-ADJ	

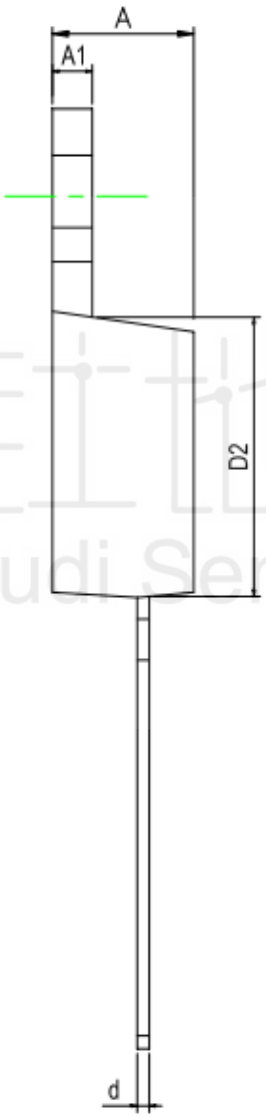
Package TO263-3



Symbol:	Min:	Max:
A	4.45	4.62
A1	1.22	1.32
B	10	10.4
C	1.89	2.19
D	13.7	14.6
D1	8.38	8.89
E	0	0.305
F	8.332	8.552
G	7.7	8.1
a	0.71	0.97
b	2.54BSC	

Package TO220-3





Symbol:	Min:	Max:
A	4.45	4.62
A1	1.22	1.32
B	10	10.4
D	28.2	28.9
D1	22.22	22.62
D2	8.5	9.1
F	8.3	8.55
G	12.55	12.75
a	0.71	0.97
d	0.33	0.42
b	2.54BSC	
q	3.8TYP	

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