



钲地半导体

Tudi Semiconductor

## Product Specification

TUDI-AMS1084

5A Low Dropout Positive Voltage Regulator

网址 [www.sztdbdt.com](http://www.sztdbdt.com) Q

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**semiconductor device  
manufacturer**

- Design
- research and development
- production
- and sales



## Features

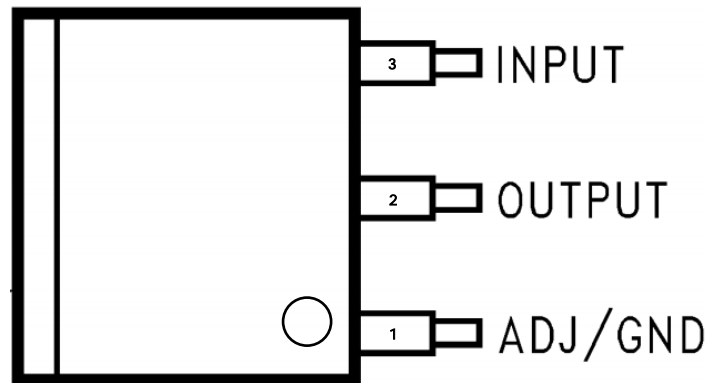
- Three Terminal Adjustable or Fixed 3.3V, and 5.0V
- Output Current of 5A
- Operates Down to 1V Dropout
- Line Regulation: 0.015%
- Load Regulation: 0.1%
- TO-220, TO-263 and TO-252 packages available

## Applications

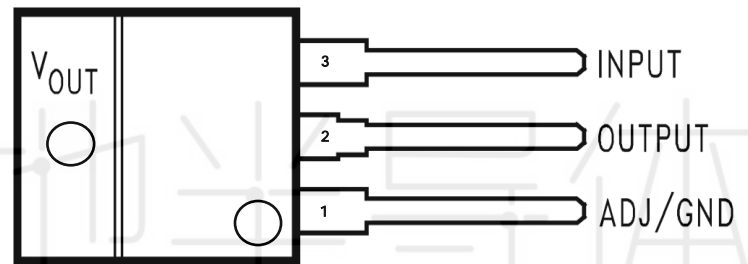
- High Efficiency Linear Regulators
- Post Regulators for Switching Supplies
- Microprocessor Supply Battery Chargers
- Constant Current Regulators
- Notebook/Personal Computer Supplies
- Portable Instrumentation

## Explanation

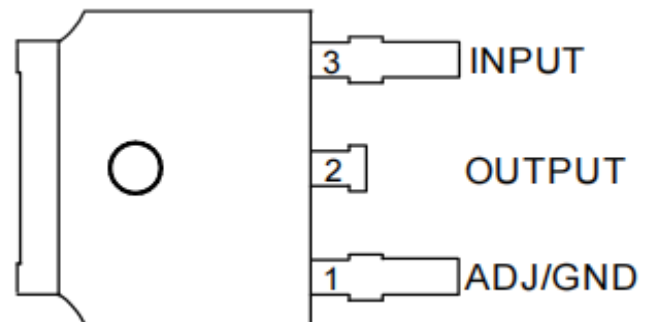
The AMS1084 series of adjustable and fixed voltage regulators are designed to provide 5A output current and to operate down to 1V input-to-output differential. The dropout voltage of the device is guaranteed maximum 1.5V at maximum output current, decreasing at lower load currents. On-chip trimming adjusts the reference voltage to 1%. Current limit is also trimmed, minimizing the stress under overload conditions on both the regulator and power source circuitry. The AMS1084 devices are pin compatible with older three-terminal regulators and are offered in 3 lead TO-220 package, 3 and 2 lead TO-263 (Plastic DD) and TO-252 (D PAK) package.



TO263-3 Pin Diagram



TO220-3 Pin Diagram



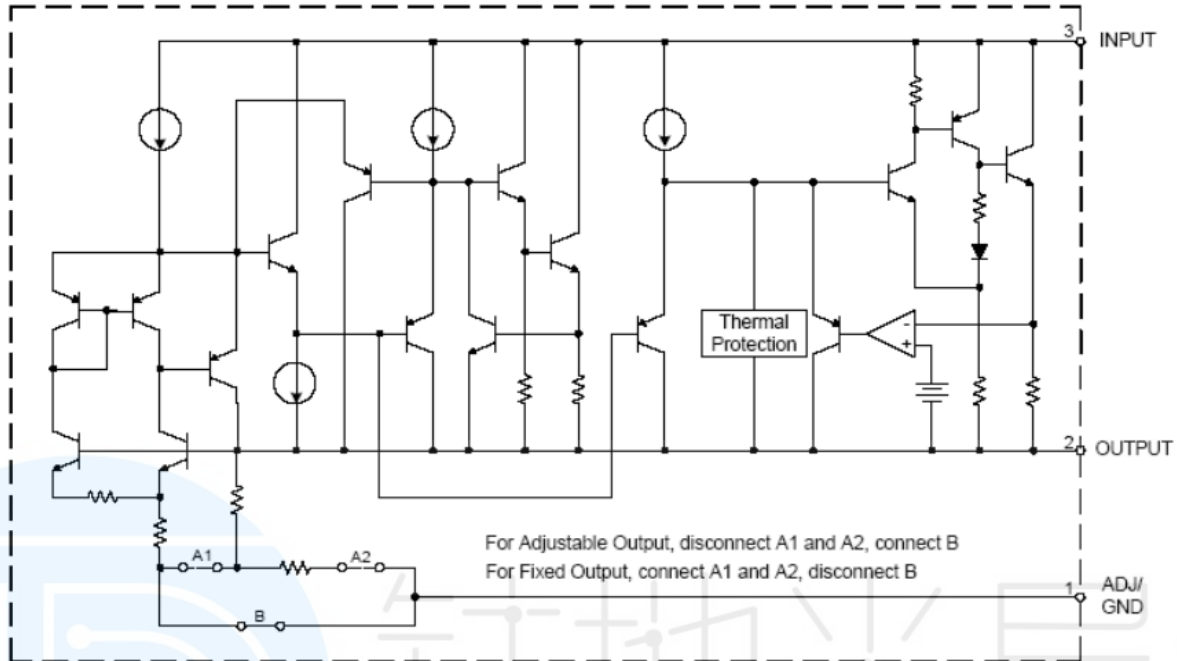
TO252-2 Pin Diagram

## 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)	TO-263-3	TLEAD	245	
	TO-220-3 TO252-2		260	
Working temperature range		TJ	150	
Storage temperature		TS	-65 ~ +150	V
Power dissipation		PD	Internal restrictions (Note 2)	
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  $JA$ , and ambient temperature  $T_{amb}$ . Under given ambient conditions, the maximum allowable power dissipation is calculated as:  $PD(max) = (T_{J(max)} - T_{amb}) / JA$ . Exceeding this threshold will cause excessive chip temperature, triggering the regulator to enter an overheat shutdown state. The junction-to-air thermal resistance  $JA$  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  $0^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ )

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	$\Delta V_{OUT}$	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	$\Delta V_{OUT}$	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	$I_{OUT}=5\text{A}$ , $\Delta V_{REF}$ , $\Delta V_{OUT}=1\%$		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	$\mu\text{A}$
Adjustable pin current variation	$\Delta I_{ADJ}$	$10\text{mA}\leq I_{OUT}\leq 5\text{A}$ , $1.5\text{V}\leq (V_{IN}-V_{OUT})\leq 4.5\text{V}$		0.2	5	$\mu\text{A}$
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	$\theta_{JA}$	TO-263-3 TO-220-3 TO252-2		60		$^{\circ}\text{C/W}$
				60		

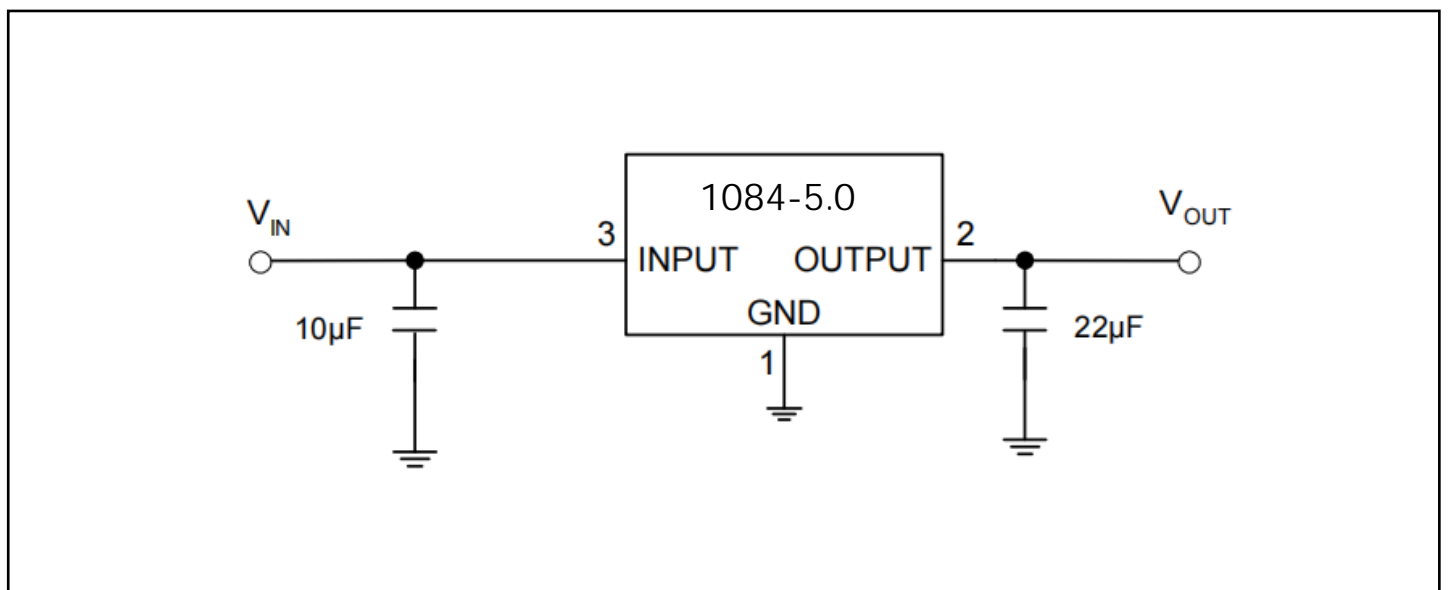
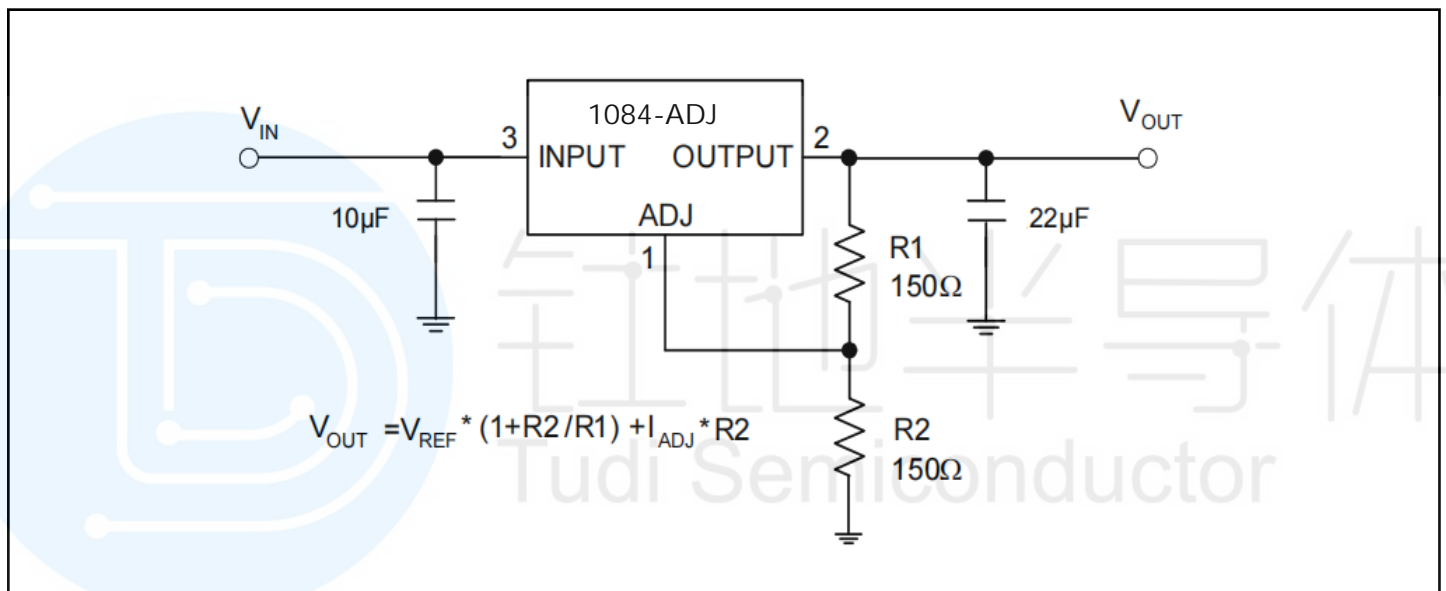




## Recommended Working Conditions

Parameter	Symbol	Scope	Unit
Input voltage	V <sub>IN</sub>	12	V
Working temperature range	T <sub>J</sub>	-40 to 125	

## Typical Applications Circuit

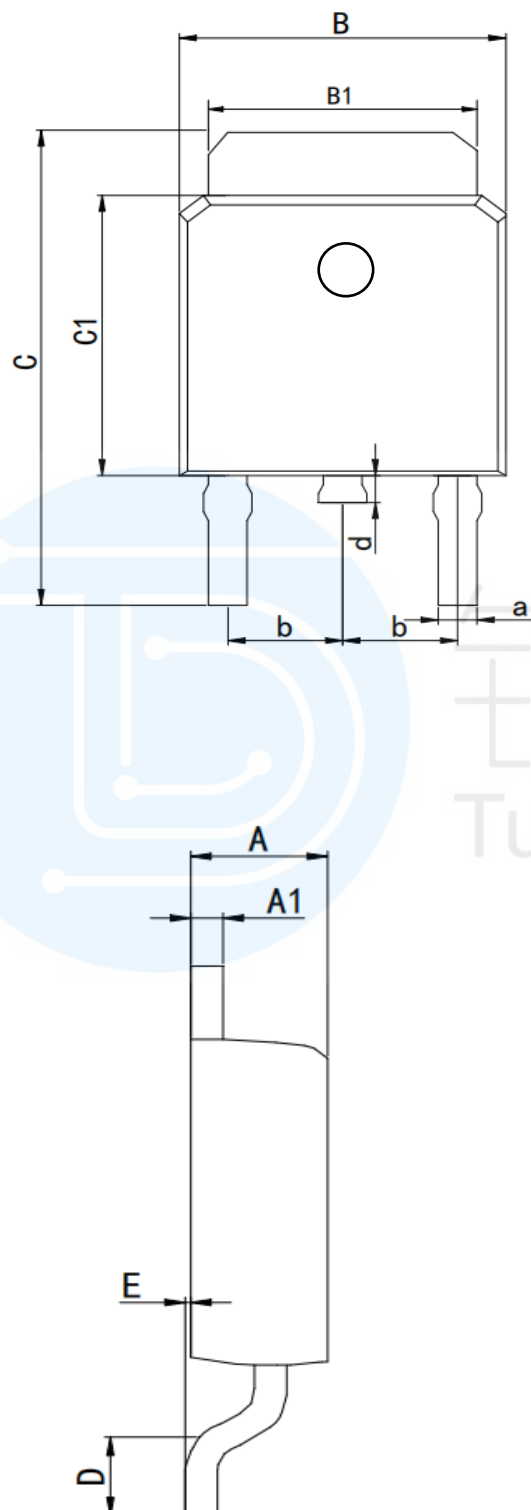




## Order information

Order Number	Package	Package Quantity	Marking On The park	Temperature
AMS1084CM-3.3-TUDI	TO263-3	Tape,Reel,500	1084CM-3.3	- 40°C to 125°C
AMS1084CT-3.3-TUDI	TO220-3	Tube,50,A box of 2000	1084CT-3.3	
AMS1084CD-3.3-TUDI	TO252-2	Tape,Reel,2500	1084CD-3.3	
AMS1084CM-5.0-TUDI	TO263-3	Tape,Reel,500	1084CM-5.0	
AMS1084CT-5.0-TUDI	TO220-3	Tube,50,A box of 2000	1084CT-5.0	
AMS1084CD-5.0-TUDI	TO252-2	Tape,Reel,2500	1084CD-3.3	
AMS1084CM-TUDI	TO263-3	Tape,Reel,500	1084CM	
AMS1084CT-TUDI	TO220-3	Tube,50,A box of 2000	1084CT-ADJ	
AMS1084CD-TUDI	TO252-2	Tape,Reel,2500	1084CD-3.3	

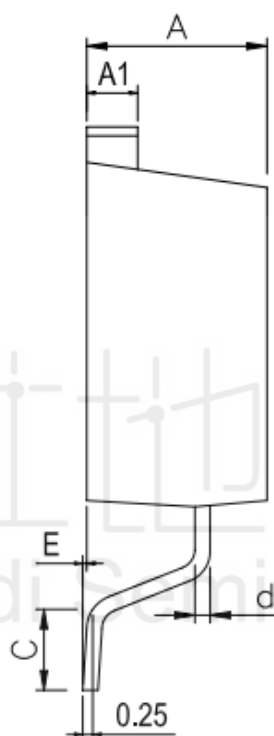
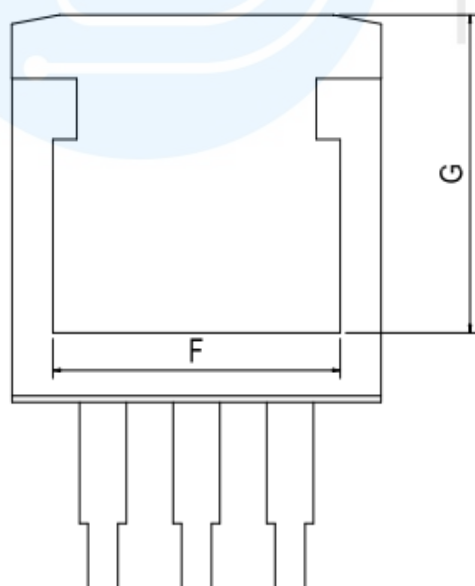
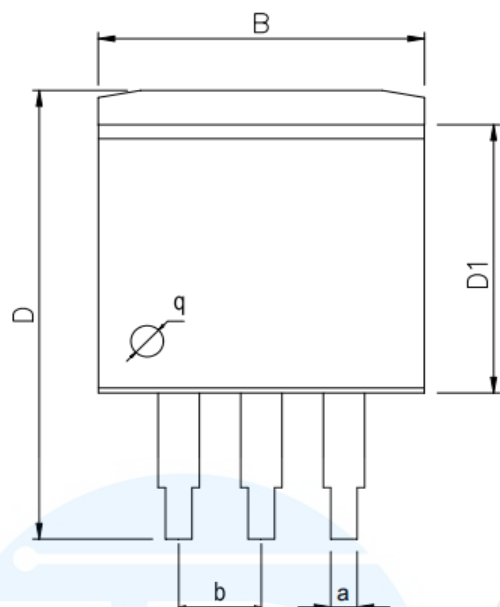
## Package TO252-2



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	



## Package TO263-3

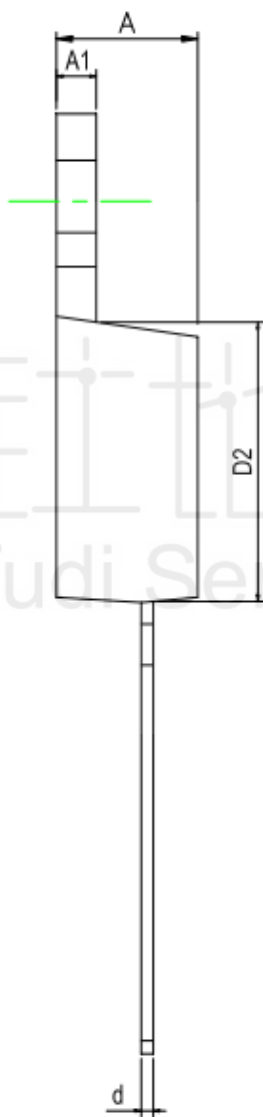
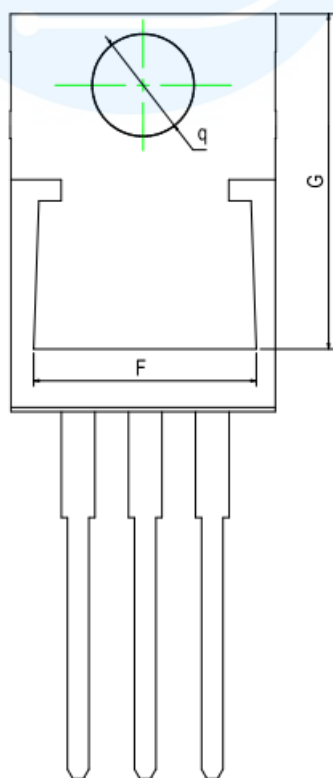
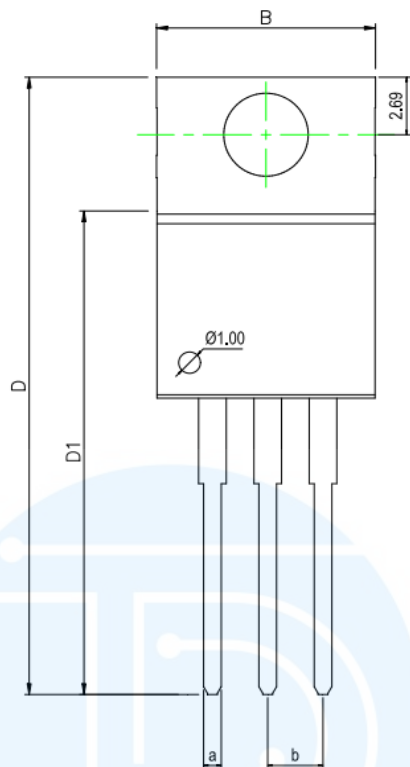


Symbol:	Min:	Max:
A	4.45	4.62
A1	1.22	1.32
B	10	10.4
C	1.89	2.19
D	13.7	14.6
D1	8.38	8.89
E	0	0.305
F	8.332	8.552
G	7.7	8.1
a	0.71	0.97
b	2.54BSC	





## 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	



## Important statement:

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