



钜地半导体
Tudi Semiconductor

Product Specification

TUDI-LT1084

5A Low Dropout Positive Voltage Regulator

网址 www.sztdbdt.com Q

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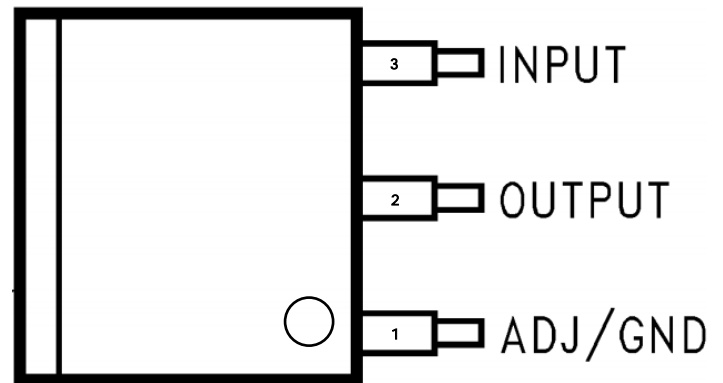
semiconductor device
manufacturer

- Design
- research and development
- production
- and sales



Features

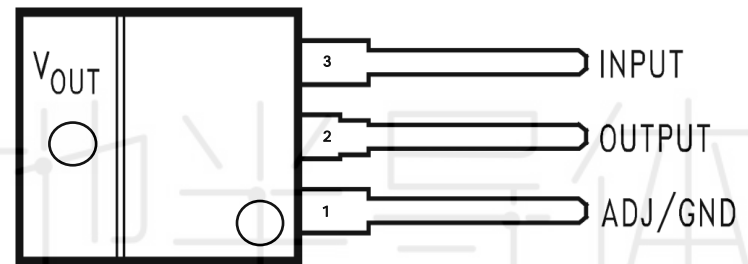
- 3-Terminal Adjustable
- Output Current of 3A, 5A or 7.5A
- Operates Down to 1V Dropout
- Guaranteed Dropout Voltage at Multiple Current Levels
- Line Regulation: 0.015%
- Load Regulation: 0.1%
- 100% Thermal Limit Functiona Test
- Fixed Versions Available
- Available in 3-Lead Plastic TO-220 and TO263 Packages



TO263-3 Pin Diagram

Applications

- High Efficiency Linear Regulators
- Post Regulators for Switching Supplies
- Constant Current Regulators
- Battery Chargers



TO220-3 Pin Diagram

Explanation

The LT1084 series adjustable regulators provide 5A of current and have higher efficiency than currently available devices. All of the internal circuits are to operate with 1V of input-to-output differential and the dropout voltage is fully specified as a function of load current. At full output current the dropout is guaranteed maximum 1.5V, dropping at lower load currents. On-chip adjustments set the reference voltage to within 1%. The current limit is also adjusted to minimize stress on regulator and power supply circuitry under overload conditions.

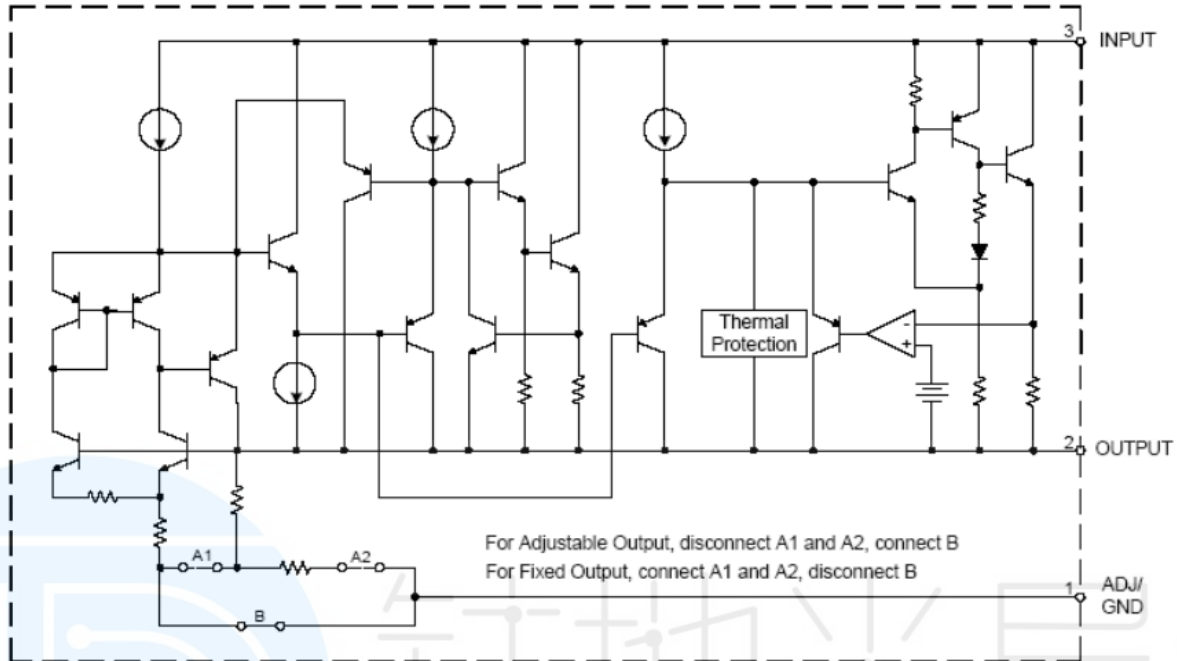
The LT1084 devices are pin compatible with older 3-terminal regulators. These new devices require a 22μF output capacitor, which is already included in most regulator designs.

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		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°C to 125°C)

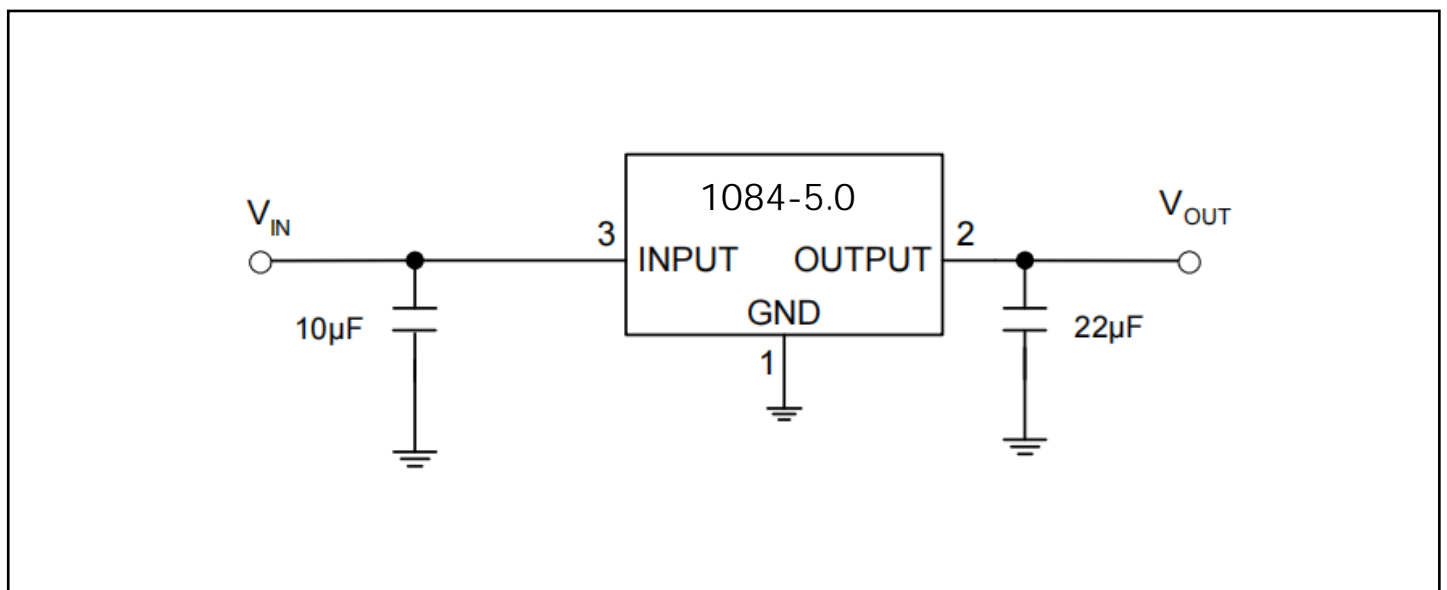
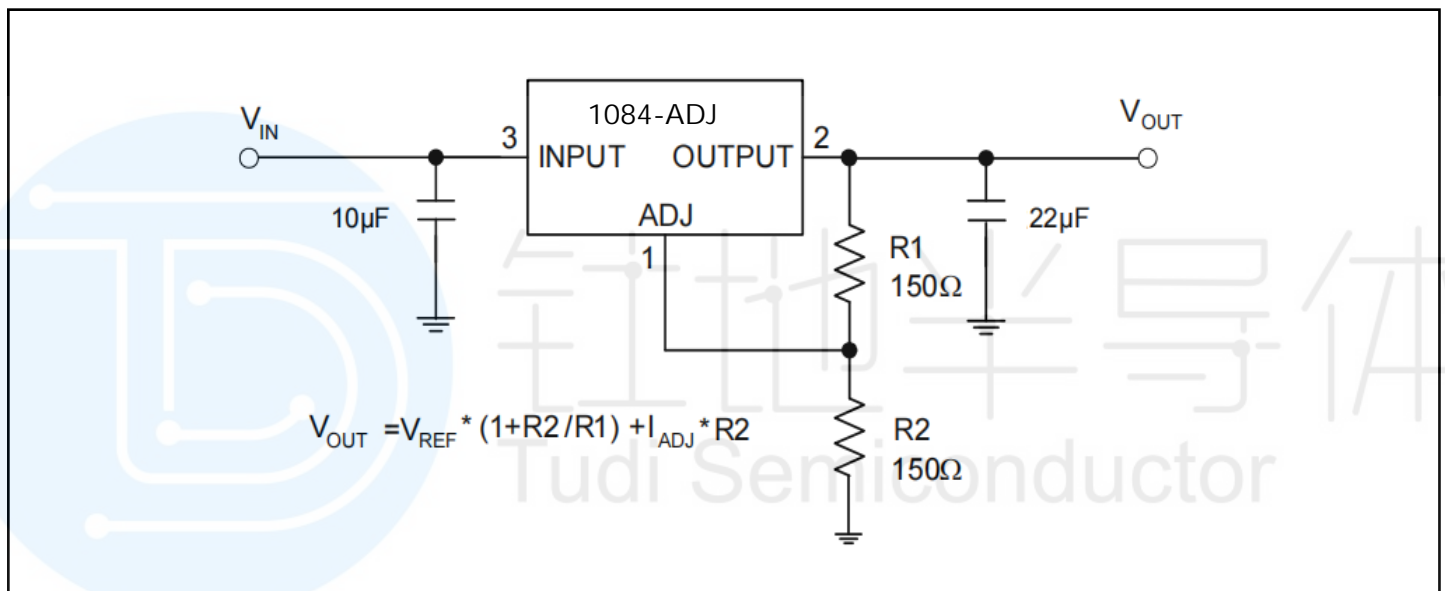
Parameter	Symbol	Test condition	Least value	Typical value	Crest value	Unit
Reference voltage	VREF	1084-ADJ, $I_{OUT}=10\text{mA}$, $V_{IN}-V_{OUT}=3\text{V}$, $10\text{mA}\leq I_{OUT}\leq 5\text{A}$, $1.5\text{V}\leq V_{IN}-V_{OUT}\leq 5\text{V}$	1.231 1.225	1.250 1.250	1.269 1.275	V
Output voltage	VOUT	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}	TO-263-3 TO-220-3		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



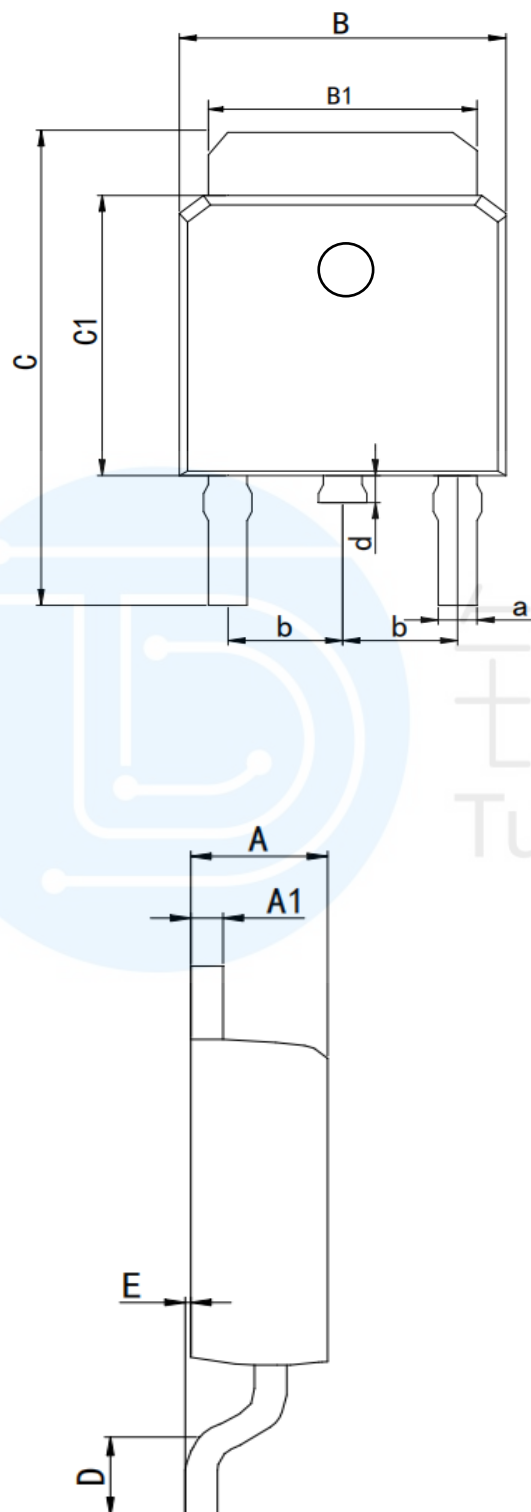


Order information

Order Number	Package	Package Quantity	Marking On The park	Temperature
LT1084CT-3.3#PBF-TUDI	TO220-3	Tube,50,A box of 2000	LT1084CT-3.3	- 0°C to 105°C
LT1084CM-3.3#PBF-TUDI	TO263-3	Tape,Reel,500	LT1084CM-3.3	
LT1084CT-5.0#PBF-TUDI	TO220-3	Tube,50,A box of 2000	LT1084CT-5.0	
LT1084CM-5.0#PBF-TUDI	TO263-3	Tape,Reel,500	LT1084CM-5.0	
LT1084CT#PBF-TUDI	TO220-3	Tube,50,A box of 2000	LT1084CT	
LT1084CM#PBF-TUDI	TO263-3	Tape,Reel,500	LT1084CM	
LT1084IT-3.3#PBF-TUDI	TO220-3	Tube,50,A box of 2000	LT1084IT-3.3	- 40°C to 125°C
LT1084IM-3.3#PBF-TUDI	TO263-3	Tape,Reel,500	LT1084IM-3.3	
LT1084IT-5.0#PBF-TUDI	TO220-3	Tube,50,A box of 2000	LT1084IT-5.0	
LT1084IM-5.0#PBF-TUDI	TO263-3	Tape,Reel,500	LT1084IM-5.0	
LT1084IT#PBF-TUDI	TO220-3	Tube,50,A box of 2000	LT1084IT	
LT1084IM#PBF-TUDI	TO263-3	Tape,Reel,500	LT1084IM	



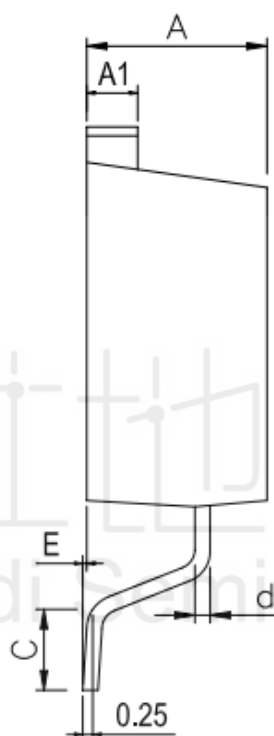
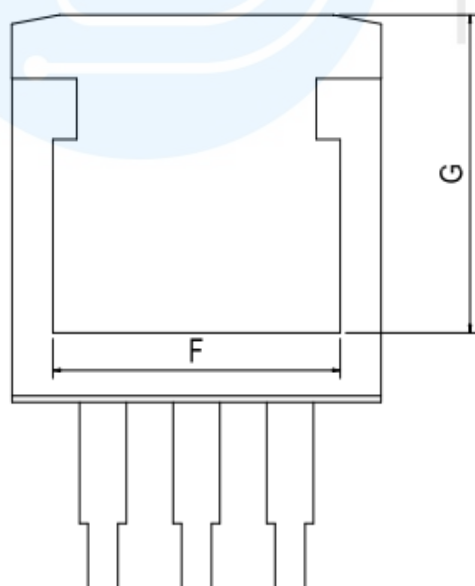
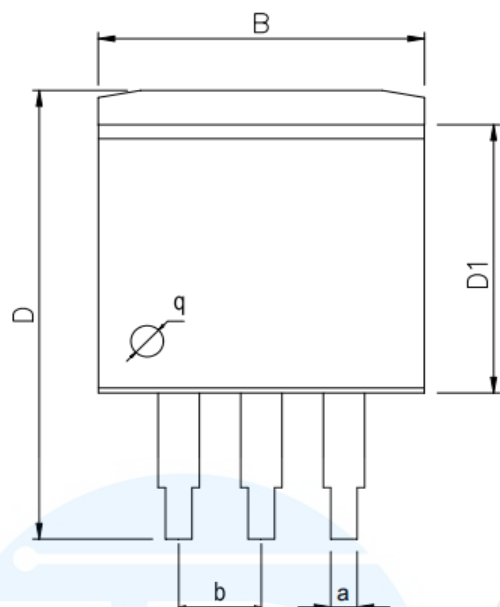
Package TO252-2



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	

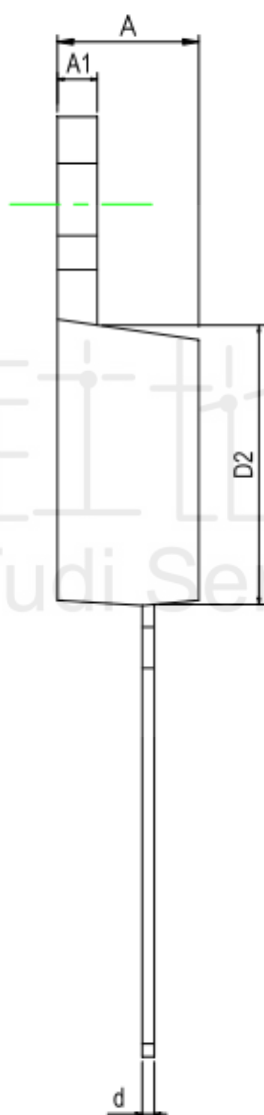
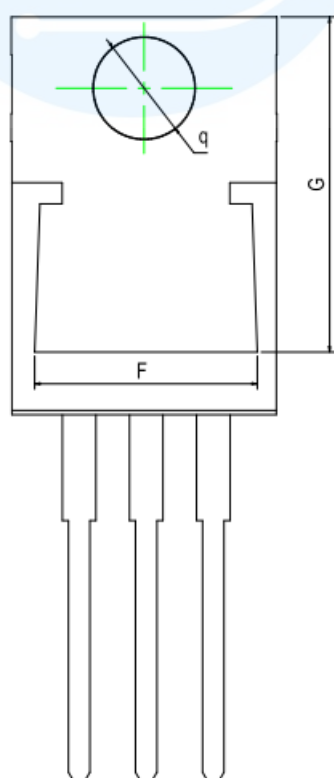
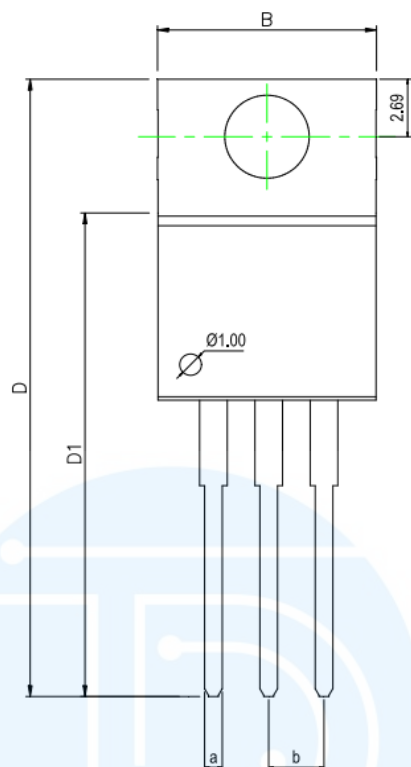


Package TO263-3



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	



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