317

DATASHEET

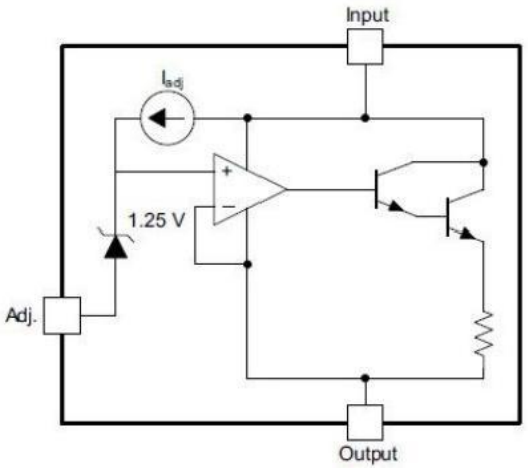
Specification Revision History:

Version	Date	Description
V1.0	2020/09	New
V1.1	2023/02	Modify Ordering Information
V1.2	2025/02	Modify Ordering Information
V1.3	2025/03	Add application precautions and overall typesetting.

Features

- Output current greater than 1.5A
- Range Output voltage range adjustable from 1.25V to 37V

Block Diagram

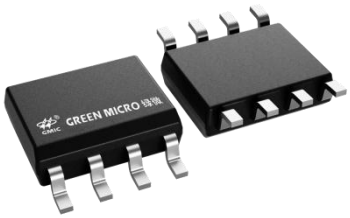


Applications

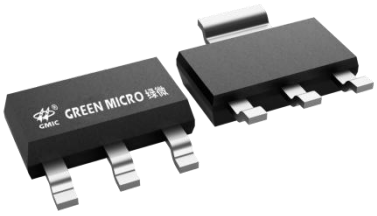
- Power Management for Computer Mother Board,Graphic Card
- LCD Monitor and LCD TV
- DVD Decode Board
- ADSL Modem
- Post Regulators for Switching Supplies

General Description

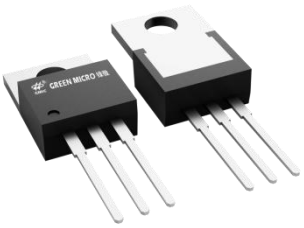
The 317 device is an adjustable three-terminal positive-voltage regulator capable of supplying more than 1.5A over an output-voltage range of 1.25V to 37V. 317 features a very low standby current 1.5mA.



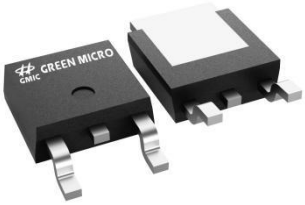
SOP-8



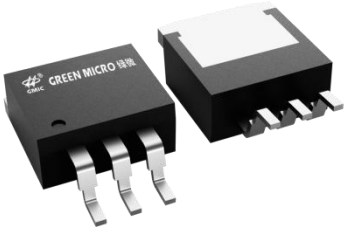
SOT-223



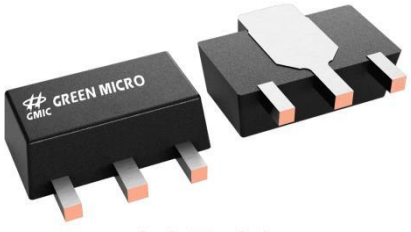
TO-220



TO-252



TO-263

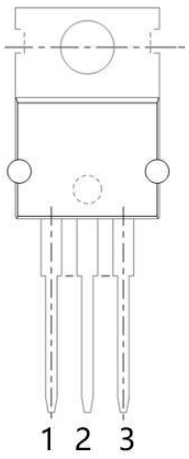


SOT-89

Product Model	Package Type	Marking	Packing	Packing Qty
GM317LDR	SOP-8	LM317 A62	REEL	2500PCS/REEL
GM317L	SOT-89-3	LM317 162	REEL	1000PCS/REEL
GM317AEMP	SOT-223	LM317 162	REEL	2500PCS/REEL
GM317T	TO-220	LM317 162	TUBE	1000PCS/BOX
GM317M	TO-252-2	LM317 162	REEL	2500PCS/REEL
GM317D	TO-263-3	LM317 162	REEL	800PCS/REEL
LM317LDR	SOP-8	LM317 A62	REEL	2500PCS/REEL
LM317L	SOT-89-3	LM317 162	REEL	1000PCS/REEL
LM317AEMP	SOT-223	LM317 162	REEL	2500PCS/REEL
LM317T	TO-220	LM317 162	TUBE	1000PCS/BOX
LM317M	TO-252-2	LM317 A62	REEL	2500PCS/REEL
LM317D	TO-263-3	LM317 162	REEL	800PCS/REEL

Pin Configuration

TO220 Top View



SOT223 (Top View)

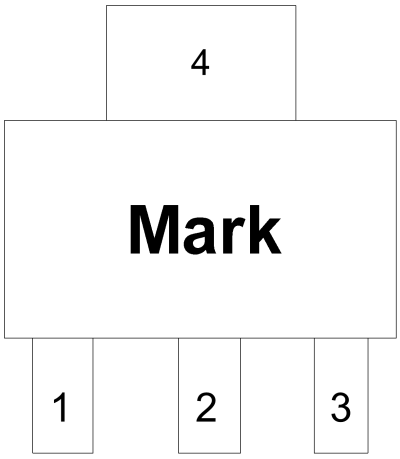


Table1:317 series(TO220 PKG)

PIN NO.	PIN NAME	FUNCTION
1	ADJ	ADJ pin
2	VOUT	Output voltage pin
3	VIN	Input voltage pin

Table2:317 series(SOT223 PKG)

PIN NO.	PIN NAME	FUNCTION
1	ADJ	ADJ pin
2	VOUT	Output voltage pin
3	VIN	Input voltage pin
4	VOUT	Output voltage pin

Absolute Maximum Ratings

Max Input Voltage ····· 40V

Max Operating Junction Temperature(Tj) ····· 150°C

Ambient Temperature(Ta)····· -20°C~85°C

Storage Temperature(Ts) ····· -40°C~150°C

Caution:Exceed these limits to damage to the device.Exposure to absolute maximum rating conditions may affect device reliability.

Thermal Information

Symbol	Parameter	TO220	UNIT
$R_{\theta(JA)}$	Junction-to-ambient thermal resistance	37.9	°C/W
$R_{\theta Jc(top)}$	Junction-to-case (top)thermal resistance	51.1	°C/W
$R_{\theta JB}$	Junction-to-board thermal resistance	23.2	°C/W
Ψ_{JT}	Junction-to-top characterization parameter	13.0	°C/W
Ψ_{JB}	Junction-to-board characterization parameter	22.8	°C/W
$R_{\theta JC(bot)}$	Junction-to-case(bottom)thermal resistance	4.2	°C/W

Electrical Characteristics

TA=25°C,unless otherwise noted.

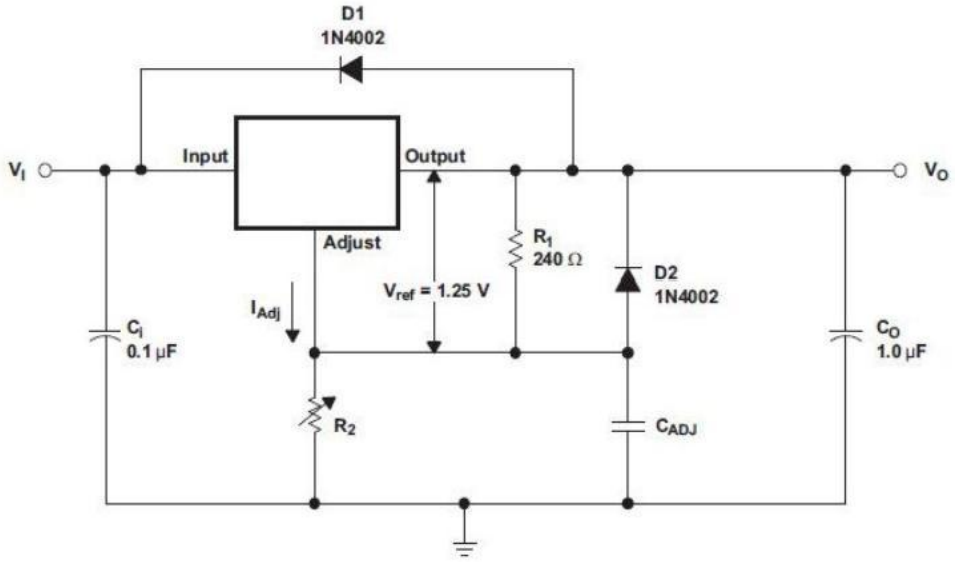
Parameter	Test Conditions		Min	Typ	Max	Unit
Line regulation	VI-VO=3V to 40V	Tj=25°C	-5	--	5	mV
Load regulation	I_o=10mA to 1500mA		-25	--	25	mV
Reference viltage	V_I-V_o=3V to 40V,P_D≤20W,I_o=10mA to 1.5A		1.2	1.25	1.3	V
Output-voltage Temperature stability	T_J=0°C to 125°C			0.7		%V_o
Maximum output current	V_I-V_o≤15V,Tj=25°C		1.5	2		A

Detailed Description

317 device is an adjustable three-terminal positive-voltage regulator capable of supplying up to 1.5A over an output-voltage range of 1.25V to 37V.It requires only two external resistors to set the output voltage.The device features a typical line regulation of 1mV and typical load regulation of7 mV.

The 317 device is versatile in its applications,including uses in programmable output regulation and local on-card regulation.Or,by connecting a fixed resistor between the ADJUST and OUTPUT terminals,the317 device can function as a precision current regulator.An optional output capacitor can be added to improve transient response.

Typical Application



Adjustable Voltage Regulator

1.R1 and R2 are required to set the output voltage.

2.C_{ADJ} is recommended to improve ripple rejection.It prenents amplification of the ripple as the output voltage is adjusted higher.

3.C_I is recommended,particularly if the regulator is not in clouse proximity to the power-supply filter capacitors.A 0.1uF or 1uF ceramic or tantalum capacitor provides sufficient bypassing for most applications,especially when adjustment and output capacitors are used.

4.C_O improves transient response,but is not needed for stability.

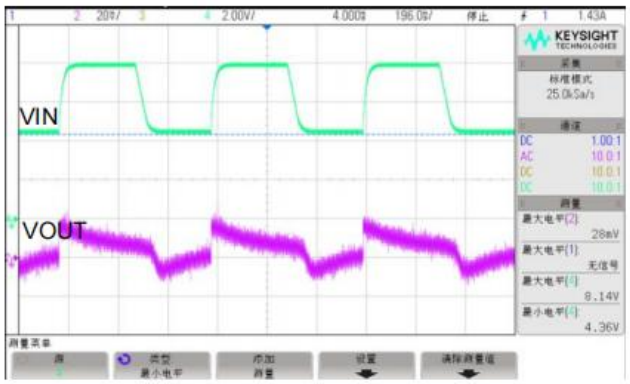
5.Protection diode D2 is recommended if C_{ADJ} is used.The diode provides a low-impedance discharge path to prevent the capacitor from discharging into the output of the regulator.

6.Protection diode D1 is recommended if C_O is used.The diode provides a low-impedance diacharge path to prevent the capactior from discharging into the output of the regulator.

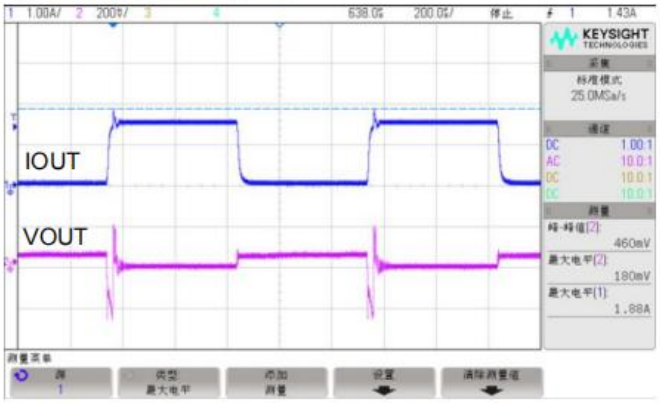
7.V_O is calculated as shown:$V_O=V_{REF}(1+R2/R1)+(I_{ADJ}XR2)$,$I_{ADJ}$ is typically 50uA and negligible in most applications.

Typical Performance Characteristics

Line Transient Response

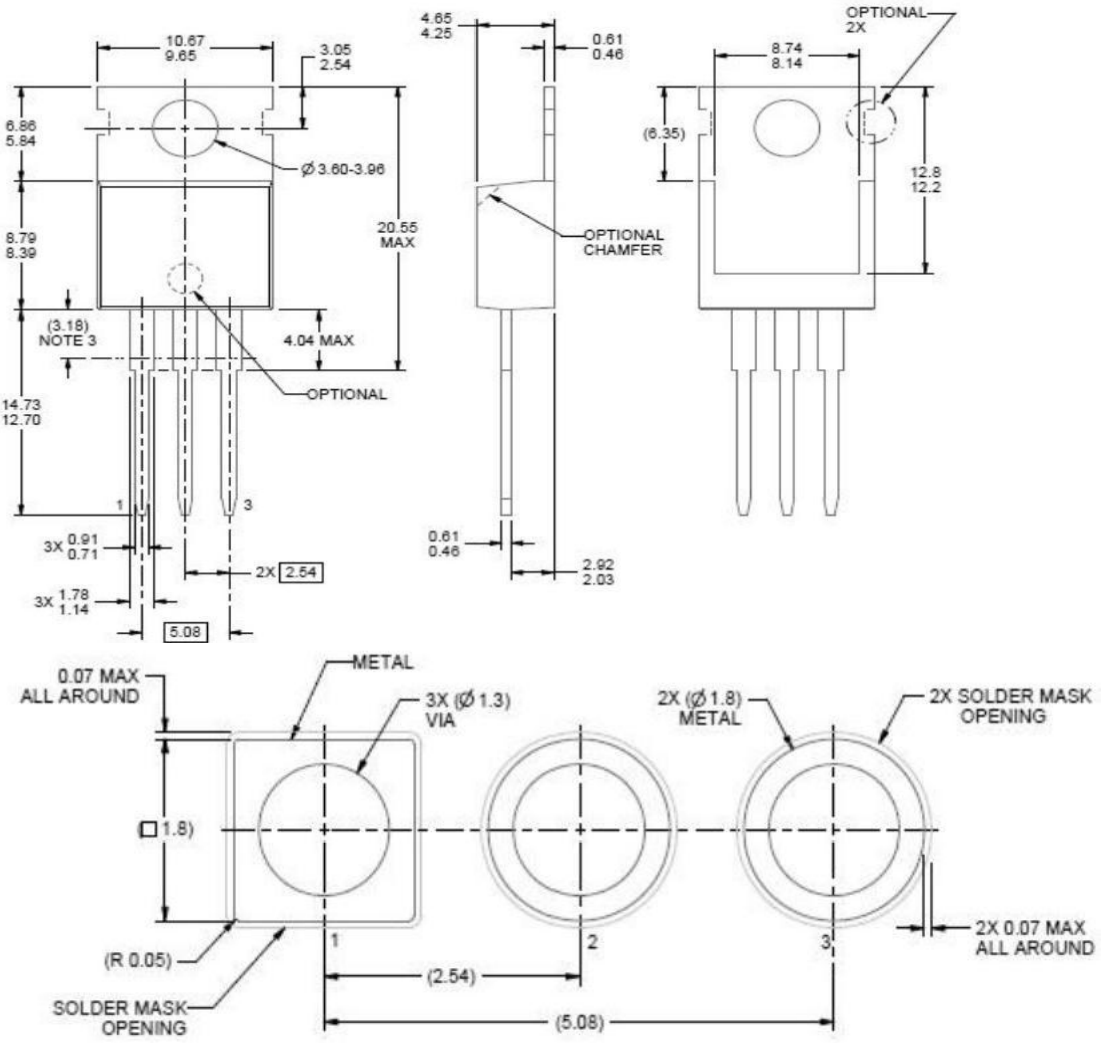


Load Transient Response

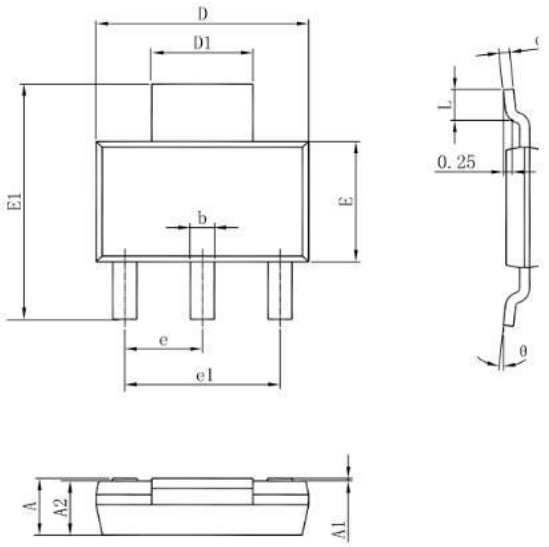


Package Information

TO220 Package



SOT223 Package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
C	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°

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