

100mA Adjustable Positive Voltage Regulator

General Description

- The LA317L is an adjustable 3-terminal positive voltage regulator capable of supplying 100mA over a 1.2V to 12V output range. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage.
- The LA317L is available in standard TO-92 and SOP-8 packages.



TO-92



SOP-8



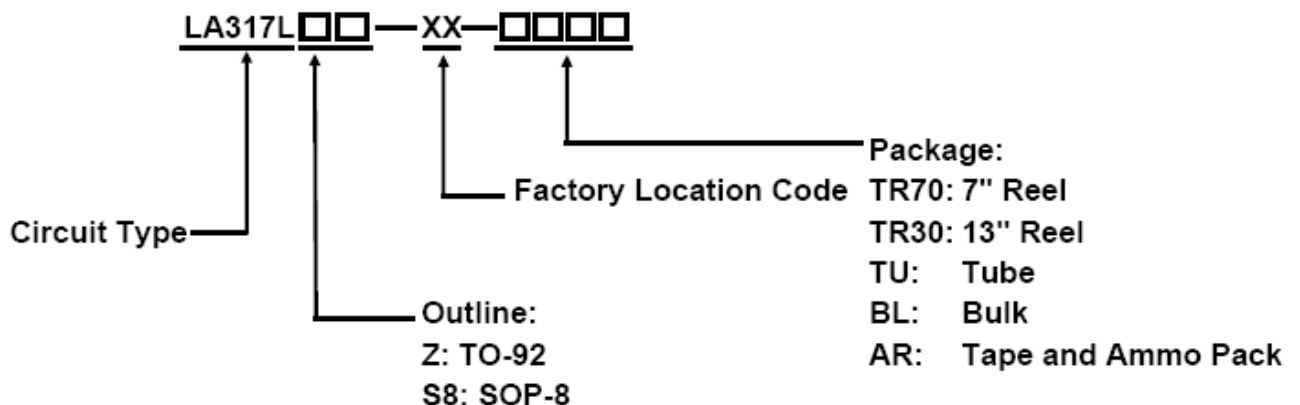
Features

- Adjustable output down to 1.2V
- Guaranteed 100mA output current
- Output short circuit protected
- Line regulation: 0.01%/V
- Load regulation: 0.1%
- Constant current limit over temperature
- Standard 3-lead transistor package
- Input ripple rejection: 70dB
- RoHS Compliance

Applications

- High Efficiency Linear Regulators
- Post Regulation for Switching Supplies
- Microprocessor Power Supply
- Mother Board I/O Power Supply

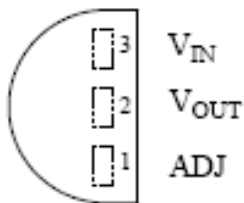
Ordering Information



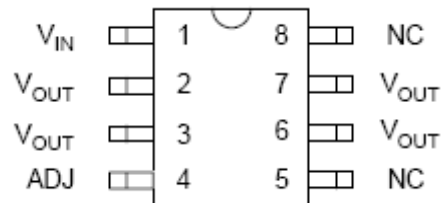
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LA317L

Pin Configuration

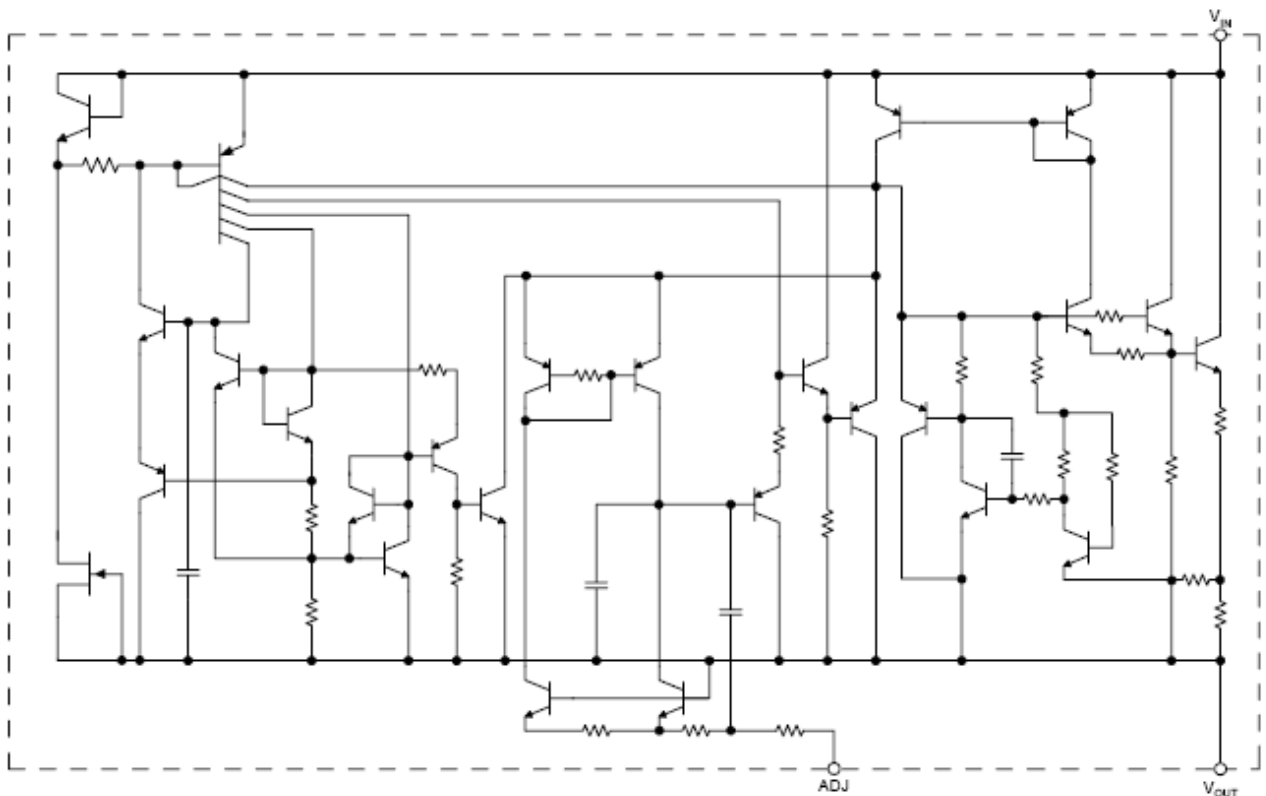


Outline: Z
TO-92



Outline: S8
SOP-8

Block Diagram



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LA317L

Absolute Maximum Ratings (Ta=25° C, unless otherwise specified)

Symbol	Description	Ratings	Unit
V _{IN-VOUT}	Input - Output Voltage Differential	40	V
I _o	Max. Output Current	100	mA
T _J	Operating Junction Temperature	150	° C
T _{OPR}	Operating Temperature Range	-20 ~ 85	° C
T _{STG}	Storage Temperature Range	-65 ~ 150	° C
P _D	Power Dissipation	700	mW
T _{LEAD}	Lead Temperature (Soldering, 4sec.)	260	° C

Electrical Characteristics

(V_{IN-VOUT}=5V, I_{OUT}=40mA, P_D≤625mW, 0°C ≤T_J≤125°C, unless otherwise specified)

Symbol	Description	LA317L			Unit	Conditions
		Min.	Typ.	Max.		
ΔV _{OUT} /V _{OUT}	Line Regulation	-	0.01	0.04	%V	T _J =25°, 3V ≤ V _{IN-VOUT} ≤ 15V, I _{OUT} ≤ 20mA (Note)
		-	0.02	0.07		3V ≤ V _{IN-VOUT} ≤ 15V, I _{OUT} ≤ 20mA (Note)
ΔV _{OUT}	Load Regulation	-	0.1	0.5	%	T _J =25°, 5mA ≤ I _{OUT} ≤ 100mA (Note)
		-	0.3	1.5	%	5mA ≤ I _{OUT} ≤ 101mA (Note)
	Thermal Regulation		0.04	0.2	%/W	T _J =25°, 10ms Pulse
I _{ADJ}	Adjustable Pin Current	-	50	100	μA	-
ΔI _{ADJ}	Adjustable Pin Current Change	-	0.2	5	μA	3V ≤ V _{IN-VOUT} ≤ 15V, 5mA ≤ I _{OUT} ≤ 100mA
V _{REF}	Reference Input Voltage	1.20	1.25	1.30	V	3V ≤ V _{IN-VOUT} ≤ 15V, 5mA ≤ I _{OUT} ≤ 100mA
I _{LIMIT}	Current Limit	100	200	300	mA	3V ≤ V _{IN-VOUT} ≤ 13V
I _{L(MIN)}	Minimum Load Current for Regulation	-	3.5	5	mA	3V ≤ V _{IN-VOUT} ≤ 13V
PSRR	Ripple Rejection	-	62	-	dB	V _{OUT} =10V, f=120Hz, C _{ADJ} =0μF
		60	70	-		V _{OUT} =10V, f=120Hz, C _{ADJ} =10μF
-	Temperature Stability	-	0.65	-	%	0° C ≤ T _J ≤ 125° C

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LA317L

Symbol	Description	LA317L			Unit	Conditions
		Min.	Typ.	Max.		
-	Long Term Stability	-	0.3	-	%	$T_J=125^\circ\text{C}$, 1000 Hours
-	RMS Output Noise (% of V_{OUT})	-	0.003	-	%	$T_J=125^\circ\text{C}$, $10\text{Hz} \leq f \leq 10\text{KHz}$
-	Thermal Resistance Junction to Case	-	185	-	$^\circ\text{C/W}$	TO-92
		-	175	-		SOP-8

Note: Regulation is measured at constant junction temperature, using pulse testing with a low duty cycle.

Changes in output voltage due to heating effects are covered under the specification of thermal regulation.

Typical Characteristics Curves

Fig.1- Load Regulation vs. Temperature

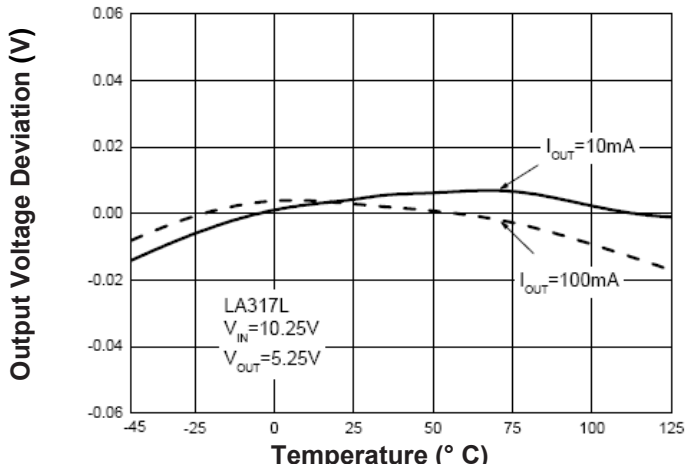


Fig.2- Output Voltage vs. Input Voltage

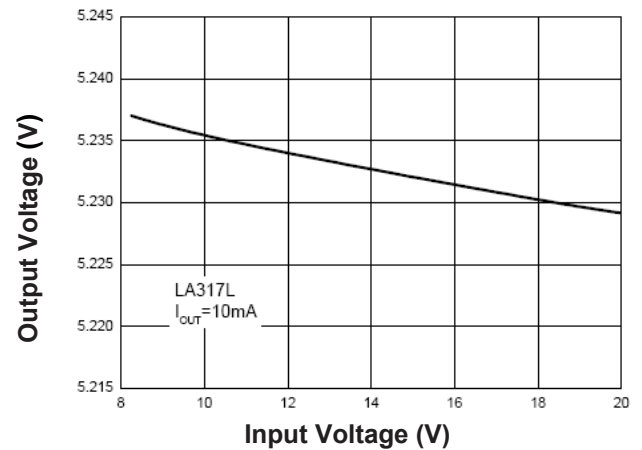


Fig.3- Reference Voltage vs. Temperature

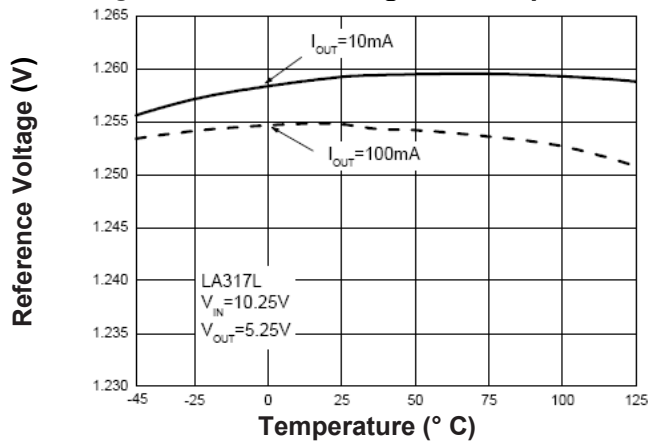
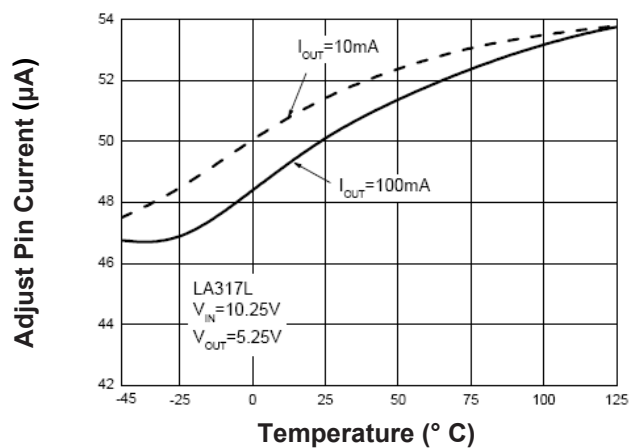


Fig.4- Adjust Pin Current vs. Temperature



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LA317L

Typical Characteristics Curves (Continued)

Fig.5- Dropout Voltage vs. Temperature

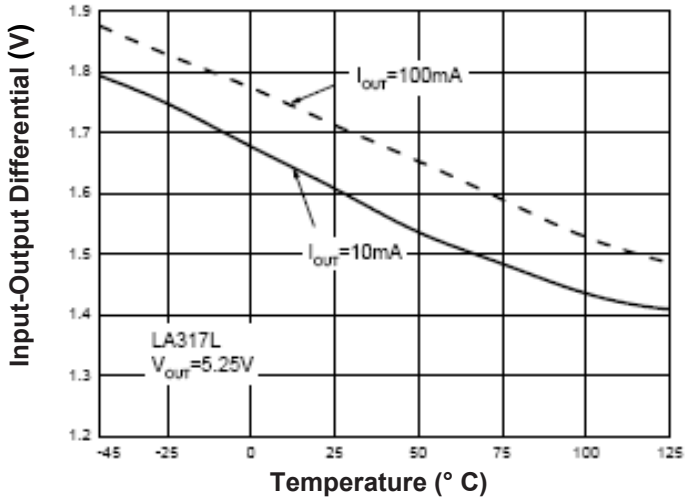


Fig.6- Minimum Operating Current

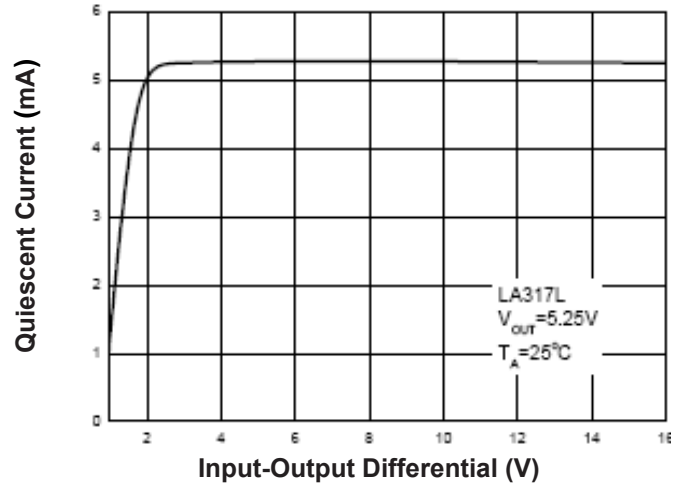


Fig.7- Ripple Rejection vs. Output Voltage

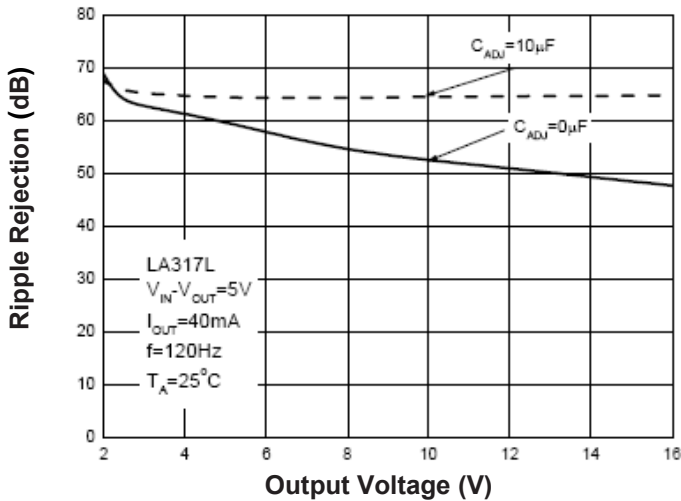
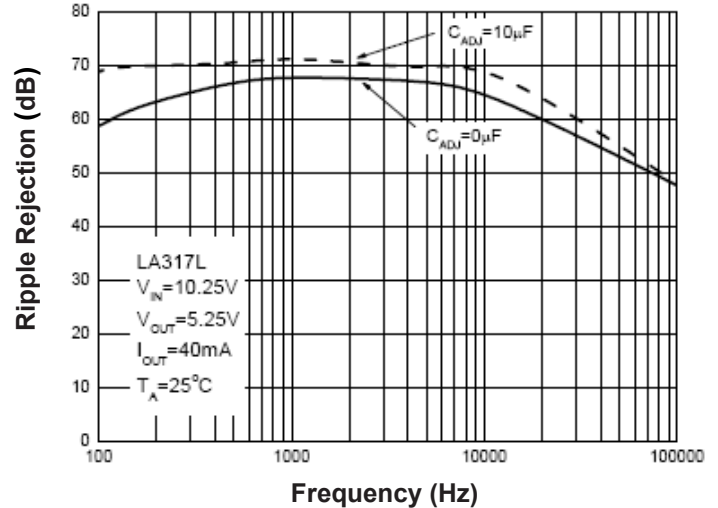


Fig.8- Ripple Rejection vs. Frequency



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LA317L

Typical Characteristics Curves (Continued)

Fig.9- Load Transient Response
(Conditions: $V_{IN}=10.25V$, $V_{OUT}=5.25V$, $C_{IN}=0.1\mu F$, $C_{OUT}=1\mu F$, $T_A=25^\circ C$)

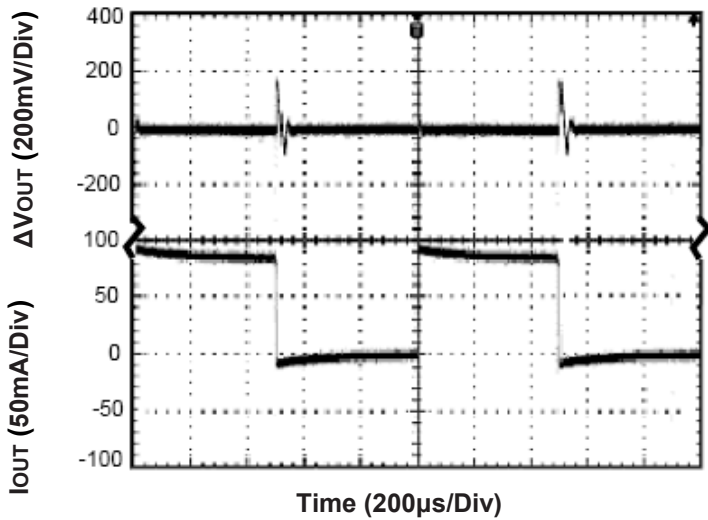
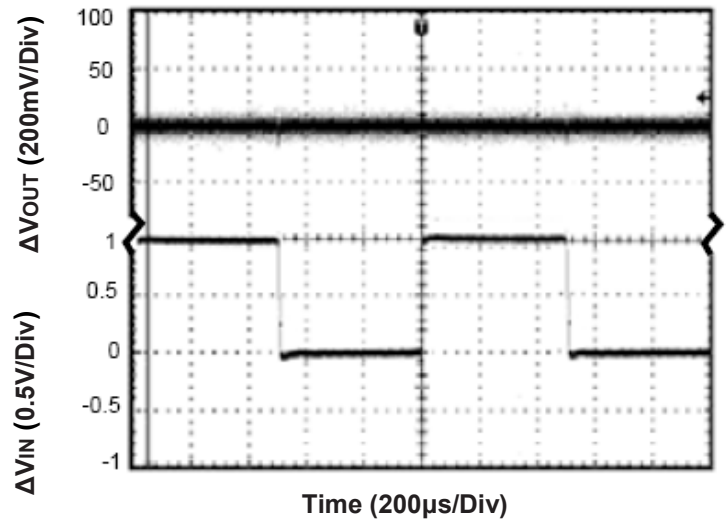


Fig.10- Line Transient Response
(Conditions: $V_{IN}=10.25$ to $11.25V$, $I_{OUT}=40mA$, $V_{OUT}=5.25V$, $C_{IN}=0.1\mu F$, $C_{OUT}=1\mu F$, $T_A=25^\circ C$)



Typical Application

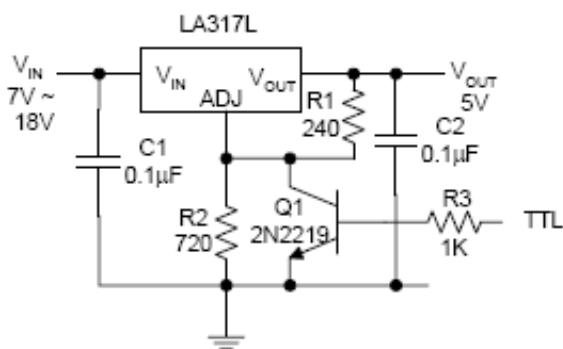


Fig.11- 5V Logic Regulator with Electronic Shutdown (Minimum output=1.2V)

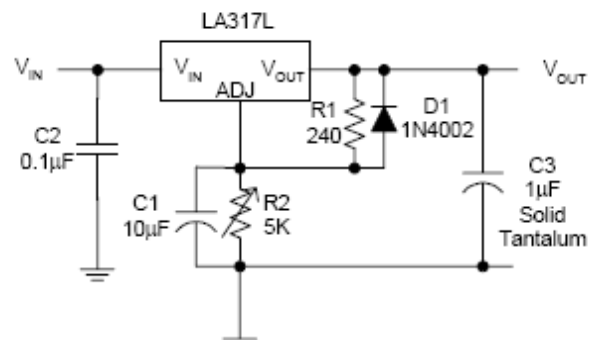


Fig.12- Adjustable Regulator with Improved Ripple Rejection
Note: Discharge C1 if output is shorted to ground

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LA317L

Typical Application (Continued)

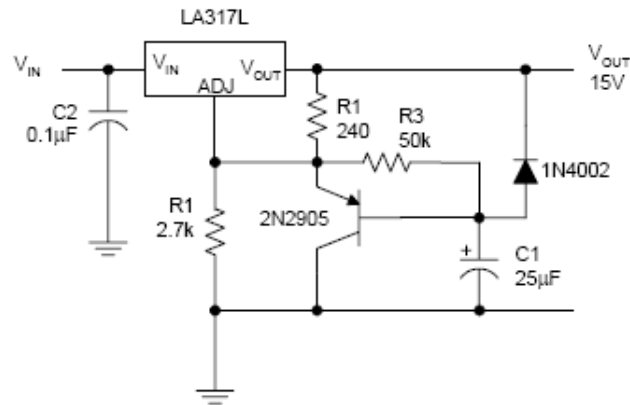
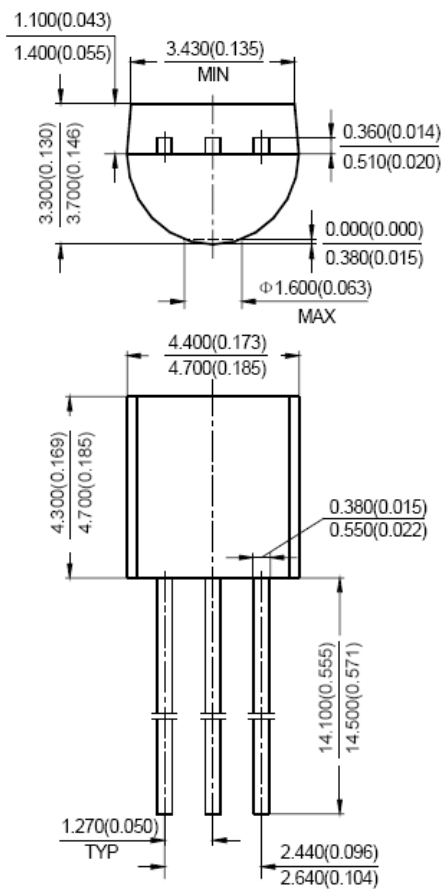


Fig.13- Slow Turn-on 15V Regulator

Dimensions in mm (inches)



TO-92

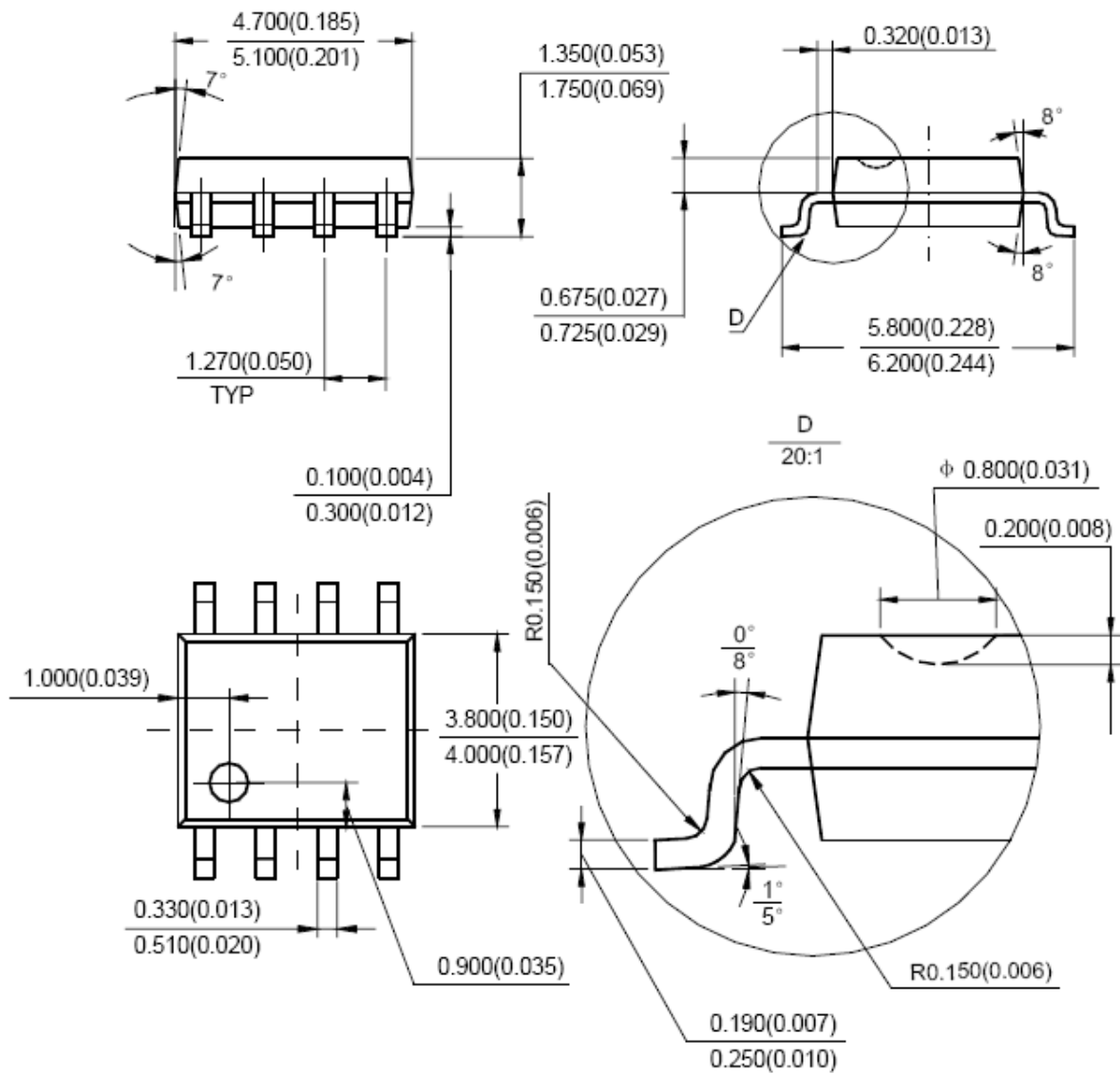
TAITRON
components incorporated

Rev. A/DX 2007-06-04

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LA317L

Dimensions in mm (inches) (Continued)



SOP-8

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LA317L

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